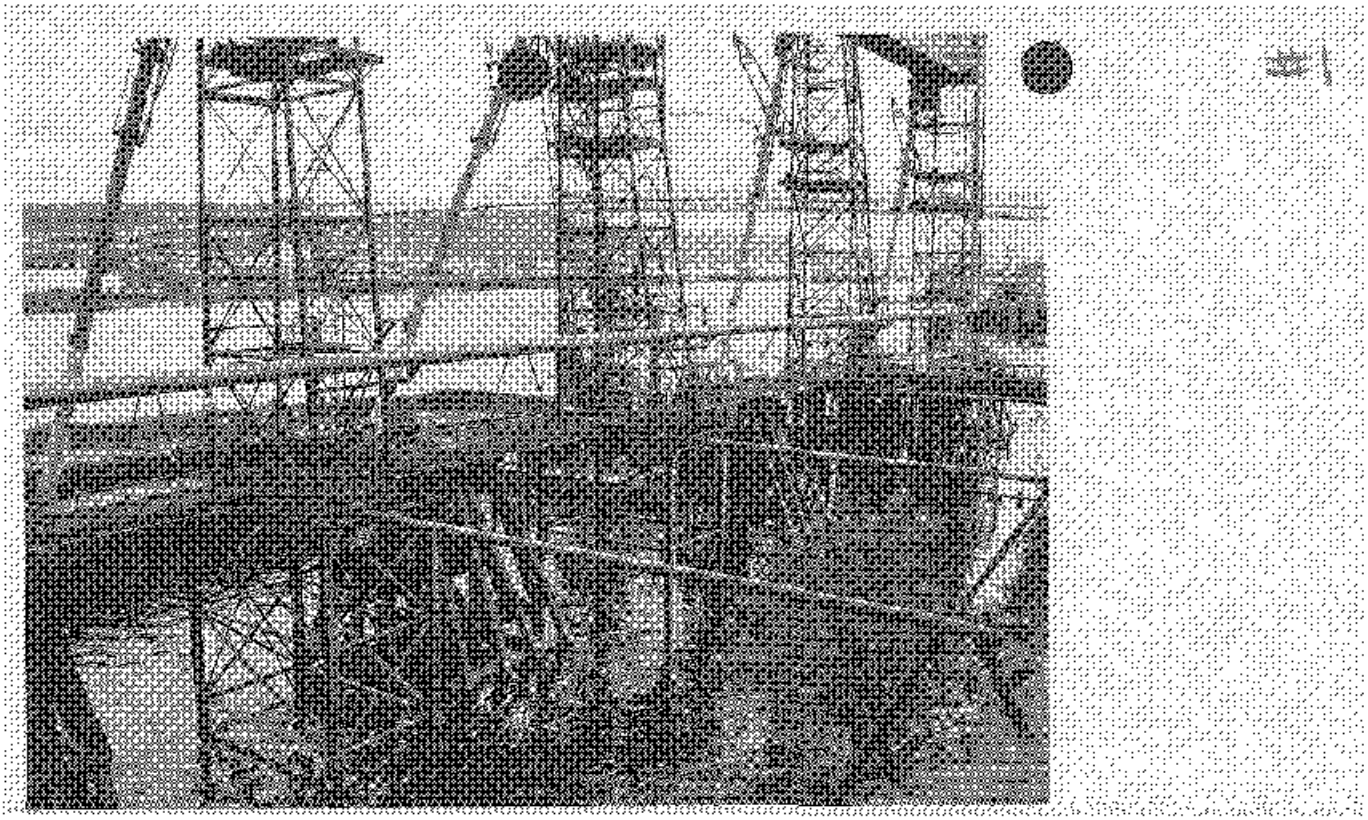
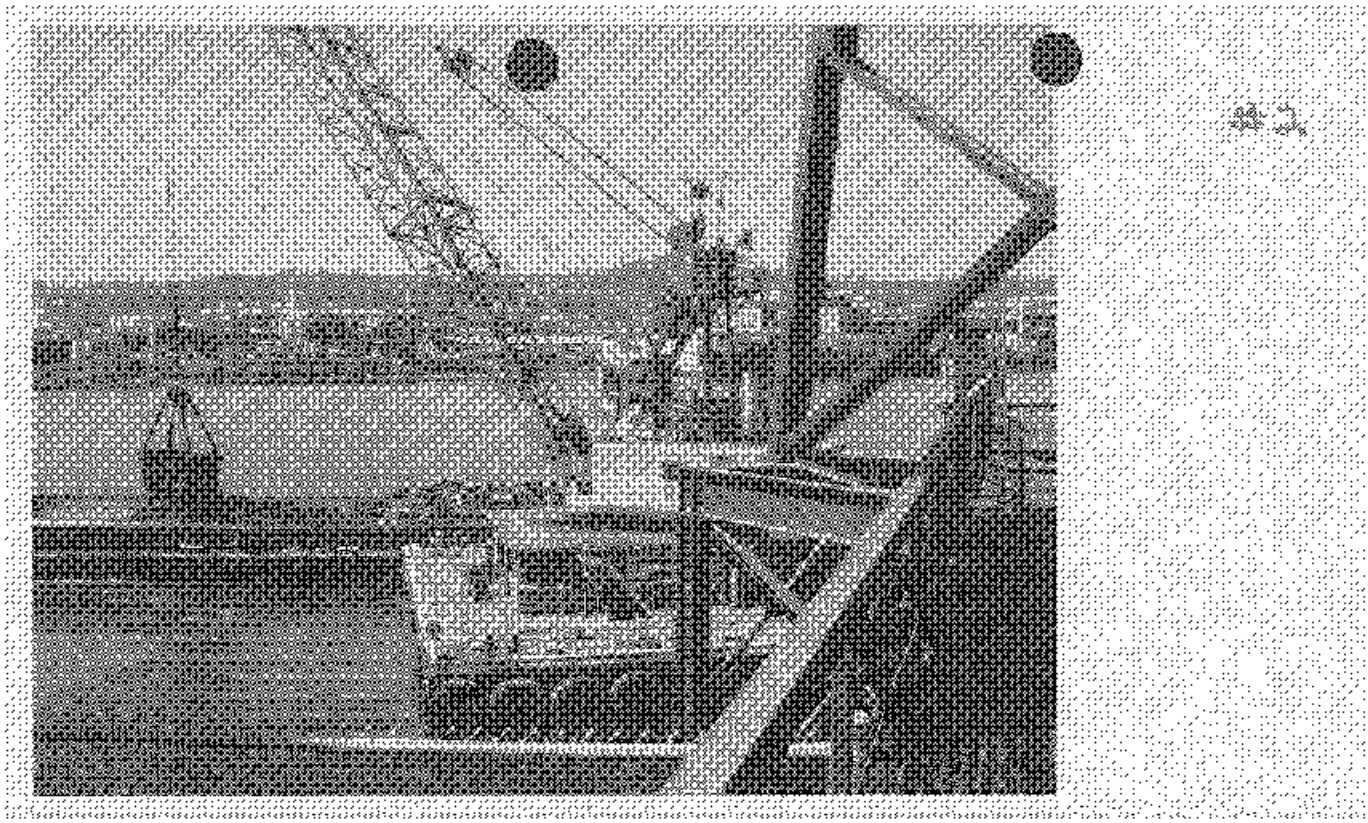
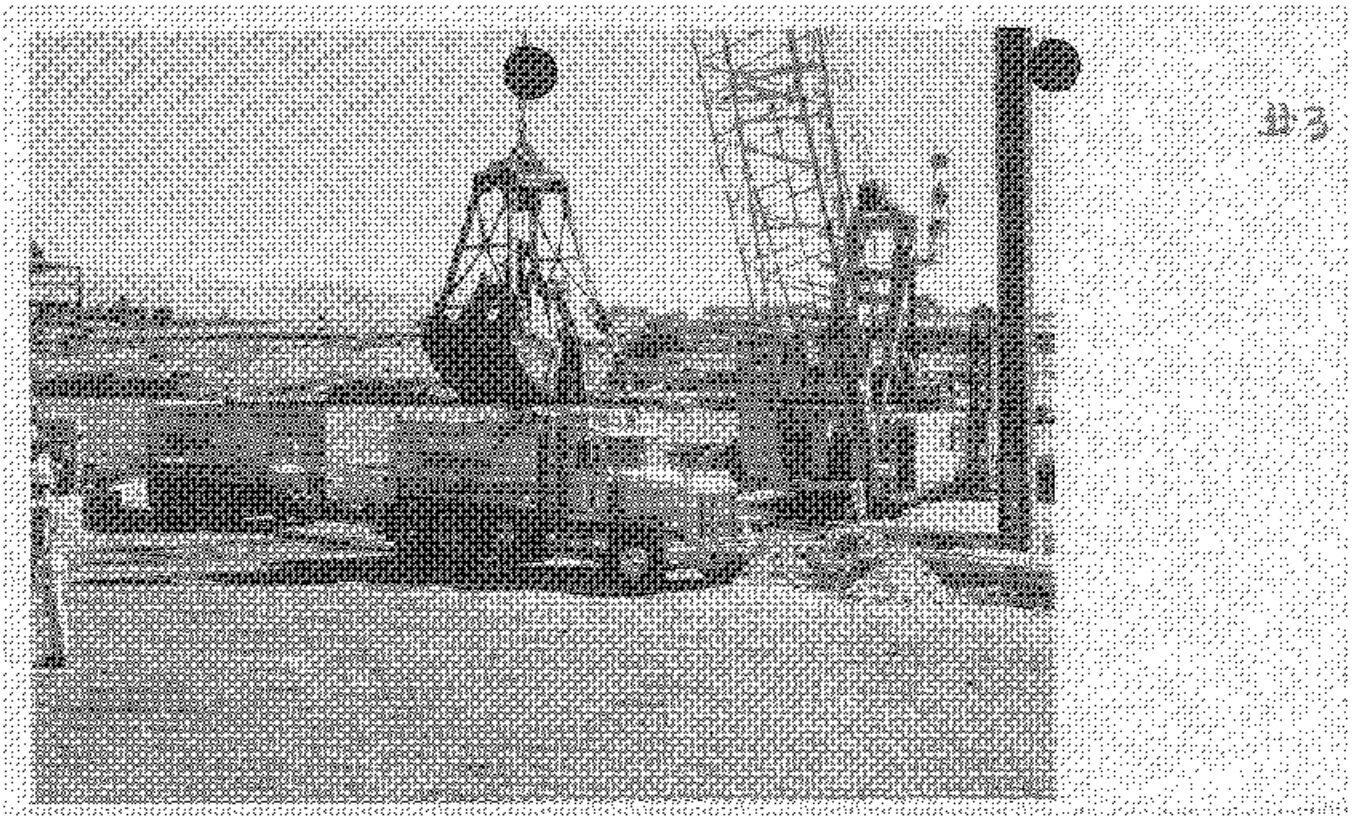
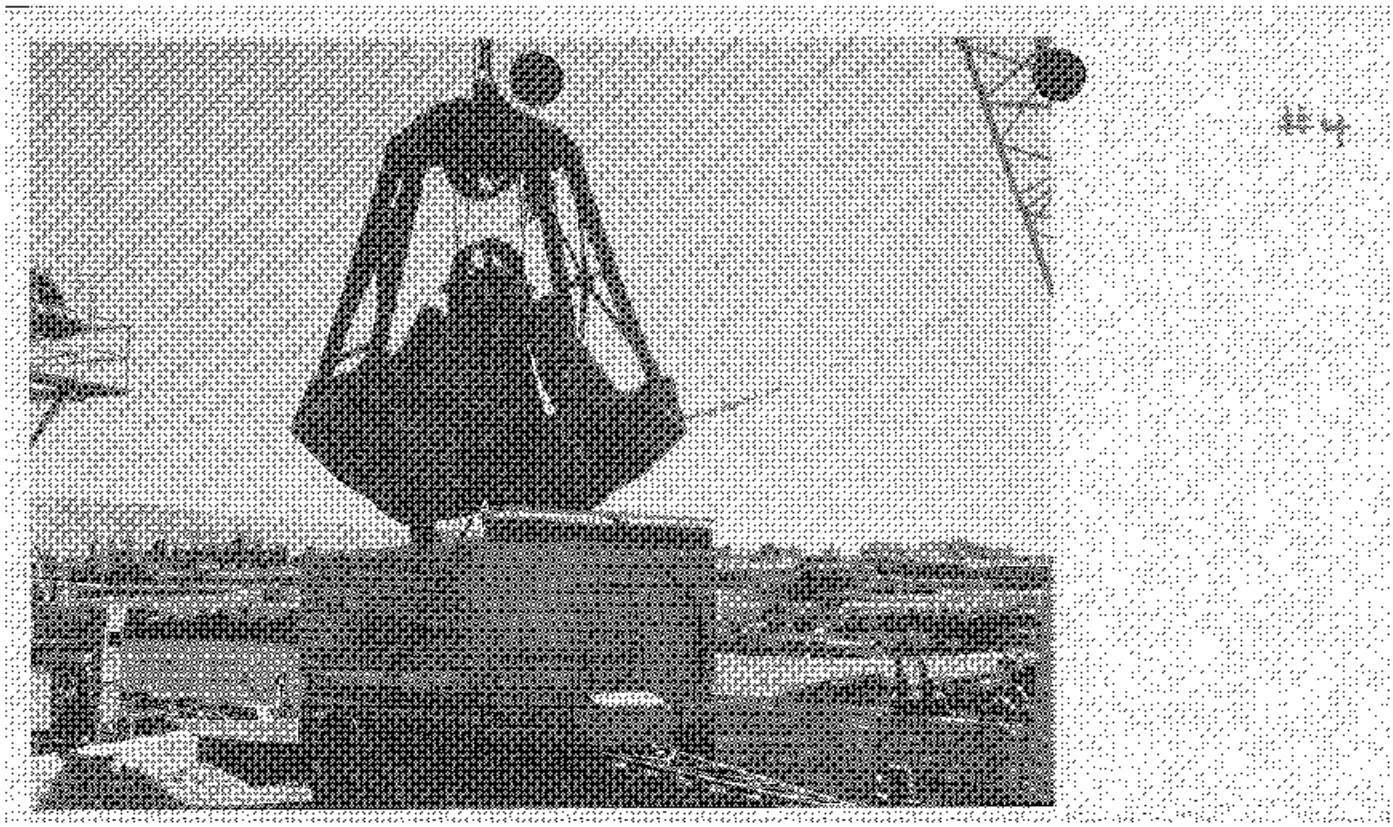





D3



2001-00031
✓ Corps
New permittee
CLD Pacific Grain

CARGILL

15407 McGinty Road West
Wayzata, MN 55391-2399
Mail Address: PO Box 9300
Minneapolis, MN 55440-9300

DEC 13 2001

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

December 3, 2001

Ms. Susan Sturges
Regulatory Specialist
US Army Corps of Engineers
CENWP-OP-G
P.O. Box 2946
Portland, OR 97208-2946

RE: Transfer of Joint Permit Application No. 200100031
Cargill, Incorporated, Irving Elevator, 800 N River Street, Portland, OR 97227

Dear Ms. Sturges:

Cargill, Incorporated and Louis Dreyfus Corporation entered into a joint venture called CLD Pacific Grain, LLC on or about December 3, 2001.

This letter constitutes notice that the above-referenced Joint Permit Application, Corps ID No. 200100031 for the Cargill, Incorporated ("Cargill") elevator located at 800 N River Street, Portland, OR 97227 will be transferred to CLD Pacific Grain, LLC. ("CLD") on or about December 3, 2001. Cargill hereby agrees to transfer the subject permit application to CLD and CLD hereby accepts transfer of the permit application and acknowledges acceptance of its rights and responsibilities under the terms and conditions of the permit application.

Please direct any questions or inquiries regarding the transfer of this permit to Dennis Klein, Environmental Coordinator, Cargill, Incorporated, US APS, P.O. Box 9300, Minneapolis, MN 55440, (952) 742-5622.

Sincerely,

Don Vogt, Vice President
US Ag Producer Services
Cargill, Incorporated

Arnie Schaufler, Manager
CLD Pacific Grain, LLC

CLD Pacific Grain, LLC

CLD Pacific Grain, LLC
KOIN Center
222 SW Columbia Street
Suite 1133
Portland, Oregon
97201-6610

Telephone 503 243-1133
Fax 503 243-5079

October 10, 2002

Department of the Army
Portland District, Corp of Engineers
Attn: CENWP-OP-G Judy Linton
PO Box 2946
Portland, OR 97208-2946

RECD OCT 11 2002

Re: Maintenance Dredging Permit #2001-00031

Dear Ms. Linton,

CLD Pacific Grain conducted maintenance dredging at our grain loading facility located at 800 N. River St Portland. The dredging was conducted by Hickey Marine on July 19, 20 and on September 28 and 29, 2002. There were 5,556 cu yds of material removed. The spoil material was barged to The Dalles, OR and then trucked to the Wasco County Landfill. During the dredging procedure visual turbidity readings were observed and found to be at acceptable levels.

A post-dredging sample of the river bottom was taken at: N45deg32min03.97sec, W122deg40min29.31sec. The sample was analysed by Columbia Analytical Services and found to be OK when compared to screening levels of the Lower Columbia River. Please see the attached report.

The attached photos #1+2 show the dredge site. Photos #3+4 show the off loading into trucks.

If you have any questions regarding this project please contact me at 503-243-1133.

Sincerely,

Gene Loffler
Operations Manager

C: Lance Bachman CLD Pacific Grain

Columbia Analytical Services INC.
An Employee-Owned Company

October 4, 2002

Service Request No: K2206060

Gene Loffler
CLD Pacific Grain
Koin Center
222 SW Columbia Street, Suite 1133
Portland, OR 97201-6610

Dear Gene:

Enclosed are the results of the sample(s) submitted to our laboratory on August 29, 2002. For your reference, these analyses have been assigned our service request number K2206060.

All analyses were performed according to our laboratory's quality assurance program. The test results meet requirements of the NELAC standards except as noted in the case narrative report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please call if you have any questions. My extension is 3372.

Respectfully submitted,

Columbia Analytical Services, Inc.

Jim Smith
Project Chemist

JS/jeb

NELAC 1317 South 13th Avenue PO Box 479 Kelso Washington 98626 ACILSeal of

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
B	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL has been elevated due to a matrix interference.
X	See case narrative.
*	The duplicate analysis not within control limits. See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated concentration that is less than the MRL but greater than or equal to the MDL.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results (25% for CLP Pesticides).
U	The compound was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
i	The MRL/MDL has been elevated due to a chromatographic interference.
X	See case narrative.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Case Narrative

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	CLD Pacific Grain Center	**Service Request No.:**	K2206060
Project:	Pacific Grain	**Date Received:**	8/29/02
Sample Matrix:	Sediment		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Matrix/Duplicate Matrix Spike (MS/DMS), and Laboratory Control Sample (LCS).

Sample Receipt

One sample was received for analysis at Columbia Analytical Services on 8/29/02. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

PCB Aroclors by EPA Method 8082

Second Source Exceptions:
The primary evaluation criterion was exceeded for the following analyte in the second source verification on the secondary column for Initial Calibration (ICAL) ID CAL2036: Aroclor 1016. However, the second source is acceptable on the primary column verifying the validity of the ICAL standards.

Aroclor Identification
Two Aroclors have been identified in the sample Aroclor 1254 and Aroclor 1260. When mixtures of PCB Aroclors are present in a sample, correct identification of component Aroclors is subjective and is based on analyst judgement.

When PCB mixtures are present in a sample, care is taken to minimize the effects of double counting PCBs in the pattern. Quantification peaks are selected that exhibit a minimum of overlapping contribution. However, in our experience, when a mixture of 1254 and 1260 are present in a sample, there is a potential for high bias resulting from overlapping contribution to each PCB pattern. Therefore, the total PCB content in the samples may be overestimated by an analysis for PCB Aroclors.

No other anomalies associated with the analysis of these samples were observed.

Semivolatile Organic Compounds by EPA Method 8270C SIM

Initial Calibration Exceptions:
The primary evaluation criterion was exceeded for the following analytes [illegible] Initial Calibration (ICAL) ID CAL1968: Pentachlorophenol, Benzo(a)pyrene. In accordance with CAS standard operating procedures, the alternative evaluation specified in the EPA method was performed using the mean Relative Standard Deviation (RSD) of all analytes in the calibration. The result of the mean RSD calculation was 9.4%. The calibration meets the alternative evaluation criteria.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____ **Date** 10/3/02

Chain of Custody Documentation

Columbia Analytical Services INC
An Employee Owned Company

CHAIN OF CUSTODY

SR#: K2206068

1317 South 13th Ave. • Kelso, WA 98626 • (360) 577-7222 • (800) 695-7222x07 • FAX (360) 636-1068

PAGE _____ OF _____ COC #. _____

PROJECT NAME: CLD Pacific Grain LLC
PROJECT NUMBER:
PROJECT MANAGER: Laura Bookman
COMPANY/ADDRESS: 520 N. River St. Portland, OR 97227
PHONE #: 503-231-7177
FAX #: 503-[illegible]
SAMPLER'S SIGNATURE:

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐	Volatile Organics 624☐ 8260☐ 8021☐ BTEX☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐ ☐ Fuel Fingerprint (FID) ☐ NW-HCID Screen	Oil & Grease/TRPH 1664 HEM☐ 1664 SGT☐	PCB's Aroclors☑ Congeners☐	Pesticides/Herbicides 608☐ 8081A☐ 8141A☐ 8151A☐	Chlorophenolics - 8151M Tri☐ Tetra☐ PCP☐	PAHS 8310☐ SIM☐	Metals, Total or Dissolved (See list below)	Cyanide☐ Hex-Chrom☐	pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS (circle) NH_3-N, COD, Total-P, TKN, TOC, DOC (circle) NO_2+NO_3	TOX 9020☐ AOX 1650☐ 506☐	REMARKS
CLD Pacific	4/29	10:30		SED	3					✓			✓						

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
✓ II. Report Dup., MS, MSD as required
___ III. Data Validation Report (includes all raw data)
___ IV. CLP Deliverable Report
___ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: _____

TURNAROUND REQUIREMENTS

___ 24 hr. ___ 48 hr.
___ 5 Day
✓ Standard (10-15 working days)
___ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

ATTN: Jim Smith

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature]	Signature: Elmer L. Brink	Signature: Elmer L. Brink	Signature: [signature]
Date/Time: 4/29/2002 14:19	Date/Time: 4/29/02 14:17	Date/Time: 4/29/02 15:30	Date/Time: 4/29/02
Printed Name: Jim Bailey	Printed Name: ELMER L. BRINK	Printed Name: ELMER L. BRINK	Printed Name: R. Monowcas
Firm: CLD Pacific	Firm: CLD Pacific	Firm: CLD Pacific	Firm: 15

RCOC #1 04/02

Columbia Analytical Services Inc.

Cooler Receipt And Preservation Form

Project/Client CLP Pacific Grain Work Order K22 / Cotland Del

Cooler received on 8/29/02 and opened on 8/29/02 by [illegible]

1.	Were custody seals on outside of cooler? If yes, how many and where? Back Side						Y N
2.	Were seals intact and signature & date correct?						Y N
3.	COC #						
	Temperature of cooler(s) upon receipt:	7.0					
	Temperature Blank:	9.9					
4.	Were custody papers properly filled out (ink, signed, etc.)?						Y N
5.	Type of packing material present Bubbles						
6.	Did all bottles arrive in good condition (unbroken)?						Y N
7.	Were all bottle labels complete (*i.e.* analysis, preservation, etc.)?						Y N
8.	Did all bottle labels and tags agree with custody papers?						Y N
9.	Were the correct types of bottles used for the tests indicated?						Y N
10.	Were all of the preserved bottles received at the lab with the appropriate pH?						~~Y N~~
11.	Were VOA vials checked for absence of air bubbles, and if present, noted below?						~~Y N~~
12.	Did the bottles originate from CAS/K or a branch laboratory?						Y N
13.	Are CWA Microbiology samples received with > ½ the 24 hr. hold time remaining from collection?						~~Y N~~
14.	Was CL2/Residual negative?						~~Y N~~

Explain any discrepancies: _____

RESOLUTION: _____

Samples that required preservation or received out of temperature:

Sample ID	Reagent	Volume	Lot Number	Bottle Type	Rec'd out of Temperature	Initials

Total Solids

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: CLD Pacific Grain
Project:
Sample Matrix: Sediment

Service Request: K2206060

Total Solids

Prep Method: NONE
Analysis Method: 160.3M
Test Notes:

Units: PERCENT
Basis: WET

Sample Name	Lab Code	Date Collected	Date Received	Date Analyzed	Result	Result Notes
CLD Pacific	K2206060-001	08/29/2002	08/29/2002	09/12/2002	92.8	

00010

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	CLD Pacific Grain	**Service Request:**	K2206060
Project:		**Date Collected:**	08/29/2002
Sample Matrix:	Soil	**Date Received:**	08/29/2002
		Date Analyzed:	09/12/2002

Duplicate Sample Summary
Total Solids

Prep Method:	NONE	**Units:**	PERCENT
Analysis Method:	160.3M	**Basis:**	WET
Test Notes:			

Sample Name	Lab Code	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference	Result Notes
CLD Pacific	K2206060-001	92.8	93.4	93.1	<1	

Polychlorinated Biphenyls
(PCBs)
Method 8082

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	CLD Pacific Grain	**Service Request:**	K2206060
Project:		**Date Collected:**	08/29/2002
Sample Matrix:	Sediment	**Date Received:**	08/29/2002

Polychlorinated Biphenyls (PCBs)

Sample Name:	CLD Pacific	**Units:**	ug/Kg
Lab Code:	K2206060-001	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	11	0.89	1	09/06/02	09/28/02	KWG0206788	
Aroclor 1221	ND	U	22	0.89	1	09/06/02	09/28/02	KWG0206788	
Aroclor 1232	ND	U	11	0.89	1	09/06/02	09/28/02	KWG0206788	
Aroclor 1242	ND	U	11	0.89	1	09/06/02	09/28/02	KWG0206788	
Aroclor 1248	ND	U	11	0.89	1	09/06/02	09/28/02	KWG0206788	
Aroclor 1254	**25**		11	0.89	1	09/06/02	09/28/02	KWG0206788	
Aroclor 1260	**24**		11	0.89	1	09/06/02	09/28/02	KWG0206788	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	112	57-149	09/28/02	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	CLD Pacific Grain	**Service Request:**	K2206060
Project:		**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polychlorinated Biphenyls (PCBs)

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG0206788-4	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8082		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Aroclor 1016	ND	U	10	0.82	1	09/06/02	09/14/02	KWG0206788	
Aroclor 1221	ND	U	20	0.82	1	09/06/02	09/14/02	KWG0206788	
Aroclor 1232	ND	U	10	0.82	1	09/06/02	09/14/02	KWG0206788	
Aroclor 1242	ND	U	10	0.82	1	09/06/02	09/14/02	KWG0206788	
Aroclor 1248	ND	U	10	0.82	1	09/06/02	09/14/02	KWG0206788	
Aroclor 1254	ND	U	10	0.82	1	09/06/02	09/14/02	KWG0206788	
Aroclor 1260	ND	U	10	0.82	1	09/06/02	09/14/02	KWG0206788	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Decachlorobiphenyl	104	57-149	09/14/02	Acceptable

Comments:

00014

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CLD Pacific Grain
Project:
Sample Matrix: Sediment

Service Request: K2206060

Surrogate Recovery Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method: EPA 3540C
Analysis Method: 8082

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1
CLD Pacific	K2206060-001	112
Method Blank	KWG0206788-4	104
CLD PacificMS	KWG0206788-1	114
CLD PacificDMS	KWG0206788-2	127
Lab Control Sample	KWG0206788-3	102

Surrogate Recovery Control Limits (%)

Sur1 = Decachlorobiphenyl 57-149

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	CLD Pacific Grain	**Service Request:**	K2206060
Project:		**Date Extracted:**	09/06/2002
Sample Matrix:	Sediment	**Date Analyzed:**	09/28/2002

Matrix Spike/Duplicate Matrix Spike Summary
Polychlorinated Biphenyls (PCBs)

Sample Name:	CLD Pacific	**Units:**	ug/Kg
Lab Code:	K2206060-001	**Basis:**	Dry
Extraction Method:	EPA 3540C	**Level:**	Low
Analysis Method:	8082	**Extraction Lot:**	KWG0206788

		CLD PacificMS KWG0206788-1 Matrix Spike			CLD PacificDMS KWG0206788-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Aroclor 1016	ND	137	108	127	147	108	136	31-147	7	50
Aroclor 1260	24	163	108	129	187	108	151	29-163	14	50

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00016

SuperSet Reference: RR20750

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	CLD Pacific Grain	**Service Request:**	K2206060
Project:		**Date Extracted:**	09/06/2002
Sample Matrix:	Sediment	**Date Analyzed:**	09/15/2002

Lab Control Spike Summary
Polychlorinated Biphenyls (PCBs)

Extraction Method:	EPA 3540C	**Units:**	ug/Kg
Analysis Method:	8082	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG0206788

	Lab Control Sample KWG0206788-3 Lab Control Spike			
Analyte Name	**Result**	**Expected**	**%Rec**	**%Rec Limits**
Aroclor 1016	109	100	109	35-144
Aroclor 1260	114	100	114	47-153

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00017

Polynuclear Aromatic Hydrocarbons
Method 8270

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	CLD Pacific Grain	**Service Request:**	K2206060
Project:		**Date Collected:**	08/29/2002
Sample Matrix:	Sediment	**Date Received:**	08/29/2002

Polynuclear Aromatic Hydrocarbons

Sample Name:	CLD Pacific	**Units:**	ug/Kg
Lab Code:	K2206060-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	**4.9**	J	5.4	0.23	1	09/11/02	09/18/02	KWG0206940	
2-Methylnaphthalene	**2.7**	J	5.4	0.23	1	09/11/02	09/18/02	KWG0206940	
Acenaphthylene	**2.2**	J	5.4	0.18	1	09/11/02	09/18/02	KWG0206940	
Acenaphthene	**1.4**	J	5.4	0.23	1	09/11/02	09/18/02	KWG0206940	
Fluorene	**1.1**	J	5.4	0.19	1	09/11/02	09/18/02	KWG0206940	
Phenanthrene	**13**		5.4	0.17	1	09/11/02	09/18/02	KWG0206940	
Anthracene	**3.6**	J	5.4	0.21	1	09/11/02	09/18/02	KWG0206940	
Fluoranthene	**64**		5.4	0.19	1	09/11/02	09/18/02	KWG0206940	
Pyrene	**84**		5.4	0.12	1	09/11/02	09/18/02	KWG0206940	
Benz(a)anthracene	**15**		5.4	0.15	1	09/11/02	09/18/02	KWG0206940	
Chrysene	**25**		5.4	0.17	1	09/11/02	09/18/02	KWG0206940	
Benzo(b)fluoranthene	**15**		5.4	0.16	1	09/11/02	09/18/02	KWG0206940	
Benzo(k)fluoranthene	**9.0**		5.4	0.17	1	09/11/02	09/18/02	KWG0206940	
Benzo(a)pyrene	**16**		5.4	0.16	1	09/11/02	09/18/02	KWG0206940	
Indeno(1,2,3-cd)pyrene	**11**		5.4	0.17	1	09/11/02	09/18/02	KWG0206940	
Dibenz(a,h)anthracene	**2.5**	J	5.4	0.20	1	09/11/02	09/18/02	KWG0206940	
Benzo(g,h,i)perylene	**13**		5.4	0.11	1	09/11/02	09/18/02	KWG0206940	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	79	43-98	09/18/02	Acceptable
Fluoranthene-d10	97	52-108	09/18/02	Acceptable
Terphenyl-d14	97	61-122	09/18/02	Acceptable

Comments:

00019

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client:	CLD Pacific Grain	**Service Request:**	K2206060
Project:		**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA

Polynuclear Aromatic Hydrocarbons

Sample Name:	Method Blank	**Units:**	ug/Kg
Lab Code:	KWG0206940-7	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM		

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Naphthalene	ND	U	5.0	0.21	1	09/11/02	09/17/02	KWG0206940	
2-Methylnaphthalene	ND	U	5.0	0.21	1	09/11/02	09/17/02	KWG0206940	
Acenaphthylene	ND	U	5.0	0.16	1	09/11/02	09/17/02	KWG0206940	
Acenaphthene	ND	U	5.0	0.21	1	09/11/02	09/17/02	KWG0206940	
Fluorene	ND	U	5.0	0.17	1	09/11/02	09/17/02	KWG0206940	
Phenanthrene	ND	U	5.0	0.15	1	09/11/02	09/17/02	KWG0206940	
Anthracene	ND	U	5.0	0.19	1	09/11/02	09/17/02	KWG0206940	
Fluoranthene	ND	U	5.0	0.17	1	09/11/02	09/17/02	KWG0206940	
Pyrene	**0.12**	J	5.0	0.11	1	09/11/02	09/17/02	KWG0206940	
Benz(a)anthracene	ND	U	5.0	0.13	1	09/11/02	09/17/02	KWG0206940	
Chrysene	ND	U	5.0	0.15	1	09/11/02	09/17/02	KWG0206940	
Benzo(b)fluoranthene	ND	U	5.0	0.14	1	09/11/02	09/17/02	KWG0206940	
Benzo(k)fluoranthene	ND	U	5.0	0.15	1	09/11/02	09/17/02	KWG0206940	
Benzo(a)pyrene	ND	U	5.0	0.14	1	09/11/02	09/17/02	KWG0206940	
Indeno(1,2,3-cd)pyrene	ND	U	5.0	0.15	1	09/11/02	09/17/02	KWG0206940	
Dibenz(a,h)anthracene	ND	U	5.0	0.18	1	09/11/02	09/17/02	KWG0206940	
Benzo(g,h,i)perylene	ND	U	5.0	0.10	1	09/11/02	09/17/02	KWG0206940	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Fluorene-d10	74	43-98	09/17/02	Acceptable
Fluoranthene-d10	86	52-108	09/17/02	Acceptable
Terphenyl-d14	96	61-122	09/17/02	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: CLD Pacific Grain
Project:
Sample Matrix: Sediment

Service Request: K2206060

Surrogate Recovery Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method: EPA 3541
Analysis Method: 8270C SIM

Units: PERCENT
Level: Low

Sample Name	Lab Code	Sur1	Sur2	Sur3
CLD Pacific	K2206060-001	79	97	97
Method Blank	KWG0206940-7	74	86	96
CLD PacificMS	KWG0206940-1	82	98	96
CLD PacificDMS	KWG0206940-2	84	96	99
Lab Control Sample	KWG0206940-5	70	84	89
Duplicate Lab Control Sample	KWG0206940-6	72	87	93

Surrogate Recovery Control Limits (%)

Sur1 =	Fluorene-d10	43-98
Sur2 =	Fluoranthene-d10	52-108
Sur3 =	Terphenyl-d14	61-122

Results flagged with an asterisk (*) indicate values outside control criteria.
Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	CLD Pacific Grain	**Service Request:**	K2206060
Project:		**Date Extracted:**	09/11/2002
Sample Matrix:	Sediment	**Date Analyzed:**	09/18/2002

Matrix Spike/Duplicate Matrix Spike Summary
Polynuclear Aromatic Hydrocarbons

Sample Name:	CLD Pacific	**Units:**	ug/Kg
Lab Code:	K2206060-001	**Basis:**	Dry
Extraction Method:	EPA 3541	**Level:**	Low
Analysis Method:	8270C SIM	**Extraction Lot:**	KWG0206940

		CLD PacificMS KWG0206940-1 Matrix Spike			CLD PacificDMS KWG0206940-2 Duplicate Matrix Spike					
Analyte Name	**Sample Result**	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	4.9	170	269	61	203	269	74	19-105	18	40
2-Methylnaphthalene	2.7	188	269	69	212	269	78	36-95	12	40
Acenaphthylene	2.2	217	269	80	232	269	85	40-99	6	40
Acenaphthene	1.4	211	269	78	220	269	81	33-102	4	40
Fluorene	1.1	235	269	87	243	269	90	38-103	3	40
Phenanthrene	13	244	269	86	245	269	86	33-113	0	40
Anthracene	3.6	261	269	96	278	269	102	40-114	6	40
Fluoranthene	64	283	269	81	306	269	90	41-117	8	40
Pyrene	84	289	269	76	359	269	102	26-139	22	40
Benz(a)anthracene	15	263	269	92	281	269	98	32-134	7	40
Chrysene	25	264	269	89	322	269	110	27-135	20	40
Benzo(b)fluoranthene	15	270	269	95	318	269	112	31-136	16	40
Benzo(k)fluoranthene	9.0	233	269	83	252	269	90	32-131	8	40
Benzo(a)pyrene	16	272	269	95	326	269	115	26-146	18	40
Indeno(1,2,3-cd)pyrene	11	245	269	87	303	269	108	33-133	21	40
Dibenz(a,h)anthracene	2.5	230	269	85	229	269	84	42-114	0	40
Benzo(g,h,i)perylene	13	216	269	76	267	269	94	31-122	21	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00022

SuperSet Reference: RR20515

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client:	CLD Pacific Grain	**Service Request:**	K2206060
Project:		**Date Extracted:**	09/11/2002
Sample Matrix:	Sediment	**Date Analyzed:**	09/17/2002

Lab Control Spike/Duplicate Lab Control Spike Summary
Polynuclear Aromatic Hydrocarbons

Extraction Method:	EPA 3541	**Units:**	ug/Kg
Analysis Method:	8270C SIM	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG0206940

	Lab Control Sample KWG0206940-5 Lab Control Spike			Duplicate Lab Control Sample KWG0206940-6 Duplicate Lab Control Spike					
Analyte Name	**Result**	**Expected**	**%Rec**	**Result**	**Expected**	**%Rec**	**%Rec Limits**	**RPD**	**RPD Limit**
Naphthalene	158	249	63	164	249	66	33-98	4	40
2-Methylnaphthalene	159	249	64	171	249	68	36-103	7	40
Acenaphthylene	164	249	66	174	249	70	41-102	6	40
Acenaphthene	168	249	67	172	249	69	41-97	3	40
Fluorene	178	249	72	186	249	75	43-101	4	40
Phenanthrene	178	249	71	178	249	71	45-101	0	40
Anthracene	188	249	75	195	249	78	46-109	4	40
Fluoranthene	212	249	85	222	249	89	49-112	5	40
Pyrene	202	249	81	208	249	84	50-112	3	40
Benz(a)anthracene	197	249	79	215	249	86	52-114	8	40
Chrysene	206	249	83	219	249	88	54-109	6	40
Benzo(b)fluoranthene	207	249	83	229	249	92	54-115	10	40
Benzo(k)fluoranthene	219	249	88	233	249	94	54-115	6	40
Benzo(a)pyrene	196	249	79	221	249	89	54-120	12	40
Indeno(1,2,3-cd)pyrene	176	249	71	191	249	77	49-121	8	40
Dibenz(a,h)anthracene	182	249	73	198	249	79	48-114	8	40
Benzo(g,h,i)perylene	178	249	72	189	249	76	45-113	6	40

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

00023

DEPARTMENT OF THE ARMY
PORTLAND DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2946
PORTLAND, OREGON 97208-2946

REPLY TO
ATTENTION OF:

July 18, 2002

Operations Division
Regulatory Branch
Corps No. 2001-00031

Mr. Gene Loffler
CLD Pacific Grain
800 N. River Street
Portland, Oregon 97227

Dear Mr. Loffler:

Enclosed is your fully executed Department of the Army Permit and a notice of authorization which must be posted at the work site.

Please carefully read the permit and its conditions. In addition, if you have a contractor and/or agent, please review these conditions with them to ensure that the work is performed in accordance with the permit terms. Also be aware that other authorizations from Federal, state, or local governments may be required by law. If the work is not completed prior to the permit expiration date, you may apply for a time extension. We recommend you apply for a time extension at least 90 days before the expiration date of the permit.

If you have any questions, please contact Ms. Judy Linton at the letterhead address or telephone (503) 808-4382.

Sincerely,

Lawrence C. Evans
Chief, Regulatory Branch

DEPARTMENT OF THE ARMY PERMIT

Permittee: CLD Pacific Grain

Permit No: 2001-00031

Issuing Office: U.S. Army Corps of Engineers, Portland District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Conduct maintenance dredging for a period of five years within an area 1,400 feet long by 60 feet wide to a maximum depth of –40 feet Columbia River Datum (CRD). The applicant estimates that up to 8,000 cubic yards of silt will be removed annually by clamshell dredge. Sediments will be disposed at one of three upland landfill sites: 1) Wasco County Landfill, 2) Rebanco Landfill in Roosevelt, Washington, or 3) Hillsboro Landfill.

Purpose: To maintain adequate depths to accept ocean-going vessels at dockside and during grain loading operations.

Project Location: 800 N. River Street (Section 27, 1 North, 1 East), Willamette River Mile 11.4, Portland, Multnomah County, Oregon.

Drawings: Three sheets labeled 2001-00031 Cargill, Inc. – Maintenance Dredging

General Conditions:

1. The time limit for completing the work authorized ends on June 30, 2007. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the

conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The following special condition is a part of all Department of the Army permits that provide authorization under Section 10 of the Rivers and Harbors Act, regardless whether the permit provides such authorization under Section 10 alone, or in combination with authorization under other laws:

- The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the U.S Army Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. This permit does not exclude the permittee from liability or any requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended (42 U.S.C. 9601 et. Seq.), the Resource Conservation and Recovery Act of 1978 as amended (42 U.S.C. 6901 et. Seq.), the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et. Seq. and any and all requirements of the State of Oregon under Revised Statutes or Administrative Rules. The permittee is advised that the work for which this permit is granted is located within the "area of interest" of the Environmental Protection Agency and the Oregon Department of Environmental Quality pursuant to a National Priorities Listing relative to the Willamette River. Granting of this permit by the Portland District, U.S. Army Corps of Engineers, should in no way be construed as approval of this project as being in compliance with the above-cited authorities. Neither should the permittee consider this permit as absolving the permittee from any liability or damages from any party whomsoever.

3. To minimize the potential for impacts to species listed under the Endangered Species Act, the permittee shall comply with the applicable terms and conditions of the SLOPES programmatic biological opinion issued by the National Marine Fisheries Service on June 14, 2002 (Measures #1, #2, #11, and #13, attached). Monitoring reports, as required by this programmatic opinion, shall be submitted to the Corps of Engineers within 120 days of project completion.

4. Inwater work shall occur during the periods of July 1 through October 31 and December 1 through January 31.

5. Following the initial dredging cycle, the permittee shall sample the sediment at the location shown on Sheet 2. This sample shall be analyzed for PAHs and total PCBs according to the criteria of the *Dredged Material Evaluation Framework, Lower Columbia River Management Area, November 1998*. Results shall be provided as part of the monitoring reports required under Special Condition c.

6. The permittee shall notify the Corps of Engineers and the Environmental Protection Agency, Region 10 (Mr. John Malek, 1200 Sixth Avenue, ECO-083, Seattle, Washington 98101) of the landfill site chosen as the dredged material disposal site.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
( ) Section 404 of the Clean Water Act (33 U.S.C. 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

(PERMITTEE SIGNATURE) *(DATE)*

7/17/02

(PRINTED NAME) *(TITLE)*

Arnold F. Schaulter (General manager, CLD Pacific Grain)

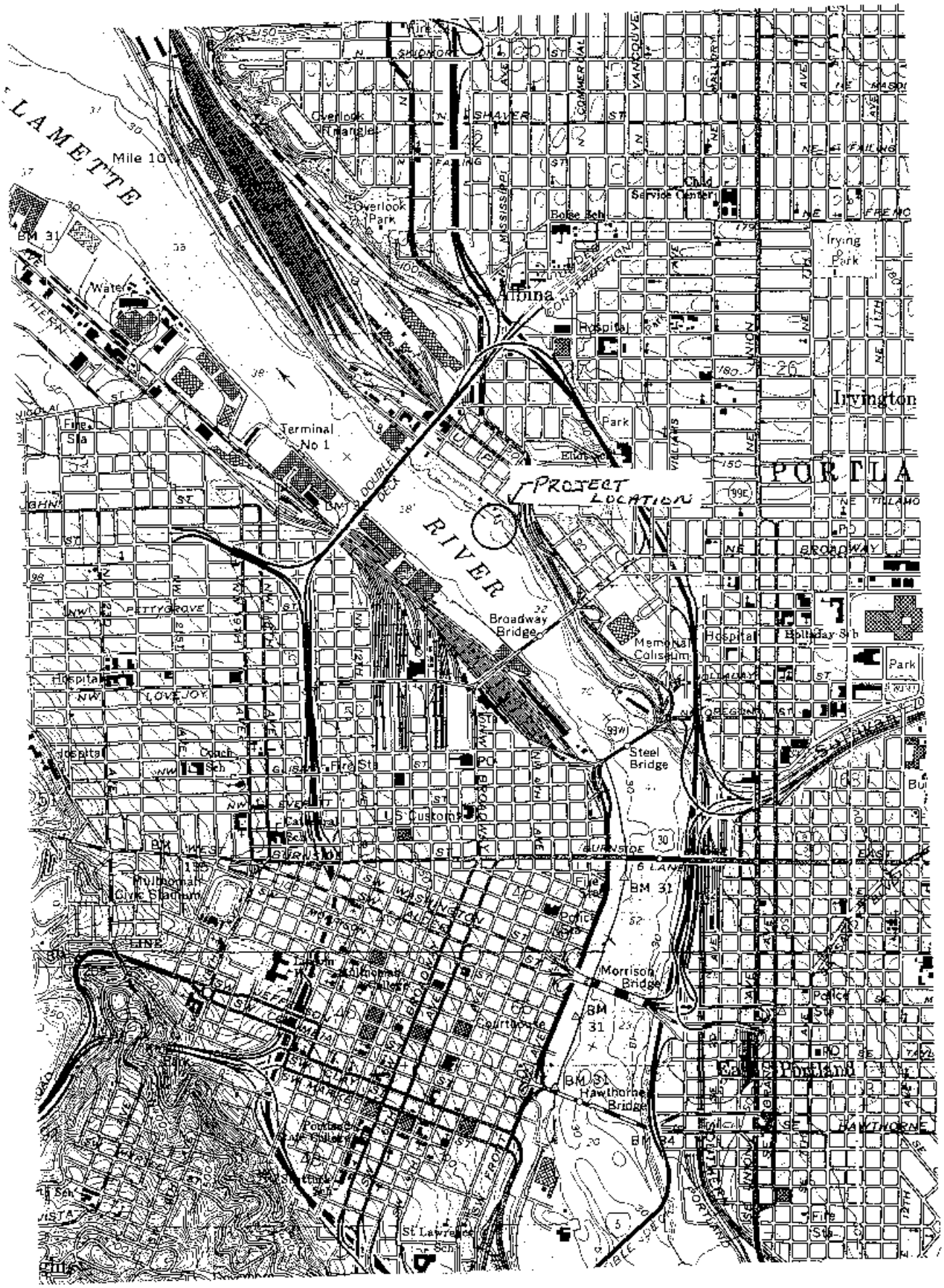
This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

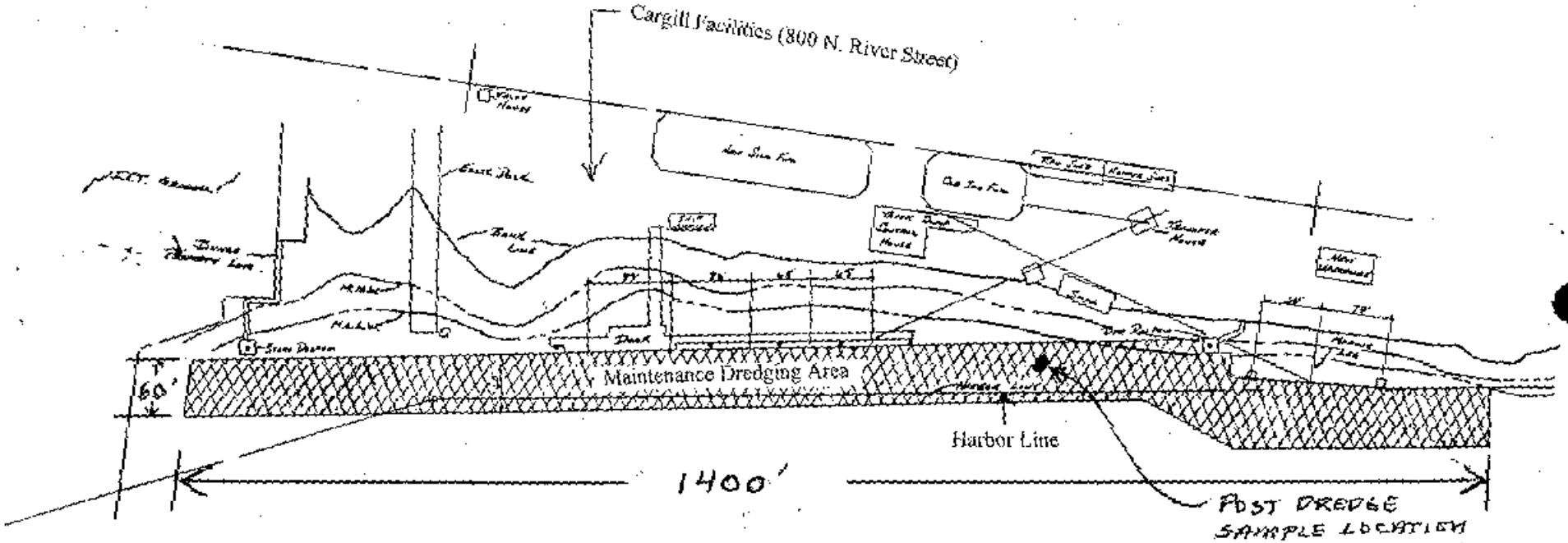
7-18-02

(DISTRICT ENGINEER) *(DATE)*
FOR
Randall J. Butler
Colonel, Corps of Engineers
District Engineer

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

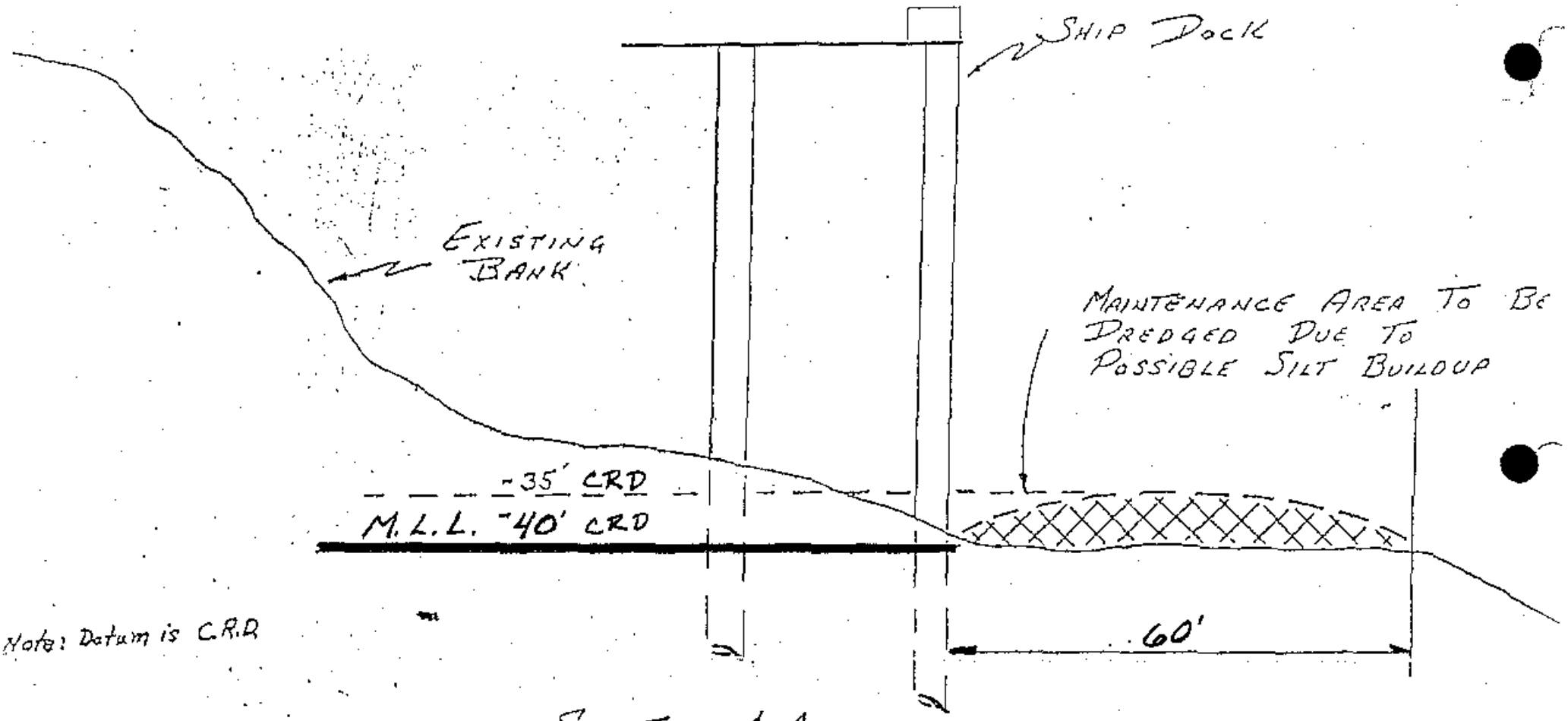
(TRANSFEREE) *(DATE)*


LAMETTE
Mile 10
Overlook Triangle
Overlook Park
Boise Sch
Child Service Center
Irving Park
Albina
Hospital
Water
Terminal No 1
Fire Sta
Park
Irvington
PORTLA
PROJECT LOCATION
RIVER
Broadway Bridge
Memorial Coliseum
Holladay Sch
Steel Bridge
Hospital
Coach Sch
Fire Sta
U S Customs
Multnomah Civic Stadium
Police
Morrison Bridge
Courthouse
Hawthorne Bridge
Portland
St Lawrence Sch



Willamette River, Mile 11.4
Flow

Plan View



Note: Datum is C.R.D

SECTION A A

NOT TO SCALE

SHEET 3 OF 3

To implement Reasonable and Prudent Measure #1 (standard local operating procedures for endangered species; SLOPES), the Corps shall:

Individual project review. Individually review each project to ensure that all direct and indirect adverse effects to listed salmon and their habitats are within the range of effects considered in this Opinion, and that each applicable term and condition from this Opinion is included as an enforceable term of the permit document.

Full implementation required. Departure from full implementation of the terms and conditions of the following incidental take statement will result in the lapse of the protective coverage of section 7(o)(2) regarding "take" of listed species and may lead NMFS to a different conclusion as to the effects of the continuing action, including findings that specific projects will jeopardize listed species.

Confirmation of fish presence. Contact a fish biologist from the NMFS, ODFW or WDFW, as appropriate for the action area, if necessary to confirm that a project is within the present or historic range of a listed species or a designated critical habitat.

Project access. Require landowners to provide reasonable access[1] to projects permitted under this Opinion for monitoring the use and effectiveness permit conditions.

Salvage notice. Include the following notice with each permit issued.

> NOTICE. If a sick, injured or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NMFS Law Enforcement at 360/418-4246. The finder must take care in handling of sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

Reinitiation. Reinitiate formal consultation on this Opinion within three years of the date of issuance. This term and condition is in addition to reinitiation requirements described in section 2.1.6 above.

Failure to provide timely monitoring causes Incidental Take Statement to expire. If the Corps fails to provide specified monitoring information by the required date, NMFS will consider that a modification of the action that causes an effect on listed species not previously considered and causes the Incidental Take Statement of the Opinion to expire.

Reinitiation contact. To reinitiate consultation, contact the Habitat Conservation Division (Oregon State Office) of NMFS.

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[1] "Reasonable access" means with prior notice to the permittee, the Corps and NMFS may at reasonable times and in a safe manner, enter and inspect permitted projects to insure compliance with the reasonable and prudent measures, terms and conditions, in this Opinion.

To implement Reasonable and Prudent Measure #11 (maintenance dredging), the Corps shall ensure that:

Exclusions. Maintenance dredging using the economic loading method for hopper dredging or in the following places are not authorized.

Salmonid spawning habitat in tributaries or upstream

Columbia River, above Bonneville Dam, in the following areas: backwater sloughs, silted-in lateral channels, alcoves, side channels, or other shallow-water areas less than 20-feet deep

Dredge Material Evaluation Framework. Sediment quality will be evaluated before dredging begins using the most recent version of NMFS' approved criteria for evaluation of contaminated sediments.(1) Only sediments approved for in-water disposal by those criteria will be authorized for maintenance dredging.

Dredge operation. Dredges will be operated as follows.

A hydraulic dredge intake must be kept at or just below the surface of the material being removed, but may be raised for brief periods of purging or flushing.

Clamshell dredges must use a finishing type bucket with flaps, whenever feasible.

Spoil disposal. Dredge spoil will be placed in an approved upland area where it cannot reenter the water body and that is large enough to allow settling. In-water disposal is not authorized.

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1 See, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Oregon Department of Environmental Quality, Washington Department of Ecology, and Washington Department of Natural Resources, *Dredged Material Evaluation Framework: Lower Columbia River Management Area* (November 1998) (providing a consistent set of procedures to determine sediment quality for dredging activity) (http://www.nwp.usace.army.mil/cc/h/hr/Final/).

1. To implement Reasonable and Prudent Measure #2 (general conditions for construction, operation and maintenance), the Corps shall ensure that:
   1. Timing of in-water work. Work within the active channel will be completed during the ODFW (2000) or the Corps Seattle District (2000) preferred in-water work period[1], as appropriate for the project area, unless otherwise approved in writing by NMFS.
   2. Cessation of work. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
   3. Fish screens. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NMFS' fish screen criteria.[2]
   4. Fish passage. Passage will be provided for any adult or juvenile salmonid species present in the project area during construction, and after construction for the life of the project. Upstream passage is not required during construction if it did not previously exist.
   5. Pollution and Erosion Control Plan. A Pollution and Erosion Control Plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by Corps or NMFS.
      1. Plan Contents. The Pollution and Erosion Control Plan must contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
         (1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.
         (2) Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.
         (3) A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.
         (4) A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

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[1] Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp (June 2000) (identifying work periods with the least impact on fish) (http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf); U.S. Army Corps of Engineers, Seattle District, Approved Work Windows for Fish Protection (Version: 13 October 2000) (http://www.nws.usace.army.mil/reg/Programmatic_Consultations/TimCond/WorkWinI.pdf)

[2] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

(5) Practices to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

2. Inspection of erosion controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.[3]

(1) If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

(2) Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.

6. Construction discharge water. All discharge water created by construction (e.g., concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows.

1. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

2. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities must not exceed 4-feet per second.

3. Spawning areas, marine submerged vegetation. No construction discharge water may be released within 300-feet upstream of active spawning areas or areas with marine submerged vegetation.

7. Treated wood. Projects using treated wood[4] for any structure that may contact flowing water or that will be placed over water are not authorized, except for pilings installed following NMFS' guidelines.[5] Projects that require removal of treated wood will use the following precautions.

1. Treated wood debris. Care must be taken to ensure that no treated wood debris falls into the water. If treated wood debris does fall into the water, it must be removed immediately.

2. Removal of treated pilings. If treated wood pilings will be removed, the following conditions apply.

(1) Pilings must be dislodged with a vibratory hammer.

(2) Once loose, the pilings must be placed onto the construction barge or other appropriate dry storage location, and not left in the water or piled onto the stream bank.

(3) If pilings break during removal, the stump must be removed by breaking or cutting 3-feet below the sediment surface, then covered with a substrate appropriate for the site.

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[3] "Working adequately" means no turbidity plumes are evident during any part of the year.

[4] "Treated wood" means lumber, pilings, and other wood products preserved with alkaline copper quaternary (ACQ), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), copper naphthenate, chromated copper arsenate (CCA), pentachlorophenol, or creosote.

[5] Letter from Steve Morris, National Marine Fisheries Service, to W.B. Paynter, Portland District, U.S. Army Corps of Engineers (December 9, 1998) (transmitting a document titled *Position Document for the Use of Treated Wood in Areas within Oregon Occupied by Endangered Species Act Proposed and Listed Anadromous Fish Species, National Marine Fisheries Service, December 1998*).

3. Disposal of treated wood debris. All treated wood removed during a project must be disposed of at a facility approved for hazardous materials of this classification.

8. Preconstruction activity. Before significant[6] alteration of the project area, the following actions must be completed.
   1. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
   2. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.
      (1) A supply of sediment control materials (e.g., silt fence, straw bales[7]).
      (2) An oil absorbing floating boom whenever surface water is present.
   3. Temporary erosion controls. All temporary erosion controls must be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

9. Temporary access roads.
   1. Existing ways. Existing roadways or travel paths must be used whenever possible, unless construction of a new way would result in less habitat take.
   2. Steep slopes. Temporary roads built mid-slope or on slopes steeper than 30 percent are not authorized.
   3. Minimizing soil disturbance and compaction. When a new temporary road is necessary within 150-feet[8] of a stream, water body or wetland, soil disturbance and compaction must be minimized by clearing vegetation to ground level and placing clean gravel over geotextile fabric, unless otherwise approved in writing by NMFS.
   4. Temporary stream crossings.
      (1) The number of temporary stream crossings must be minimized.
      (2) Temporary road crossings must be designed as follows.
         (1) A survey must identify and map any potential spawning habitat within 300-feet downstream of a proposed crossing.
         (2) No stream crossing may occur at known or suspected spawning areas, or within 300-feet upstream of such areas if spawning areas may be affected.

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[6] "Significant" means an effect can be meaningfully measured, detected or evaluated.

[7] When available, certified weed-free straw or hay bales must be used to prevent introduction of noxious weeds.

[8] Distances from a stream or water body are measured horizontally from, and perpendicular to, the bankfull elevation, the edge of the channel migration zone, or the edge of any associated wetland, whichever is greater. "Channel migration zone" means the area defined by the lateral extent of likely movement along a stream reach as shown by evidence of active stream channel movement over the past 100 years, e.g., alluvial fans or floodplains formed where the channel gradient decreases, the valley abruptly widens, or at the confluence of larger streams.

(3) The crossing design must provide for foreseeable risks (e.g., flooding and associated bedload and debris) to prevent the diversion of streamflow out of the channel and down the road if the crossing fails.

(4) Vehicles and machinery must cross riparian areas and streams at right angles to the main channel wherever possible.

5. Obliteration. When the project is completed, all temporary access roads must be obliterated, the soil must be stabilized, and the site must be revegetated. Temporary roads in wet or flooded areas must be abandoned and restored as necessary by the end of the in-water work period.

10. Heavy Equipment. Use of heavy equipment will be restricted as follows.

1. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (e.g., minimally sized, rubber tired).

2. Vehicle staging. Vehicles must be fueled, operated, maintained and stored as follows.

(1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150-feet or more from any stream, water body or wetland.

(2) All vehicles operated within 150-feet of any stream, water body or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by Corps or NMFS.

(3) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud.

3. Stationary power equipment. Stationary power equipment (e.g., generators, cranes) operated within 150-feet of any stream, water body or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NMFS.

11. Site preparation. Native materials will be conserved for site restoration.

1. If possible, native materials must be left where they are found.

2. Materials that are moved, damaged or destroyed must be replaced with a functional equivalent during site restoration.

3. Any large wood[9], native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.

12. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, the work area will be well isolated from the active flowing stream

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[9] For purposes of this Opinion only, "large wood" means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

using inflatable bags, sandbags, sheet pilings, or similar materials. The work area will also be isolated if in-water work may occur within 300-feet upstream of spawning habitats.

13. Capture and release. Before and intermittently during pumping to isolate an in-water work area, an attempt must be made to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.
    1. A fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire capture and release operation.
    2. If electrofishing equipment is used to capture fish, the capture team must comply with NMFS' electrofishing guidelines.[10]
    3. The capture team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.
    4. Captured fish must be released as near as possible to capture sites.
    5. ESA-listed fish may not be transferred to anyone except NMFS personnel, unless otherwise approved in writing by NMFS.
    6. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.
    7. NMFS or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.

14. Earthwork. Earthwork (including drilling, excavation, dredging, filling and compacting) will be completed as quickly as possible.
    1. Site stabilization. All disturbed areas must be stabilized, including obliteration of temporary roads, within 12 hours of any break in work unless construction will resume work within 7 days between June 1 and September 30, or within 2 days between October 1 and May 31.
    2. Source of materials. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained outside the riparian area.

15. Construction of new impervious surface/stormwater management. Beyond construction terms and conditions above, any project that will produce new impervious surface or a land cover conversion that slows the entry of water into the soil must also control the quantity and quality of the resulting stormwater runoff for the life of the project.
    1. On-site stormwater management.
        (1) Stormwater best management practices (BMPs)[11] will be used for stormwater source control and treatment individually or in a

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[10] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

[11] For purposes of this Opinion, "stormwater BMP" means a procedure or structure that, when used individually or in series, will avoid or minimize the adverse effects of stormwater on riparian and aquatic habitats. On-site stormwater BMPs include source controls to prevent the production and release of pollutants, and treatments that capture pollutants. A source control can be operational (i.e., managerial) or structural (i.e., a physical or mechanical facility). **Implement appropriate** on-site BMPs such as downspout dispersion, concentrated flow dispersion , sheet flow dispersion, full dispersion , concave vegetated surfaces, multiple small basins, engineered soil/landscape system, infiltration basins, infiltration trenches, bio-filtration swales, basic biofiltration swales, wet biofiltration swales, continuous inflow

series as necessary to minimize, retain, treat, and infiltrate stormwater on-site to the maximum extent feasible without causing flooding or erosion effects. Stormwater BMP installation in the riparian buffer area may be allowed with prior written approval from NMFS. (Actions with no more than a negligible likelihood of adverse effects.)

(2) Permeable pavements[12] must be installed and maintained for load-bearing surfaces, including multiple use trails, wherever soil, slope and traffic conditions allow.

2. Runoff treatment facilities.[13]

(1) Water quality treatment must be provided to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present using the best available technology applicable to site conditions.[14]

(2) Treatment facilities and BMPs will not be installed inside the riparian buffer area without prior written approval from NMFS. (Actions with no more than a negligible likelihood of adverse effects.)

(3) Runoff from pollution generating impervious surfaces must be pre-treated[15] to reduce suspended solids before use of infiltration BMPs.

(4) Stormwater treatment facilities and BMPs for each project will include a schedule of operation, inspection and maintenance activities for all structural BMPs and conveyance systems. A log

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biofiltration swales, basic filter strips , narrow area filter strips, wetponds, and stormwater treatment wetlands. For a discussion of stormwater BMPs, see, e.g., Washington Department of Ecology, Water Quality Program, Stormwater Management Manual for Western Washington, Publication Numbers 99-11 through 99-15 (August 2001) (http://www.ecy.wa.gov/programs/wq/stormwater/index.html

[12] **Implement appropriate** permeable pavements such as porous asphalt and porous concrete, porous pavers, and permeable interlocking concrete pavement. For a discussion of stormwater BMPs, see, e.g., Washington Department of Ecology, Water Quality Program, Stormwater Management Manual for Western Washington, Publication Numbers 99-11 through 99-15 (August 2001) (http://www.ecy.wa.gov/programs/wq/stormwater/index.html).

[13] **Implement appropriate** water quality treatment facilities such as biofiltration swales, constructed wetlands, detention ponds, or oil/water separators. For a discussion of treatment facilities see, e.g., Washington Department of Ecology, Water Quality Program, Stormwater Management Manual for Western Washington, Publication Numbers 99-11 through 99-15 (August 2001) (http://www.ecy.wa.gov/programs/wq/stormwater/index.html).

[14] In addition to on-site stormwater BMP's, in Washington State, runoff treatment facilities are required if a project has 5,000 or more square feet of effective, pollution-generating impervious surfaces, or 32,670 or more square feet (0.75 acres) of pollution-generating pervious surfaces and a surface discharge. Further, treatment facilities must be sized to meet runoff volume predicted from a 24-hour storm with a 6-month return frequency as predicted by a continuous runoff model. The water quality design flow rate must treat 91 percent of the runoff volume. Also in Washington State, projects that discharge directly into the Columbia River are exempt from flow control requirements, but must meet requirements iii.1–4 above).

[15] **Implement appropriate** pretreatment BMPs such as pre-settling basins.

of maintenance activities showing what actions were taken will be kept and made available for inspection on request by the Corps and NMFS. These operations, inspection and maintenance activities must be conducted, as appropriate:

(1) Ensure that the capacity of each facility, structural BMP and conveyance system is not exceeded and that heavy sediment discharges are prevented.

(2) Inspect and clean each structural BMP and conveyance system as needed. Determine whether improvements in operation and maintenance are needed.

(3) Promptly repair any deterioration threatening the effectiveness of any structural BMP or conveyance system.

(4) If storm drains inlets are used, post warning signs on or next to all storm drain inlets that say, as appropriate for the receiving water, "Dump No Waste - Drains to Ground Water, Streams, or Lakes."

(5) Ensure that all sediments and liquids from catch basins are disposed of only in an approved facility.

3. Flow Control. When runoff must be discharged directly, or indirectly through a conveyance system, into fresh surface water or a wetland, the following requirements apply.

(1) Natural drainage patterns must be maintained. Discharges from the project site must occur at the natural location, to the maximum feasible extent. Discharge of runoff from the project site must not cause an adverse effect to riparian or aquatic habitats.

(2) The area must be drained by a conveyance system comprised entirely of manufactured elements (e.g., pipes, ditches, outfall protection) that extends to the ordinary high water line of the receiving water.

(3) Any erodible elements of this system must be adequately stabilized to prevent erosion.

(4) Surface water from the area must not be diverted from or increased to an existing wetland, stream or near-shore habitat sufficient to cause a significant adverse effect to wetland hydrology, soils or vegetation.

16. Site restoration. All streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows.

1. Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

2. Streambank shaping. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation.

3. Revegetation. Areas requiring revegetation must be replanted before the first April 15 following construction with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

4. Pesticides. No pesticide application is allowed, although mechanical or other methods may be used to control weeds and unwanted vegetation.
5. Fertilizer. No surface application of fertilizer may occur within 50-feet of any stream channel.
6. Fencing. Fencing must be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

17. Long-term adverse effects. Long-term adverse effects will be avoided or offset after taking all appropriate steps to avoid or minimize short-term adverse effects.
    1. Actions of concern. The following actions require compensation for long-term adverse effects.
        (1) Construction of new impervious surfaces inside the riparian buffer area.[16]
        (2) Maintenance dredging in water closer than 50-feet from shore or in waters less than 20-feet deep.[17]
        (3) Other activities that prevent development of properly functioning condition of natural habitat processes.
    2. Design review. The Corps must review and approve designs to avoid or offset long-term adverse effects by applying the following considerations.
        (1) Use of an ecosystem approach
        (2) Habitat requirements of the affected species
        (3) Productive capacity of the proposed construction and compensation site(s)
        (4) Timing of the construction and compensation actions
        (5) Length of time necessary to achieve full functionality
        (6) Likelihood of success
    3. Maintenance dredging goal. The goal of compensation for maintenance dredging is to offset loss of benthic food resources and must consist of riparian plantings of trees and woody shrubs or restoration of nearshore habitats whenever feasible.
    4. Project evaluation. The Corps must evaluate compensation project success using quantitative criteria established for the project.
    5. Terms and conditions. Action to minimize long-term adverse effects that requires a Corps permit must also meet all applicable terms and conditions for this Opinion, or complete a separate consultation.

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[16] For purposes of this Opinion only, "riparian buffer area" means land: (1)Within 150-feet of any natural water occupied by listed salmonids during any part of the year or designated as critical habitat; (2) within 100-feet of any natural water within 1/4 mile upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat; and (3) within 50-feet of any natural water upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat. "Natural water" means all perennial or seasonal waters except water conveyance systems that are artificially constructed and actively maintained for irrigation.

[17] Depth in tidal waters is measured from mean lower low water (MLLW).

To implement Reasonable and Prudent Measure #13 (monitoring), the Corps shall:

1. Meet with NMFS within 60-days of signing this biological opinion and develop a collaborative monitoring strategy. If the strategy cannot be developed within 60-days, the following terms and conditions will apply, including timelines.
2. Implementation monitoring. Ensure that each permittee submits a monitoring report to the Corps within 120 days of project completion describing the permittee's success meeting his or her permit conditions. Each project level monitoring report will include the following information.
    1. Project identification
        (1) Permittee name, permit number, and project name.
        (2) Category of activity
        (3) Project location, including any compensatory mitigation site(s), by 5th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map
        (4) Corps contact person.
        (5) Starting and ending dates for work completed
    2. Narrative assessment. A narrative assessment of the project's effects on natural stream function.
    3. Photo documentation. Photo of habitat conditions at the project and any compensation site(s), before, during, and after project completion.[1]
        (1) Include general views and close-ups showing details of the project and project area, including pre and post construction.
        (2) Label each photo with date, time, project name, photographer's name, and a comment about the subject.
    4. Other data. Additional project-specific data, as appropriate for individual projects.
        (1) Work cessation. Dates work cessation was required due to high flows.
        (2) Fish screen. Compliance with NMFS' fish screen criteria.
        (3) A summary of pollution and erosion control inspections, including any erosion control failure, hazardous material spill, and correction effort.
        (4) Site preparation.
            (1) Total cleared area – riparian and upland.
            (2) Total new impervious area.
        (5) Isolation of in-water work area, capture and release.
            (1) Supervisory fish biologist – name and address.
            (2) Methods of work area isolation and take minimization.
            (3) Stream conditions before, during and within one week after completion of work area isolation.
            (4) Means of fish capture.
            (5) Number of fish captured by species.

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[1] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

(6) Location and condition of all fish released.
(7) Any incidence of observed injury or mortality.

(6) Streambank protection.
(1) Completed screening matrices used to select treatments.
(2) Type and amount of materials used.
(3) Project size – one bank or two, width and linear feet.

(7) Water dependent structures and related features.
(1) Area of new over-water structure.
(2) Streambank distance to nearest existing water dependent structure -- upstream and down.

(8) Minor discharge and excavation/maintenance dredging.
(1) Volume of dredged material.
(2) Water depth before dredging and within one week of completion.
(3) Verification of upland dredge disposal.

(9) Site restoration.
(1) Finished grade slopes and elevations.
(2) Log and rock structure elevations, orientation, and anchoring (if any).
(3) Planting composition and density.
(4) A five-year plan to:
(1) Inspect and, if necessary, replace failed plantings to achieve 100 percent survival at the end of the first year, and 80 percent survival or 80 percent coverage after five years (including both plantings and natural recruitment).
(2) Control invasive non-native vegetation.
(3) Protect plantings from wildlife damage and other harm.
(4) Provide the Corps annual progress reports.

(10) Long-term habitat loss. This will consist of the same elements as monitoring for site restoration.

3. Effectiveness monitoring. Gather any other data or analyses the Corps deems necessary or helpful to complete an assessment of habitat trends in stream and riparian conditions as a result of Corps permitted actions. The Corps may use existing monitoring efforts for this purpose if those efforts can provide information specific to the objective of identifying habitat trends.

4. Annual monitoring report. Provide NMFS with an annual monitoring report by January 31 of each year that describes the Corps's efforts carrying out this Opinion. The report will summarize project level monitoring information by activity and by 5th field HUC, with special attention to site restoration, streambank protection and compensatory mitigation. The report will also provide an overall assessment of program activity and cumulative effects. A copy of the annual report will be submitted to both the Oregon and Washington Offices of NMFS.

Branch Chief - Portland National Marine Fisheries Service Attn: OSB2001-0016 525 NE Oregon Street Portland, OR 97232	Branch Chief - Lacey National Marine Fishery Service Attn: OSB2001-0016 510 Desmond Drive, SE, Suite 103 Lacey, WA 98503

5. Annual coordination. Meet with NMFS by March 31 each year to discuss the annual monitoring report and any action necessary to make the program more effective.

DEPARTMENT OF THE ARMY
PORTLAND DISTRICT, CORPS OF ENGINEERS
P.O. BOX 2946
PORTLAND, OREGON 97208-2946

REPLY TO
ATTENTION OF:

July 16, 2002

Operations Division
Regulatory Branch
Corps No. 2001-00031

Mr. Gene Loffler
CLD Pacific Grain
800 N. River Street
Portland, Oregon 97227

Dear Mr. Loffler:

Enclosed are two unsigned copies of your requested permit.

In order to make this permit valid, please read the conditions of the permit carefully, complete both copies including signature, printed name and title, and return both copies to the Regulatory Branch, Permits Section, at the letterhead address along with a check in the amount of $100.00, payable to Finance and Accounting Officer, USAED, Portland. Your copy of the fully executed permit will then be returned to you.

You are cautioned, however, not to begin work under the terms of this permit until you receive the fully executed document, as such action would be in violation of Federal law.

Recent changes in the U.S. Army Corps of Engineers regulations have established a process through which you may object to certain terms and conditions of the enclosed permit, and ask that the permit be modified accordingly. Please see the enclosed Notification of Administrative Appeal Options and Process and Request for Appeal for further information about that process.

If you have any questions regarding our evaluation process, please contact Ms. Judy Linton at the letterhead address or telephone (503) 808-4382.

Sincerely,

Lawrence C. Evans
Chief, Regulatory Branch

RC
SC
PM
TL
PM
TECH
[illegible] 07/16/02

Enclosures

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: CLD Pacific Grain

File Number: 2001-00031 | Date: July 15, 2002

Attached is:		See Section below
XX	INITIAL PROFFERED PERMIT (Standard Permit)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice. Also, see Section II.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record. If you believe you have additional information pertinent to an approved jurisdictional determination {see Part D} with which you disagree, that new information should first be sent to the Portland District for reconsideration. Following the District's reconsideration, the approved jurisdictional determination can still be appealed as noted in Part D)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: U.S. Army, Corps of Engineers Portland District Office CENWP-OP-GA (ATTN: Jim Goudzwaard, Wetland Specialist) P.O. BOX 2946 Portland, OR 97208-2946	If you decide to appeal an action under Parts B, C or D above, send a copy of each page to: U.S. Army, Corps of Engineers Omaha Regional Office CENWD-MR (ATTN: Mores Bergman, Review Officer) 15265 West Center Road Omaha, NE 68144-3871

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:

DEPARTMENT OF THE ARMY PERMIT

Permittee: CLD Pacific Grain

Permit No: 2001-00031

Issuing Office: U.S. Army Corps of Engineers, Portland District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: Conduct maintenance dredging for a period of five years within an area 1,400 feet long by 60 feet wide to a maximum depth of –40 feet Columbia River Datum (CRD). The applicant estimates that up to 8,000 cubic yards of silt will be removed annually by clamshell dredge. Sediments will be disposed at one of three upland landfill sites: 1) Wasco County Landfill, 2) Rebanco Landfill in Roosevelt, Washington, or 3) Hillsboro Landfill.

Purpose: To maintain adequate depths to accept ocean-going vessels at dockside and during grain loading operations.

Project Location: 800 N. River Street (Section 27, 1 North, 1 East), Willamette River Mile 11.4, Portland, Multnomah County, Oregon.

Drawings: Three sheets labeled 2001-00031 Cargill, Inc. – Maintenance Dredging

General Conditions:

1. The time limit for completing the work authorized ends on June 30, 2007. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the

conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The following special condition is a part of all Department of the Army permits that provide authorization under Section 10 of the Rivers and Harbors Act, regardless whether the permit provides such authorization under Section 10 alone, or in combination with authorization under other laws:

- The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the U.S Army Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. This permit does not exclude the permittee from liability or any requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended (42 U.S.C. 9601 et. Seq.), the Resource Conservation and Recovery Act of 1978 as amended (42 U.S.C. 6901 et. Seq.), the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et. Seq. and any and all requirements of the State of Oregon under Revised Statutes or Administrative Rules. The permittee is advised that the work for which this permit is granted is located within the "area of interest" of the Environmental Protection Agency and the Oregon Department of Environmental Quality pursuant to a National Priorities Listing relative to the Willamette River. Granting of this permit by the Portland District, U.S. Army Corps of Engineers, should in no way be construed as approval of this project as being in compliance with the above-cited authorities. Neither should the permittee consider this permit as absolving the permittee from any liability or damages from any party whomsoever.

3. To minimize the potential for impacts to species listed under the Endangered Species Act, the permittee shall comply with the applicable terms and conditions of the SLOPES programmatic biological opinion issued by the National Marine Fisheries Service on June 14, 2002 (Measures #1, #2, #11, and #13, attached). Monitoring reports, as required by this programmatic opinion, shall be submitted to the Corps of Engineers within 120 days of project completion.

4. Inwater work shall occur during the periods of July 1 through October 31 and December 1 through January 31.

5. Following the initial dredging cycle, the permittee shall sample the sediment at the location shown on Sheet 2. This sample shall be analyzed for PAHs and total PCBs according to the criteria of the *Dredged Material Evaluation Framework, Lower Columbia River Management Area, November 1998.* Results shall be provided as part of the monitoring reports required under Special Condition c.

6. The permittee shall notify the Corps of Engineers and the Environmental Protection Agency, Region 10 (Mr. John Malek, 1200 Sixth Avenue, ECO-083, Seattle, Washington 98101) of the landfill site chosen as the dredged material disposal site.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
( ) Section 404 of the Clean Water Act (33 U.S.C. 1344).
( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

(PERMITTEE SIGNATURE) *(DATE)*

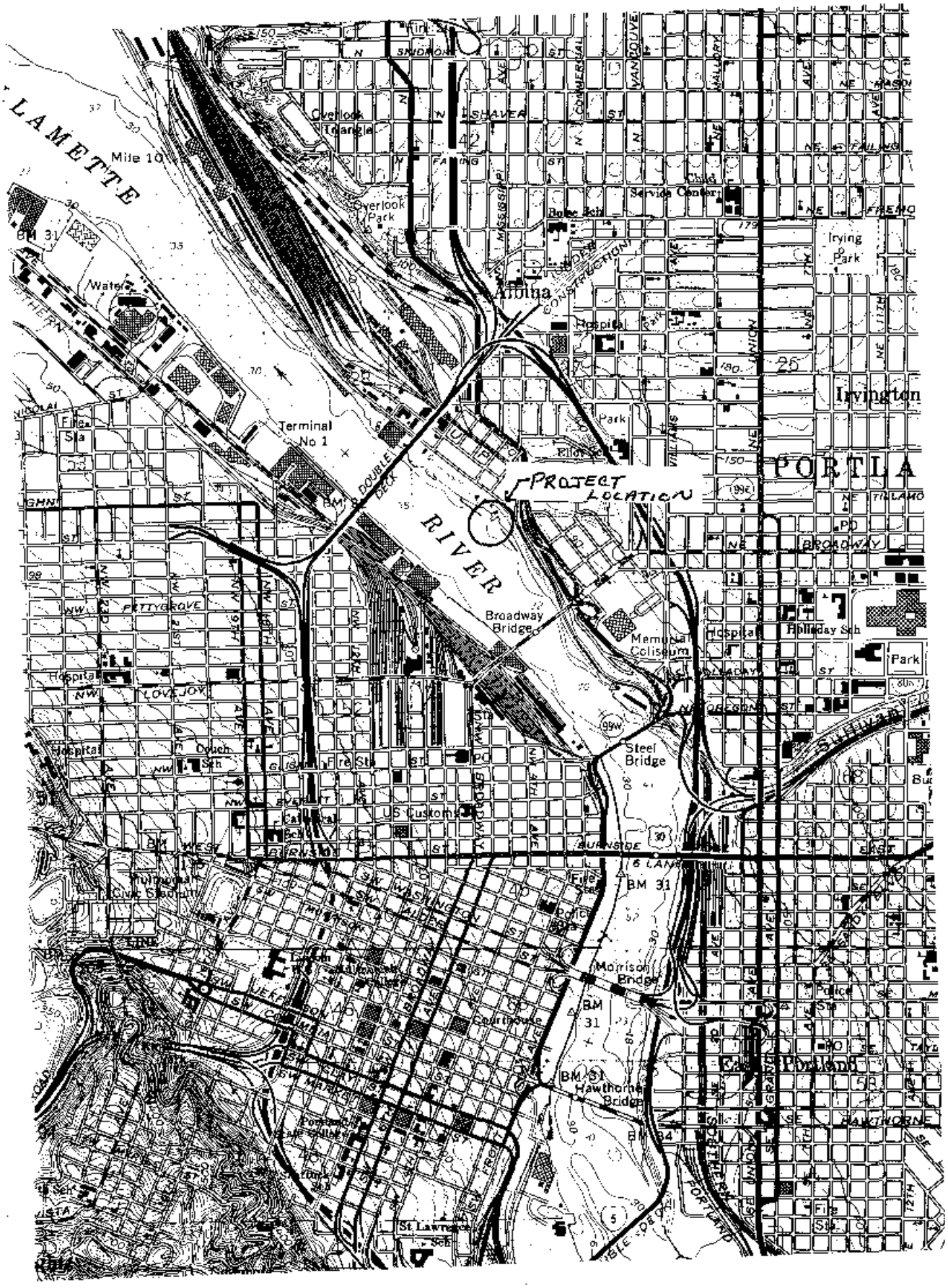
(PRINTED NAME) *(TITLE)*

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

(DISTRICT ENGINEER) *(DATE)*
FOR
Randall J. Butler
Colonel, Corps of Engineers
District Engineer

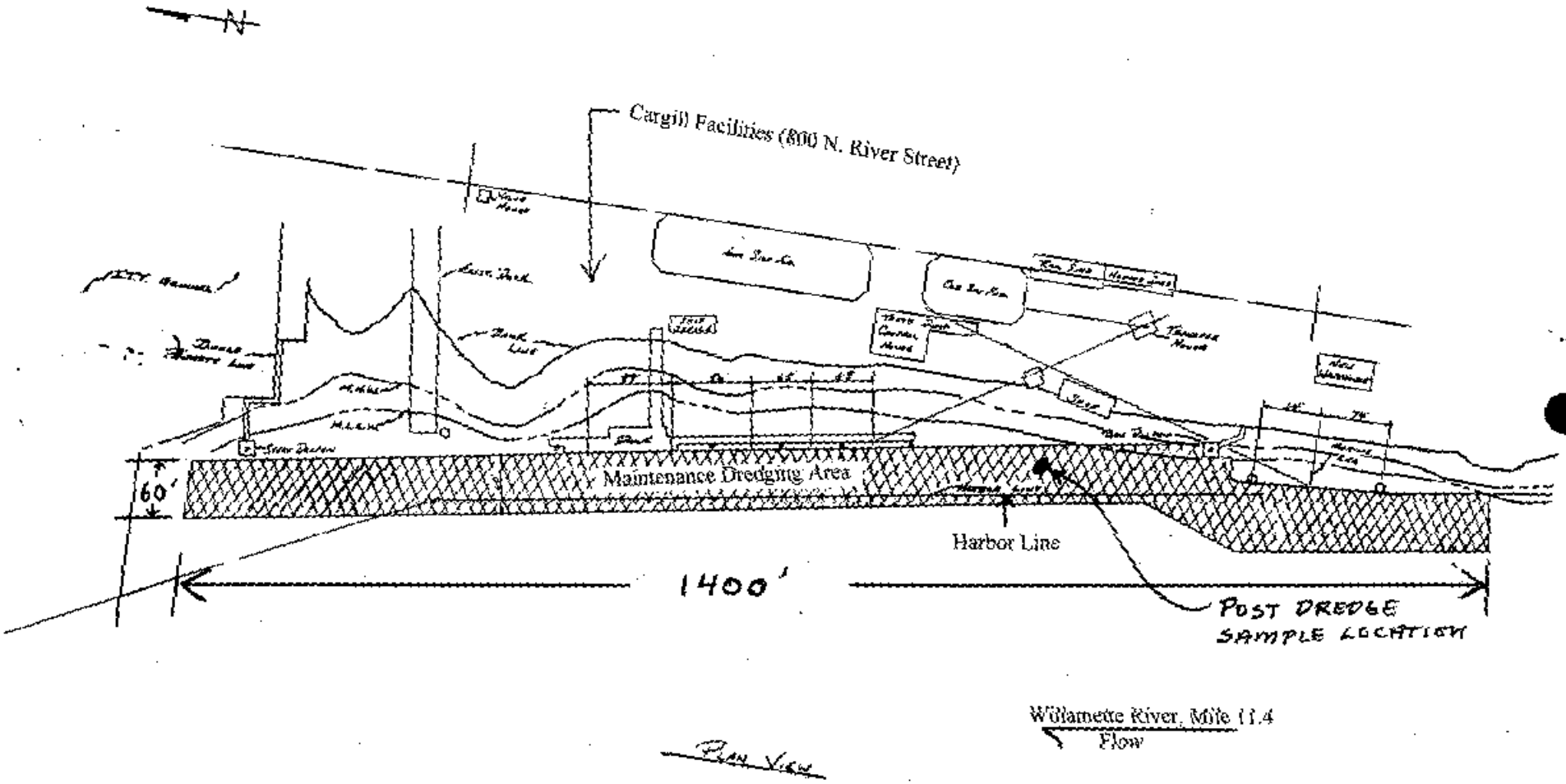
When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

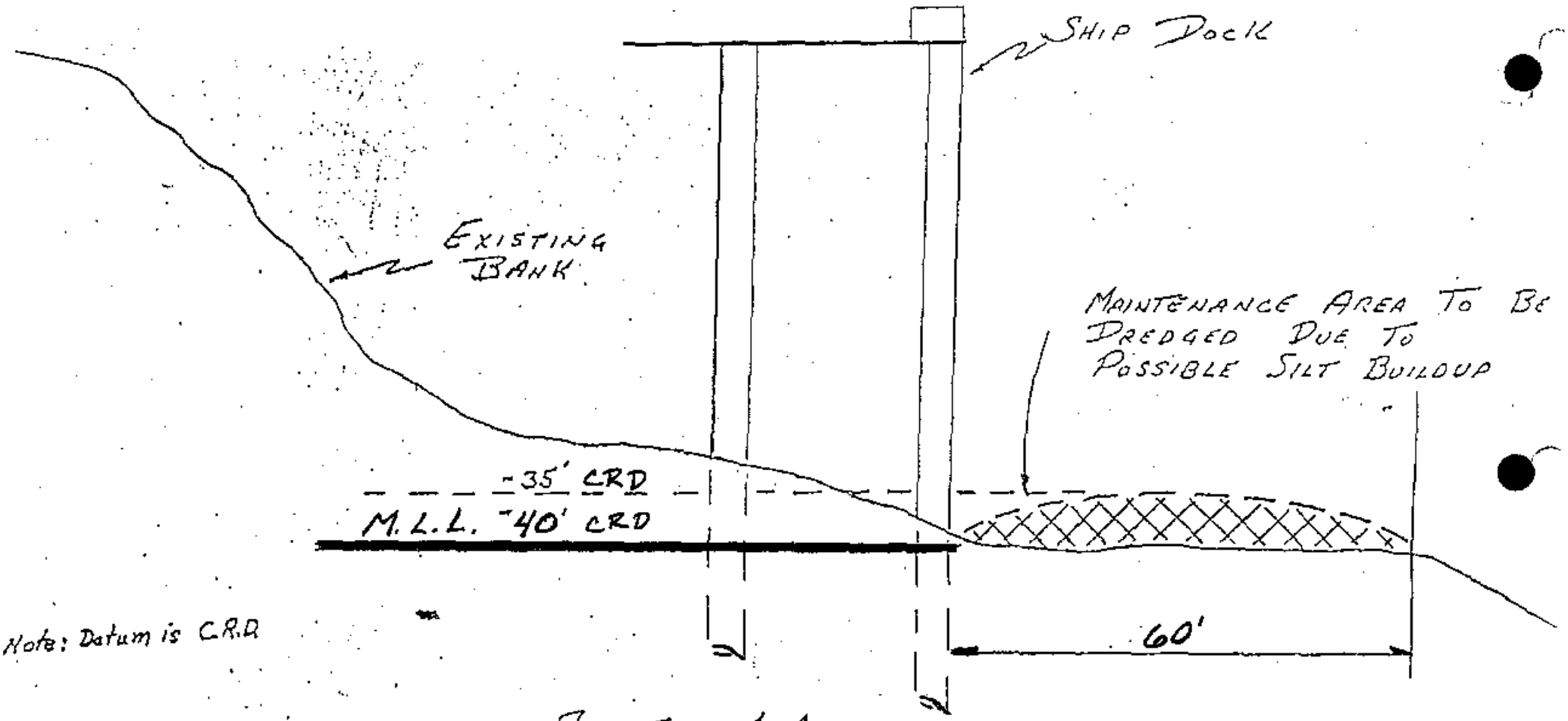
(TRANSFEREE) *(DATE)*



2001-00031 Cargill, Inc. – Maintenance Dredging

SHEET 1 OF 3


N
Cargill Facilities (800 N. River Street)
Maintenance Dredging Area
60'
Harbor Line
1400'
POST DREDGE
SAMPLE LOCATION
Willamette River, Mile 11.4
Flow
Plan View



Note: Datum is C.R.D

SECTION A A

NOT TO SCALE

SHEET 3 OF 3

To implement Reasonable and Prudent Measure #1 (standard local operating procedures for endangered species; SLOPES), the Corps shall:

Individual project review. Individually review each project to ensure that all direct and indirect adverse effects to listed salmon and their habitats are within the range of effects considered in this Opinion, and that each applicable term and condition from this Opinion is included as an enforceable term of the permit document.

Full implementation required. Departure from full implementation of the terms and conditions of the following incidental take statement will result in the lapse of the protective coverage of section 7(o)(2) regarding "take" of listed species and may lead NMFS to a different conclusion as to the effects of the continuing action, including findings that specific projects will jeopardize listed species.

Confirmation of fish presence. Contact a fish biologist from the NMFS, ODFW or WDFW, as appropriate for the action area, if necessary to confirm that a project is within the present or historic range of a listed species or a designated critical habitat.

Project access. Require landowners to provide reasonable access[1] to projects permitted under this Opinion for monitoring the use and effectiveness permit conditions.

Salvage notice. Include the following notice with each permit issued.

> NOTICE. If a sick, injured or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NMFS Law Enforcement at 360/418-4246. The finder must take care in handling of sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.

Reinitiation. Reinitiate formal consultation on this Opinion within three years of the date of issuance. This term and condition is in addition to reinitiation requirements described in section 2.1.6 above.

Failure to provide timely monitoring causes Incidental Take Statement to expire. If the Corps fails to provide specified monitoring information by the required date, NMFS will consider that a modification of the action that causes an effect on listed species not previously considered and causes the Incidental Take Statement of the Opinion to expire.

Reinitiation contact. To reinitiate consultation, contact the Habitat Conservation Division (Oregon State Office) of NMFS.

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[1] "Reasonable access" means with prior notice to the permittee, the Corps and NMFS may at reasonable times and in a safe manner, enter and inspect permitted projects to insure compliance with the reasonable and prudent measures, terms and conditions, in this Opinion.

1. To implement Reasonable and Prudent Measure #2 (general conditions for construction, operation and maintenance), the Corps shall ensure that:
   1. Timing of in-water work. Work within the active channel will be completed during the ODFW (2000) or the Corps Seattle District (2000) preferred in-water work period[1], as appropriate for the project area, unless otherwise approved in writing by NMFS.
   2. Cessation of work. Project operations will cease under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
   3. Fish screens. All water intakes used for a project, including pumps used to isolate an in-water work area, will have a fish screen installed, operated and maintained according to NMFS' fish screen criteria.[2]
   4. Fish passage. Passage will be provided for any adult or juvenile salmonid species present in the project area during construction, and after construction for the life of the project. Upstream passage is not required during construction if it did not previously exist.
   5. Pollution and Erosion Control Plan. A Pollution and Erosion Control Plan will be prepared and carried out to prevent pollution related to construction operations. The plan must be available for inspection on request by Corps or NMFS.
      1. Plan Contents. The Pollution and Erosion Control Plan must contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.
         (1) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations and staging areas.
         (2) Practices to confine, remove and dispose of excess concrete, cement and other mortars or bonding agents, including measures for washout facilities.
         (3) A description of any hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.
         (4) A spill containment and control plan with notification procedures, specific clean up and disposal instructions for different products, quick response containment and clean up measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

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[1] Oregon Department of Fish and Wildlife, *Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources*, 12 pp (June 2000) (identifying work periods with the least impact on fish) (http://www.dfw.state.or.us/ODFWhtml/InfoCntrHbt/0600_inwtrguide.pdf); U.S. Army Corps of Engineers, Seattle District, Approved Work Windows for Fish Protection (Version: 13 October 2000) (http://www.nws.usace.army.mil/reg/Programmatic_Consultations/TimCond/WorkWinI.pdf)

[2] National Marine Fisheries Service, *Juvenile Fish Screen Criteria* (revised February 16, 1995) and *Addendum: Juvenile Fish Screen Criteria for Pump Intakes* (May 9, 1996) (guidelines and criteria for migrant fish passage facilities, and new pump intakes and existing inadequate pump intake screens) (http://www.nwr.noaa.gov/1hydrop/hydroweb/ferc.htm).

(5) Practices to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

2. Inspection of erosion controls. During construction, all erosion controls must be inspected daily during the rainy season and weekly during the dry season to ensure they are working adequately.[3]

(1) If inspection shows that the erosion controls are ineffective, work crews must be mobilized immediately to make repairs, install replacements, or install additional controls as necessary.

(2) Sediment must be removed from erosion controls once it has reached 1/3 of the exposed height of the control.

6. Construction discharge water. All discharge water created by construction (e.g., concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows.

1. Water quality. Facilities must be designed, built and maintained to collect and treat all construction discharge water using the best available technology applicable to site conditions. The treatment must remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

2. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities must not exceed 4-feet per second.

3. Spawning areas, marine submerged vegetation. No construction discharge water may be released within 300-feet upstream of active spawning areas or areas with marine submerged vegetation.

7. Treated wood. Projects using treated wood[4] for any structure that may contact flowing water or that will be placed over water are not authorized, except for pilings installed following NMFS' guidelines.[5] Projects that require removal of treated wood will use the following precautions.

1. Treated wood debris. Care must be taken to ensure that no treated wood debris falls into the water. If treated wood debris does fall into the water, it must be removed immediately.

2. Removal of treated pilings. If treated wood pilings will be removed, the following conditions apply.

(1) Pilings must be dislodged with a vibratory hammer.

(2) Once loose, the pilings must be placed onto the construction barge or other appropriate dry storage location, and not left in the water or piled onto the stream bank.

(3) If pilings break during removal, the stump must be removed by breaking or cutting 3-feet below the sediment surface, then covered with a substrate appropriate for the site.

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[3] "Working adequately" means no turbidity plumes are evident during any part of the year.

[4] "Treated wood" means lumber, pilings, and other wood products preserved with alkaline copper quaternary (ACQ), ammoniacal copper arsenate (ACA), ammoniacal copper zinc arsenate (ACZA), copper naphthenate, chromated copper arsenate (CCA), pentachlorophenol, or creosote.

[5] Letter from Steve Morris, National Marine Fisheries Service, to W.B. Paynter, Portland District, U.S. Army Corps of Engineers (December 9, 1998) (transmitting a document titled *Position Document for the Use of Treated Wood in Areas within Oregon Occupied by Endangered Species Act Proposed and Listed Anadromous Fish Species, National Marine Fisheries Service, December 1998*).

3. Disposal of treated wood debris. All treated wood removed during a project must be disposed of at a facility approved for hazardous materials of this classification.

8. Preconstruction activity. Before significant[6] alteration of the project area, the following actions must be completed.
   1. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian vegetation, wetlands and other sensitive sites beyond the flagged boundary.
   2. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.
      (1) A supply of sediment control materials (e.g., silt fence, straw bales[7]).
      (2) An oil absorbing floating boom whenever surface water is present.
   3. Temporary erosion controls. All temporary erosion controls must be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

9. Temporary access roads.
   1. Existing ways. Existing roadways or travel paths must be used whenever possible, unless construction of a new way would result in less habitat take.
   2. Steep slopes. Temporary roads built mid-slope or on slopes steeper than 30 percent are not authorized.
   3. Minimizing soil disturbance and compaction. When a new temporary road is necessary within 150-feet[8] of a stream, water body or wetland, soil disturbance and compaction must be minimized by clearing vegetation to ground level and placing clean gravel over geotextile fabric, unless otherwise approved in writing by NMFS.
   4. Temporary stream crossings.
      (1) The number of temporary stream crossings must be minimized.
      (2) Temporary road crossings must be designed as follows.
         (1) A survey must identify and map any potential spawning habitat within 300-feet downstream of a proposed crossing.
         (2) No stream crossing may occur at known or suspected spawning areas, or within 300-feet upstream of such areas if spawning areas may be affected.

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[6] "Significant" means an effect can be meaningfully measured, detected or evaluated.

[7] When available, certified weed-free straw or hay bales must be used to prevent introduction of noxious weeds.

[8] Distances from a stream or water body are measured horizontally from, and perpendicular to, the bankfull elevation, the edge of the channel migration zone, or the edge of any associated wetland, whichever is greater. "Channel migration zone" means the area defined by the lateral extent of likely movement along a stream reach as shown by evidence of active stream channel movement over the past 100 years, e.g., alluvial fans or floodplains formed where the channel gradient decreases, the valley abruptly widens, or at the confluence of larger streams.

(3) The crossing design must provide for foreseeable risks (e.g., flooding and associated bedload and debris) to prevent the diversion of streamflow out of the channel and down the road if the crossing fails.

(4) Vehicles and machinery must cross riparian areas and streams at right angles to the main channel wherever possible.

5. Obliteration. When the project is completed, all temporary access roads must be obliterated, the soil must be stabilized, and the site must be revegetated. Temporary roads in wet or flooded areas must be abandoned and restored as necessary by the end of the in-water work period.

10. Heavy Equipment. Use of heavy equipment will be restricted as follows.

1. Choice of equipment. When heavy equipment must be used, the equipment selected must have the least adverse effects on the environment (e.g., minimally sized, rubber tired).

2. Vehicle staging. Vehicles must be fueled, operated, maintained and stored as follows.

(1) Vehicle staging, cleaning, maintenance, refueling, and fuel storage must take place in a vehicle staging area placed 150-feet or more from any stream, water body or wetland.

(2) All vehicles operated within 150-feet of any stream, water body or wetland must be inspected daily for fluid leaks before leaving the vehicle staging area. Any leaks detected must be repaired in the vehicle staging area before the vehicle resumes operation. Inspections must be documented in a record that is available for review on request by Corps or NMFS.

(3) All equipment operated instream must be cleaned before beginning operations below the bankfull elevation to remove all external oil, grease, dirt, and mud.

3. Stationary power equipment. Stationary power equipment (e.g., generators, cranes) operated within 150-feet of any stream, water body or wetland must be diapered to prevent leaks, unless otherwise approved in writing by NMFS.

11. Site preparation. Native materials will be conserved for site restoration.

1. If possible, native materials must be left where they are found.

2. Materials that are moved, damaged or destroyed must be replaced with a functional equivalent during site restoration.

3. Any large wood[9], native vegetation, weed-free topsoil, and native channel material displaced by construction must be stockpiled for use during site restoration.

12. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, the work area will be well isolated from the active flowing stream

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[9] For purposes of this Opinion only, "large wood" means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

using inflatable bags, sandbags, sheet pilings, or similar materials. The work area will also be isolated if in-water work may occur within 300-feet upstream of spawning habitats.

13. Capture and release. Before and intermittently during pumping to isolate an in-water work area, an attempt must be made to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.
    1. A fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish must conduct or supervise the entire capture and release operation.
    2. If electrofishing equipment is used to capture fish, the capture team must comply with NMFS' electrofishing guidelines.[10]
    3. The capture team must handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.
    4. Captured fish must be released as near as possible to capture sites.
    5. ESA-listed fish may not be transferred to anyone except NMFS personnel, unless otherwise approved in writing by NMFS.
    6. Other Federal, state, and local permits necessary to conduct the capture and release activity must be obtained.
    7. NMFS or its designated representative must be allowed to accompany the capture team during the capture and release activity, and must be allowed to inspect the team's capture and release records and facilities.
14. Earthwork. Earthwork (including drilling, excavation, dredging, filling and compacting) will be completed as quickly as possible.
    1. Site stabilization. All disturbed areas must be stabilized, including obliteration of temporary roads, within 12 hours of any break in work unless construction will resume work within 7 days between June 1 and September 30, or within 2 days between October 1 and May 31.
    2. Source of materials. Boulders, rock, woody materials and other natural construction materials used for the project must be obtained outside the riparian area.
15. Construction of new impervious surface/stormwater management. Beyond construction terms and conditions above, any project that will produce new impervious surface or a land cover conversion that slows the entry of water into the soil must also control the quantity and quality of the resulting stormwater runoff for the life of the project.
    1. On-site stormwater management.
        (1) Stormwater best management practices (BMPs)[11] will be used for stormwater source control and treatment individually or in a

[10] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

[11] For purposes of this Opinion, "stormwater BMP" means a procedure or structure that, when used individually or in series, will avoid or minimize the adverse effects of stormwater on riparian and aquatic habitats. On-site stormwater BMPs include source controls to prevent the production and release of pollutants, and treatments that capture pollutants. A source control can be operational (i.e., managerial) or structural (i.e., a physical or mechanical facility). **Implement appropriate** on-site BMPs such as downspout dispersion, concentrated flow dispersion, sheet flow dispersion, full dispersion, concave vegetated surfaces, multiple small basins, engineered soil/landscape system, infiltration basins, infiltration trenches, bio-filtration swales, basic biofiltration swales, wet biofiltration swales, continuous inflow

series as necessary to minimize, retain, treat, and infiltrate stormwater on-site to the maximum extent feasible without causing flooding or erosion effects. Stormwater BMP installation in the riparian buffer area may be allowed with prior written approval from NMFS. (Actions with no more than a negligible likelihood of adverse effects.)

(2) Permeable pavements[12] must be installed and maintained for load-bearing surfaces, including multiple use trails, wherever soil, slope and traffic conditions allow.

2. Runoff treatment facilities.[13]

(1) Water quality treatment must be provided to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present using the best available technology applicable to site conditions.[14]

(2) Treatment facilities and BMPs will not be installed inside the riparian buffer area without prior written approval from NMFS. (Actions with no more than a negligible likelihood of adverse effects.)

(3) Runoff from pollution generating impervious surfaces must be pre-treated[15] to reduce suspended solids before use of infiltration BMPs.

(4) Stormwater treatment facilities and BMPs for each project will include a schedule of operation, inspection and maintenance activities for all structural BMPs and conveyance systems. A log

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biofiltration swales, basic filter strips , narrow area filter strips, wetponds, and stormwater treatment wetlands. For a discussion of stormwater BMPs, see, e.g., Washington Department of Ecology, Water Quality Program, Stormwater Management Manual for Western Washington, Publication Numbers 99-11 through 99-15 (August 2001) (http://www.ecy.wa.gov/programs/wq/stormwater/index.html

[12] **Implement appropriate** permeable pavements such as porous asphalt and porous concrete, porous pavers, and permeable interlocking concrete pavement. For a discussion of stormwater BMPs, see, e.g., Washington Department of Ecology, Water Quality Program, Stormwater Management Manual for Western Washington, Publication Numbers 99-11 through 99-15 (August 2001) (http://www.ecy.wa.gov/programs/wq/stormwater/index.html).

[13] **Implement appropriate** water quality treatment facilities such as biofiltration swales, constructed wetlands, detention ponds, or oil/water separators. For a discussion of treatment facilities see, e.g., Washington Department of Ecology, Water Quality Program, Stormwater Management Manual for Western Washington, Publication Numbers 99-11 through 99-15 (August 2001) (http://www.ecy.wa.gov/programs/wq/stormwater/index.html).

[14] In addition to on-site stormwater BMP's, in Washington State, runoff treatment facilities are required if a project has 5,000 or more square feet of effective, pollution-generating impervious surfaces, or 32,670 or more square feet (0.75 acres) of pollution-generating pervious surfaces and a surface discharge. Further, treatment facilities must be sized to meet runoff volume predicted from a 24-hour storm with a 6-month return frequency as predicted by a continuous runoff model. The water quality design flow rate must treat 91 percent of the runoff volume. Also in Washington State, projects that discharge directly into the Columbia River are exempt from flow control requirements, but must meet requirements iii.1-4 above).

[15] **Implement appropriate** pretreatment BMPs such as pre-settling basins.

of maintenance activities showing what actions were taken will be kept and made available for inspection on request by the Corps and NMFS. These operations, inspection and maintenance activities must be conducted, as appropriate:

(1) Ensure that the capacity of each facility, structural BMP and conveyance system is not exceeded and that heavy sediment discharges are prevented.

(2) Inspect and clean each structural BMP and conveyance system as needed. Determine whether improvements in operation and maintenance are needed.

(3) Promptly repair any deterioration threatening the effectiveness of any structural BMP or conveyance system.

(4) If storm drains inlets are used, post warning signs on or next to all storm drain inlets that say, as appropriate for the receiving water, "Dump No Waste - Drains to Ground Water, Streams, or Lakes."

(5) Ensure that all sediments and liquids from catch basins are disposed of only in an approved facility.

3. Flow Control. When runoff must be discharged directly, or indirectly through a conveyance system, into fresh surface water or a wetland, the following requirements apply.

(1) Natural drainage patterns must be maintained. Discharges from the project site must occur at the natural location, to the maximum feasible extent. Discharge of runoff from the project site must not cause an adverse effect to riparian or aquatic habitats.

(2) The area must be drained by a conveyance system comprised entirely of manufactured elements (e.g., pipes, ditches, outfall protection) that extends to the ordinary high water line of the receiving water.

(3) Any erodible elements of this system must be adequately stabilized to prevent erosion.

(4) Surface water from the area must not be diverted from or increased to an existing wetland, stream or near-shore habitat sufficient to cause a significant adverse effect to wetland hydrology, soils or vegetation.

16. Site restoration. All streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows.

1. Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (such as large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

2. Streambank shaping. Damaged streambanks must be restored to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation.

3. Revegetation. Areas requiring revegetation must be replanted before the first April 15 following construction with a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees.

4. Pesticides. No pesticide application is allowed, although mechanical or other methods may be used to control weeds and unwanted vegetation.
5. Fertilizer. No surface application of fertilizer may occur within 50-feet of any stream channel.
6. Fencing. Fencing must be installed as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

17. Long-term adverse effects. Long-term adverse effects will be avoided or offset after taking all appropriate steps to avoid or minimize short-term adverse effects.
    1. Actions of concern. The following actions require compensation for long-term adverse effects.
        (1) Construction of new impervious surfaces inside the riparian buffer area.[16]
        (2) Maintenance dredging in water closer than 50-feet from shore or in waters less than 20-feet deep.[17]
        (3) Other activities that prevent development of properly functioning condition of natural habitat processes.
    2. Design review. The Corps must review and approve designs to avoid or offset long-term adverse effects by applying the following considerations.
        (1) Use of an ecosystem approach
        (2) Habitat requirements of the affected species
        (3) Productive capacity of the proposed construction and compensation site(s)
        (4) Timing of the construction and compensation actions
        (5) Length of time necessary to achieve full functionality
        (6) Likelihood of success
    3. Maintenance dredging goal. The goal of compensation for maintenance dredging is to offset loss of benthic food resources and must consist of riparian plantings of trees and woody shrubs or restoration of nearshore habitats whenever feasible.
    4. Project evaluation. The Corps must evaluate compensation project success using quantitative criteria established for the project.
    5. Terms and conditions. Action to minimize long-term adverse effects that requires a Corps permit must also meet all applicable terms and conditions for this Opinion, or complete a separate consultation.

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[16] For purposes of this Opinion only, "riparian buffer area" means land: (1)Within 150-feet of any natural water occupied by listed salmonids during any part of the year or designated as critical habitat; (2) within 100-feet of any natural water within 1/4 mile upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat; and (3) within 50-feet of any natural water upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat. "Natural water" means all perennial or seasonal waters except water conveyance systems that are artificially constructed and actively maintained for irrigation.

[17] Depth in tidal waters is measured from mean lower low water (MLLW).

To implement Reasonable and Prudent Measure #11 (maintenance dredging), the Corps shall ensure that:

Exclusions. Maintenance dredging using the economic loading method for hopper dredging or in the following places are not authorized.

Salmonid spawning habitat in tributaries or upstream

Columbia River, above Bonneville Dam, in the following areas: backwater sloughs, silted-in lateral channels, alcoves, side channels, or other shallow-water areas less than 20-feet deep

Dredge Material Evaluation Framework. Sediment quality will be evaluated before dredging begins using the most recent version of NMFS' approved criteria for evaluation of contaminated sediments.(1) Only sediments approved for in-water disposal by those criteria will be authorized for maintenance dredging.

Dredge operation. Dredges will be operated as follows.

A hydraulic dredge intake must be kept at or just below the surface of the material being removed, but may be raised for brief periods of purging or flushing.

Clamshell dredges must use a finishing type bucket with flaps, whenever feasible.

Spoil disposal. Dredge spoil will be placed in an approved upland area where it cannot reenter the water body and that is large enough to allow settling. In-water disposal is not authorized.

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1 See, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, Oregon Department of Environmental Quality, Washington Department of Ecology, and Washington Department of Natural Resources, *Dredged Material Evaluation Framework: Lower Columbia River Management Area* (November 1998) (providing a consistent set of procedures to determine sediment quality for dredging activity) (http://www.nwp.usace.army.mil/ec/h/hr/Final/).

To implement Reasonable and Prudent Measure #13 (monitoring), the Corps shall:

1. Meet with NMFS within 60-days of signing this biological opinion and develop a collaborative monitoring strategy. If the strategy cannot be developed within 60-days, the following terms and conditions will apply, including timelines.
2. Implementation monitoring. Ensure that each permittee submits a monitoring report to the Corps within 120 days of project completion describing the permittee's success meeting his or her permit conditions. Each project level monitoring report will include the following information.
    1. Project identification
        (1) Permittee name, permit number, and project name.
        (2) Category of activity
        (3) Project location, including any compensatory mitigation site(s), by 5th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map
        (4) Corps contact person.
        (5) Starting and ending dates for work completed
    2. Narrative assessment. A narrative assessment of the project's effects on natural stream function.
    3. Photo documentation. Photo of habitat conditions at the project and any compensation site(s), before, during, and after project completion.[1]
        (1) Include general views and close-ups showing details of the project and project area, including pre and post construction.
        (2) Label each photo with date, time, project name, photographer's name, and a comment about the subject.
    4. Other data. Additional project-specific data, as appropriate for individual projects.
        (1) Work cessation. Dates work cessation was required due to high flows.
        (2) Fish screen. Compliance with NMFS' fish screen criteria.
        (3) A summary of pollution and erosion control inspections, including any erosion control failure, hazardous material spill, and correction effort.
        (4) Site preparation.
            (1) Total cleared area – riparian and upland.
            (2) Total new impervious area.
        (5) Isolation of in-water work area, capture and release.
            (1) Supervisory fish biologist – name and address.
            (2) Methods of work area isolation and take minimization.
            (3) Stream conditions before, during and within one week after completion of work area isolation.
            (4) Means of fish capture.
            (5) Number of fish captured by species.

[1] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

(6) Location and condition of all fish released.
(7) Any incidence of observed injury or mortality.

(6) Streambank protection.
(1) Completed screening matrices used to select treatments.
(2) Type and amount of materials used.
(3) Project size – one bank or two, width and linear feet.

(7) Water dependent structures and related features.
(1) Area of new over-water structure.
(2) Streambank distance to nearest existing water dependent structure -- upstream and down.

(8) Minor discharge and excavation/maintenance dredging.
(1) Volume of dredged material.
(2) Water depth before dredging and within one week of completion.
(3) Verification of upland dredge disposal.

(9) Site restoration.
(1) Finished grade slopes and elevations.
(2) Log and rock structure elevations, orientation, and anchoring (if any).
(3) Planting composition and density.
(4) A five-year plan to:
(1) Inspect and, if necessary, replace failed plantings to achieve 100 percent survival at the end of the first year, and 80 percent survival or 80 percent coverage after five years (including both plantings and natural recruitment).
(2) Control invasive non-native vegetation.
(3) Protect plantings from wildlife damage and other harm.
(4) Provide the Corps annual progress reports.

(10) Long-term habitat loss. This will consist of the same elements as monitoring for site restoration.

3. Effectiveness monitoring. Gather any other data or analyses the Corps deems necessary or helpful to complete an assessment of habitat trends in stream and riparian conditions as a result of Corps permitted actions. The Corps may use existing monitoring efforts for this purpose if those efforts can provide information specific to the objective of identifying habitat trends.

4. Annual monitoring report. Provide NMFS with an annual monitoring report by January 31 of each year that describes the Corps's efforts carrying out this Opinion. The report will summarize project level monitoring information by activity and by 5th field HUC, with special attention to site restoration, streambank protection and compensatory mitigation. The report will also provide an overall assessment of program activity and cumulative effects. A copy of the annual report will be submitted to both the Oregon and Washington Offices of NMFS.

Branch Chief - Portland National Marine Fisheries Service Attn: OSB2001-0016 525 NE Oregon Street Portland, OR 97232	Branch Chief - Lacey National Marine Fishery Service Attn: OSB2001-0016 510 Desmond Drive, SE, Suite 103 Lacey, WA 98503

5. Annual coordination. Meet with NMFS by March 31 each year to discuss the annual monitoring report and any action necessary to make the program more effective.

DEPARTMENT OF THE ARMY ENVIRONMENTAL ASSESSMENT AND STATEMENT OF FINDINGS

Applicant: CLD Pacific Grain

Application Number: 2001-00031

1. Introduction: This is a Department of the Army (DA) permit decision document for a permit action being reviewed by the Portland District of the U.S. Army Corps of Engineers (Corps). This document constitutes the Environmental Assessment, Section 404(b)(1) Evaluation and Determination, Statement of Findings, and Public Interest Determination for the proposed project described below. Review was conducted according to the procedures at 33 CFR Part 320 and 325, including Appendices B and C. This document also addresses the Environmental Protection Agency's Section 404(b)(1) Guidelines published at 40 CFR Part 230.

1.1. Authority.

(X) Section 10 of the Rivers and Harbors Act of 1899.
( ) Section 404 of the Clean Water Act.

1.2. Permit Decision. As District Engineer, my decision is to issue an individual Department of the Army permit for the proposed project.

2. Proposed Project.

2.1. Location. 800 N. River Street (Section 27, 1 North, 1 East), Willamette River Mile 11.4, Portland, Multnomah County, Oregon.

2.2. Project description. Conduct maintenance dredging for a period of five years within an area 1,400 feet long by 60 feet wide to a maximum depth of -40 feet Columbia River Datum (CRD). The applicant estimates that up to 8,000 cubic yards of silt could be removed annually by clamshell dredge although annual dredging is not expected to be necessary based on past practices. The applicant proposes to dispose of the sediments upland at Ross Island, or another approved upland disposal site, or inwater within the Ross Island Lagoon.

Since the Public Notice was issued, the applicant dropped the proposal to dispose of the dredged material at Ross Island (both upland and inwater). Dredged material is now proposed to be taken to one of three landfill sites: 1) Wasco County Landfill, 2) Rebanco Landfill in Roosevelt, Washington, or 3) Hillsboro Landfill. The determination of which site will depend on the timeline of the dredging activity, both when and how long. There have been no other project changes since the Public Notice was issued.

2.3. Existing conditions. Cargill operates a grain terminal at its existing facility. Water depths are greater than -30 feet Columbia River Datum. Vegetation is limited along the shoreline as it is for much of the Willamette River industrial area. The proposed project is located within the proposed Willamette River Superfund boundaries.

2.4. Jurisdiction. A Jurisdictional Determination form, dated May 13, 2002, is located in the project file.

2.5. Purpose and need. The purpose of the proposed project is to maintain adequate depths to accept ocean-going vessels at dockside and during grain loading operations.

3. Public Notification Issues.

3.1 Public Notice Information. A complete application was received on January 16, 2001. A Public Notice describing the project was issued on April 5, 2001, and sent to all interested parties including appropriate Federal and state agencies. Comments received on this action are summarized below, followed by the applicant's response to the comments and the Corps response.

3.2. Comments to the Public Notice.

3.2.1. Federal Agencies.

3.2.1.1. Environmental Protection Agency (EPA). EPA did not comment on the public notice. With regard to superfund review EPA did, however, indicate by email message dated June 19, 2002, that they do not object to issuing a permit for this project with the inclusion of the "superfund" condition and a requirement that the permittee notify both the Corps and EPA of the final disposal site for the dredged material.

3.2.1.2. U.S. Fish and Wildlife Service (FWS). FWS expressed concerns regarding the timing of the dredging, the composition (grain size) and possible contaminant content of the sediments proposed for dredging, the location of the disposal site for the dredged material, and the lack of a monitoring plan. The Service recommended the following: 1) all in-water work take place between July 1 and October 31 and/or December 1 and January 31; 2) sediment testing for grain size and total volatile solids (TVS) be conducted and the results provided to FWS for review; 3) no contaminated sediments be placed upland at Ross Island or inwater at Ross Island Lagoon; 4) a monitoring plan be developed to assess immediate and long-term dredging impacts on water quality, fish, and benthic organisms.

These comments are addressed in the Section 6: Environmental Impact Assessment.

3.2.1.3. National Marine Fisheries Service (NMFS). NMFS did not respond to the public notice.

3.2.1.4. Other Federal Agencies. Portland District's cultural resource coordinator commented that the project area has been dredged over a long history; no impacts to cultural resources are anticipated.

3.2.2. State and Local Agencies.

3.2.2.1. Oregon Department of Fish and Wildlife (ODFW). ODFW did not comment on the public notice.

3.2.2.2. State Historic Preservation Officer (SHPO). SHPO did not provide comments on the public notice.

3.2.3. Organizations. The Willamette Riverkeeper indicated that there must be careful evaluation of potential impacts to endangered species, that the sediment analysis plan should be very thorough with attention paid to contaminants, and that contaminated sediments should not be disposed at Ross Island.

3.2.4. Individuals. No individuals commented on the public notice.

3.3. Public Hearing (33 CFR Part 327). Public hearings are held if the Corps determines additional information from such a hearing is needed to make a final permit decision. Generally, public hearings are held if comments to the public notice raise substantial issues which cannot be resolved informally. Public hearings are conducted on an as needed basis at the discretion of the District Engineer. No public hearing was requested or held for this project.

4. <u>Compliance With Other Federal and State Laws. (e.g., ESA,WQC, CZM, EFH, Executive Order</u>

4.1. Water Quality Certification. Oregon Department of Environmental Quality (DEQ). DEQ Water Quality Certification is not required for the project as modified as there will be no discharge of dredged material into waters of the United States.

4.2. Oregon Division of State Lands (DSL). DSL issued a Removal/Fill Permit on January 17, 2002. This permit will expire on February 28, 2007.

4.3. Endangered Species Act. Several listed salmonid species (Lower Columbia River steelhead, Upper Willamette River steelhead, Upper Willamette River Chinook, Lower Willamette River Chinook, Lower Columbia River Chinook, and Columbia River chum) occur within the project area. The proposed dredging project met the terms and conditions of the *Programmatic Biological Opinion for 15 Categories of Activities Requiring Department of the Army Permits*, issued by NMFS on March 21, 2001, with the exception that initially in-water disposal was requested. Therefore, the Corps initiated consultation with NMFS by letter dated August 30, 2001. With the change deleting the Ross Island in-water disposal option, NMFS determined that the project now meets

the terms and conditions of the programmatic opinion with one stipulation. NMFS requests that a sample be taken following dredging at the site that had exceedances of DMEF screening levels in 1998 sampling. These tests must be analyzed for PAHs and PCBs with the results sent to NMFS along with monitoring information required under the programmatic opinion. Cargill has agreed to complete these tests and this will be made a condition of the DA permit. The 15 categories programmatic opinion has been replaced with the SLOPES programmatic opinion. These terms and conditions will be placed on the DA permit.

No other listed species occur within the project site based on review of the Oregon Natural Resources Heritage database.

4.4. Essential Fish Habitat (EFH). The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires Federal agencies to consult with NMFS on activities that may adversely affect EFH. EFH compliance was completed as part of ESA compliance described above.

4.5. Executive Orders. Not applicable.

4.6. Coastal Zone Management Consistency Determination. Oregon Department of Land Conservation and Development (DLCD). The proposed project is not located within the coastal zone.

5. Alternatives. [33 CFR Part 320.4 (a)(2)(ii) and 40 CFR Part 230.10(a)] Section 404(b)(1) of the Clean Water Act prohibits the discharge of dredged or fill material into waters of the United States unless the proposed discharge is the least environmentally damaging practicable alternative capable of achieving the project purpose. Alternatives were evaluated pursuant to 40 CFR 230.10. The NEPA and implementing regulations at 40 CFR 1502.14 require that a range of reasonable alternatives including the no action alternative be evaluated. Under NEPA, the no action alternative and action alternatives that meet the project purpose and need of the preferred alternative are considered to be reasonable alternatives. These alternatives under NEPA do not need to be available to the applicant. Though we evaluate these alternatives, the alternatives selected should be available to the applicant at the time of our permit decision. Following is a detailed discussion of alternatives to the proposed project that meet the project purpose and need. Each alternative discussed addresses logistics, technology, cost and environmental consequences and is followed by a statement indicating whether or not we consider the alternative to be practicable. Alternatives to the proposed project are evaluated throughout this document unless they are considered not practicable, do not meet the project purpose, are not the least environmentally damaging or are not available.

5.1. No Action. The no action alternative would be not to conduct maintenance dredging. This would allow continued siltation of the existing facility and increase the potential for vessels to run aground. Therefore, this alternative does not meet the project purpose.

5.2. Other Project Designs.

5.2.1. Smaller Project Designs. A smaller dredge area would not allow the entire facility to be maintained to adequate depths to prevent vessel grounding. This alternative does not meet the project purpose.

5.2.2. Larger Project Designs. The applicant proposed the minimum dredge area necessary to maintain the existing facility to adequate depths. A larger project was not considered.

5.3. Other Sites Available to the Applicant. The proposed project is the maintenance dredging of an existing facility. Consideration of other sites does not meet the project purpose.

6. Environmental Impact Assessment. [33 CFR Part 320.3 and 320.4]. The following paragraphs describe the potential beneficial and detrimental direct impacts of the activity on various public interest factors considering the parameters that are necessary to ensure minimal adverse effects. Direct impacts are the potential short and long-term effects of discharges on the chemical, physical, and biological components of the aquatic environment. Direct impacts are caused by the action and occur at the same time and place. The extent to which each factor is discussed is based on the value of the resource, the controversy surrounding it, the level of concern expressed by the commenting public, and the potential impact to the factor. Indirect and cumulative impacts of the proposed work are discussed at the end of this section.

6.1. Substrate. No effect.

6.2. Currents, circulation or drainage patterns. No effect.

6.3. Suspended Particulates and Turbidity. Turbidity levels will increase during the dredging activity; these elevated levels will return to background levels following completion of the dredging.

6.4. Water Quality (temperature, salinity patterns). No effect.

6.5. Flood Control, Storm, Wave and Erosion Buffers. No effect.

6.6. Erosion and accretion patterns. No effect.

6.7. Aquifer recharge. No effect.

6.8. Baseflow. No effect.

6.9. Mixing Zone (for projects that involve the discharge of dredged material) (consider the depth of water at the disposal site, current velocity, direction and variability of the disposal site, degree of turbulence, water column stratification, discharge vessel speed and direction, rate of discharge, dredged material

characteristics, and number of discharges per unit of time). No effect.

6.10. Special Aquatic Sites. No special aquatic sites will be impacted by the proposed project.

6.11. Habitat for Fish and Other Aquatic Organisms. Dredging will be conducted during the preferred in-water work windows: July 1 through October 31 and December 1 through January 31. The project is located in deep water areas and is not expected to impact juvenile salmonid species. It is not expected that the applicant will need to conduct dredging annually based on past practices; therefore, long-term impacts to fish and other aquatic organisms are not anticipated.

6.12. Wildlife habitat. No effect.

6.13 Threatened and Endangered Species. See discussion in Section 4.3.

6.14. Biological availability of possible contaminants in dredged or fill material, considering hydrograpy in relation to known or anticipated sources of contaminants; results of previous testing of material from the vicinity of the project; known significant sources of persistent pesticides form land run-off or percolation; spill records for petroleum products or designated (Section 311 of the CWA) hazardous substances; other public records of significant introduction of contaminants from industries, municipalities or other sources. A sediment analysis plan (SAP) was prepared by the applicant in accordance with the *Dredged Material Evaluation Framework, Lower Columbia River Mangement Area*, November 1998. Testing included grain size, total volatile solids, and an analysis of chemicals of concern. Sediment test results indicated that none of the chemicals of concern exceeded DMEF screening levels; therefore, the sediments are suitable for unconfined inwater disposal. PCBs were detected at 130 ug/kg, which is the DMEF screening level (131 ug/kg would have triggered bioassay testing), and PAHs exceeding low values of the NOAA SQuiRT tables. Although these levels did not raise issues with the DMEF review process, NMFS did express concerns and requested additional testing post dredging of the area where the elevated sediment values were found. This testing will be done and the results provided to NMFS as part of the SLOPES programmatic biological opinion monitoring report. This additional testing will help assess any long-term dredging impacts on water quality, fish, and benthic organisms. Immediate impacts are not anticipated based on the results of the sediment testing and the fact that dredged sediments will be removed from the aquatic system and placed at an upland landfill disposal site and not at Ross Island as originally proposed.

6.15. Existing and Potential Water Supplies. No effect.

6.16. Recreational and Commercial Fisheries. No change to existing conditions anticipated.

6.17. Other Water Related Recreation. No effect.

6.18. Aesthetics of Aquatic Ecosystem. No effect.

6.19. Parks, National Seashores, Wild and Scenic Rivers, Wilderness Areas, Research Sites, etc. No effect.

6.20. Traffic/Transportation Patterns. No change over existing conditions. Dredging will ensure that vessels will not ground during low water levels normally experienced during the summer.

6.21. Energy Consumption or Generation. No effect.

6.22. Navigation. The area proposed to be dredged is outside of the main Willamette River navigation channels.

6.23. Safety. No effect.

6.24. Air Quality. No effect.

6.25. Noise. Project is located within the industrial area; noise levels are not expected to exceed those occurring on a daily basis.

6.26. Historic Properties (National Historic Preservation Act). The Portland District cultural resource coordinator commented that the project area has a long dredging history; no impacts to cultural resources are anticipated.

6.27. Land Use Classification. No effect.

6.28. Economics. No effect.

6.29. Prime and Unique Farmland (7 CFR Part 658). No effect.

6.30. Food and Fiber Production. No effect.

6.31. Mineral Needs. No effect.

6.32. Consideration of private property. No effect.

6.33. Other. None.

6.34. Secondary and Cumulative Impacts.

6.34.1. Secondary Impacts. Secondary impacts are the effects on an aquatic ecosystem that are associated with a discharge of dredged or fill material, but do not result from the actual placement of the dredged or fill material. Secondary effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.

The proposed project will not result in a discharge of dredged material and therefore, secondary impacts will not result from a

discharge.

6.34.2. Cumulative Impacts. Cumulative impacts are the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual discharges of dredged or fill material. Although the impact of a particular discharge may constitute a minor change by itself, the cumulative effect of numerous separate actions can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems. Cumulative effects attributable to the discharge of dredged or fill material in waters of the United States should be predicted to the extent reasonable and practicable.

The dredging activity may remove any aquatic organisms that have inhabited the site since the last dredging cycle; however, it is anticipated that dredging will not occur annually based on past practices. If this is the case, aquatic organisms will re-inhabit the site. The dredge area is located in deep waters and as a result is not expected to affect juvenile salmonids. Dredging will occur during inwater work periods when fish numbers present in the area are expected to be lowest.

7. Compliance with 404 (b)(1) Guidelines of the Clean Water Act [40 CFR 230.1]. The revised project does not involve a discharge of dredged or fill material into waters of the United States. The proposal to discharge within the Ross Island lagoon was dropped.

8. Mitigation. Mitigation is not required for this project.

9. Special Conditions. The following conditions would be made part of any permit issued for the proposed project. Each permit condition was reviewed for enforceability.

a. The following special condition is a part of all Department of the Army permits that provide authorization under Section 10 of the Rivers and Harbors Act, regardless whether the permit provides such authorization under Section 10 alone, or in combination with authorization under other laws:

- The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the U.S Army Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

b. This permit does not exclude the permittee from liability or any requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 as amended (42 U.S.C. 9601 et.

Seq.), the Resource Conservation and Recovery Act of 1978 as amended (42 U.S.C. 6901 et. Seq.), the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et. Seq. and any and all requirements of the State of Oregon under Revised Statutes or Administrative Rules. The permittee is advised that the work for which this permit is granted is located within the "area of interest" of the Environmental Protection Agency and the Oregon Department of Environmental Quality pursuant to a National Priorities Listing relative to the Willamette River. Granting of this permit by the Portland District, U.S. Army Corps of Engineers, should in no way be construed as approval of this project as being in compliance with the above cited authorities. Neither should the permittee consider this permit as absolving the permittee from any liability or damages from any party whomsoever.

c. To minimize the potential for impacts to species listed under the Endangered Species Act, the permittee shall comply with the applicable terms and conditions of the SLOPES programmatic biological opinion issued the National Marine Fisheries Service June 14, 2002, (Measures #1, #2, #11, and #13, attached). Monitoring reports, as required by this programmatic opinion, shall be submitted to the Corps of Engineers within 120 days of project completion.

d. Inwater work shall occur during the periods of July 1 through October 31 and December 1 through January 31.

e. Following the initial dredging cycle, the permittee shall sample the sediment at the location shown on Sheet 2. This sample shall be analyzed for PAHs and total PCBs according to the criteria of the *Dredged Material Evaluation Framework, Lower Columbia River Management Area, November 1998*. Results shall be provided as part of the monitoring reports required under Special Condition c.

f. The permittee shall notify the Corps of Engineers and the Environmental Protection Agency, Region 10 (Mr. John Malek, 1200 Sixth Avenue, ECO-083, Seattle, Washington 98101) of the landfill site chosen as the dredged material disposal site.

10. <u>Determinations.</u>

10.1. Finding of No Significant Impact (FONSI) (33 CFR Part 325). Having reviewed the information provided by the applicant, all interested parties and the assessment of environmental impacts contained in Section 6 of this document, I find that this permit action will not have a significant impact on the quality of the human environment. Therefore, an Environmental Impact Statement is not required.

10.2. 404(b)(1) Guidelines (40 CFR 230.12) Determination. The proposed project does not involve the discharge of dredged or fill material into waters of the United States.

10.3. Public Hearing Determination. No public hearing was requested or held for this project.

10.4. Clean Air Act Determination. The proposed project has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. I have determined that the activities proposed under this permit will not exceed de minimis levels of direct emissions of a criteria pollutant or its precursors and are exempt by 40 CFR Part 93.153. Any later indirect emissions are generally not within the Corps continuing program responsibility and generally cannot be practicably controlled by the Corps. For these reasons a conformity determination is not required for this project.

10.5. Public Interest Determination. I find that issuance of a Department of the Army permit (with special conditions), as prescribed by regulations published in 33 CFR Parts 320 to 330, and 40 CFR Part 230 is not contrary to the public interest.

PREPARED BY:

Judy L. Linton
Senior Project Manager 7/15/02

REVIEWED BY:

for 7/15/02
Lawrence C. Evans
Chief, Regulatory Branch

APPROVED BY:

for
Randall J. Butler
Colonel, Corps of Engineers
Commanding

JURISDICTIONAL DETERMINATION
U.S. Army Corps of Engineers, Portland District

APPLICANT: ~~Cargill, Inc.~~ CLD Pacific Grain

PROJECT LOCATION/WATERWAY: Willamette River mile 11.4, PORTLAND, MULTNOMAH CO, OR

FILE NUMBER: 200100031

PROJECT REVIEW COMPLETED: ■ Office ☐ Field

Jurisdictional Determination (JD):

■ Preliminary JD - Based on available information, *there appear to be* ■ or *there appear to be no* ☐ waters of the United States on the project site. A preliminary JD is not appealable.

☐ Approved JD - *There are* ☐ or *there are no* ☐ waters of the United States on the project site. An approved JD is an appealable action.

Basis of Jurisdictional Determination:

☐ There are no jurisdictional waters of the United States present on the project site.

■ The presence of waters which are currently used, or were used in the past, or may be susceptible for use to transport interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide (i.e., navigable waters of the U.S.).

☐ The presence of interstate waters (including interstate wetlands[1]).

☐ The presence of a tributary to an interstate waters or other water of the US.

☐ Impoundments of interstate or other waters of the US or their tributaries.

☐ The presence of territorial seas.

☐ The presence of wetlands adjacent[2] to interstate or other waters of the US, except for those wetlands adjacent to other wetlands.

☐ The presence of an isolated water (e.g., intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds).

- ☐ The site is used by interstate or foreign travelers for recreational purposes.
- ☐ The site has fish or shellfish that are taken and sold in interstate or foreign commerce.
- ☐ The site is used for industrial purposes by industries in interstate commerce.
- ☐ Other: _____

Rationale for Basis (applies to all boxes):

Lateral Extent of Jurisdiction (33 CFR 328 and 329):

■ Ordinary High Water Mark indicated by:
- ☐ clear, natural line impressed on the bank
- ☐ the presence of litter and debris
- ☐ changes in the character of soil
- ☐ destruction of terrestrial vegetation
- ☐ shelving
- ■ other: Elevation chart 14.8 CRD

☐ High Tide Line indicated by:
- ☐ oil or scum line along shore objects
- ☐ fine shell or debris deposits (foreshore)
- ☐ physical markings/characteristics
  - ☐ tidal gages
- ☐ other: _____

☐ Mean High Water Mark indicated by
☐ survey to available datum; ☐ physical markings; ☐ vegetation lines/changes in vegetative types

☐ In ocean or coastal area, site is in a zone three geographic (nautical) miles seaward of the baseline[3]

☐ Wetland, as shown on the attached wetland delineation map and/or in a jurisdictional report prepared by: _____.

☐ **Additional supporting information.** (attach when appropriate)

Preparer: Judy L. Linton **Date:** May 13, 2002

[1]Wetlands are identified and delineated using the methods and criteria established in the Corps Wetland Delineation Manual (87 Manual)(i.e., occurrence of hydrophytic vegetation, hydric soils and wetland hydrology). Processes for determining wetlands on agricultural lands may vary from methods described in the Corps Wetland Delineation Manual.

[2]The term "adjacent" means bordering, contiguous, or neighboring. Wetlands separated from other waters of the U.S. by man-made dikes or barriers, natural river berms, beach dunes, and the like are also adjacent.

[3]Baseline is the line on the shore reached by the ordinary low tides from which the distance of three miles is measured.

Details | Back | Habitat Data | County Lists

Record **1** of the **7** matches that your search found.

Print List | Home

Project LatLong 45:32:18 N 122:40:20 W 2001-00031

LatLong Range Searched 45:30:33...45:34:03 ; 122:37:50...122:42:50

Scientific Name	Common Name	Federal Status	State Status
Falco Peregrinus Anatum	American Peregrine Falcon	LE	LE
Aster Curtus	White-topped Aster	SOC	LT
Cimicifuga Elata	Tall Bugbane	SOC	C
Clemmys Marmorata Marmorata	Northwestern Pond Turtle	SOC	SC
Corynorhinus Townsendii Townsendii	Pacific Western Big-eared Bat	SOC	SC
Carex Comosa	Bristly Sedge		
Chrysemys Picta	Painted Turtle		SC

Peregrine falcon has been delisted

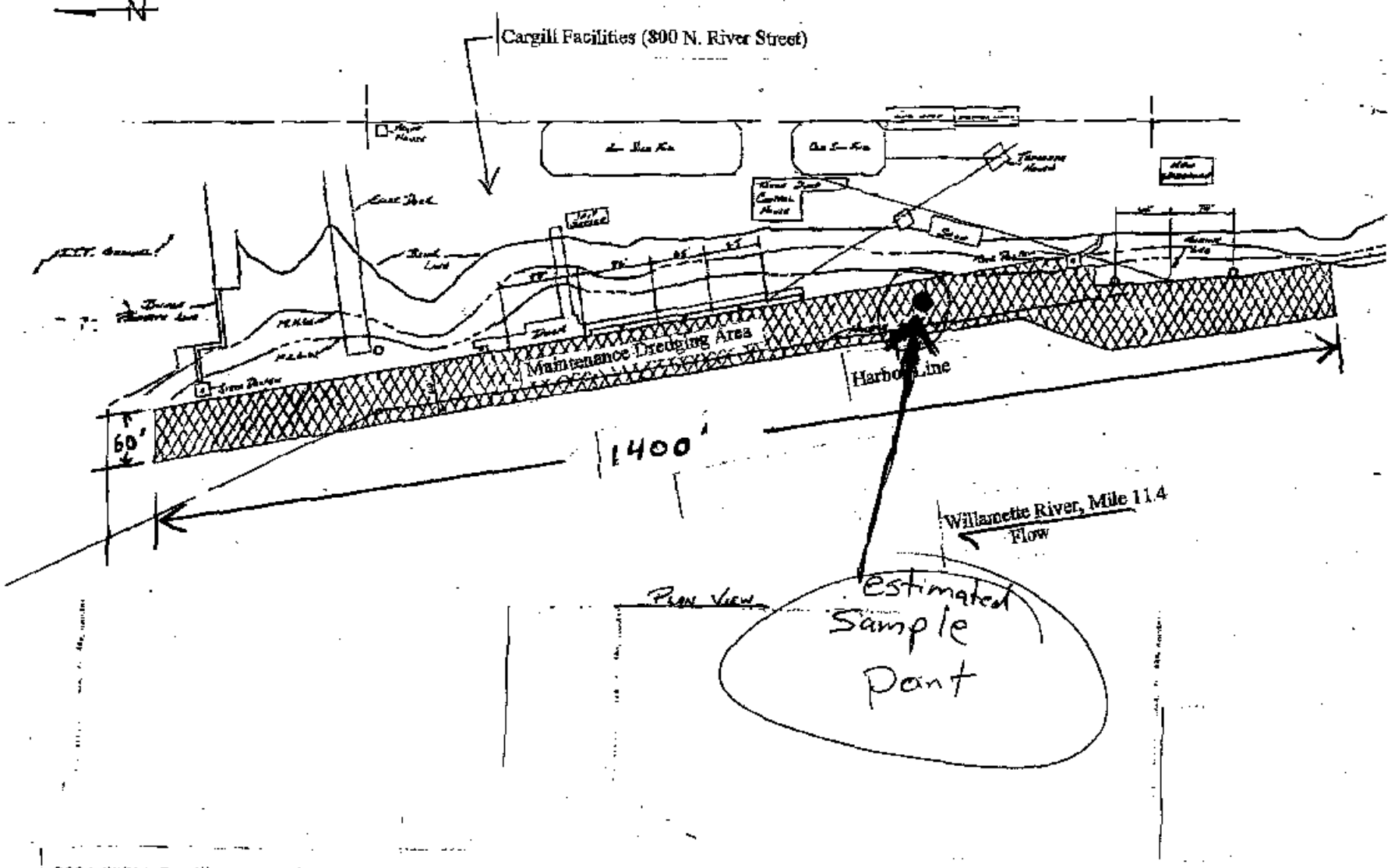
07/09/2002 13:29 415-884-3300 101
CENWP-OP-G

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 1

To Chris Kemp	From Judy Linton
Dept./Agency	Phone #
Fax # 415 884 3300	Fax #

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION



2001-00031 Cargill, Inc. – Maintenance Dredging

SHEET 2 OF 3

Linton, Judy L NWP

From: Malek.John@epamail.epa.gov
Sent: Wednesday, June 19, 2002 9:44 AM
To: Linton, Judy L NWP
Cc: Reid.Wallace@epamail.epa.gov; Humphrey.Chip@epamail.epa.gov
Subject: Re: EPA approval for 3 Willamette Projects

Judy: Here is the resend. Sorry that it didn't come through before. Am ccing Wally Reid and Chip Humphrey this time for FYI. I am attempting to pull together all the remaining backlog.

Judy Linton:

This reply provides EPA's approval/comments regarding three permit applications for activities located in EPA's area of interest between Willamette Falls and Rivermile 0.0 of the lower Willamette River, in Oregon. Between the Portland District Corps and Region 10 EPA, two separate issues were of concern: (1) whether EPA had reservations about allowing these regulatory actions to proceed through processing to a decision since they are located within the area of interest recently listed by EPA's Superfund program; and (2) whether the projects themselves had followed the assessment requirements and protocols of the multi-agency approved and implemented Dredged Material Evaluation Framework, Lower Columbia River Management Area (DMEF, 1998) in assessing sediment contamination or whether additional assessment was necessary.

Cargill Irving Elevator Terminal, PN 2001-00031. River Mile (RM) 11.8. Project purpose: Maintenance dredging (by clamshell) with material to be disposed upland of approximately 3,000 cubic yards (cy). DMEF testing completed, EPA concurs with Mark Siipola's assessment previously provided to Regulatory. Conditions: (1) Superfund Condition; (2) At this time the final respository or use of the dredged material is unknown. EPA requests that the Applicant be required to provide that information to the Corps and EPA when determined. [The information can be provided directly to John Malek, or through the Corps.]

Lakeside Industries, PN 2001-0085. RM 8.5. Project purpose: Recovery of spilled aggregate/maintenance. Approximately 1,500 cubic yards (cy) per year. Recovered aggregate is reprocessed. Complies with DMEF. Conditions: (1) Superfund Condition; (2) Applicant to leave at least one foot of aggregate as temporary "cap"; underlying sediments may not be disturbed.

Glacier Northwest, PN 2000-00708. RM 7.9. Project purpose: Same as Lakeside; volume slightly less (1,000 cy/year). Recovered aggregate is reprocessed. Complies with DMEF. Conditions: (1) Superfund Condition; (2) Applicant to leave at least one foot of aggregate as temporary "cap"; underlying sediments may not be disturbed.

John Malek, Team Leader
Sediment Management Program
EPA Region 10
1200 Sixth Ave, ECO-083
Seattle, Washington 98101
Email: malek.john@epa.gov
Voice: (206) 553-1286
Fax: (206) 553-1775

"Linton, Judy L NWP"
<Judy.L.Linton@nwp01.usace.army.mil>

To: John Malek/R10/USEPA/US@EPA

cc:

Subject: EPA approval for 3 Willamette Projects

05/03/2002 08:49 AM

John:

I would like to request EPA approval to proceed with permit issuance for three projects in the Willamette River: Cargill, Lakeside Industries, and Glacier Northwest.

As you may recall, Cargill involves removal of sediment from the existing dock facility by clamshell dredge. Material will be taken to a landfill for disposal (three sites proposed, specific site yet to be determined). We have coordinated with NMFS and they agree the project will fit under the programmatic consultation we completed with them for specific categories of activities (initial completed March 2001.....we are in the process of revising with expected signature by 9 May 02). NMFS has asked that we require Cargill to test following dredging at the location of the sample taken in 1998. Cargill is okay with this. Sediment to be analyzed for PAHs and total PCBs according to screening levels in DMEF. We also propose to add Superfund condition.

Lakeside and Glacier are removal of spilled aggregate to be reprocessed on site. We will require that one foot cover of aggregate be left as cap over natural sediments. Also propose to add Superfund condition.

An email response will suffice.

Thank you for your consideration to these projects. Judy

Linton, Judy L NWP

From: Linton, Judy L NWP
Sent: Friday, May 03, 2002 8:50 AM
To: 'John Malek'
Subject: EPA approval for 3 Willamette Projects

John:

I would like to request EPA approval to proceed with permit issuance for three projects in the Willamette River: Cargill, Lakeside Industries, and Glacier Northwest.

As you may recall, Cargill involves removal of sediment from the existing dock facility by clamshell dredge. Material will be taken to a landfill for disposal (three sites proposed, specific site yet to be determined). We have coordinated with NMFS and they agree the project will fit under the programmatic consultation we completed with them for specific categories of activities (initial completed March 2001.....we are in the process of revising with expected signature by 9 May 02). NMFS has asked that we require Cargill to test following dredging at the location of the sample taken in 1998. Cargill is okay with this. Sediment to be analyzed for PAHs and total PCBs according to screening levels in DMEF. We also propose to add Superfund condition.

Lakeside and Glacier are removal of spilled aggregate to be reprocessed on site. We will require that one foot cover of aggregate be left as cap over natural sediments. Also propose to add Superfund condition.

An email response will suffice.

Thank you for your consideration to these projects. Judy

Linton, Judy L NWP

From: nancy munn [nancy.munn@noaa.gov]
Sent: Wednesday, May 01, 2002 11:01 AM
To: Linton, Judy L
Cc: jjgravenmier@mactec.com; Ben Meyer
Subject: Cargill at Irving Elevator (Corps no. 2001-00031)

I have reviewed the file for the proposed action at the Cargill Irving elevator, as well as the stipulations of the 15 categories COE programmatic. Because Cargill proposes to use methods outlined in section 1.2.13 (Maintenance Dredging) of the Biological Opinion (Opinion) including upland disposal, NMFS agrees that this activity can be covered by the programmatic ESA consultation with one stipulation. NMFS has asked Cargill to sample, following dredging, the sediment at the location of the sample taken during the 1998 sampling survey. The sediment must be analyzed for PAHs that were in exceedance of the DMEF screening levels and total PCBs. The results of the sediment analysis must be sent to NMFS along with the monitoring requirements outlined in the Opinion under the terms and conditions (page 60 and 61, term and condition #13).

Please call me if you have any questions. I have talked to Josh Gravenmeir concerning this requested, and he has indicated that Cargill has agreed to sample the indicated location following their dredge activities this year.

Nancy Munn, Ph.D.
NMFS Oregon Habitat Branch
503/231-6269

Linton, Judy L NWP

From: Josh Gravenmier [JJGravenmier@mactec.com]

Sent: Monday, March 04, 2002 4:23 PM

To: Linton, Judy L

Cc: KESweetland.PEOPostOffice.MailHub#1@mactec.com

Subject: Cargill Irving Elevator Project

Judy~

In summary of our conversation today about the Cargill Irving Elevator dredge material permit completion process:

[1] You needed to know where the dredge material would be going so that NMFS could complete their consultation. I talked to Greg Speyer (Hickey Marine) and he indicated that it would go to one of three approved landfill sites (depending upon the timeline of dredging - both when and how long). These sites would be either Wasco County Landfill, Rebanco (Roosevelt, WA), or Hillsborogh Landfill (Portland).
[2] The USACE (Mark Siipola) has indicated that the testing done to date is sufficient to proceed with the upland disposal.
[3] You had not heard from DEQ (Tom Melville) as to the suitability of the material with the existing testing.
[3] The EPA (John Malek) was still in the process of evaluating the project. However, the EPA was reviewing the project in light of both a dredge material evaluation as well as in light of its proximity to the Portland Harbor Superfund site (even though it is not within the Superfund boundaries). You were going to write a letter to EPA asking for a status update of the evaluation process.

My concern about the EPA evaluation is two-fold. Cargill is in dire need of dredging once the fish window opens (July) so that a lengthy evaluation would be detrimental to this process (especially if the evaluation dictates that we would need to do any further testing, which would push the schedule back further). Secondly, the project site is not within the Portland Harbor Superfund footprint and as such should not be included in any Superfund evaluation.

Thank you for your help in expiditing the permit process. As you know, the need for dredging the Cargill Irving Elevator facility is highlighted by the grounding of a vessle last year and once the Williammete returns to more of a normal summer flow the facility will likely be impacted, so that dredging will need to commence as soon as the fish window opens.

Sincerely,

Josh Gravenmier
Project Environmental Scientist
Harding ESE, a MACTEC Company
90 Digital Drive
Novato, CA 94949
(415) 884-3160 (fax) 884-3300
jjgravenmier@mactec.com

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471

December 20, 2001

Mr. Josh Gravenmier, Project Environmental Scientist
Harding ESE, Inc.
90 Digital Drive
Novato, CA 94949

SUBJECT: Cargill – Bioaccumulation Testing

Dear Josh:

Based on discussions we've had with you recently regarding the evaluation of sediments planned to be dredged from the Cargill Irving Elevator Terminal located near River Mile 10 on the Willamette River in Portland, Oregon, we understand that Cargill wants to proceed with bioaccumulation testing to assess the potential risk posed by PCBs detected in previous sampling. This testing is being pursued to evaluate the placement of the dredged material in Ross Island Lagoon. Bioassay testing previously conducted has demonstrated that the sediments do not pose a threat due to aquatic toxicity.

The proposed bioaccumulation test method involves exposing *Lumbriculus* (worm) to the affected sediment and analyzing PCB concentrations in worm tissue after a 28-day exposure period. This test is described in the Corps' Dredged Material Evaluation Framework (DMEF) {note that DEQ is requiring only one of the two freshwater bioaccumulation tests required by the DMEF}. As Bruce Hope indicated in his discussions with you, DEQ's assessment of sediment for bioaccumulating contaminants is not based on the presence/absence of such contaminants in the tissues of the test species, but on whether tissue levels in the test species exceed acceptable risk-based concentrations when extrapolated to doses to selected receptors.

Prior to proceeding with testing, we recommend that tissue residue levels of concern be determined to ensure that laboratory detection limits will be sufficiently low to provide useful information. This will require back calculating a protective PCB concentration in worm tissue from a risk-based acceptable PCB dose for potential receptors at Ross Island, assuming the worms are a link (through fish) in the food chain(s) to these receptors. The reason for this is that DEQ questions whether worm tissue residues alone, without further consideration of bioaccumulation and biomagnification processes, are a protective indication of residues consumed by valued receptors. Addressing this concern may require using a food chain bioaccumulation / biomagnification model; DEQ is open to alternative approaches to addressing this concern. For Ross Island, the selected receptors are human recreational fishermen, bald eagle, great blue heron, mink, and river otter. At this

point in time we do not see value in conducting PCB congener analysis, but recommend that this evaluation be completed on an Aroclor basis.

If you have any questions, feel free to call me at (503) 229-6148. Technical questions on the bioaccumulation evaluation can be directed to Bruce Hope at (503) 229-6251.

Sincerely,

Jennifer Sutter, Project Manager
Site Response Section

Cc: Julie Wilson, Landau Inc.
Bruce Hope, XP/LQD/DEQ HQ
Jim Rue, Ross Island Sand and Gravel Co.
Judy Linton, USACE,
Gene Loffler, Cargill

CENPP-CO-GP *(1145b/Permit Files)* DATE: _____

MEMORANDUM FOR Regulatory Case File: _____

SUBJECT: _____

10/11/01 Copy of bioassay results sent to John Malek (EPA) + Tom Melville (DEQ)
- also provided copy to Mark Sipola

11/26/01 Nancy Munn @ NMFS (231-6269) has taken over ESA consultation for this project. She indicates that bioaccumulation test results will be necessary to complete consultation.

12/03/01 Call to Josh Gravenmier (415-884-3160) to see if Cargill going forward with bioaccumulation testing.

Josh indicated that bioaccumulation will be done but may be March 2002 before results ready.

12/18/01 Sent message to Mark Sipola, Tom Melville, John Malek asking if testing complete as far as DMEF review.
- Cargill is evaluating their options for disposal.

NPP Form 1145-2, Jul 96 Proponent Office: CENPP-CO-GP

Judy L. Linton
PROJECT MANAGER *(Signature)*

Oregon
John A. Kitzhaber, M.D., Governor

Department of Environmental Quality
Northwest Region
2020 SW Fourth Avenue
Suite 400
Portland, OR 97201-4987
(503) 229-5263 Voice
TTY (503) 229-5471

REC'D OCT 29 2001

October 24, 2001

Mr. Josh Gravenmier, Project Environmental Scientist
Harding ESE, Inc.
90 Digital Drive
Novato, CA 94949

SUBJECT: Cargill – Bioassay Analyses

Dear Josh:

Thank you for providing the results of bioassay testing conducted on sediment samples collected from the Cargill Irving Elevator Terminal located near River Mile 10 on the Willamette River in Portland, Oregon. We have reviewed these results and agree with your assessment that the sediment does not appear to pose an aquatic toxicity threat. As we discussed in our August 2001 meeting, the detection of PCBs requires evaluation of the threat posed via bioaccumulation before we can complete our assessment of the appropriateness of placing this material in Ross Island Lagoon. Please let us know how you plan to proceed. If Cargill plans to proceed with bioaccumulation testing, it would be worthwhile to submit a brief sampling plan describing the planned sample collection and analysis procedures to DEQ for review prior to sample collection.

If you have any questions, feel free to call me at (503) 229-6148.

Sincerely,

Jennifer Sutter, Project Manager
Site Response Section

Cc: Julie Wilson, Landau Inc.
Bruce Hope, LQD/DEQ HQ
Jim Rue, Ross Island Sand and Gravel Co.
Judy Linton, USACE,
Gene Loffler, Cargill

Harding ESE
A MACTEC COMPANY

Harding ESE, Inc.
90 Digital Drive
Novato, CA 94949

Telephone: 415/883-0112
Fax: 415/884-3300
Home Page: www.mactec.com

REC'D OCT 4 2001

October 1, 2001

52852.005

Ms. Jennifer Sutter
Oregon Department of Environmental Quality
Northwest Region Office
2020 SW 4th Avenue, 4th Floor
Portland, Oregon 97201-4953

SUBJECT: Results of Bioassay Analyses – Cargill Irving Elevator Terminal USACE Permit 95-1063 and DSL Permit RP 3158

Dear Ms. Sutter:

Enclosed are the bioassay results for the composite, T1, and T4 samples from the Cargill Irving Elevator Terminal (Cargill) Portland, Oregon facility, as requested by Oregon Department of Environmental Quality (DEQ). These analyses were performed in response to DEQ comment (August 23, 2001 meeting) to assess the potential aquatic toxicity of the sediments proposed for disposal at the Ross Island facility from Cargill. The chemical analysis results presented in the August 3, 2001 results report submitted to the Dredge Material Management Team (*Harding ESE, 2001*) indicate that none of the sample chemistry values were above the Dredge Material Evaluation Framework (DMEF) Screening Values or Bioaccumulation Triggers. However, some additional criteria used by DEQ (Consensus-based and NOAA SQuiRT values) indicate that PAHs and PCBs in the sediments may be at levels of potential environmental concern. As a result, DEQ requested that Cargill perform these bioassay analyses.

The three tested samples were retained from the initial sampling event (June 23, 2001) and continuously stored at 4 °C. On August 20, 2001 the samples (designated Composite, T1, and T4) were removed from cold storage, placed in a cooler, and shipped (on ice) under chain-of-custody to Pacific EcoRisk (PER) in Martinez, California for analysis. The bioassay results were generated following the testing approach outlined in the DMEF (*USACE, 1998*). The specific tests conducted were the solid phase amphipod (*Hyalella azteca*) survival test and the solid phase midge (*Chironomus tentans*) survival and growth test. The bioassay survival results are reported in percent and the growth results are reported in milligrams. At the request of the DEQ, a determination of the grain size of the Home Control sediment was also completed to assist in this evaluation as a comparison to the test samples. A sample of the Home Control was placed in a cooler and shipped (on ice) under chain-of-custody to Columbia Analytical Services (CAS) in Kelso, Washington for analysis. The grain size results were generated following ASTM Test Method D422 (with hydrometer) and are reported in percent, on a wet weight basis. Appropriate Quality Assurance/Quality Control (QA/QC) measures were followed to ensure the generation of accurate bioassay and grain size data.

Results

The bioassay and grain size results for each of the samples are presented in Table 1. The original laboratory reports for the testing are included in Appendix A.

- Grain Size: The grain size of the Home Control sediment was primarily sand (98.4 percent) and was elevated in sand content as compared to the Cargill sediments (58.2 to 86.9 percent).

- *Hyallela azteca* Survival Test: *Hyallela* survival was 97.5 (Home Control), 96.2 (Composite), 97.5 (T1), and 93.8 (T4) percent. None of the survival results were statistically reduced ($p < 0.05$) from the Home Control.

- *Chironomus tentans* Survival and Growth Test: *Chironomus* survival was 92.9 (Home Control), 76.2 (Composite), 70.0 (T1), and 96.2 (T4) percent. Both the composite and T1 sample had survival results that were statistically reduced ($p < 0.05$) from the Home Control. *Chironomus* growth was 0.41 (Home Control), 0.46 (Composite), 0.47 (T1), and 0.37 (T4) milligrams. None of the growth results that were statistically reduced ($p < 0.05$) from the Home Control.

It should be noted that the comparisons of the test sediments to the Home Control is a worst case scenario and have only been done due to a lack of an appropriate local reference sediment for the Ross Island area.

Results of QA/QC Review

An independent data review was performed on the sediment sample laboratory reports submitted by PER and CAS. The data was evaluated to determine that the tests met the required QA/QC criteria for each analysis. Any parameters that were determined to be outside of acceptance criteria were further evaluated to assess the impact, if any, to the data presented.

- Grain Size Analysis: All parameters were within acceptance limits.

- Bioassay Analysis: The concurrent ammonia reference toxicant tests indicate that the ammonia levels found in the test sediments were well below the threshold for detrimental effects to the test organisms. The concurrent positive reference toxicant tests were within the laboratory historical database, indicating that the organisms were responding to toxic stress in a typical fashion. The Home Control survival met the absolute mean mortality standards for both species. The growth performance did not achieve the 0.6 milligram minimum mean weight per organism in the Home Control (0.41 milligrams). Since the growth of the Home Control is similar to the growth of the test sediments, this is not considered significant.

The overall assessment indicates that the data presented meet the project requirements and are considered useable for the intended purpose.

Conclusions

The Bioassay Interpretive Criteria (Section 9.2.4 of the DMEF; *USACE, 1998*) indicate that there are two levels of response in interpreting the observed bioassay results. First, a one-hit failure would occur when one of the test sediment responses is statistically reduced from both the Home Control and reference sediment. Second, a two-hit failure would occur when any two tests are statistically reduced from the reference sediment. In addition, the term statistically reduced is defined as those test sediment responses that are both greater than 20 percent different from the Home Control response and statistically different from the reference sediment. Neither of these conditions can be adequately assessed due to the lack of an appropriate local reference sediment for the Ross Island area, but they can be used as a basis to establish relative environmental concern.

Only the T4 *Chironomus* survival test results had a 20 percent or more reduction (22.9 percent) in response as compared to the Home Control. This test response was also statistically different from the Home Control. However, since the response in a reference sediment is likely to be lower (conservative assessment) than that of the Home control and the reduction was just above 20 percent level, the T4 *Chironomus* survival test result is unlikely to be statistically reduced as defined by the DMEF.

In addition, based on the strong survival for the *Hyalella* tests and the relatively high *Chironomus* growth values in the Cargill samples, the sediments from the Cargill facility appear to be suitable for disposal as the Ross Island disposal site, contingent upon the favorable results from a subsequent bioaccumulation test of a composite sample to be taken from the area, if deemed necessary.

We appreciate your expedience in reviewing these results. Please call either Josh (415-884-3160) or Bridgette (415-884-3130) if you have any questions or comments. Thank you for your assistance.

Very Truly Yours,

HARDING ESE

Josh Gravenmier
Project Environmental Scientist

Bridgette DeShields
Associate Environmental Scientist

JG/ra/Cargill/Bioassay Results

Enclosure

cc: Judy Linton, USACE – Portland District
Gene Loffler, Cargill Irving Elevator Terminal
Dennis Klein, Cargill Corporate
Chris Putnam, Cargill Corporate
Kirk Sweetland, Harding ESE

REFERENCES

Harding ESE, 2001. *Results of Sediment Sampling and Analysis, Cargill Irving Elevator Terminal, Portland, Oregon*. August 3, 2001.

U.S. Army Corps of Engineers (USACE), 1998. *Dredged Material Evaluation Framework: Lower Columbia River Management Area*. November.

Table 1. Summary of Bioassay Testing Results
Sediment Investigation
Cargill Irving Elevator Terminal
Portland, Oregon

Analyte	Sample Location			
	Home Control	Composite	T1	T4
Grain Size (%) [a]				
Gravel	0.0	2.8	0.4	18.0
Sand	98 4	75.5	86.9	58.2
Silt	0.2	21.7	12.7	22.8
Clay	0.2	0.0	0.0	1.0
Solid Phase Bioassays				
Ampelisca -				
Survival (%)	97.5	96.2	97.5	93.8
Chironomus -				
Survival (%)	92.9	76.2	**70.0**	96.2
Growth (mg)	0.41	0.46	0.47	0.37

% Percent.
mg Milligram.
[ ] Significantly less than the Home Control (at $p < 0.05$) and greater than 20% different from the Home Control response.

[a] The Composite, T1, and T4 grain size results are from the original dataset.

A Dredge Materials Toxicity Evaluation of Sediment Cores Collected from Cargill Irving Elevator Terminal (Samples June 29, 2001)

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APPENDIX A Chain of Custody Record

APPENDIX B Test Data Sheets and Summary of Statistics for the Toxicity Evaluation of Cargil Sediments with the Amphipod, *Hyalella azteca*.

APPENDIX C Test Data Sheets and Summary of Statistics for the Ammonia Toxicity Evaluation of the Amphipod, *Hyalella azteca*.

APPENDIX D Test Data Sheets and Summary of Statistics for the Reference Toxicant Evaluation with the Amphipod, *Hyalella azteca*.

A Dredge Materials Toxicity Evaluation of Sediment Cores Collected from Cargill Irving Elevator Terminal

(Samples June 29, 2001)

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APPENDIX E	Test Data Sheets and Summary of Statistics for the Toxicity Evaluation of Cargill Sediments with the Midge, *Chironomus tentans.*
APPENDIX F	Test Data Sheets and Summary of Statistics for the Ammonia Toxicity Evaluation of the Midge, *Chironomus tentans..*
APPENDIX G	Test Data Sheets and Summary of Statistics for the Reference Toxicant Evaluation with the Midge, *Chironomus tentans.*

A Dredge Materials Toxicity Evaluation of Sediment Cores Collected from Cargill Irving Elevator Terminal

(Samples June 29, 2001)

1.0 INTRODUCTION

Under contract to Harding ESE (HESE), Pacific EcoRisk (PER) performed whole sediment toxicity testing for sediment samples collected from the Cargill Irving Terminal area. These sediment toxicity evaluations consisted of performing whole sediment 10-day freshwater amphipod survival tests with *Hyalella azteca*, and whole sediment 10-day estuarine midge survival and growth tests with *Chironomus tentans*. In order to assess the potential role of sediment porewater ammonia in any observed mortalities, an ammonia toxicity test was performed for each of these test species. Finally, to document that the test organisms used in these evaluations were responding to toxicant stress in a typical fashion, concurrent reference toxicant tests were performed. This report describes the performance and results of each of these toxicity tests.

2.0 TEST PROCEDURES

The methods used in conducting these tests followed the guidelines established by the U.S. EPA: The amphipod survival test with *Hyalella azteca* and the *Chironomus tentans* survival and growth test were performed following the guidelines established in the EPA manual "Methods for Measuring the Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates" (EPA/600/R-99/064).

2.1 RECEIPT AND HANDLING OF THE SEDIMENT SAMPLES

On June 29, 2001, HESE staff collected sediment samples from sampling stations within the Cargill Irving Elevator Terminal, which were designated site I.Ds. "T1", "T4" and "Composite". These sediment samples were delivered, under chain of custody, to the PER testing lab on August 20, 2001. Upon receipt, each sample was inspected and logged in, and then placed in a sample refrigerator at 4°C. Copies of the chain of custody records are attached as Appendix A.

On August 21, 2001, each sediment was homogenized and aliquot of each was centrifuged at 2500 g for 15 minutes for collection of sediment porewater and determination of the initial porewater chemistries (Table 1).

Table 1. Sediment porewater initial water quality characteristics.

Sample ID	pH	Total Ammonia (mg/L N)	Total Sulfide (mg/L)
T-1	6.23	9.44	0.13
T-4	6.54	4.24	0.07
Composite	6.53	4.64	0.12

2.2 TEST ORGANISMS

The *Hyalella azteca* used in these tests were obtained from a commercial supplier (Aquatic Biosystems, Ft. Collins, CO). The *Chironomus tentans* used in these tests were also obtained from a commercial supplier (Enviromental Consulting and Testing Superior, WI).

2.3 SEDIMENT TOXICITY TESTING PROCEDURES

2.3.1 Hyalella azteca Whole Sediment Toxicity Testing Procedures

The EPA freshwater sediment test is a 10-day solid-phase exposure with % survival of the *Hyalella* as the endpoint. Immediately prior to the set-up of the 10-day solid phase sediment tests with *Hyalella* the sediment samples for each site were removed from the sample refrigerator, allowed to come to room temperature, and were then homogenized. Large debris (root, twigs, etc.) were removed from each sample at this time. The test replicate containers consisted of 275 mL polycarbonate jars, 6.3 cm i.d. x 10.3 cm deep, with a 3 cm ribbon of 220 um mesh NITEX attached to the top of the jars with silicone sealant. There were eight replicate containers for each site. Each of the sediment samples was re-homogenized immediately prior to introduction of the sediments into the test replicates. Approximately 100 mL of sediment was loaded into each of the test replicate containers. The Control treatment sediment consisted of the same reference soil which is used as the routine control sediment by the National Biological Survey (Columbia, MO) in their freshwater sediment toxicity tests. Each of the test replicates was then carefully filled with clean overlying water (synthetic Moderately Hard water, modified for use with *Hyalella* as per the EPA test guidelines). The replicates with sediments and clean overlying water were established 24 hrs prior to the introduction of the amphipods.

After this initial 24 hrs period, a small aliquot of the overlying water in each of the eight treatment replicates was collected and composited for measurement of "pre-test" water quality

characteristics. The overlying water in each replicate was then flushed with one volume of fresh control water (approximately 150 mL) using a modified Zumwalt delivery system (Zumwalt et al. 1994). A small aliquot of the renewed overlying water in each of the eight replicates per treatment was then collected and composited for measurement of "initial" water quality characteristics. Then 10 organisms were randomly allocated into each replicate, followed by the addition of 1.5 mL of YCT food. The test replicates were then returned to the water baths. Each day, for the following nine days, the test replicates were pulled from the water bath, and each replicate was examined for the presence of any dead amphipods. A small aliquot of the overlying water in each of the eight replicates was then collected and composited as before for measurement of D.O., after which each replicate was flushed with one volume of fresh water and the animals fed 1.5 mL of YCT.

On Day 10, the replicate containers were pulled from the water bath, and an aliquot of overlying water was collected from each replicate and composited for analysis of the "final" water quality characteristics. The sediments in each replicate container were then carefully washed out and sieved using a #40 (425 um mesh) stainless steel sieve, and the number of surviving amphipods determined. All statistical analyses were made using the ToxCalc® statistical package (Version 5, TidePool Scientific, McKinleyville, CA).

2.3.1.1 Ammonia Toxicity Testing with *Hyalella azteca* - In order to assess the potential effects of elevated ammonia on *Hyalella* used in these tests, an ammonia toxicity evaluation was performed. This consisted of an acute 96 hour static toxicity test with ammonia (as NH_4Cl), at nominal concentrations of 5, 10, 20, 40, 80, and 160 mg/L (statistical analysis were performed on the measured ammonia concentrations (5.21, 9.01, 19.7, 38.2, 80.4 and 152 mg/L)).

There were 10 replicates at each treatment level, each replicate consisting of 15 mL of test media in a 30 mL HDPE cup and a small 4 cm x4 cm piece of nitex screen (used as a substrate for amphipods to attach to). The test was initiated by randomly allocating one amphipod into each of the replicate cups. The cups were placed in a temperature-controlled water bath at 23°C under under cool-white fluorescent lighting on a 16L:8D photoperiod. Each replicate cup was examined daily, and the number of live amphipods in each was recorded at this time. Routine water quality characteristics (D.O., pH and temperature) of the treatment waters were measured and recorded for one randomly selected replicate per treatment at test initiation and test termination. After 96 hrs, the number of live amphipods in each replicate cup was determined. The data for each test treatment were analyzed and compared to the Control treatment to determine whether or not any statistically significant differences were observed (statistical analyses were performed using the ToxCalc statistical package).

2.3.1.2 Reference Toxicant Test Procedures with *Hyalella azteca* - In order to validate that the *Hyalella* used in these tests were responding in a typical fashion to chemical stress, a reference toxicant test was run. The reference toxicant test consists of an acute 96 hour survival static toxicity test with potassium chloride(KCl), at concentrations of 0.1, 0.2, 0.3, 0.4, and 0.5 mg/L. The test response data were then compared to the ongoing database of response data from previous reference toxicant tests performed in this lab.

There were 10 replicates at each treatment level, each replicate consisting of 15 mL of test media in a 30 mL HDPE cup and a small 4cmx4cm piece of nitex screen (used as a substrate for amphipods to attach to). The test was initiated by randomly allocating one amphipod into each of the replicate cups. The cups were placed in a temperature-controlled water bath at 23°C under under cool-white fluorescent lighting on a 16L:8D photoperiod. Each replicate cup was examined daily, and the number of live amphipods in each was recorded at this time. Routine water quality characteristics (D.O., pH and temperature) of the treatment waters were measured and recorded for one randomly selected replicate per treatment at test initiaitin and test termination. After 96 hrs, the number of live amphipods in each replicate cup was determined.

2.3.2 *Chironomus tentans* Whole Sediment Toxicity Testing Procedures

Immediately prior to the set-up of the 10-day solid phase sediment tests with *Chironomus*, the sediment samples for each site were removed from the sample refrigerator, allowed to come to room temperature, and were then homogenized. Large debris (root, twigs, etc) were removed from each sample at this time. The Control treatment sediment consisted of the same control sediment as was used in the *Hyalella* test. Approximately 100 mL of the homogenized sediment from each site were randomly allocated into each of eight labeled replicate containers, each consisting of a 275 mL polycarbonate jar, 6.3 cm i.d. x 10.3 cm deep, with a 3 cm ribbon of 500 µm mesh NITEX attached to the top of the jar with silicone sealant. Each replicate container was carefully filled with clean overlying water (synthetic US EPA Moderately Hard water). The replicates with sediments and clean overlying water were then placed into a temperature-controlled water bath at 23°C under cool-white fluorescent lighting on a 16L:8D photoperiod.

Approximately 24 hrs later, a small aliquot of the overlying water in each of the eight treatment replicates was collected and composited for measurement of "pre-test" water quality characteristics. The overlying water in each replicate was then flushed with four volumes of fresh control water using a modified Zumwalt delivery system , as described in the test guidelines. A small aliquot of the renewed overlying water in each of the eight replicates per treatment was then collected and composited for measurement of "initial" water quality characteristics. Then 10 third instar *Chironomus* larvae were randomly allocated into each replicate. The test replicates were then returned to the water baths. Each day, for the following

nine days, the test replicates were pulled from the water bath, and each replicate was examined for the presence of any dead larvae. A small aliquot of the overlying water in each of the eight replicates was then collected and composited as before for measurement of D.O., after which each replicate was flushed with four volumes of fresh water and the animals fed 1.5 mL of a fish flake food slurry (prepared with TetraMin® fish flake food, as per test guidelines).

On Day 10, the replicate containers were pulled from the water bath, and an aliquot of overlying water was collected from each replicate and composited for analysis of the "final" water quality characteristics. The sediments in each replicate container were then carefully washed out and examined; the surviving larval *Chironomus* from each replicate were collected via pipette and transferred to a small plastic weigh-boat containing 25-40 mL of clean water. After the contents of each replicate was carefully examined, the number of surviving chironomids was recorded, and the larvae were quickly rinsed in de-ionized water and transferred to pre-dried and pre-weighed aluminum drying pans. These pans were placed into a drying oven at 100°C for 24 hrs. After drying, the pans were transferred into desiccators to cool off, after which each pan was re-weighed to the nearest 0.1 mg; the resulting weight of dried larvae in each pan was then divided by the number of organisms in order to determine the mean dry weight per organism. Following determination of mean dry weight, ash free dry weight (AFDW) was then determined by placing the dried larvae into a muffle furnace at 550°C for 2 hours. After drying, the pans were transferred into desiccators to cool off, after which each pan was re-weighed to the nearest 0.1 mg; the resulting weight of the additionally dried larvae in each pan was subtracted from mean dry weight the then divided by the number of organisms in order to determine the mean AFDW per organism.

The resulting survival and weight data for each of the site sediment treatments were analyzed and compared to the Control treatment to determine whether or not any statistically significant reductions were observed. All statistical analyses were made using the ToxCalc® statistical package.

2.3.2.1 Ammonia Toxicity Testing with *Chironomus tentans* - In order to assess the potential effects of elevated ammonia on chironomids used in these tests, an ammonia toxicity evaluation was performed. This consisted of an acute 96 hour static toxicity test with ammonia (as NH_4Cl), at nominal concentrations of 5, 10, 20, 40, 80, and 160 mg/L (statistical analysis were performed on the measured ammonia concentrations (6.05,12.4, 20.9, 42.3, 80.0 and 154 mg/L)).

There were two replicates at each treatment level, each replicate consisting of 400 mL of test media in a 600 mL glass beaker. The test was initiated by randomly allocating ten chironomids into each of the replicate beakers. The beakers were placed in a temperature-controlled water

bath at 23°C under continual darkness. Each replicate container was examined daily, and the number of live chironomids in each was recorded at this time. Routine water quality characteristics (D.O., pH and temperature) of the treatment waters were measured and recorded for one randomly selected replicate per treatment each day. After 96 hrs, the number of live chironomids in each replicate beaker was determined.

2.3.2.2 Reference Toxicant Test Procedures with *Chironomus tentans*- In order to validate that the *Chironomus* used in these tests were responding in a typical fashion to chemical stress, a reference toxicant test was run. The reference toxicant test consists of an acute 96 hour survival static toxicity test with copper (as $CuSO_4$), at concentrations of 0.1, 0.2, 0.4, 0.8, 1.6, and 3.2 mg/L. The test response data were then compared to the ongoing database of response data from previous reference toxicant tests performed in this lab.

There were two replicates at each treatment level, each replicate consisting of 400 mL of test media in a 600 mL glass beaker. The test was initiated by randomly allocating ten chironomids into each of the replicate beakers. The beakers were placed in a temperature-controlled water bath at 23°C under continual darkness. Each replicate container was examined daily, and the number of live chironomids in each was recorded at this time. Routine water quality characteristics (D.O., pH and temperature) of the treatment waters were measured and recorded for one randomly selected replicate per treatment each day. After 96 hrs, the number of live organisms in each replicate beaker was determined.

3.0 RESULTS

3.1 SEDIMENT TOXICITY TO THE AMPHIPOD *HYALELLA AZTECA*.

The survival results of this test are summarized below in Table 2. Briefly, there was 97.5% survival of the amphipods at the Control treatment. There was not less than 93.8% survival of the *Hyalella* in any of the site sediments, none of which were significantly less than the Control.

The test data sheets and summary of statistical analyses for this test are presented in Appendix B.

Table 2. Toxicity of Cargill Sediments to *Hyalella azteca* survival and growth.

	Rep A	Rep B	Rep C	Rep D	Rep E	Rep F	Rep G	Rep H	Mean
Control	100	90	100	90	100	100	100	100	97.5
T1	90	100	100	100	100	100	90	100	97.5
T4	100	100	90	100	90	90	90	90	93.8
Composite	100	100	90	100	100	90	90	100	96.2

3.1.1 Acute Toxicity of Ammonia to *Hyalella azteca*

The results of the ammonia toxicity evaluation are presented in Table 3. There was a mean amphipod survival of 100% at the Control treatment, and 100% survival up through the 38.2 mg/L treatment. Amphipod survival was reduced to 50% at the 80.4 mg/L treatment which was significantly less than the Control. Statistical analysis of the survival data indicated that NOEC was 38.2 mg/L and the LOEC was 80.4 mg/L. The EC50 was 91.9 mg/L.

The test data sheets and the summary of statistical analyses for this test are presented in Appendix C.

3.1.2 Results of the Reference Toxicant Evaluation of *Hyalella*

The results of the Ref Tox evaluation of the *Hyalella azteca* used in these tests are presented in Table 4. There was a mean amphipod survival of 100% at the Control treatment and 100% survival up through the 0.3 mg/L treatment. Survival was reduced to 40% at the 0.4 mg/L test treatment, which was significantly less than the Control. There was complete mortality at the remaining test treatment. Statistical analysis of the survival data indicated that NOEC was 0.3 mg/L KCl and the LOEC was 0.4 mg/L KCl. The EC50 was 0.38 mg/L KCl.

This EC50 value is consistent with previous performance of this test in our laboratory, indicating that these test organisms were responding to toxic stress in a typical fashion.

The test data sheet and the summary of statistical analysis for this test are presented in Appendix D

Table 3. Effects of ammonia on survival of *Hyalella azteca*		
Total NH_3 (mg/L-N)		Overall Mean % Survival
Nominal NH_3	Measured NH_3	
Control	Control	100
5.0	5.21	100
10.0	9.01	100
20.0	19.7	100
40.0	38.2	100
80.0	**80.4**	**50***
160	**152**	**20 ***
NOEC =		38.2 mg/L
LOEC =		80.4 mg/L
EC50 =		91.9 mg/L

* Amphipod survival at this treatment level was significantly less than the Control at $p < 0.05$.

Table 4. Reference toxicant testing: Effects of KCl on survival of *Hyalella azteca*	
KCl Treatment (mg/L)	Overall Mean % Survival
Control	100
0.1	100
0.2	100
0.3	100
0.4*	**40 ***
0.5*	**0 ***
NOEC =	0.3 mg/L
LOEC =	0.4 mg/L
EC50 =	0.38 mg/L

* - Amphipod survival at this treatment level was significantly less than the Control at $p < 0.05$.

3.2 SEDIMENT TOXICITY TO *Chironomus tentans*

The survival results of these tests are summarized in Table 5. Briefly, there was a mean of 92.9% survival at the Control treatment, which is within the test acceptability criterion of ≥70% survival. *Chironomus* survival was reduced to 70% in the T1 site sediment, and 76.2%in the

composite site sediment, both of which were significantly less than the Control sediment. There were no significant reduction in *Chironomus* survival associated with the site T4 sediment.

The growth results of these tests are summarized in Table 6. Briefly, there was a mean dry weight of 0.41 mg per organism at the Control treatment. Statistical analysis of the test data indicated that there were no significant reductions in *Chironomus* weight associated with any of the site sediment.

The test data sheets and the summary of statistical analyses for these tests are presented in Appendix E.

Table 5. Toxicity of Site Sediments to *Chironomus tentans* survival (% Survival)

Site	Rep A	Rep B	Rep C	Rep D	Rep E	Rep F	Rep G	Rep H	Mean
Control	90	100	80	-[A]	100	100	100	80	92.9
T1	70	80	60	90	50	90	100	20	70.0*
T4	100	100	100	80	100	100	100	90	96.2
Composite	60	90	70	70	80	90	80	70	76.2*

* Significantly less than the Control at $p < 0.05$.

[A] Replicate spilled – no data was obtained

Table 6. Toxicity of Site Sediments to *Chironomus tentans* growth (mg)

Site	Rep A	Rep B	Rep C	Rep D	Rep E	Rep F	Rep G	Rep H	Mean Weight
Control	0.53	0.47	0.42	-[A]	0.32	0.38	0.33	0.43	0.41
T1	0.49	0.34	0.60	0.32	0.53	0.40	0.35	0.71	0.47
T4	0.32	0.38	0.37	0.42	0.34	0.38	0.35	0.41	0.37
Composite	0.56	0.39	0.57	0.40	0.45	0.41	0.37	0.51	0.46

[A] Replicate spilled – no data was obtained

3.2.1 Acute Toxicity of Ammonia to *Chironomus tentans*

The results of the ammonia toxicity evaluation are presented in Table 7. There was a mean chironomid survival of 85% at the Control treatment and not less than 65% up through the 42.3 mg/L treatment. Chironomid survival was reduced to 55% and 10% at the 80 and 154 mg/L treatments, respectively, which were significantly less than the Control. Statistical analysis of the survival data indicated that NOEC was 42.3 mg/L and the LOEC was 80 mg/L. The EC50 was 85.3 mg/L. The test data sheets and the summary of statistical analyses for this test are presented in Appendix F.

Table 7. Effects of ammonia on survival of *Chironomus tentans*				
Total NH_3 (mg/L-N)		% Survival in Test Replicates		Overall Mean
Nominal NH_3	Measured NH_3	Rep A	Rep B	% Survival
Control	Control	70	100	85
5.0	6.05	90	90	90
10.0	12.4	80	100	90
20.0	20.9	100	80	90
40.0	42.3	70	60	65
80.0	**80**	**60**	**50**	**55 ***
160	**154**	**0**	**20**	**10***
NOEC =		42.3 mg/L		
LOEC =		80 mg/L		
EC50 =		85.3 mg/L		

* Midge survival at this treatment level was significantly less than the Control at $p < 0.05$.

3.2.2 Results of the Reference Toxicant Evaluation of *Chironomus tentans*

The results of the Ref Tox evaluation of the *Chironomus* used in these tests are presented in Table 8. There was a mean chironomid survival of 95% at the Control treatment and 90% at the 0.1 mg/L Cu treatment. At the 0.2 mg/L Cu treatment, survival decreased to 50% which was significantly less than the Control. Statistical analysis of the survival data indicated that NOEC was 0.1 mg/L Cu and the LOEC was 0.2 mg/L Cu. The EC50 was 0.29 mg/L Cu.

This EC50 value is consistent with previous performance of this test in our laboratory, indicating that these test organisms were responding to toxic stress in a typical fashion. The test data sheets and the summary of statistical analyses for this test are presented in Appendix G.

Table 8. Reference toxicant testing: Effects of cadmium on survival of *Chironomus tentans*			
Copper Treatment (mg/L)	% Survival in Test Replicates		**Overall Mean**
	Rep A	Rep B	**% Survival**
Control	90	100	95
0.1	90	90	90
0.2*	**80**	**20**	**50***
0.4*	**50**	**30**	**40***
0.8*	**20**	**0**	**10***
1.6*	**0**	**20**	**10***
3.2*	**0**	**0**	**0 ***
NOEC =	0.1 mg/L Cu		
LOEC =	0.2 mg/L Cu		
EC50 =	0.29 mg/L Cu		

* Midge survival at this treatment level was significantly less than the Control at $p < 0.05$.

4.0 SUMMARY AND CONCLUSIONS

Results for the whole sediment toxicity evaluations of the Cargill sediment cores indicated that there was no statistically significant toxicity to *Hyalella azteca* survival for all of the sites tested. However, for the midge sediment tests, both sites T1 and Composite were significantly less than the Control with respect to survival, indicating that these sediment samples are considered slightly toxic to *Chironomus*.

4.1 QA/QC SUMMARY

Test Conditions - Test conditions (pH, D.O., temperature, etc.) were within acceptable limits for these test organisms. All such analyses were performed according the laboratory Standard Operating Procedures.

Negative Control - The biological responses for each of the various test organisms at the Control treatment were within acceptable limits.

Positive Control - The results for the concurrent reference toxicant tests were consistent with the reference toxicant test databases, indicating that these test organisms were responding to toxic stress in a typical fashion. A summary of key reference toxicant database values are presented in Tables 9 and 10 for *Hyalella azteca*, and *Chironomus tentans*, respectively.

Table 9. Summary of Reference Toxicant Database for *Hyalella azteca*

Mean	Standard Deviation	Upper Limit (+2SD)	Lower Limit (-2SD)	Current Result
0.38 mg/L	0.05 mg/L	0.42 mg/L	0.22	0.38 mg/L

Table 10. Summary of Reference Toxicant Database for *Chironomus tentans*

Mean	Standard Deviation	Upper Limit (+2SD)	Lower Limit (-2SD)	Current Result
0.72 mg/L	0.36 mg/L	1.44 mg/L	0	0.29 mg/L

Harding Lawson Associates
90 Digital Drive
Novato, CA 94949
(415) 883-0112

CHAIN OF CUSTODY FORM

Seq. No.: № 1067 Collection Corc# 1080

Lab: PERL

Samplers: Josh Gravenmier

Job Number: 52852.004

Name/Location: Cargill Irving Elevator Terminal

Project Manager: Josh Gravenmier

Recorder: (signature Required)

MATRIX			#CONTAINERS & PRESERV.					SAMPLE NUMBER		DATE				STATION DESCRIPTION	
Water	Soil	Air	Unpres	H_2SO_4	HNO_3	HCL		YR	SEQ	YR	MO	DAY	TIME		DEPTH
	X		X					0	1 COMPOSITE	0	1	06	29 1430		
	X		X					0	1 T1	0	1	06	29 0900		
	X		X					0	1 T2	0	1	06	29 1020		
	X		X					0	1 T3	0	1	06	29 1100		
	X		X					0	1 T4	0	1	06	29 1140		

ANALYSIS REQUESTED

Gasoline Range Organics 8015B	Diesel Range Organics 8015B	BTEX plus MTBE	CCR Title 22 Metals (17)	EPA 8021B	EPA 8260B	EPA 8270C	Hyallela survival		Chironomus survival and growth						
							X		X						
							X		X						
							X		X						
							X		X						
							X		X						

ADDITIONAL INFORMATION

SAMPLE NUMBER YR	SEQ	TURNAROUND TIME/REMARKS
		Have sediment needs grain size analysis

CHAIN OF CUSTODY RECORD

Relinquished By: (signature)	Josh Gravenmier (Print Name)	Harding ESE (Company)	Date/Time 3/20/01 1630
Received By: (signature)	JOSH BRADLEY (Print Name)	PER (Company)	Date/Time 8/20/01 1605
Relinquished By: (signature)	(Print Name)	(Company)	Date/Time
Received By: (signature)	(Print Name)	(Company)	Date/Time
Relinquished By: (signature)	(Print Name)	(Company)	Date/Time
Received By: (signature)	(Print Name)	(Company)	Date/Time
Received By: (signature)	(Print Name)	(Company)	Date/Time

Method of Shipment:

Laboratory Copy *White* Project Office Copy *Yellow* Field or Office Copy *Pink*

0029F1

[illegible]ay Freshwater Sediment Test-Proportion [illegible]vived

Start Date:	24 Aug-01 00:00	Test ID:	6132	Sample ID:	T1
End Date:	03 Sep-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	FS-Freshwater Sediment
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	HA-Hyalella azteca
Comments:					

Conc-%	1	2	3	4	5	6	7	8
Control	1.0000	0.9000	1.0000	0.9000	1.0000	1.0000	1.0000	1.0000
T1	0.9000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9000	1.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9750	1.0000	1.3713	1.2490	1.4120	5.501	8		
T1	0.9750	1.0000	1.3713	1.2490	1.4120	5.501	8	68.00	51.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.5466	0.844	-1.2778	-0.4396
F-Test indicates equal variances (p = 1.00)	1	8.8853		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

ToxCalc v5.0

Reviewed by:

10 Day Freshwater Sediment Toxicity Test Data

Client: HESE Test ID#: 6132 Date (day 0): 8-24-01

Species: *Hyalella azteca* Organism Log#: 1049 Organism Age/Size: 11-13 days

DAY	DATE	TEMP	CONTROL D.O. (OLD)	CONTROL D.O. (NEW)	T1 D.O. (OLD)	T1 D.O. (NEW)	SIGN-OFF
1	8-25-01	23.1	6.2	7.2	6.1	7.2	KL
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
2	8-26-01	82 am 24.9	6.8	7.8	5.4	7.1	CEL MM
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
3	8-27-01	23.0	7.0	7.6	6.1	~~7.1~~ 6.8	AL
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
4	8-28-01	23.0	6.6	7.4	6.3	7.0	AL MM
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
5	8-29-01	23.1	7.0	7.5	4.6	6.2	KL
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
6	8-30-01	23.2	5.7	7.0	4.9	6.4	MC KL
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
7	8-31-01	23.1	6.1	7.4	4.9	6.5	KL MC
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
8	9-1-01	23.0	5.6	6.8	4.2	6.5	AL
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
9	9-2-01	23.1	5.6	7.3	4.5	6.8	FH MM
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
10	9-3-01	23.0	# Alive Organisms/replicate		# Alive Organisms/replicate		JD
			A 10 B 9 C 10 D 9		A 9 B 10 C ~~9~~ 10 D 10		
			E 10 F 10 G 10 H 10		E 10 F 10 G 9 H 10		

10-Day Freshwater Sediment Test-Proportion Survived

Start Date:	24 Aug-01 00:00	Test ID:	6134	Sample ID:	T4
End Date:	03 Sep-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	FS-Freshwater Sediment
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	HA-Hyalella azteca
Comments:					

Conc-%	1	2	3	4	5	6	7	8
Control	1.0000	0.9000	1.0000	0.9000	1.0000	1.0000	1.0000	1.0000
T4	1.0000	1.0000	0.9000	1.0000	0.9000	0.9000	0.9000	0.9000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.9750	1.0000	1.3713	1.2490	1.4120	5.501	8			
T4	0.9375	0.9615	1.3102	1.2490	1.4120	6.438	8	1.528	1.761	0.0028

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.8676	0.844	-0.2008	-1.3217
F-Test indicates equal variances (p = 0.78)	1.25	8.8853		

Hypothesis Test (1-tail, 0.05)

Homoscedastic t Test indicates no significant differences

ToxCalc v5.0

Reviewed by:

10 Day Freshwater Sediment Toxicity Test Data

Client: HESE Test ID#: 6134 Date (day 0): 8-24-01

Species: *Hyalella azteca* Organism Log#: 1049 Organism Age/Size: 11-13 days

DAY	DATE	TEMP	CONTROL D.O. (OLD)	CONTROL D.O. (NEW)	T4 D.O. (OLD)	T4 D.O. (NEW)	SIGN-OFF
1	8-25-01	23.1	6.2	7.2	6.1	7.3	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		tc
2	8 26.01	22 ac 24.9	6.8	7.8	5.8	7.3	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
3	8.27.01	23.0	7.0	7.6	6.7	7.5	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
4	8.28.01	23.0	6.6	7.4	7.3	6.0	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
5	8-29-01	23.1	7.0	7.5	5.2	6.0	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		tc
6	8-30-01	23.2	5.7	7.0	5.3	6.4	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		tc mc
7	8-31-01	23.1	6.1	7.4	5.3	6.8	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		tc mc
8	9-1-01	23.0	5.6	6.8	4.5	6.4	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		GA
9	9-2-01	23.1	~~5.6~~	~~6.5~~ 7.3	~~4~~ 5.5	7.0	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		GA MM
10	9-3-01	23.0	# Alive Organisms/replicate		# Alive Organisms/replicate		
			A 10 B 9 C 10 D 9		A 10 B 10 C 9 D 10		
			E 10 F 10 G 10 H 10		E 9 F 9 G 9 H 9		

10-Day Freshwater Sediment Test-Proportion Survived

Start Date:	24 Aug-01 00:00	Test ID:	6130	Sample ID:	Composite
End Date:	03 Sep-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	FS-Freshwater Sediment
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	HA-Hyalella azteca
Comments:					

Conc-%	1	2	3	4	5	6	7	8
Control	1.0000	0.9000	1.0000	0.9000	1.0000	1.0000	1.0000	1.0000
Composite	1.0000	1.0000	0.9000	1.0000	1.0000	0.9000	0.9000	1.0000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9750	1.0000	1.3713	1.2490	1.4120	5.501	8		
Composite	0.9625	0.9872	1.3509	1.2490	1.4120	6.244	8	64.00	51.00

Auxillary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.6933	0.844	-0.87	-1.3217
F-Test indicates equal variances (p = 0.78)	1.25	8.8853		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

ToxCalc v5.0

Reviewed by:

10 Day Freshwater Sediment Toxicity Test Data

Client: HESE Test ID#: 6130 Date (day 0): 8-24-01

Species: *Hyalella azteca* Organism Log#: 1049 Organism Age/Size: 11-13 days old

DAY	DATE	TEMP	CONTROL D.O. (OLD)	CONTROL D.O. (NEW)	Composite D.O. (OLD)	Composite D.O. (NEW)	SIGN-OFF
1	8-25-01	23.1	6.2	7.2	5.8	7.3	KC
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
2	8.26.01	22 am 24.9	6.8	7.8	6.7	7.5	CL
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
3	8.27.01	23.0	7.0	7.6	6.4	7.0	CL BD
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
4	8.28.01	23.0	6.6	7.4	6.1	7.1	CL
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
5	8-29-01	23.1	7.0	7.5	5.1	6.2	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		KC MC
6	8-30-01	23.2	5.7	7.0	5.4	6.5	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MC KC
7	8-31-01	23.1	6.1	7.4	5.5	6.4	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		KC MC
8	9.1.01	23.0	5.6	6.8	4.8	6.6	EA
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
9	9.2.01	23.1	5.6	7.3	5.0	7.5	BD
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
10	9-3-01	23.0	# Alive Organisms/replicate		# Alive Organisms/replicate		BD
			A 10 B 9 C 10 D 9		A 10 B 10 C 9 D 10		
			E 10 F 10 G 10 H 10		E 10 F 9 G 9 H 10		

Freshwater Sediment Test Water Quality Characteristics

Client: **HESE** Test ID: 6130, 6132, 6134 Date (day 0): 8-24-01

Species: *Hyalella azteca* Sample ID: Comp., T1, T4 Organism Age/Size: 11-13 days old

Initial Water Quality Characteristics for Overlying Water

Temperature (°C) 23.0 Initials: MC

Site	pH	D.O. (mg/L)	Conductivity (µs/cm)	Alkalinity	Hardness	Ammonia
Control	7.36	7.7	371	80	94	1.24
T1	7.32	7.4	325	39	90	2.09
T4	7.32	7.4	296	42	86	1.14
composite	7.31	7.4	307	74	87	1.69

Final Water Quality Characteristics for Overlying Water

Temperature (°C) 23.0 Initials: JB

Site	pH	D.O. (mg/L)	Conductivity (µs/cm)	Alkalinity	Hardness	Ammonia
Control	7.08	4.9	366	65	110	0.297
T1	7.02	4.2	326	42	92	0.446
T4	7.02	4.6	324	48	90	0.755
COMPOSITE	7.03	4.7	324	47	92	0.751

Acute Test-96 Hr Survival

Start Date:	24 Aug-01 00:00	Test ID:	6137	Sample ID:	REF-Ref Toxicant
End Date:	28 Aug-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	TNH3-Ammonia-total
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	HA-Hyalella azteca
Comments:					

Conc-mg/L	1	2	3	4	5	6	7	8	9	10
Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
5.21	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
9.01	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
19.7	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
38.2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
80.4	0.0000	0.0000	1.0000	1.0000	0.0000	1.0000	0.0000	0.0000	1.0000	1.0000
152	1.0000	0.0000	0.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	0.0000

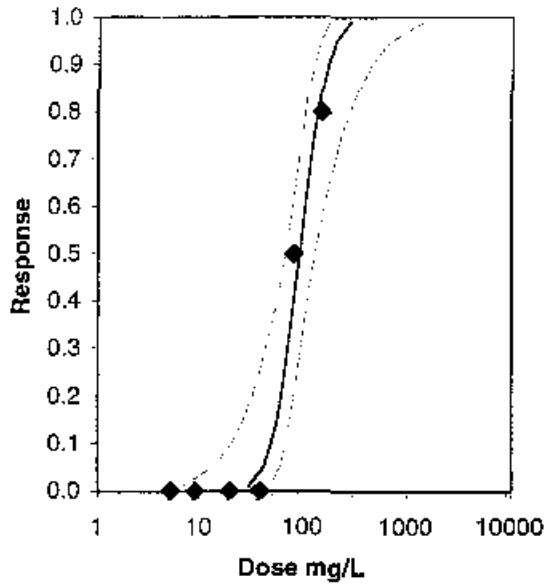
Conc-mg/L	Mean	N-Mean	Affected	Not Affected	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
Control	1.0000	1.0000	0	10	10	10			0	10
5.21	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
9.01	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
19.7	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
38.2	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
*80.4	0.5000	0.5000	5	5	10	10	0.0163	0.0500	5	10
*152	0.2000	0.2000	8	2	10	10	0.0004	0.0500	8	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	38.2	80.4	55.419	

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	4.7909	1.4013	2.0443	7.5375	0	1.08	13.277	0.9	1.9633	0.2087	6
Intercept	-4.4058	2.749	-9.7938	0.9822							
TSCR											

Point	Probits	mg/L	95% Fiducial Limits	
EC01	2.674	30.039	6.5651	47.277
EC05	3.355	41.681	13.838	59.51
EC10	3.718	49.633	20.427	67.824
EC15	3.964	55.838	26.405	74.528
EC20	4.158	61.319	32.204	80.769
EC25	4.326	66.448	37.969	87.025
EC40	4.747	81.355	55.404	109
EC50	5.000	91.889	67.003	129.54
EC60	5.253	103.79	78.487	158.95
EC75	5.674	127.07	96.698	235.79
EC80	5.842	137.7	103.79	279.08
EC85	6.036	151.22	112.12	341.46
EC90	6.282	170.12	122.86	442.6
EC95	6.645	202.58	139.68	654.95
EC99	7.326	281.09	175.43	1383.6



ToxCalc v5.0

Reviewed by:

96 hour *Hyalella azteca* Reference Toxicant Test Data

Date: 8-24-01 Client: HESE Test ID#: 6137

NH_3 Treatment	Date	Day	Temp (°C)	Survival A	B	C	D	E	F	G	H	I	J	Time Initials
	8-24-01	Time 0	23.0	1	1	1	1	1	1	1	1	1	1	
Control	8-25-01	24 hrs	23.1	1	1	1	1	1	1	1	1	1	1	1200 KEG
	8-26-01	48 hrs	23.9	1	1	1	1	1	1	1	1	1	1	1130 DB
	8-27-01	72 hrs	23.0	1	1	1	1	1	1	1	1	1	1	1345 DB
	8-28-01	96 hrs	23.1	1	1	1	1	1	1	1	1	1	1	1420 DB
5 mg/L		24 hrs		1	1	1	1	1	1	1	1	1	1	
		48 hrs		1	1	1	1	1	1	1	1	1	1	
		72 hrs		1	1	1	1	1	1	1	1	1	1	
		96 hrs		1	1	1	1	1	1	1	1	1	1	
10 mg/L		24 hrs		1	1	1	1	1	1	1	1	1	1	
		48 hrs		1	1	1	1	1	1	1	1	1	1	
		72 hrs		1	1	1	1	1	1	1	1	1	1	
		96 hrs		1	1	1	1	1	1	1	1	1	1	
20 mg/L		24 hrs		1	1	1	1	1	1	1	1	1	1	
		48 hrs		1	1	1	1	1	1	1	1	1	1	
		72 hrs		1	1	1	1	1	1	1	1	1	1	
		96 hrs		1	1	1	1	1	1	1	1	1	1	
40 mg/L		24 hrs		1	1	1	1	1	1	1	1	1	1	
		48 hrs		1	1	1	1	1	1	1	1	1	1	
		72 hrs		1	1	1	1	1	1	1	1	1	1	
		96 hrs		1	1	1	1	1	1	1	1	1	1	
80 mg/L		24 hrs		1	1	1	1	1	1	1	1	1	1	
		48 hrs		1	1	1	1	1	1	1	0	1	1	
		72 hrs		0	0	1	1	1	1	1	—	1	1	
		96 hrs		—	—	1	1	0	1	0	—	1	1	
160 mg/L		24 hrs		1	0	0	0	0	1	0	0	0	0	
		48 hrs		1	—	—	—	—	1	—	—	—	—	
		72 hrs		1	—	—	—	—		—	—	—	—	
		96 hrs		1	—	—	—	—	1	—	—	—	—	

NH_3 Treatment	Initial Water Chemistires pH	DO	Cond.	Final Water Chemistries pH	DO	Cond.
Control	8.10	8.0	~~311~~	7.98	7.9	537
5 mg/L	7.90	8.0	355	7.47	7.5	378
10 mg/L	7.88	8.0	392	7.67	7.7	393
20 mg/L	7.78	8.0	491	7.79	8.0	466
40 mg/L	7.64	8.0	674	7.66	7.9	632
80 mg/L	7.48	8.0	1052	7.45	8.0	945
160 mg/L	7.32	8.1	1760	6.13	7.7	1839

Acute Test-96 Hr Survival

Start Date:	24 Aug-01 00:00	Test ID:	6136	Sample ID:	REF-Ref Toxicant
End Date:	28 Aug-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	KCL-Potassium chloride
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	HA-Hyalella azteca
Comments:					

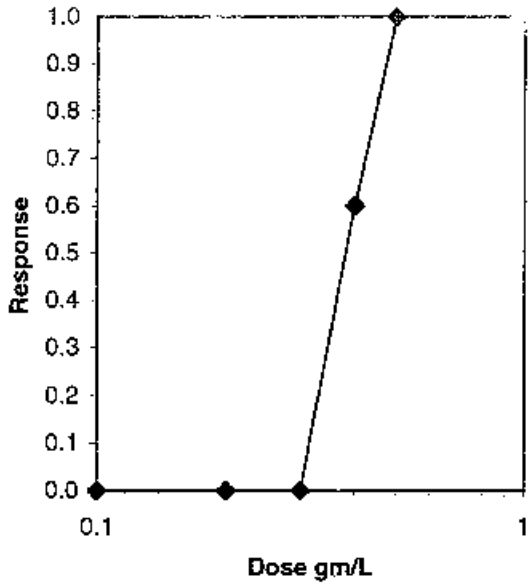
Conc-gm/L	1	2	3	4	5	6	7	8	9	10
Control	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.2	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.3	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.4	1.0000	0.0000	1.0000	0.0000	0.0000	1.0000	0.0000	0.0000	0.0000	1.0000
0.5	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Conc-gm/L	Mean	N-Mean	Affected	Not Affected	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
Control	1.0000	1.0000	0	10	10	10			0	10
0.1	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
0.2	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
0.3	1.0000	1.0000	0	10	10	10	1.0000	0.0500	0	10
*0.4	0.4000	0.4000	6	4	10	10	0.0054	0.0500	6	10
0.5	0.0000	0.0000	10	0	10	10			10	10

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	0.3	0.4	0.3464	

Trimmed Spearman-Karber

Trim Level	EC50	95% CL	
0.0%	0.3837	0.3545	0.4153
5.0%	0.3833	0.3511	0.4184
10.0%	0.3830	0.3473	0.4223
20.0%	0.3823	0.3371	0.4335
Auto-0.0%	0.3837	0.3545	0.4153



ToxCalc v5.0

Reviewed by:

96 hour *Hyalella azteca* Reference Toxicant Test Data

Date 8-24-01 Client HESE Project HESE/SEO/052401 Test ID#: 6136

KCl Treatment	Date	Day	Temp (°C)	Survival A	B	C	D	E	F	G	H	I	J	Sign-Off Time	Initials
	8-24-01	Time 0	23°	1	1	1	1	1	1	1	1	1	1	1500	CL
Control	8-25-01	24 hrs	23.1	1	1	1	1	1	1	1	1	1	1	0920	[illegible]
	8-26-01	48 hrs	22.9	1	1	1	1	1	1	1	1	1	1	1100	DB
	8-27-01	72 hrs	23.0	1	1	1	1	1	1	1	1	1	1	1600	DB
	8-28-01	96 hrs	23.1	1	1	1	1	1	1	1	1	1	1	1445	DB
0.10 g/L		24 hrs		1	1	1	1	1	1	1	1	1	1		
		48 hrs		1	1	1	1	1	1	1	1	1	1		
		72 hrs		1	1	1	1	1	1	1	1	1	1		
		96 hrs		1	1	1	1	1	1	1	1	1	1		
0.20 g/L		24 hrs		1	1	1	1	1	1	1	1	1	1		
		48 hrs		1	1	1	1	1	1	1	1	1	1		
		72 hrs		1	1	1	1	1	1	1	1	1	1		
		96 hrs		1	1	1	1	1	1	1	1	1	1		
0.30 g/L		24 hrs		1	1	1	1	1	1	1	1	1	1		
		48 hrs		1	1	1	1	1	1	1	1	1	1		
		72 hrs		1	1	1	1	1	1	1	1	1	1		
		96 hrs		1	1	1	1	1	1	1	1	1	1		
0.40 g/L		24 hrs		1	1	1	1	1	1	1	1	1	1		
		48 hrs		1	1	1	1	1	0	1	1	1	0		
		72 hrs		1	1	1	1	0	1	0	0	1	1		
		96 hrs		1	0	1	0	–	1	–	–	0	1		
0.50 g/L		24 hrs		1	0	1	0	1	1	1	1	0	0		
		48 hrs		0	–	1	–	0	1	0	0	–	–		
		72 hrs		–	–	0	–	–	0	–	–	–	–		
		96 hrs		–	–	–	–	–	–	–	–	–	–		

KCl Treatment	Initial Water Chemistries pH	DO	Salinity	Conduct.	Final Water Chemistries pH	DO	Salinity	Conduct.
Control	8.10	8.0	0	311	7.98	7.9	0.0	537
0.10 g/L	8.13	8.0	0	499	7.97	8.0	0.0	486
0.20 g/L	8.14	7.9	0.1	689	7.94	8.1	0.1	677
0.30 g/L	8.15	8.0	0.2	861	7.95	8.2	0.3	856
0.40 g/L	8.15	8.0	0.3	1046	7.92	8.3	0.3	1036
0.50 g/L	8.16	8.0	0.5	1235	7.63	8.2	0.5	1223

1[illegible]ay Freshwater Sediment Test-Proportion [illegible]vived

Start Date:	24 Aug-01 00:00	Test ID:	6133	Sample ID:	T1
End Date:	03 Sep-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	FS-Freshwater Sediment
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	CT-Chironomus tentans
Comments:					

Conc-%	1	2	3	4	5	6	7	8
Control	0.9000	1.0000	0.8000	1.0000	1.0000	1.0000	0.8000	
T1	0.7000	0.8000	0.6000	0.9000	0.5000	0.9000	1.0000	0.2000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.9286	1.0000	1.3016	1.1071	1.4120	11.184	7			
*T1	0.7000	0.7538	1.0179	0.4636	1.4120	29.924	8	2.243	1.771	0.0283

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9483	0.835	-0.6817	0.9076
F-Test indicates equal variances (p = 0.09)	4.3783	10.786		

Hypothesis Test (1-tail, 0.05)

Homoscedastic t Test indicates significant differences

ToxCalc v5.0

Reviewed by: [illegible]

10 Day Freshwater Sediment Test-Growth(wt)

Start Date:	24 Aug-01 00:00	Test ID:	6133	Sample ID:	T1
End Date:	03 Sep-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	FS-Freshwater Sediment
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	CT-Chironomus tentans
Comments:					

Conc-%	1	2	3	4	5	6	7	8
Control	0.5322	0.4710	0.4188	0.3200	0.3750	0.3270	0.4325	
T1	0.4914	0.3450	0.5967	0.3222	0.5340	0.4011	0.3530	0.7100

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.4109	1.0000	0.4109	0.3200	0.5322	18.706	7			
T1	0.4692	1.1418	0.4692	0.3222	0.7100	29.499	8	-0.986	1.771	0.0062

Auxillary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.95	0.835	0.6167	-0.0956
F-Test indicates equal variances (p = 0.17)	3.2422	10.786		

Hypothesis Test (1-tail, 0.05)

Homoscedastic t Test indicates no significant differences

ToxCalc v5.0

Reviewed by:

10 Day Freshwater Sediment Toxicity Test Data

Client: **HESE** Test ID#: 6133 Date (day 0): 8-24-01

Species: *Chironomus tentans* Organism Log#: 1051 Organism Age/Size: 3rd instar

DAY	DATE	TEMP	CONTROL D.O. (OLD)	CONTROL D.O. (NEW)	T1 D.O. (OLD)	T1 D.O. (NEW)	SIGN-OFF
1	8-25-01	23.1	6.5	7.8	5.5	7.0	KE
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
2	8-26-01	22.9	6.0	7.5	5.3	7.0	ok
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
3	8-27-01	23.0	6.5 ~~7.80~~	7.3	5.7	6.4	ok
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
4	8-28-01	23.0	5.9	7.1	5.6	6.9	ok
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
5	8-29-01	23.1	5.4	6.7	5.0	6.3	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		KE MC
6	8-30-01	23.2	6.4	6.9	5.3	6.3	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		KE MC
7	8-31-01	23.1	5.9	7.3	4.5	6.9	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		KE MC
8	9-1-01	23.0	5.9	7.1	4.2	6.3	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
9	9-2-01	23.1	6.1	7.6	4.7	6.8	MM
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
10	9-3-01	23.0	# Alive Organisms/replicate		# Alive Organisms/replicate		
			A 9 B 10 C 8 D —		A 7 B 8 C 6 D 9		
			E 10 F 10 G 10 H 8		E 5 F 9 G 10 H 2		

Chironomus Weight Data Sheets

Client: **Harding ESE** Species: *Chironomus tentans* Test Date: 8-24-01

Sample ID: T1 Investigator: EA Test ID: 6133

Dry Weight Calculations

Pan	Concentration Replicate		Initial Weight (mg)	Final Weight (mg)	# organisms	Ave Dry Weight (mg)
1	Control	A	32.50	39.83	9	0.814
2		B	31.46	38.19	10	0.673
3		C	34.92	38.78	8	0.545
4		D	33.23	–	–	–
5		E	31.34	36.63	10	0.479
6		F	29.36	34.62	10	0.526
7		G	34.55	38.80	10	0.425
8		H	28.91	33.72	8	0.601
17	T1	A	32.71	45.35	7	0.948
18		B	31.61	36.90	8	0.661
19		C	34.82	40.81	6	1.131
20		D	31.74	37.20	9	0.606
21		E	31.18	36.56	5	1.076
22		F	34.16	41.37	9	0.801
23		G	29.89	36.83	10	0.694
24		H	32.52	35.57	2	1.525
QA 1			33.39	–	–	–
QA 23			32.94	–	–	–

Ash Free Dry Weight Calculations

Pan	Concentration Replicate		Dry Weight (mg)	Ash Free Dry Weight (mg)	# organisms	Ave. Ash Free Dry Weight (mg)
1	Control	A	39.83	35.04	9	0.532
2		B	38.19	33.48	10	0.471
3		C	38.78	35.43	8	0.419
4		D	–	–	–	–
5		E	36.63	33.43	10	0.320
6		F	34.62	30.87	10	0.375
7		G	38.80	35.53	10	0.327
8		H	33.72	30.26	8	0.433
17	T1	A	45.35	41.91	7	0.491
18		B	36.90	34.14	8	0.345
19		C	40.81	37.23	6	0.597
20		D	37.20	34.30	9	0.322
21		E	36.56	33.99	5	0.534
22		F	41.37	37.76	9	0.401
23		G	36.83	33.30	10	0.353
24		H	35.57	34.15	2	0.710
QA 1			33.42	–	–	–
QA 3			72.95	–	–	–

10 Day Freshwater Sediment Test-Growth

Start Date:	24 Aug-01 00:00	Test ID:	6135	Sample ID:	T4
End Date:	03 Sep-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	FS-Freshwater Sediment
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	CT-Chironomus tentans
Comments:					

Conc-%	1	2	3	4	5	6	7	8
Control	0.5311	0.4710	0.4188	0.3200	0.3750	0.3270	0.4325	
T4	0.3220	0.3820	0.3650	0.4238	0.3440	0.3770	0.3510	0.4144

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.4108	1.0000	0.4108	0.3200	0.5311	18.642	7			
T4	0.3724	0.9066	0.3724	0.3220	0.4238	9.290	8	1.281	1.771	0.0016

Auxillary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.979	0.835	0.3042	0.3093
F-Test indicates equal variances (p = 0.06)	4.8996	9.1554		

Hypothesis Test (1-tail, 0.05)

Homoscedastic t Test indicates no significant differences

ToxCalc v5.0

Reviewed by

10-Day Freshwater Sediment Test-Proportion Survived

Start Date:	24 Aug-01 00:00	Test ID:	6135	Sample ID:	T4
End Date:	03 Sep-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	FS-Freshwater Sediment
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	CT-Chironomus tentans
Comments:					

Conc-%	1	2	3	4	5	6	7	8
Control	0.9000	1.0000	0.8000	1.0000	1.0000	1.0000	0.8000	
T4	1.0000	1.0000	1.0000	0.8000	1.0000	1.0000	1.0000	0.9000

			Transform: Arcsin Square Root					Rank	1-Tailed
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	Sum	Critical
Control	0.9286	1.0000	1.3016	1.1071	1.4120	11.184	7		
T4	0.9625	1.0365	1.3535	1.1071	1.4120	8.476	8	69.50	49.00

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates non-normal distribution (p <= 0.01)	0.789	0.835	-1.0247	-0.483
F-Test indicates equal variances (p = 0.55)	1.6099	9.1554		

Hypothesis Test (1-tail, 0.05)

Wilcoxon Two-Sample Test indicates no significant differences

ToxCalc v5.0

Reviewed by

10 Day Freshwater Sediment Toxicity Test Data

Client: HESE Test ID#: 0135 Date (day 0): 8-24-01

Species: *Chironomus tentans* Organism Log#: 1051 Organism Age/Size: 3rd instar

DAY	DATE	TEMP	CONTROL D.O. (OLD)	CONTROL D.O. (NEW)	T4 D.O. (OLD)	T4 D.O. (NEW)	SIGN-OFF
1	8-25-01	23.1	6.5	7.8	5.4	7.0	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		KE
2	8-26-01	22.9 ~~24.~~	6.0	7.5	5.8	7.4	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
3	8-27-01	23.0	6.5	7.3	6.4	7.0	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
4	8-28-01	23.0	5.9	7.1	5.2	6.7	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
5	8-29-01	23.1	5.4	6.7	4.9	6.4	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		KE MC
6	8-30-01	23.2	6.4	6.4	5.3	6.6	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		KE MC
7	8-31-01	23.1	5.9	7.3	4.9	6.8	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		KE MC
8	9-1-01	23.0	5.9	7.1	4.1	6.2	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		EA
9	9-2-01	23.1	6.1	7.6	4.7	6.5	
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
10	9-3-01	23.0	# Alive Organisms/replicate		# Alive Organisms/replicate		
			A 9 B 10 C 8 D —		A 10 B 10 C 10 D 8		
			E 10 F 10 G 10 H 8		E 10 F 10 G 10 H 9		JC

Chironomus Weight Data Sheets

Client: HESE Species: *Chironomus tentans* Test Date: 8-24-01

Sample ID: T4 Investigator: EA Test ID: 6135

Dry Weight Calculations

Pan	Concentration	Replicate	Initial Weight (mg)	Final Weight (mg)	# organisms	Ave Dry Weight (mg)
1	Control	A	32.50	39.83	9	0.814
2		B	31.46	38.19	10	0.673
3		C	34.72	38.78	8	0.545
4		D	33.23	–	–	–
5		E	31.84	36.63	10	0.479
6		F	29.36	34.62	10	0.526
7		G	34.55	38.80	10	0.425
8		H	28.91	33.72	8	0.601
25	T4	A	33.44	40.33	10	0.689
26		B	30.50	38.64	10	0.814
27		C	31.61	38.61	10	0.7
28		D	32.37	40.38	8	0.876
29		E	32.66	39.38	10	0.672
30		F	32.72	39.23	10	0.651
31		G	31.17	38.62	10	0.745
32		H	32.85	40.24	9	0.821
QA 1			33.39			
QA 4			~~32.50~~ 32.40			

Ash Free Dry Weight Calculations

Pan	Concentration	Replicate	Dry Weight (mg)	Ash Free Dry Weight (mg)	# organisms	Ave. Ash Free Dry Weight (mg)
1	Control	A	39.83	35.05	9	0.531
2		B	38.19	33.48	10	0.471
3		C	38.78	35.43	8	0.418
4		D	–	–	–	–
5		E	36.63	33.43	10	0.32
6		F	34.62	30.37	10	0.375
7		G	38.80	35.53	~~8~~ 10	0.327
8		H	33.72	30.26	8	0.432
25	T4	A	40.33	37.11	10	0.322
26		B	38.64	34.32	10	0.382
27		C	38.61	34.96	10	0.365
28		D	40.38	36.99	8	0.423
29		E	39.38	35.94	10	0.344
30		F	39.23	35.46	10	0.377
31		G	38.62	35.11	10	0.351
32		H	40.24	36.57	9	0.414
QA 1			33.38			–
QA 4			30.41			–

10-Day Freshwater Sediment Test-Proportion Survived

Start Date:	24 Aug-01 00:00	Test ID:	6131	Sample ID:	Composite
End Date:	03 Sep-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	FS-Freshwater Sediment
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	CT-Chironomus tentans
Comments:					

Conc-%	1	2	3	4	5	6	7	8
Control	0.9000	1.0000	0.8000	1.0000	1.0000	1.0000	0.8000	
Composite	0.6000	0.9000	0.7000	0.7000	0.8000	0.9000	0.8000	0.7000

			Transform: Arcsin Square Root						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.9286	1.0000	1.3016	1.1071	1.4120	11.184	7			
*Composite	0.7625	0.8212	1.0715	0.8861	1.2490	12.185	8	3.229	1.771	0.0090

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.8986	0.835	-0.2159	-1.3725
F-Test indicates equal variances (p = 0.77)	1.2431	9.1554		

Hypothesis Test (1-tail, 0.05)

Homoscedastic t Test indicates significant differences

ToxCalc v5.0

Reviewed by: JC

10 Day Freshwater Sediment Test-Growth

Start Date:	24 Aug-01 00:00	Test ID:	6131	Sample ID:	Composite
End Date:	03 Sep-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	FS-Freshwater Sediment
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	CT-Chironomus tentans
Comments:	Ash-Free Dry Weight				

Conc-%	1	2	3	4	5	6	7	8
Control	0.5322	0.4710	0.4188	0.3200	0.3750	0.3270	0.4325	
Composite	0.5583	0.3933	0.5714	0.4014	0.4475	0.4078	0.3700	0.5100

			Transform: Untransformed						1-Tailed	
Conc-%	Mean	N-Mean	Mean	Min	Max	CV%	N	t-Stat	Critical	MSD
Control	0.4109	1.0000	0.4109	0.3200	0.5322	18.706	7			
Composite	0.4575	1.1133	0.4575	0.3700	0.5714	17.211	8	-1.155	1.771	0.0029

Auxiliary Tests	Statistic	Critical	Skew	Kurt
Shapiro-Wilk's Test indicates normal distribution (p > 0.01)	0.9122	0.835	0.3979	-1.2728
F-Test indicates equal variances (p = 0.97)	1.0492	10.786		

Hypothesis Test (1-tail, 0.05)

Homoscedastic t Test indicates no significant differences

ToxCalc v5.0

Reviewed by:

10 Day Freshwater Sediment Toxicity Test Data

Client: **HESE** Test ID#: 6131 Date (day 0): 8-24-01

Species: *Chironomus tentans* Organism Log#: 1051 Organism Age/Size: 3rd instar

DAY	DATE	TEMP	CONTROL D.O. (OLD)	CONTROL D.O. (NEW)	Composite D.O. (OLD)	Composite D.O. (NEW)	SIGN-OFF
1	8-25-01	23.1	6.5	7.8	5.7	7.4	KE
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
2	8-26-01	~~24~~ 22.9	6.0	7.5	5.5	7.1	MM
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
3	8-27-01	23.0	6.5 ~~7.5~~	7.3	5.9	7.0	KB
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
4	8-28-01	23.0	5.9	7.1	5.2	6.0	MM
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
5	8-29-01	23.1	5.4	6.7	4.7	6.2	KE MC
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
6	8-30-01	23.2	6.4	6.9	5.4	6.5	KE MC
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
7	8-31-01	23.1	5.9	7.3	5.1	6.7	KE MC
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
8	9-1-01	23.0	5.9	7.1	4.0	6.1	BB
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		
9	9-2-01	23.1	6.1	7.6	4.6	7.2	ES
			A 0 B 0 C 0 D 0		A 0 B 0 C 0 D 0		
			E 0 F 0 G 0 H 0		E 0 F 0 G 0 H 0		MM
10	9-3-01	23.0	# Alive Organisms/replicate		# Alive Organisms/replicate		
			A 9 B 10 C 8 D ~~10~~		A 6 B 9 C 7 D 7		
			E 10 F 10 G 10 H 8		E 8 F 9 G 8 H 7		

* Test beaker accidentally dropped

Chironomus Weight Data Sheets

Client: **Harding ESE** Species: *Chironomus tentans* Test Date: 8-24-01

Sample ID: Composite Investigator: EVS Test ID: 6131

Dry Weight Calculations

Pan	Concentration	Replicate	Initial Weight (mg)	Final Weight (mg)	# organisms	Ave Dry Weight (mg)
1	Control	A	32.50	39.33	9	0.814
2		B	31.46	38.19	10	0.673
3		C	34.42	38.78	8	0.545
4		D	33.23	—	—	—
5		E	31.34	36.63	10	0.479
6		F	29.36	34.62	10	0.526
7		G	34.55	38.80	10	0.425
8		H	28.91	33.72	8	0.601
9	Composite	A	38.25	44.70	6	1.075
10		B	31.70	39.12	9	0.824
11		C	31.57	40.33	7	1.251
12		D	34.61	40.35	7	0.82
13		E	30.90	38.34	8	0.93
14		F	36.91	44.41	9	0.833
15		G	32.73	39.05	8	0.665
16		H	31.85	39.33	7	1.068
QA			32.29	—	—	—
QA			32.52	—	—	—

Ash Free Dry Weight Calculations

Pan	Concentration	Replicate	Dry Weight (mg)	Ash Free Dry Weight (mg)	# organisms	Ave. Ash Free Dry Weight (mg)
1	Control	A	39.83	35.04	9	0.532
2		B	38.19	33.48	10	0.471
3		C	38.78	~~35.5~~ 35.43	8	0.415
4		D	—	—	—	—
5		E	36.63	33.43	10	0.32
6		F	34.62	30.87	10	0.375
7		G	38.80	35.53	10	0.327
8		H	33.72	30.26	8	0.432
9	Composite	A	44.70	41.35	6	0.558
10		B	39.12	35.58	9	0.393
11		C	40.33	36.33	7	0.571
12		D	40.35	37.54	7	0.401
13		E	38.34	34.76	8	0.447
14		F	44.41	40.74	9	0.407
15		G	39.05	36.09	8	~~0.34~~ 0.37
16		H	39.33	35.~~8~~ 76	7	0.51
QA						
QA						

Freshwater Sediment Test Water Quality Characteristics

Client: **HESE** Test ID: 6131, 6133, 6135 Date (day 0): 8-24-01

Species: *Chironomus tentans* Sample ID: Comp, T1, T4 Organism Age/Size: 3rd instar

Initial Water Quality Characteristics for Overlying Water

Temperature (°C) 23.0 Initials: mc

Site	pH	D.O. (mg/L)	Conductivity (µs/cm)	Alkalinity	Hardness	Ammonia
Control	8.23	7.2	NT	~~107~~ 97	108	0.0648
T1	7.98	7.4	NT	~~74~~ 80	84	1.67
T4	7.93	7.2	NT	~~82~~ 88	79	1.14
composite	7.87	7.4	NT	~~84~~ 88	84	1.20

Final Water Quality Characteristics for Overlying Water

Temperature (°C) 23.0 Initials: JC

Site	pH	D.O. (mg/L)	Conductivity (µs/cm)	Alkalinity	Hardness	Ammonia
Control	7.51	5.8	231	107	92	0.316
T1	7.46	4.0	190.7	79	90	0.240
T4	7.35	4.2	184	82	82	0.693
Composite	7.32	3.9	190.1	84	100	0.631

Acute Test-48 Hr Survival

Start Date:	29 Aug-01 00:00	Test ID:	6139	Sample ID:	REF-Ref Toxicant
End Date:	31 Aug-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	TNH3-Ammonia-total
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	CT-Chironomus tentans
Comments:					

Conc-mg/L	1	2
Control	0.7000	1.0000
6.05	0.9000	0.9000
12.4	0.8000	1.0000
20.9	1.0000	0.8000
42.3	0.7000	0.6000
80	0.6000	0.5000
154	0.0000	0.2000

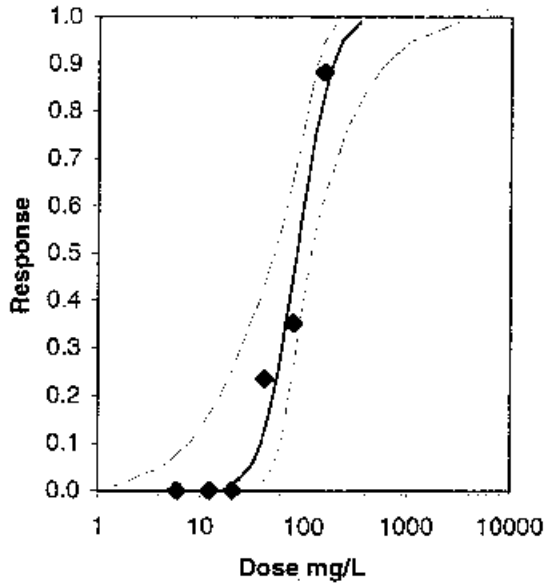
Conc-mg/L	Mean	N-Mean	Affected	Not Affected	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
Control	0.8500	1.0000	3	17	20	2			3	20
6.05	0.9000	1.0588	2	18	20	2	0.5000	0.0500	2	20
12.4	0.9000	1.0588	2	18	20	2	0.5000	0.0500	2	20
20.9	0.9000	1.0588	2	18	20	2	0.5000	0.0500	2	20
42.3	0.6500	0.7647	7	13	20	2	0.1367	0.0500	7	20
*80	0.5500	0.6471	9	11	20	2	0.0412	0.0500	9	20
*154	0.1000	0.1176	18	2	20	2	0.0000	0.0500	18	20

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	42.3	80	58.172	

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	3.8105	1.2228	1.4139	6.2072	0.15	1.6706	13.277	0.8	1.9312	0.2624	25
Intercept	-2.3587	2.4171	-7.0905	2.3789							
TSCR	0.168	0.0436	0.0826	0.2534							

Point	Probits	mg/L	95% Fiducial Limits	
EC01	2.674	20.925	1.4681	39.609
EC05	3.355	31.587	4.3883	51.767
EC10	3.718	39.341	7.8272	60.009
EC15	3.964	45.622	11.523	66.547
EC20	4.158	51.321	15.615	72.496
EC25	4.326	56.775	20.192	78.307
EC40	4.747	73.228	37.524	97.812
EC50	5.000	85.342	52.393	116.26
EC60	5.253	99.461	69.259	145.96
EC75	5.674	128.28	96.018	244.38
EC80	5.842	141.92	105.81	309.77
EC85	6.036	159.65	117.02	413.48
EC90	6.282	185.13	131.3	601.59
EC95	6.645	230.58	153.7	1062.6
EC99	7.326	348.07	202.53	3150.4



ToxCalc v5.0

Reviewed by:

48 Hour Acute *Chironomus* Toxicity Test Data

Client: HESE
Test ID #: 6139
Date: 8-29-01

Test Species: *Chironomus tentans*
Test Material: Ammonia
Control/Dilution Water: 80:20

Treatment ($mgNH_3/L$)	Temp	pH Old	pH New	D.O. Old	D.O. New	Conductivity (µS/cm)	# Live Animals A	# Live Animals B	Sign-Off
Control	23.2		8.24		8.2	180.8	10	10	Time: 1530
5	23.2		8.14		8.2	231	10	10	
10	23.2		8.07		8.2	282	10	10	Date: 8-29-01
20	23.2		7.97		8.2	360	10	10	
40	23.2		7.83		8.2	554	10	10	
80	23.2		7.68		8.2	888	10	10	ID: mc
160	23.2		7.51		8.2	1610	10	10	kc
Control	23.0	7.97		6.4			7	10	Time: 1010
5	23.0	7.94		6.0			9	10	
10	23.0	7.91		6.0			9	10	Date: 8-30-01
20	23.0	7.88		5.9			10	8	
40	23.0	7.84		6.3			9	8	
80	23.0	7.74		6.3			8	8	ID: mc
160	23.0	7.59		5.9			5	4	kc
Control	23.1	7.72		6.9		191.1	7	10	Time: 1515
5	23.1	7.87		6.6		232	9	9	
10	23.1	7.91		6.9		282	8	10	Date: 8-31-01
20	23.1	7.90		6.8		355	10	8	
40	23.1	7.77		7.0		541	7	6	
80	23.1	7.74		6.9		817	6	5	ID: mc
160	23.1	7.59		6.9		1603	0	2	kc

Acute Test-48 Hr Survival

Start Date:	29 Aug-01 00:00	Test ID:	6138	Sample ID:	REF-Ref Toxicant
End Date:	31 Aug-01 00:00	Lab ID:	CAPER-Pacific EcoRisk	Sample Type:	CUSO-Copper sulfate
Sample Date:		Protocol:	EPAFS 94-EPA Freshwater S	Test Species:	CT-Chironomus tentans
Comments:					

Conc-ug/L	1	2
Control	0.9000	1.0000
100	0.9000	0.9000
200	0.8000	0.2000
400	0.5000	0.3000
800	0.2000	0.0000
1600	0.0000	0.2000
3200	0.0000	0.0000

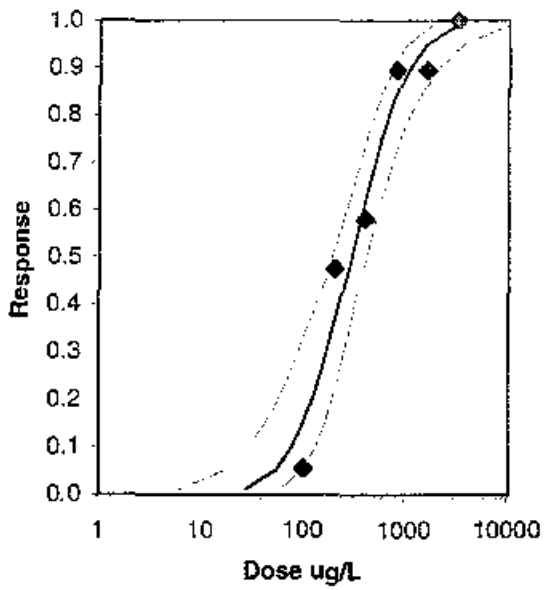
Conc-ug/L	Mean	N-Mean		Affected	Not Affected	Total	N	Fisher's Exact P	1-Tailed Critical	Number Resp	Total Number
Control	0.9500	1.0000	1.3305	1	19	20	2			1	20
100	0.9000	0.9474	1.249	2	18	20	2	0.5000	0.0500	2	20
*200	0.5000	0.5263	0.7854	10	10	20	2	0.0017	0.0500	10	20
*400	0.4000	0.4211	0.6825	12	8	20	2	0.0002	0.0500	12	20
*800	0.1000	0.1053	0.3112	18	2	20	2	0.0000	0.0500	18	20
*1600	0.1000	0.1053	0.3112	18	2	20	2	0.0000	0.0500	18	20
3200	0.0000	0.0000	0.1588	20	0	20	2			20	20

Hypothesis Test (1-tail, 0.05)	NOEC	LOEC	ChV	TU
Fisher's Exact Test	100	200	141.42	

Maximum Likelihood-Probit

Parameter	Value	SE	95% Fiducial Limits		Control	Chi-Sq	Critical	P-value	Mu	Sigma	Iter
Slope	2.2583	0.4026	1.4692	3.0474	0.05	4.2027	13.277	0.38	2.4651	0.4428	6
Intercept	-0.5671	1.0521	-3.6292	1.495							
TSCR	0.0421	0.0443	-0.0448	0.129							

Point	Probits	ug/L	95% Fiducial Limits	
EC01	2.674	27.228	5.9091	58.556
EC05	3.355	54.549	16.892	99.747
EC10	3.718	79.006	29.417	133.19
EC15	3.964	101.44	42.624	162.43
EC20	4.158	123.73	57.066	190.75
EC25	4.326	146.71	73.091	219.58
EC40	4.747	225.4	133.9	318.79
EC50	5.000	291.84	188.87	407.09
EC60	5.253	377.85	260.25	532.17
EC75	5.674	580.51	416.24	884.97
EC80	5.842	688.36	491.47	1105
EC85	6.036	839.62	590.04	1447.1
EC90	6.282	1078	733.63	2056.7
EC95	6.645	1561.3	997.08	3519
EC99	7.326	3128	1726.3	9896.8



ToxCalc v5.0

Reviewed by:

48 Hour Acute *Chironomus* Toxicity Test Data

Client: HESE
Test ID #: 6138
Date: 8-29-01

Test Species: *Chironomus tentans*
Test Material: Copper sulfate
Control/Dilution Water: 80:20

Treatment (µgCu/L)	Temp	pH Old	pH New	D.O. Old	D.O. New	Conductivity (µS/cm)	# Live Animals A	# Live Animals B	Sign-Off
Control	23.2		8.24		8.2	180.2	10	10	Time:
100	23.2		8.28		8.2	179.4	10	10	1530
200	23.2		8.27		8.2	179.2	10	10	Date:
400	23.2		8.27		8.2	179.4	10	10	8-29-01
800	23.2		8.22		8.2	179.5	10	10	
1600	23.2		8.12		8.2	180.1	10	10	ID:
3200	23.2		7.85		8.2	182.1	10	10	MC KC
Control	23.0	7.48		5.6			10	10	Time:
100	23.0	7.90		6.0			10	9	1000
200	23.0	8.05		6.8			10	10	Date:
400	23.0	8.24		7.6			10	10	
800	23.0	8.31		7.9			10	8	8-30-01
1600	23.0	8.30		8.0			8	7	ID:
3200	23.0	8.23		8.0			5	7	MC KC
Control	23.1	7.78		7.1		191.7	9	10	Time:
100	23.1	7.78		5.9		192.0	9	9	1615
200	23.1	7.78		6.0		193.0	8	2	Date:
400	23.1	7.86		5.3		191.7	5	3	8-31-01
800	23.1	8.27		8.0		192.3	2	0	
1600	23.1	8.35		8.3		192.5	0	2	ID:
3200	23.1	8.34		8.4		192.5	0	0	MC HN

CHAIN OF CUSTODY RECORD

K2106412

PACIFIC ECORISK
835 Arnold Drive, Suite 104
Martinez, CA 94553
(925)313-8080 fax: (925)313-8089

RESULTS TO:
HESE
90 Digital Dr
Novato, CA 94949
Attn: J. Gravenmier Tel: 415-884-3169

BILL TO:
Attn: Tel:

PROJECT: Cargill

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE MATRIX	GRAB/ COMP.	# CONTAINERS/TYPE	Grain Size								REMARKS
1 Control Sed	8-23-01	NA	Sed.	Grab	1 1 plastic	✓								
					/									
					/									
					/									
					/									
					/									
					/									
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METHOD OF SHIPMENT: FED X ____ UPS ____ HAND ____ OTHER ____

COMMENTS:

CODES:

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	PAGE #
Kathie Evans	8-31-01	1200	A Pinnton CAS	9/1/01	0830	OF

White - Return w/sample

Yellow: - Keep for your records

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Pacific Eco-risk	**Service Request:**	k2106412
Project:	Cargill	**Date Collected:**	8/23/01
Sample Matrix:	Sediment	**Date Received:**	9/1/01
		Date Analyzed:	9/15/01

Particle Size Determination
ASTM D422M

Sample Name: Control Sed
Lab Code: K2106412-001

Sand Fraction: Dry Weight (Grams)	74.3453
Sand Fraction: Weight Recovered (Grams)	74.2949
Sand Fraction: Percent Recovery	99.9

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered	
Medium Gravel	<-2 Ø	0.0000	0.00	
Fine Gravel	-2 Ø to -1 Ø	0.0000	0.00	Ø
Very Coarse Sand	-1 to 0 Ø	0.0000	0.00	
Coarse Sand	0 to 1 Ø	0.7341	0.97	
Medium Sand	1 to 2 Ø	34.4776	45.7	98.36
Fine Sand	2 to 3 Ø	38.8042	51.4	
Very Fine Sand	3 to 4 Ø	0.2160	0.29	
62.5 µm	4 Ø	0.0800	0.11	
31.3 µm	5 Ø	0.0600	0.08	
15.6 µm	6 Ø	-0.0350	0.00	0.21
7.8 µm	7 Ø	0.0150	0.02	
3.9 µm	8 Ø	0.0500	0.07	
1.95 µm	9 Ø	0.0500	0.07	0.20
0.98 µm	> 10 Ø	0.0450	0.06	
		74.4969	98.8	

Approved By: Mike Smith Date: 9/25/01

06412WET.MF2 \9/25/01

Page No.:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Pacific Eco-risk	**Service Request:**	k2106412
Project:	Cargill	**Date Collected:**	8/23/01
Sample Matrix:	Sedimont	**Date Received:**	9/1/01
		Date Analyzed:	9/15/01

Particle Size Determination
ASTM D422M

Sample Name: Control Sed
Lab Code: K2106412-001DUP

Sand Fraction: Dry Weight (Grams)	75.7581
Sand Fraction: Weight Recovered (Grams)	75.7190
Sand Fraction: Percent Recovery	99.9

Description	Phi Size	Dry Weight (Grams)	Percent of Total Weight Recovered	
Medium Gravel	<-2 Ø	0.0000	0.00	0.03
Fine Gravel	-2 Ø to -1 Ø	0.0192	0.03	
Very Coarse Sand	-1 to 0 Ø	0.0000	0.00	
Coarse Sand	0 to 1 Ø	0.6167	0.82	
Medium Sand	1 to 2 Ø	29.0154	38.5	100.34
Fine Sand	2 to 3 Ø	45.7555	60.7	
Very Fine Sand	3 to 4 Ø	0.2380	0.32	
62.5 µm	4 Ø	-0.0500	0.00	
31.3 µm	5 Ø	0.0500	0.07	0.07
15.6 µm	6 Ø	-0.0450	0.00	
7.8 µm	7 Ø	-0.0800	0.00	
3.9 µm	8 Ø	0.1650	0.22	1.52
1.95 µm	9 Ø	0.0550	0.07	
0.98 µm	> 10 Ø	0.0450	0.06	
		75.7848	101	

Approved By: Mike Smith Date: 9/25/01

06412WET.MS2 \9/25/01

Harding ESE
A MACTEC COMPANY

Harding ESE, Inc.
90 Digital Drive
Novato, CA 94949

Telephone: 415/883-0112
Fax: 415/884-3300
Home Page: www.mactec.com

REC'D AUG 31 2001

August 28, 2001

52852.004

Mr. Brett Betts
Washington Department of Ecology
Sediment Management Unit – Toxics Cleanup Program
P.O. Box 47600
Olympia, Washington 98504-7600

SUBJECT: QA2 Results of Sediment Sampling and Analysis
Cargill Irving Elevator Terminal, Portland, Oregon
USACE Permit 95-1063 and DSL Permit RP 3158

Dear Mr. Betts:

Enclosed you will find the chemistry QA2 Results of Sediment Sampling and Analysis for Cargill Irving Elevator Terminal in Portland, Oregon. The QA2 information includes analytical information such as hard copy chromatograms and calibration curves as well as a SEDQUAL formatted spreadsheet of the data. These results are submitted to the Washington Department of Ecology as directed by the *Dredged Material Evaluation Framework: Lower Columbia River Management Area* (USACE, 1998).

Please call me at 415-884-3160 if you have any questions or comments. Thank you for your assistance.

Very Truly Yours,

HARDING ESE

Josh Gravenmier
Project Environmental Scientist

JG/ra/Cargill/Admin/ChemQA2_CoverLetter

Enclosure

cc: Judy Linton, U.S. Army Corps of Engineers, Portland District

DEPARTMENT OF THE ARMY
PORTLAND DISTRICT, CORPS OF ENGINEERS
POST OFFICE BOX 2946
PORTLAND, OREGON 97208-2946

REPLY TO
ATTENTION OF:

August 30, 2001

Operations Division
Regulatory Branch
Corps No.: 2001-00031

Mr. Michael Crouse
National Marine Fisheries Service
525 NE Oregon Street, Suite 500
Portland, Oregon 97232

Dear Mr. Crouse:

The U.S. Army Corps of Engineers (Corps), Portland District is evaluating an application from Cargill Incorporation for a project at their Irving Elevator (800 N. River Street) on the Willamette River, mile 11.4, in Portland (Section 27, Township 1 North, Range 1 East), Multnomah County, Oregon. A copy of the public notice is provided (Enclosure 1). The Corps is evaluating the proposal under our regulatory authority found in Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.

Lower Columbia River steelhead, Upper Willamette River steelhead, Upper Willamette River Chinook, Lower Willamette River Chinook, Lower Columbia River Chinook, and Columbia River chum may be affected by the work, but the Corps believes these species will not be adversely affected. The purpose of this letter is to initiate informal consultation under Section 7 of the Endangered Species Act.

Cargill is requesting authorization to conduct maintenance dredging for a five year period within an area 1,400 feet long by 60 feet wide to a maximum depth of –40 feet Columbia River Datum (CRD). The applicant estimates that up to 8,000 cubic yards of sediment would be removed annually by clamshell dredge. The proposed project appears to meet the terms and conditions of the *Programmatic Biological Opinion for 15 Categories of Activities Requiring Department of the Army Permit*, issued by your agency on March 21, 2001, with the exception that the applicant is proposing to place sediments in-water within the Ross Island Lagoon as one of the disposal options. The programmatic biological opinion requires dredged material to be "permanently confined in an approved upland area where it cannot reenter the water body…" Other disposal options include upland at Ross Island or at another approved upland site to be determined. Sediment testing has been completed at the site according to the *Dredged Material Evaluation Framework, Lower Columbia River Management Area*, November 1998. Initial review shows that the material is suitable for unconfined in-water disposal. The Sampling and Analysis Plan (Enclosure 2) and sediment test results (Enclosure 3) are provided for use in your

review of this project. Dredging would occur during the in-water work periods for the Willamette River, which is from July 1 through October 31 and December 1 through January 31.

The Corps requests your concurrence with our determination that the project may affect, but is not likely to adversely affect the above listed species. If you require further information regarding this project please contact Ms. Judy Linton at (503) 808-4382. Thank you for your assistance and attention to this matter.

Sincerely,

Donald Borda

for Lawrence C. Evans
Chief, Regulatory Branch

Enclosures

CO-G
CO-GP

Meeting Minutes
Cargill Irving Elevator Terminal Meeting
August 23, 2001, 1 p.m.

Attendees: Jennifer Sutter, Oregon Dept. of Environmental Quality (DEQ)
John Wegrzyn, DEQ
Bridgette DeShields, Harding ESE
Josh Gravenmier, Harding ESE
Gene Loffler, Cargill Irving Elevator Terminal

Planned Agenda:

1. Introductions
2. Cargill Sediment Results
   a. Project description
   b. Timeline
   c. Testing Issues
      - Sediment holding times expire on 8/24/01 for bioassay analysis
      - Not enough sediment to perform bioaccumulation testing
3. DEQ Issues/Requirements
   a. PAH's/ PCB's
   b. Bioassay analysis
   c. Bioaccumulation analysis
   d. Issues/Concerns/Alternatives

PROJECT BACKGROUND

The project background and scope of work were discussed. A highlighted item was that the anticipated dredge volume is to be only about 5,000 cubic yards of material. This volume of dredge material would be categorized as very small. The chemistry results were discussed as detailed in the August 3, 2001 report, including the fact that none of the chemistry values were above the Dredge Material Evaluation Framework (DMEF) Screening Values or Bioaccumulation Triggers.

The sampling and analysis plan (SAP) was submitted in March and final comments were not received until 10 weeks later. The additional requirements as detailed by the DMMT response were to perform chemistry on individual cores in addition to the composite and sample the new surface material below the dredge prism. However, the comments received by Cargill/Harding ESE did not include all the comments made by Jennifer Sutter of DEQ. Jennifer indicated that she had indeed read the SAP and that she had made comments and supplied them to Judy Linton of the DMMT. Jennifer explained her frustration at the lack of a formal approval process by the DMMT, but was not able to say that the communication needed within the DMMT was going to improve as a result of the Cargill project. Additional requirements she requested for the project in her comments were to have five cores sampled and perform a total petroleum hydrocarbon analysis on all the sediments. However, based upon the results received, Jennifer indicated that she would forgo these requirements for this project.

The DEQ received the results report. Based on some additional criteria they have been using (Consensus-based and NOAA SQuiRT values) there were levels of concern for both PAHs and PCBs in the sediments, primarily from samples T1 and T4. As a result, Cargill would need to perform both solid phase bioassay analysis and probably bioaccumulation testing to be considered acceptable for disposal at Ross Island, even if determined acceptable for aquatic disposal by the DMMT. The initial sampling effort did not allocate enough sample volume to perform the bioaccumulation testing. In addition, the holding time for the solid bioassay analysis will expire on 8/24/01.

BIOASSAY

To assess the potential aquatic toxicity of sediments, it was agreed that not all five of the sediments would need to be evaluated with bioassay tests. The composite, T1, and T4 samples would provide enough information to formulate a decision. Only the midge and amphipod solid phase tests would be necessary. No elutriate phase testing would be necessary.

The lack of a reference sediment for the Ross Island area was highlighted. Therefore, the solid phase tests would only be able to be compared to a home control. John Wegrzyn agreed that this would be a very conservative assessment and that without a reference site a statistical and absolute criteria may be appropriate. Both John and Jennifer suggested we talk to John Malek or Erica Hoffman of EPA Region X and someone from the Washington Dept. of Ecology and make a proposal and justification for specific bioassay criteria. The home control will need to have a grain size analysis performed to help complete the evaluation.

BIOACCUMULATION

PCB's were highlighted as a cause of concern and reason for requesting the bioaccumulation testing, even though the highest organic carbon normalized PCB level for the Cargill samples was 18 μg/gOC as compared to the bioaccumulation trigger value of 38 μg/gOC. Jennifer and John indicated that the DMEF bioaccumulation trigger values may not be considered low enough by DEQ to be protective of upper trophic level consumers in the area. The DEQ is currently conducting an assessment to determine what level of PCB's would not be of concern, but as yet do not have this number formulated. As a result, the DEQ feels that any detectable PCB's are indicative of bioaccumulation and need to be tested. The highest concentration of PCB's detected at Ross Island was 13 ppb.

The sample used should contain the highest levels of PCB's that can be found and if possible measure the PCB's from multiple composites and take the highest as the sample for bioaccumulation testing. However, given the type of disposal and small dredge volume, DEQ agreed that bioaccumulation testing would be satisfied by testing the composite (a 5 sample composite made proportional to the core length) with only the species *Lumbriculus*. An appropriate reference site will have to be determined to make

an appropriate ecological assessment, and this will have to be determined with the help of EPA Region X and Washington Dept. of Ecology.

Modeling of a PCB trigger value specific to Ross Island receptors and exposure pathways is an option. The development of this trigger value may indicate that bioaccumulation would not be necessary. However, the approach for this has not yet been developed.

ISSUES/CONCERNS/ALTERNATIVES

Cargill needs to dredge and this need is highlighted by the recent grounding of a vessel at the facility. No other aquatic disposal option exists in the area and upland disposal of dredge material is significantly more expensive (at least 300% more than disposal at Ross Island). Without dredging, vessels being loaded may not be able to be filled all the way.

The bioaccumulation tests will not be available until after the dredging window for this year is over. However, the DEQ agreed that it would consider the data from 2001 as appropriate for next year, without re-testing.

Ross Island may still reject the material after the DEQ analysis and evaluation. Jennifer suggested that Cargill involve them in the decision process. If Ross Island does not feel the material is appropriate then all of the additional analysis would be a waste of time and upland disposal would be the only option.

Linton, Judy L NWP

From: Siipola, Mark D NWP
Sent: Monday, August 20, 2001 8:37 AM
To: 'John Malek'; 'Tom Melville'; Linton, Judy L NWP
Subject: FW: Cargill

Chevronlt1.doc

John and Tom

I had a brief look at the data and I consider the material to be suitable for unconfined openwater disposal without further testing. Of note the PCB was detected at 130 ug/Kg which is the DMEF screening level, 131 ug/Kg would have triggered bioassays. T4 had the 130 PCB other values were 73, 25, 13, and for the composite 48 ug/Kg. The other item of note is the TBT analyses. The lab was only able to run the TBT pour water analyses on the composite sample. However they did run bulk TBT analyses on all of the samples. The bulk TBT had results of 200, 160, 12, 220 and for the composite sample 210 ug/Kg. The pour water analyses for the composite was 0.058 ug/L which is below the DMEF screening level of 0.15 ug/L. I believe the composite to be representative of the material to be dredged and therefore not too concerned with TBT.

I understand from Harding ESE that Jennifer is having them run bioassays based upon the PAH data. Apparently the PAH values exceed the low low values found in the NOAA SQuiRT tables or the Consensus-Based values.

I will be out of the office until Thursday on a sed. sampling trip to Chetco and Coquille so could you two get back to Ms Linton on this project directly?

Mark D. Siipola
CENWP-EC-HR
http://www.nwp.usace.army.mil/ec/h/hr/

-----Original Message-----
From: SUTTER.Jennifer@deq.state.or.us
[mailto:SUTTER.Jennifer@deq.state.or.us]
Sent: Wednesday, August 15, 2001 3:43 PM
To: MELVILLE.Tom@deq.state.or.us; Linton, Judy L; Siipola, Mark D;
Malek.John@epamail.epa.gov
Subject: RE: Cargill

Hey gang
I just spoke with Josh Gravenmier, Harding ESE - Cargill's consultant, to pass on the concerns we have re: Ross Island evaluation. He's a bit concerned about the lack of documented response to the sampling plan he originally provided, but mostly concerned that he was not informed of the additional evaluation that might be warranted for pursuing disposal at Ross Island. At this point, I don't know how different what I'm asking for is from what you all would ask for. Have you had a chance to look at the data yet? I'm still learning the RMT process and at the time we were looking at the sampling plan, I was thinking there would be a written response commenting on it that I could add my comments to. Apparently, this is a less formal process and I still need to learn how best to feed into it. Anyway, I sent Josh a copy of the letter I sent to Chevron re: sampling needs for Ross Island (attached for your reference) and agreed to discuss the PCB detections with our toxicologist to determine how all the results they have might be considered and if there are any options other than a bioaccumulation study. Before I do this, it would be helpful to know if the COE would require a bioaccumulation study based on their results.
Thanks!

Jennifer <<Chevronltl.doc
> -----Original Message-----
> From: SUTTER Jennifer
> Sent: Friday, August 10, 2001 10:29 AM
> To: MELVILLE Tom
> Cc: 'judy.l.linton@usace.army.mil'; SUTTER Jennifer
> Subject: Cargill
>
> Tom
> I've taken a look at the data for Cargill and am providing my comments
> below. Can we combine our response into one letter to the COE or however
> you typically provide your input?
>
> 1. For the Ross Island evaluation we've typically asked for a minimum of
> 5 samples. They only collected 4. I'm willing to live with 4 but I'd
> want to document that we recommend 5 and I believe they had this
> information based on some earlier communication I had with them.
>
> 2. Sample T1 has several exceedances of the consensus-based sediment
> screening values for PAHs. Sample T3 exceeds for Benzo(a)anthracene.
> There are also some exceedances of SQuiRT values for PAHs in samples T2
> and T4. Sample T1 also exceeded the SQuiRT value for
> Bis(2ethyl,hexyl)phthalate. Based on this we'd recommend bioassays be
> performed on a minimum of 3 samples.
>
> 3. Samples T1 and T4 exceeded the consensus based screening value for
> PCBs and there is some history at the site of PCB detections. Because of
> this and the detection of PCBs in every sample, we'd recommend a
> bioaccumulation study.
>
> As you know, these recommendations only pertain to the evaluation of
> disposal at Ross Island.
>
> Let me know if you want this in a more formal format or if I should direct
> my comments to Cargill directly. I thought it might be less confusing if
> they only got one set of responses from DEQ.
>
> Thanks!
> Jennifer
>
>
>

Harding ESE
A MACTEC COMPANY

Harding ESE, Inc.
90 Digital Drive
Novato, CA 94949
Telephone: 415/884-3108
Fax: 415/884-3300
Home Page: www.mactec.com

August 3, 2001

52852.004

Ms. Judy Linton
U.S. Army Corps of Engineers, Portland District
P.O. Box 2946
Portland, Oregon 97208

SUBJECT: Results of Sediment Sampling and Analysis – Cargill Irving Elevator Terminal USACE Permit 95-1063 and DSL Permit RP 3158

Dear Ms. Linton:

Enclosed you will find the Results of Sediment Sampling and Analysis for Cargill Irving Elevator Terminal (Cargill) in Portland, Oregon. These results were generated following the approach outlines in the previously submitted and approved Sampling and Analysis Plan (*Harding ESE, 2001*) for the dredge material disposal planning at the site.

Cargill would like to begin dredging as soon as possible (prior to the permit stipulation of no dredging during September) to facilitate the safe passage of vessel traffic. This urgency is highlighted by a recent incident in which a vessel was temporarily grounded at the site. We appreciate your expedience in reviewing this plan. Please call either Josh (415-884-3160) or Bridgette (415-884-3130) if you have any questions or comments. Thank you for your assistance.

Very Truly Yours,

HARDING ESE

Josh Gravenmier
Project Environmental Scientist

Bridgette DeShields
Associate Environmental Scientist

JG/ru/Cargill/Admin/Results_CoverLetter

Enclosure

cc: Gene Loffler, Cargill Irving Elevator Terminal
Dennis Klein, Cargill Corporate
Chris Putnam, Cargill Corporate
Kirk Sweetland, Harding ESE

REFERENCES

Harding ESE, 2001. *Sampling and Analysis Plan, Dredge Material Disposal Planning, Cargill Irving Elevator Terminal, Portland, Oregon*. March 16, 2001.

Oregon
John A. Kitzhaber, M.D., Governor

Division of State Lands
775 Summer Street NE, Suite 100
Salem, OR 97301-1279
(503) 378-3805
FAX (503) 378-4844
http://statelands.dsl.state.or.us

July 17, 2001

REC'D JUL 19 2001

State Land Board

John A. Kitzhaber
Governor

Bill Bradbury
Secretary of State

Randall Edwards
State Treasurer

EE02/3158RP
GENE LOFFLER
CARGILL, INC.
800 N. RIVER STREET
PORTLAND, OR 97227

Re: DSL Permit Number 3158 RP
In-Water Work Period

Dear Mr. Loffler:

Thank you for notifying the Division that the in-water work period listed in Attachment A of the permit authorization does not correspond to the dates required by the Corps of Engineers. The permit current indicates there shall be no removal in the permit area between February 1 and May15, or between September 1 and September 30. The Oregon Department of Fish and Wildlife's Oregon Guidelines for Timing of In-Water Work lists the recommended period for the Willamette River in the permit area as July 1 to October 31 and December 1 to January 31. To correct this deficiency, the permit authorization (Attachment A) is modified as follows:

5. Removal activities in the Willamette River shall be conducted between July 1 and October 31 and between December 1 and January 31, unless otherwise coordinated with ODFW and approved in writing by ODSL.

If you have any questions, please call Ed Emrick, Resource Coordinator, at 503-378-3805, extension 231.

Sincerely,

Lori Warner

Lori Warner
Manager
Field Operations—Western Region

xc: Judy Linton, Corps of Engineers
Multnomah County Planning

\\Salem1\FO\Counties\Multnomah\Com_App\RP-3158.071701.doc

CENPP-CO-GP *(1145b/Permit Files)* DATE: _____

MEMORANDUM FOR Regulatory Case File: 2001-00031

SUBJECT:

6/26/01 Provided copy of Harding ESF letter (6/21/01) to Mark Slipka w/ Fax to Tom Melville (DEQ) and John Malek (EPA)

7/17/01 Gene Lofler Cargill

→ asked about status: we are waiting for final ~~tets~~ test results (Mr. Lofler expects them in by end of month)

→ reviewed USFWS comment letter; with regard to request for "monitoring plan to assess immediate + long-term impacts on water quality, fish, and benthic organisms."

— proposal requests to dredge no deeper than previously authorized so should be no long-term impacts to benthic orgs. Sediment to be dredged is being tested to determine potential impacts on WQ. Dredging probably last occurred about six or more years ago.

NPP Form 1145-2, Jul 96 Proponent Office: CENPP-CO-GP

Judy L. Linton
PROJECT MANAGER *(Signature)*

Harding ESE
A MACTEC COMPANY

Harding ESE, Inc.
90 Digital Drive
Novato, CA 94949
Telephone: 415/884-3108
Fax: 415/884-3300
Home Page: www.mactec.com

RECD JUN 25 2001

June 21, 2001

52852.001

Ms. Judy Linton
U.S. Army Corps of Engineers, Portland District
P.O. Box 2946
Portland, Oregon 97208

SUBJECT: Sampling and Analysis Plan
Dredge Material Disposal Planning, Cargill Irving Elevator Terminal
Portland, Oregon

Dear Ms. Litton:

Harding ESE submits the following letter on behalf of the Cargill Irving Elevator Terminal (Cargill) to clarify our intentions in response to the comments received regarding approval of the previously submitted Sampling and Analysis Plan (SAP; *Harding ESE, 2001*) for the dredge material disposal planning at the site.

As per Section 6.6.5 of the Dredged Material Evaluation Framework (DMEF; *USACE, 1998*) and because of concerns brought up by the Dredge Material Management Team (DMMT), an additional two feet of new surface material (NSM) will be collected below the proposed dredging depth plus overdredge for each core. This material will be archived at –20°C (i.e., frozen) for possible future chemical analysis. Chemical analysis will be performed on this NSM only if the sediment from the dredging prism above exceeds screening levels and fails the applicable biological tests. According to the DMEF, chemical analysis of the NSM material will not be required if the overlying sediments pass. If the NSM is cleaner or as clean as the overlying sediments, no additional actions will be performed. If the NSM is less clean than overlying sediments, the potential dredging options are to overdredge or cap. These issues will be addressed only if necessary.

Also as requested by the DMMT, each individual core sample (in addition to the SAP outlined composite of all four cores) will be analyzed for the approved suite of chemical and physical tests. Enough sample will also be collected and archived at 4°C (for up to 8 weeks) from this sampling event to initiate any subsequent standard bioassay tests, should they be deemed necessary (dependent upon the results of the chemical analysis). These tests will only be performed if needed (if bioaccumulation testing is necessary, an additional sampling effort would also be required).

Appropriate reference toxicant tests and QA/QC, as described in the SAP will be conducted and reported for the successful completion of the project. All chemical results will be reported on a dry weight basis. All other sampling and testing methods will follow those from the SAP, as applicable.

Cargill will initiate the indicated sampling on June 29, 2001. Please call either Josh (415-884-3160) or Bridgette (415-884-3130) if you have any questions or comments. Thank you for your assistance.

Very Truly Yours,

HARDING ESE

Josh Gravenmier
Project Environmental Scientist

Bridgette DeShields
Associate Environmental Scientist

cc: Gene Loffler, Cargill Irving Elevator Terminal
Dennis Klein, Cargill Corporate
Chris Putnam, Cargill Corporate
Kirk Sweetland, Harding ESE

REFERENCES

Harding ESE, 2001. *Sampling and Analysis Plan, Dredge Material Disposal Planning, Cargill Irving Elevator Terminal, Portland, Oregon.* March 16, 2001.

U.S. Army Corps of Engineers (USACE), 1998. *Dredge Material Evaluation Framework: Lower Columbia River Management Area.* November, 1998.

Linton, Judy L NWP

From: Linton, Judy L NWP
Sent: Wednesday, May 16, 2001 2:06 PM
To: 'jgravenmier@mactec.com'
Subject: Cargill, Sediment Testing

Josh Gravenmier:

The Dredged Material Management team has completed review of the SAP prepared by Harding ESE, Inc. for Cargill's proposed maintenance dredging project. The only requirement I received, in addition to the testing methods described in the SAP, is that core samples be taken two feet below the proposed dredging depth (in this case to a depth of -42 feet Columbia River Datum base on information from the application). As we discussed, the core from the dredging prism should be tested separately from the material below the dredging prism. This will show us what will be exposed when dredging has been completed.

The team is concerned that material at Cargill will not be found suitable for in-water disposal based on past test results. It may benefit Cargill to test each of the samples separately rather than as one composite. Benefits would include 1) time saved retesting if the one composite sample is found to be unsuitable and 2) if only one of the cores does not pass, there may be other ways to manage that material while allowing the remainder to go in-water. The team, however, is not requiring that separate testing be done.

If you have any questions, please do not hesitate to call.

Judy Linton
Senior Project Manager
Regulatory Branch
U.S. Army Corps of Engineers
(503) 808-4382

Linton, Judy L NWP

From: SUTTER.Jennifer@deq.state.or.us
Sent: Friday, April 06, 2001 3:34 PM
To: MELVILLE.Tom@deq.state.or.us
Cc: Linton, Judy L; SUTTER.Jennifer@deq.state.or.us
Subject: RE: Cargill

Tom - I took a quick look at the SAP and have the following comments:
1. We'd want a minimum of 5 separate samples (can be composited vertically) with the full suite of analyses identified, as opposed to the one composited sample proposed. I'm ok with including the previously collected data as 2 of the 5; however, this data shows contaminants at concentrations that we would require bioassays and bioaccumulation studies (e.g., PCBs) to assess.
2. As you note in your handwritten comments, we are not strictly following the DMEF for disposal at Ross Island at this time, though at a minimum the sediments would have to qualify for open-water disposal.

I agree with you that it's unlikely we could approve this material going to Ross Island at this time, based on the sampling results provided.
How do you want to handle? Tom - will you be preparing a letter that I could add on to? Should I prepare a letter that you could add on to?
Thanks!
Jennifer

-----Original Message-----
From: Linton, Judy L NWP [mailto:Judy.L.Linton@nwp01.usace.army.mil]
Sent: Monday, April 02, 2001 11:49 AM
To: SUTTER Jennifer; MELVILLE Tom
Subject: RE: Cargill

Okay, no problem. FYI, 1) We have assigned a new ID number to this project.....2001-00031 and 2)I will be sending out a public notice this week probably. Let me know when you have reviewed the SAP.

Judy

-----Original Message-----
From: SUTTER.Jennifer@deq.state.or.us
[mailto:SUTTER.Jennifer@deq.state.or.us
<mailto:SUTTER.Jennifer@deq.state.or.us>]
Sent: Monday, April 02, 2001 9:36 AM
To: MELVILLE.Tom@deq.state.or.us; Linton, Judy L
Subject: RE: Cargill

Thanks Tom! - Judy - before you approve their SAP can you make sure I get a chance to look at it so that we cover sampling requirements for Ross Island disposal at the same time? I think I have some information on this project but haven't seen a sampling plan.
Thanks!
Jennifer

> -----Original Message-----
> From: MELVILLE Tom
> Sent: Wednesday, March 28, 2001 09:29 AM
> To: SUTTER Jennifer
> Subject: Cargill
>
> Jennifer,
> I received a SAP from Harding Lawson associates relative to the Cargill
> Irving Grain Elevator Terminal from Judy yesterday. The Corps Permit # is

> 95-1063, and its up for renewal although I don't think it ever had a 401.
> I just gave the SAP a very quick review and notice that they want to use
> Ross Island as a disposal. They're going to do some testing, but past

> testing showed PAH and PCB levels over the SL's for DMEF so there's not
> much likelihood that they would pass SqUIRT table values. I'm not sure
> who Harding Lawson is but their SAP contains a bunch of really glaring
> inconsistencies. I don't know where these people get some of their ideas.

> I'll get you more information as I get it.
> Tom

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Oregon State Office
2600 S.E. 98th Avenue, Suite 100
Portland, Oregon 97266
(503) 231-6179 FAX: (503) 231-6195

Reply To: 7313.0901
File Name: PN01-031, Will. Riv. Maint. Dredging, Cargill, Inc.
OALS# 01-2158

April 24, 2001

Colonel Randall J. Butler, District Engineer
Portland District, Corps of Engineers
ATTN: CENWP-GP-OP (Linton)
P. O. Box 2946
Portland, Oregon 97208-2946

Re: PN 01-031
Cargill, Inc.
Willamette River-Maint. Dredging
Multnomah County, Oregon
April 5, 2001

Dear Colonel Butler:

The Fish and Wildlife Service has reviewed the referenced public notice regarding a proposal to conduct maintenance dredging for a period of five years at river mile 11.4 on the Willamette River. These comments have been prepared under the authority of and in accordance with the provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) and are consistent with the intent of the National Environmental Policy Act of 1969. This letter does not fulfill the requirements of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). If the Corps of Engineers (Corps) determines, based on a Biological Assessment or evaluation, that threatened and endangered species and/or critical habitat may be affected by the project, the Corps is required to consult with the Service following the requirements of 50 CFR 402 which implement the Act.

PROJECT DESCRIPTION

The proposed project would involve dredging to -40 feet with a clamshell dredge and annually removing up to 8,000 cubic yards (cy) of material from an area around the Cargill grain elevator dock to maintain adequate depths during docking and grain loading operations. Material would be disposed upland at Ross Island or at another approved upland disposal site or inwater in the Ross Island Lagoon.

FISH AND WILDLIFE RESOURCES

The Willamette River at the project site is used by several species of anadromous fishes for rearing, feeding, and migration. These include spring and fall chinook and coho salmon; winter and summer steelhead and searun cutthroat trout; Pacific lamprey; shad; and sturgeon. Resident game fish such as rainbow and resident cutthroat trout; whitefish; and smallmouth and largemouth bass as well as a variety of nongame fish also use the Willamette River for spawning, rearing, and feeding.

Several of the above anadromous fish species have been listed under the Endangered Species Act as follows: Snake River sockeye salmon (endangered); Snake River spring/summer chinook salmon (threatened); Snake River fall chinook salmon (threatened); Snake River steelhead trout (threatened); Columbia River chum salmon (threatened); Lower Columbia River steelhead trout (threatened); Lower Columbia River chinook salmon (threatened); Middle Columbia River steelhead trout (threatened); Upper Columbia River steelhead trout (endangered); Upper Columbia River spring chinook salmon (endangered); Upper Willamette River chinook salmon (threatened); Upper Willamette River steelhead trout (threatened); and SW Washington/ Columbia River coastal cutthroat trout (proposed threatened).

Aquatic wildlife resources associated with the proposed project area include waterfowl species like mallard and Canada goose and aquatic furbearers such as mink and river otter. Opossums, raccoons, pigeons, Norway rats, mice, hawks, and peregrine falcons are also found in the project area. Bald eagles and ospreys are present within the project area and ospreys may occasionally use this portion of the Willamette River for foraging.

FISH AND WILDLIFE SERVICE CONCERNS

The Service has concerns regarding the timing of the dredging, the composition (grain size) and possible contaminant content of the sediments that are proposed for dredging, the location of the disposal site for the dredged materials, and the lack of a monitoring plan. Each of these concerns is discussed below.

Most juvenile salmonids use the shallow waters along the shoreline when migrating to the ocean. Here they can find food and escape cover from predators. The preferred inwater work period for dredging projects in the lower Willamette River is the period when juvenile salmon are least likely to be present, which for this section of the Willamette River is July 1 through October 31 and December 1 through January 31.

Depending on the grain size of the sediments in the proposed dredging area, there may be concentrations of contaminants present in the sediments. Fine, silty organic materials can serve as attachment sites for DDT, DDE, PCB, petroleum compounds, and other contaminants. Dredging in such sediments could resuspend these materials into the water column, thus exposing fish and other aquatic organisms to contamination. The Corps document entitled "Dredged Material Evaluation Framework, Lower Columbia River Management Area" requires testing of material proposed for dredging under a Tiered Evaluation Process. It is important that

up-to-date information is available on the grain size and total volatile solids (TVS) of the sediments to be dredged so that a determination can be made on the likely presence or absence of contaminants in these sediments and on the possible effects of these contaminants, should they be present, on fish and wildlife resources in the project area.

We have some concerns about the disposal of the dredged sediments. If the sediments are found to have contaminants, we recommend that the materials be disposed on an approved upland area, not on Ross Island itself nor in the Ross Island Lagoon. If the sediments are not contaminated, and it is agreed to by the resource agencies and Ross Island Sand and Gravel, the materials could be placed inwater in the lagoon.

The Service believes monitoring of the proposed dredging is also necessary. A monitoring plan should be developed by the applicant to determine project impacts in terms of water quality effects (turbidity, DO, pH), fish kills, and/or effects on benthic organisms (productivity, density, recovery, etc.). This information would be useful for developing permit renewal conditions that would protect fish and wildlife resources in the project area in the future.

In addition, we ask that the Corps provide this office with copies of the Record of Decision for the permit application and the issued permit. These copies will help us to maintain a complete professional record of the above cited project.

RECOMMENDATIONS

To protect and minimize adverse impacts to fish and wildlife resources of the Willamette River, the Service recommends that:

1. All inwater work take place between July 1 and October 31 and/or December 1 and January 31.

2. Sediment testing for grain size and total volatile solids (TVS) be conducted and that the results of this testing be provided to this office for review and comment prior to initiation of dredging.

3. No contaminated sediments be placed upland at Ross Island or inwater at Ross Island Lagoon. In addition, the Service requests the opportunity to review and comment on any site selected for upland disposal of contaminated sediments.

4. A monitoring plan be developed to assess immediate and long-term dredging impacts on water quality, fish, and benthic organisms.

Please contact Kathi Larson at this office (503-231-6179) if you have any questions regarding these comments or need additional information.

The above views and recommendations constitute the report of the Department of the Interior on the subject public notice.

Sincerely yours,

for Kemper M. McMaster
State Supervisor
Acting for U.S. Department of
the Interior Coordinator

KL/kl/01-031cgl
cc:
EPA
NMFS
ODFW, Clackamas
DSL
DEQ

Linton, Judy L NWP

From: Marg, Ron E NWP
Sent: Tuesday, April 10, 2001 8:48 AM
To: Linton, Judy L NWP
Subject: FW: Public Notice #: 2001-00023, cultural resource evaluation

---Original Message---
From: Martin, Michael A NWP
Sent: Tuesday, April 10, 2001 8:08 AM
To: Marg, Ron E NWP
Subject: Public Notice #: 2001-00023, cultural resource evaluation

Judy, place a copy of this E-Mail into the file, thanks, Michael

Public Notice #: 2001-000031
Project Manager: Judy Linton
Notice Dates: April 5-April 25, 2001
Applicant: Cargill, Inc.
County: Multnomah
Project: Dredging the ship mooring area adjacent to Irving Grain Elevator, Portland, Or. Disposal site in-water, Ross Island.
Impact Acreage: approximately 2 acres in-water
Evaluation: Area has been dredged over a long history; no impacts to cultural resources anticipated.
Response to Regulatory: 4/10/2001

Willamette Riverkeeper

April 19, 2001

REC'D APR 25 2001

Travis Williams
Executive Director & Riverkeeper

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Ms Judy Linton
U.S. Army Corps of Engineers
ATTN: CENWP-OP-GP (Ms. Judy Linton)
P.O. Box 2946
Portland, OR 97208

RE: 2001-00031

Dear Ms. Linton:

On behalf of Willamette Riverkeeper I submit the following comments on the maintenance dredging permit application by Cargill, Incorporated – Irving Elevator (2001-00031).

We believe that there must be careful evaluation of how this proposed project affects fish species listed under the Endangered Species Act, specifically spring chinook, and steelhead.

It would seem that the sediment analysis plan should be very thorough, with due attention paid to any contaminants found in the sediment as a result of this evaluation. If contamination is found (such as PCBs, PAH, etc) we should carefully consider how removal proposed under this plan can affect not only listed species, but other resident species in the area. Resuspension of sediment from the clamshell dredge is a concern.

The issue of disposal sites is also of concern to us. If it is determined that sediment in this area is contaminated, then we believe Ross Island should be ruled out as a disposal site. The Corps should consider this carefully. Willamette Riverkeeper believes that an upland site not closely associated with the Willamette River, or any other river, would be more suitable.

We understand the need for Cargill Inc. to dredge this site, but the Corps should thoroughly consider this project's impact on the immediate area, and on potential disposal sites as well. If you have any questions about this letter, please give me a call at (503) 223-6418.

Sincerely,

Travis Williams
Riverkeeper & Executive Director

408 SW Second Ave., Suite 210, Portland, OR 97204 • 503-223-6418 • Fax 503-228-1960 • www.willamette-riverkeeper.org

DEPARTMENT OF THE ARMY
PORTLAND DISTRICT, CORPS OF ENGINEERS
ATTN: CENWP-OP-G
PO BOX 2946
PORTLAND OR 97208-2946

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PUBLIC NOTICE for PERMIT APPLICATION

US Army Corps of Engineers
Portland District

Issue Date: April 5, 2001
Expiration Date: April 25, 2001
Corps of Engineers Action ID: 2001-00031
Oregon Division of State Lands Number: RP-3158

20 Day Notice

Interested parties are hereby notified that an application has been received for a Department of the Army permit for certain work in waters of the United States, as described below and shown on the attached plan.

Comments: Comments on the described work should reference the U.S. Army Corps of Engineers number shown above and should reach this office no later than the above expiration date of this Public Notice to become part of the record and be considered in the decision. Comments should be mailed to the following address:

U.S. Army Corps of Engineers
ATTN: CENWP-OP-GP (Ms. Judy Linton)
P.O. Box 2946
Portland, Oregon 97208-2946

Applicant: Cargill Incorporated, Irving Elevator

Location: 800 N. River Street (Section 27, 1 North, 1 East), Willamette River Mile 11.4, Portland, Multnomah County, Oregon

Project Description: Conduct maintenance dredging for a period of five years within an area 1,400 feet long by 60 feet wide to a maximum depth of –40 feet Columbia River Datum (CRD). The applicant estimates that up to 8,000 cubic yards of silt will be removed annually by clamshell dredge. The applicant is proposing to dispose of the sediments upland at Ross Island, or another approved upland disposal site, or inwater within the Ross Island Lagoon. A sediment analysis plan (SAP) has been prepared by the applicant and is being reviewed according to the *Dredged Material Evaluation Framework, Lower Columbia River Mangement Area*, November 1998. Sediment testing will be conducted following approval of the SAP. Testing results can be requested from the Corps Regulatory Project Manager listed below.

Purpose: To have adequate depth to accept ocean going vessels at dockside and during grain loading operation.

Drawings: Three sheets labeled: 2001-00031 Cargill, Inc. - Maintenance Dredging

Additional Information: Additional information may be obtained from Mr. Gene Loffler telephone (503) 281-9177, or by telephoning Ms. Judy Linton, Regulatory Project Manager, U.S. Army Corps of Engineers at (503) 808-4382.

Authority: This permit will be issued or denied under the following:

Section 10, Rivers and Harbors Act 1899 (33 U.S.C. 403), for work in or affecting navigable waters of the United States.

Section 404, Clean Water Act (33 U.S.C. 1344), for discharge of dredged or fill material into waters of the United States.

Water Quality Certification: A permit for the described work will not be issued until certification, as required under Section 401 of the Clean Water Act (P.L. 95-217), has been received or is waived from the certifying state. Attached is the state's notice advertising the request for certification.

Section 404(b)(1) Evaluation: The impact of the activity on the public interest will be evaluated in accordance with the Environmental Protection Agency guidelines pursuant to Section 404(b)(1) of the Clean Water Act.

Public Hearing: Any person may request, in writing, within the comment period specified in this notice, that a public hearing be held to consider this application. Requests for public hearings shall state, with particularity, the reasons for holding a public hearing.

Endangered Species: The Corps of Engineers has preliminarily determined that the proposed project may affect listed fish species occurring in the project area. Consultation with the appropriate agency will occur as part of the permit evaluation process.

Essential Fish Habitat: This notice initiates the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. The proposal would impact approximately 2 acres of EFH utilized by species of Lower Columbia River chinook and Lower Columbia River/Southwest Washington Coast coho. Our initial determination is that the proposed action may have an adverse effect on EFH of federally-managed fisheries in Oregon, Washington, and Idaho waters. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

Cultural Resources: The described activity is not known to be located on property registered or eligible for registration in the latest published version of the National Register of Historic Places. This notice has been provided to the State Historic Preservation Office.

Evaluation: The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the described activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit, which reasonably may be expected to accrue from the described activity, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the described activity will be considered including the cumulative effects thereof; among those are conservation, economics, aesthetics, general environmental concerns, wetlands,

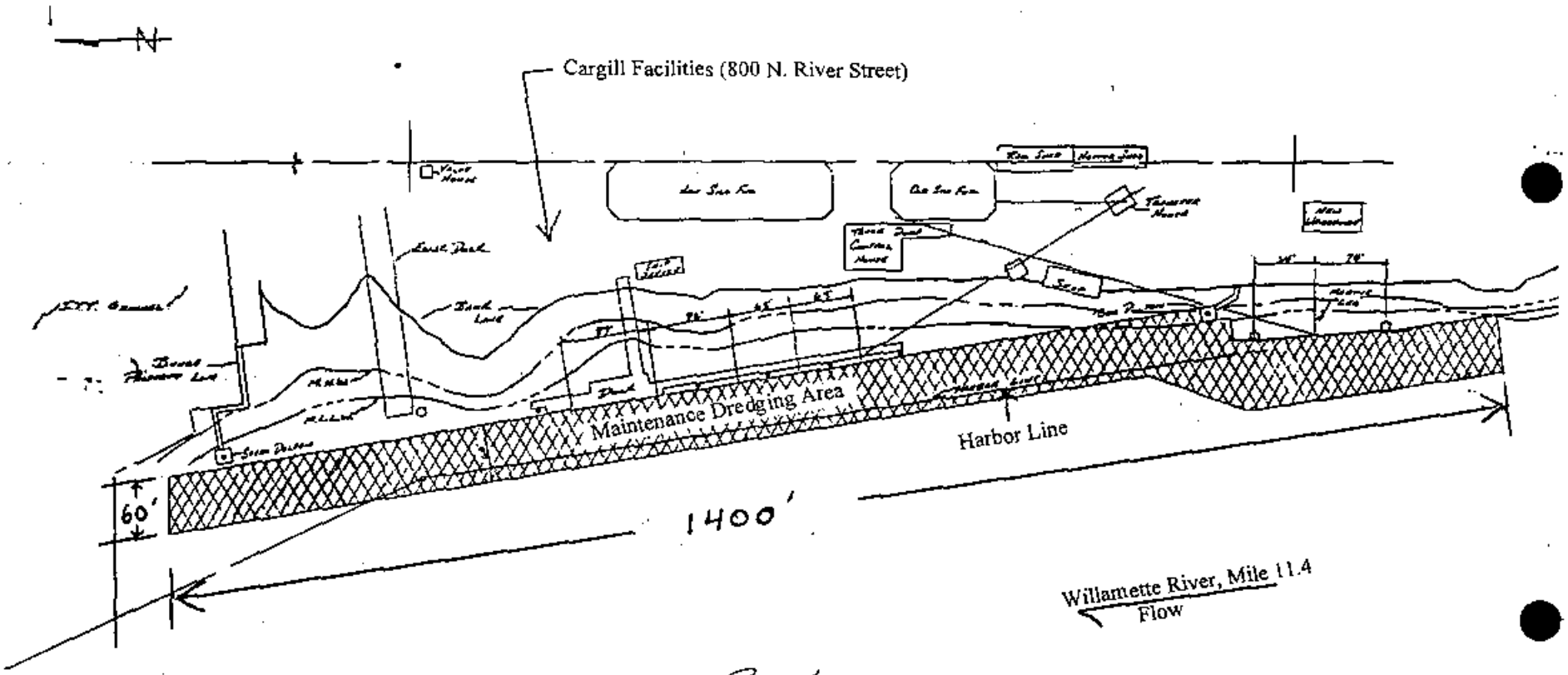
historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general, the needs and welfare of the people.

The Corps of Engineers is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Additional Requirements: State law requires that leases, easements, or permits be obtained for certain works or activity in the described waters. These State requirements must be met, where applicable, and a Department of the Army permit must be obtained before any work within the applicable Statutory Authority, previously indicated, may be accomplished. Other local governmental agencies may also have ordinances or requirements, which must be satisfied before the work is accomplished.

LAMETTE
Mile 10
Overlook Park
Irving Park
Terminal No 1
DOUBLE DECK
PROJECT LOCATION
RIVER
Broadway Bridge
Steel Bridge
Morrison Bridge
Hawthorne Bridge
PORTLA
Portland

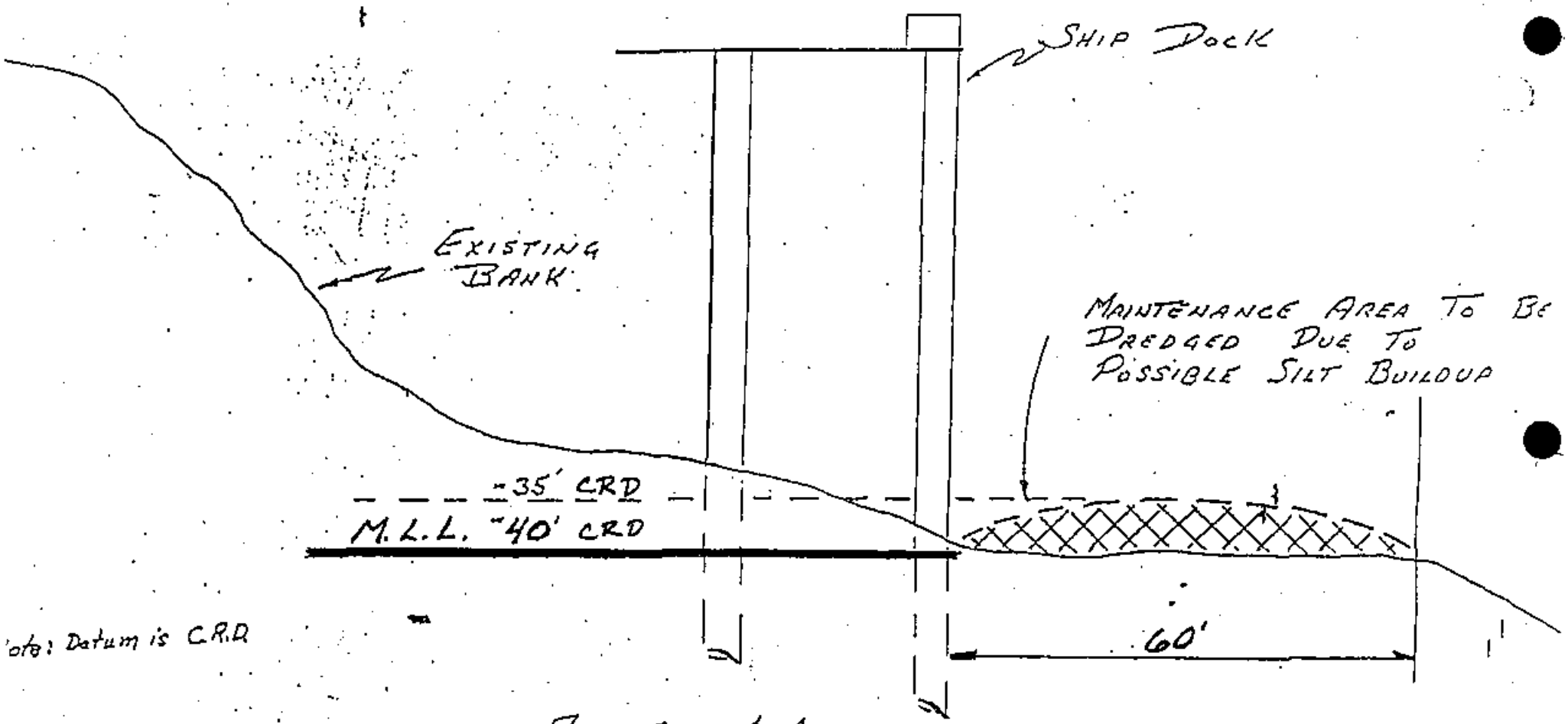
SHEET 1 OF 3



PLAN VIEW

2001-00031 Cargill, Inc. – Maintenance Dredging

SHEET 2 OF 3



Note: Datum is C.R.D.

SECTION A A

NOT TO SCALE

PUBLIC NOTICE

Oregon Department of Environmental Quality
Water Quality 401 Certification

Corps of Engineers Action ID Number: 2001-00031
Oregon Division of State Lands Number: RP-3158

Notice Issued: April 5, 2001
Written Comments Due: May 7, 2001

WHO IS THE APPLICANT: Cargill Incorporated, Irving Elevator

LOCATION OF CERTIFICATION ACTIVITY: See attached U.S. Army Corps of Engineers public notice

WHAT IS PROPOSED: See attached U.S. Army Corps of Engineers public notice on the proposed project

NEED FOR CERTIFICATION: Section 401 of the Federal Clean Water Act requires applicants for Federal permits or licenses to provide the Federal agency a water quality certification from the State of Oregon if the proposed activity may result in a discharge to surface waters.

DESCRIPTION OF DISCHARGES: See attached U.S. Army Corps of Engineers public notice on the proposed project

WHERE TO FIND DOCUMENTS: Documents and related material are available for examination and copying at Oregon Department of Environmental Quality, Water Quality Division, 811 S.W. 6th Avenue, Portland, Oregon 97204

While not required, scheduling an appointment will ensure documents are readily accessible during your visit. To schedule an appointment please call Donna Kelly at (503) 229-6962.

Any questions on the proposed certification may be addressed to the 401 Program Coordinator, (503) 229-5845 or toll free within Oregon at 1-800-452-4011. People with hearing impairments may call DEQ's TTY at (503) 229-6993.

PUBLIC PARTICIPATION:

Public hearing: DEQ will provide opportunity for a public hearing for interested people to appear and submit written or oral comments on the proposed permit if:

- the submitted comments indicate significant public interest, or
- written requests from 10 or more persons are received, or
- an organization representing at least 10 persons requests a public hearing.

Written comments:

Written comments on the proposed certification must be received at the Oregon Department of Environmental Quality by 5 p.m. on (full date). Written comments should be mailed to Oregon Department of Environmental Quality, Attn: 401 Program Coordinator, 811 S.W. 6th Avenue, Portland, Oregon 97204. ***People wishing to send written comments via e-mail should be aware that if there is a delay between servers or if a server is not functioning properly, e-mails may not be received prior to the close of the public comment period.*** People wishing to send comments via e-mail should send them in Microsoft Word (through version 7.0), WordPerfect (through version 6.x) or plain text format. Otherwise, due to conversion difficulties, DEQ recommends that comments be sent in hard copy.

WHAT HAPPENS NEXT: DEQ will review and consider all comments received during the public comment period. Following this review, the permit may be issued as proposed, modified, or denied. You will be notified of DEQ's final decision if you present either oral or written comments during the comment period. Otherwise, if you wish to receive notification, please call or write DEQ at the above address.

ACCESSIBILITY INFORMATION: This publication is available in alternate format (e.g. large print, Braille) upon request. Please contact DEQ Public Affairs at (503) 229-5766 or toll free within Oregon at 1-800-452-4011 to request an alternate format. People with a hearing impairment can receive help by calling DEQ's TTY at (503) 229-6993.

Tillery, Ramona D NWP

From: REGULATORY BRANCH [Don.Easdale@nwp01.usace.army.mil]
Sent: Thursday, April 05, 2001 1:26 AM
To: MICHELLE MICHAUD; WM JONES; ALICE KAVAJECZ; DORIS MCKILLIP; MICHAEL MARTIN (CENWP-PM-E); YVONNE VALLETTE (EPA); BRONWEN MILLER (OFCC); GUYNES, BETH; JOHN MALEK (EPA); GERALD (BUTCH) PARKER; PUBLIC AFFAIRS (NWP-PA); RON GARST; BIANCA STREIF; JOHN MARSHALL; TOM MELVILLE; GLADINE G. RITTER; KAREN M. QUIGLEY; DINO HERRERA; SHERRI SHAFFER; SCOTT STEUMKE; JEFF VAN PELT; ROBERT KENTTA; LINDY TROLAN; LINDA REED-JEROFKE; CHRISTOBEL JURIANSZ; LYNDA WALKER; BERT RADER; MARK SIIPOLA; JOHN MINGER; ERIC ANDERSON (DSL); KAREN A KOCHENBACH; ROBERT ROSE; RAVE KRISTA; AQUA-BARRIER, INC; MATT REYNOLDS; HARBORSIDE; LARRY EVANS; DON BORDA; CENWP-RE NWP; RAMONA TILLERY; CORAL MIRTH WALKER; DON EASDALE; LIBBY MCCULLY; NANCY DURSO (JD WHITE COMPANY); JUDY LINTON; PAUL ROEGER; RUTHANNE BENNETT; DAVID HALMAGY I; COLUMBIA RIVER PILOT; COLUMBIA RIVER PILOTS; ROBERT ROSE; LORI WARNER; MARK SCHNEIDER; PHILLIP STALLINGS; BOB COCHRAN; GLORIA J. GALLEGO; JLKOLIAS
Subject: 20010031 P/N

20010031.pdf

Attached is a .pdf file of a U.S. Army Corps of Engineers for a project where a permit is being requested. Some of the following information is made available in .pdf format which makes an excellent print resource, provided you've taken time to download Adobe Acrobat. For a free copy of the Acrobat reader please visit: http://www.adobe.com/products/acrobat/readstop.html

To provide any comments by e-mail, please visit: http://www.nwp.usace.army.mil/op/g/Regs/PocTable.htm, click on the Project Manager's name or county. Written comments can be mailed to the Project Manger at the letterhead address
found at the top of the public notice.

For more information, please visit our web site: http://www.nwp.usace.army.mil/op/g/

MR. CHIP HUMPHREY
ENVIRONMENTAL PROTECTION AGENCY
OREGON OPERATIONS OFFICE
811 SW SIXTH AVENUE
PORTLAND OREGON 97204

MR. WALLACE REID
ENVIRONMENTAL PROTECTION AGENCY
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SEATTLE WASHINGTON 98101

GLACIER NORTHWEST
921 N RIVER STREET
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PORTLAND OREGON 97227

MS. GENE LOFFLER
CARGILL INCORPORATION,
IRVING ELEVATOR
800 N RIVER STREET
PORTLAND OREGON 97227

Mailed

MR. JOHN TERDINA
81174 GRONNEL ROAD
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Home Page: www.mactec.com

REC'D MAR 22 2001

2001-00031

March 19, 2001

52852.001

Ms. Judy Litton
U.S. Army Corps of Engineers, Portland District
P.O. Box 2946
Portland, Oregon 97208

SUBJECT: Sampling and Analysis Plan
Dredge Material Disposal Planning, Cargill Irving Elevator Terminal
Portland, Oregon

Dear Ms. Litton:

Harding ESE submits the attached document on behalf of the Cargill Irving Elevator Terminal (Cargill) to request approval of the Sampling and Analysis Plan for the dredge material disposal planning at the site.

Cargill would like to begin sampling as soon as possible. We appreciate your expedience in reviewing this plan. Please contact me immediately at 884-3160 if you need any additional information. Thank you for your assistance.

Very Truly Yours,

HARDING ESE

Josh Gravenmier
Project Environmental Scientist

JG/ra/Cargill/CoverLetter2

Enclosure

1.0 INTRODUCTION

Cargill, Incorporated (Cargill) is proposing to conduct maintenance dredging at its Irving Elevator Terminal (Terminal) in Portland, Oregon to facilitate year-round docking operations. Cargill intends to dredge approximately 3,000 cubic yards of sediment (to the permitted dredge depth of –40 feet mean lower low water water[MLLW]) from the adjacent Williamette River (Plate 1) in May 2001. Before sediments can be dredged and disposed of at a pre-selected disposal site, they must meet established chemical, physical, and biological standards. To evaluate whether the material proposed for dredging and disposal meets the standards, representative samples of the material must be sampled and tested. Following testing, the dredged material excavated from the Terminal must be disposed of at an appropriate site. The most appropriate disposal option for these sediments is undetermined, with disposal at Ross Island being the preferred disposal alternative. In order to dispose of dredged material at Ross Island, the material must be deemed suitable for unconfined aquatic disposal. If the material is not deemed suitable for unconfined aquatic disposal, alternate disposal options, including upland disposal at an approved upland disposal site, will be evaluated. This Sampling and Analysis Plan (SAP) establishes the general approach to sampling and testing sediments that are to be dredged from within the Terminal dredging area (Plate 2) and provides relevant background information.

Approval for sediment SAPs and evaluation of testing reports for disposal suitability of dredged material within the Lower Columbia River Management Area (LCRMA) must be obtained from the Dredged Material Management Team (DMMT), which coordinates such activities. The DMMT coordinates these activities with the Regional Management Team, a joint program of the U.S. Army Corps of Engineers (USACE), the U.S. Environmental Protection Agency (EPA), Washington Department of Ecology, Washington Department of Natural Resources, and Oregon Department of Environmental Quality. This SAP was developed in accordance with applicable USACE and EPA guidance, and follows the sampling and testing guidelines from the recently published *Inland Testing Manual* (ITM; *EPA/USACE, 1998*) and the Dredged Material Evaluation Framework (DMEF; *USACE, 1998*).

1.1 Background

The Williamette River is within the LCRMA and as such, dredged material management for the Terminal area falls within the guidance of the DMEF (*USACE, 1998*). Cargill has a permit from the USACE, Portland District (Permit No. 95-1063) and Oregon Division of State Lands (DSL; Permit No. RP 3158) to conduct maintenance dredging of up to 8,000 cubic yards (cys) from the Terminal area (Plate 2). The Terminal area dredge permits expire February 28, 2002. Before a dredging episode can commence, sediments from the area to be dredged must first be evaluated to determine what potential effects the disposal of the dredged material would have on the physical, chemical, and biological components of the aquatic environment to which it will be deposited. Sediment evaluation is accomplished by collecting and testing the material to be dredged, with the test results subsequently compared against established chemical, physical, and biological standards.

1.1.1 Suitability Determinations and Disposal Options

Disposal options include Ross Island or upland disposal and suitability determinations for these are made by the appropriate regulatory agencies. Sediments that are deemed suitable for unconfined aquatic disposal (SUAD) may be placed at the Ross Island disposal site. In order to be deemed SUAD, current and/or historical test results are evaluated against screening levels (*USACE, 1998*) and other available information. Other information includes sediment screening values, such as those compiled by the National Oceanographic and Atmoshperic Administration (*Long et al, 1995*) and Oak Ridge National Laboratory (*Jones et al., 1996*). Suitability determinations are made based on a weight-of-evidence approach. The agencies evaluate whether there is a "reason to believe" that sediments will have an adverse effect on the marine/estuarine environment if disposed at the designated disposal site.

If the material is deemed not suitable for unconfined aquatic disposal (NUAD), alternate disposal options are evaluated. Material deemed NUAD is not necessarily hazardous or harmful to humans or the environment in other than aquatic settings. In fact, NUAD material may be suitable for a variety of other purposes and beneficial uses such as upland/wetland reuse (UWR), use as construction fill or road base, placement on levees, or clean cover for landfills. If material is unsuitable for these purposes or a beneficial reuse project cannot be located within the time frame of the project, landfill disposal or stockpiling is an option.

Because Ross Island disposal is Cargill's preferred option, this SAP is intended to describe the requirements for unconfined aquatic disposal. Therefore, a full discussion of the options for other disposal options, the feasibility of such options, and their testing requirements are not presented herein. If upland disposal is deemed more appropriate by either Cargill or by the agencies (e.g., material is found to be NUAD) than aquatic disposal, additional documentation will be prepared. Additional testing (which depends upon the specific requirements of the final destination of the material) may be required; this could be fulfilled using archived sediment samples (at the discretion of the regulating agencies) or additional sampling and testing may be conducted.

1.1.2 Site Description

Plate 2 shows the area covered by Cargill's maintenance dredging permits. The permitted dredge depth for the facility is –38 feet MLLW with a 2 foot overdredge allowance. The Terminal is an isolated dredge area that is subject to a high current from the Williamette River. The current produces an eddy near the South end of the Terminal and is the location of the majority of the accumulated sediment above dredge depth. Nearby land use is surrounded by the City of Portland, with a varied urban usage. Just to the North of the Terminal site are a few offices and the Glazer Concrete Plant, while to the immediate South are railroad tracks. The Terminal receives variable, moderate vessel traffic in support of Cargill's grain transfer operations. There is a potential for hydraulic fluid releases and oily bilge water discharges associated with these activities. However, no significant spills have occurred at the facility since Cargill has purchased the property. At the North end of the Terminal exists a large (eight foot diameter) City of Portland Storm drain.

1.1.3 Summary of Recent Testing and Dredging History

Cargill purchased the Terminal area from Bunge in 1995 and has had only slight sediment accumulation to date. As a result, no maintenance dredging has occurred at the Terminal during the Cargill operations. The last known dredging episode at the site occurred 9-11 years ago, during the Bunge ownership. No data is available from that dredge episode. Recent testing for the adjacent Columbia River Navigation Channel in 1998 included one sample from the Terminal site area (*Hart Crowser, 1999*). Two sediment cores were collected at this location and were composited into two depth integrated (0 to 3 feet and 3 to 5 feet) samples (Table 1). The top sample yielded six polycyclic aromatic hydrocarbons (PAHs) that were

above LCRMA Maximum Levels (MLs) and seven PAHs that were detected above the LCRMA Screening Levels (SLs) but below the corresponding ML. The detected concentration of total polychlorinated biphenyls (PCBs) also exceeded the LCRMA ML. The lower sample results were all below the LCRMS SLs except for total PCBs.

1.2 Project Organization

The Terminal maintenance dredging testing program will be managed by both Cargill and Harding ESE. The following are the project contacts:

- Dennis Klein, Cargill Representative (952-742-5622)
- Chris Putnam, Cargill Legal Representative (952-742-4470)
- Gene Loffler, Terminal Manager/Superintendent (503-281-9177)
- Josh Gravenmier, Harding ESE Project Manager (415-884-3160)

The Cargill Representative will be the main point-of-contact for the maintenance dredging programs. Subcontractors will be used for various permitting and program coordination activities as well as sediment sampling and chemical, and physical testing. Harding ESE will direct all sampling and testing activities under the supervision of Cargill. Core sampling will be conducted by Harding ESE and Terra Hydr, Inc. of Portland, Oregon. Columbia Analytical Services (CAS) in Kelso, Washington will conduct the chemical and physical analyses.

1.3 Data Quality Objectives

Data quality objectives (DQOs; *EPA, 1994*) provide a qualitative and quantitative framework and series of planning steps based on the scientific method around which data collection programs can be designed. The use of DQOs ensures that:

- The objectives of the investigation are clearly defined
- The type, quantity, and quality of environmental data used in decision-making are appropriate for their intended application

- Acceptable levels of decision error and performance goals are specified such that the quantity and quality of data needed to support management decisions are provided.

Table 2 presents general DQOs for Cargill's Terminal sediment sampling and analysis program, including all 7 steps of the DQO process, as defined by EPA guidance. Section 2.0 and 3.0 further expand on aspects of steps 6 and 7 (Specify Limits on Decision Error and Optimize the Sampling Design).

2.0 PROPOSED STUDY DESIGN

The purpose of the testing proposed in this document is to evaluate the suitability of dredged sediment adjacent to the Terminal for disposal at Ross Island. Dredging of the proposed area is required to bring the area back to a navigable depth and allow vessels to utilize the facility. The sections below describe the general approach to the sampling design and methods for collecting sediment samples for evaluating aquatic disposal options. Additional sampling may be required to evaluate other disposal options.

2.1 Sampling Design

It is proposed that testing be conducted on whole core samples (from sediment surface to permitted depth of –38 feet MLLW, plus two feet overdredge). A total of four cores (Plate 2) will be collected to –40 feet MLLW each and composited into a single sample. Factors considered in selecting the locations and number of cores and samples include historical data, new point sources (e.g., spills, storm drains) in the vicinity of the dredge area, volume to be dredged, river flow patterns, and lateral and vertical extent of the dredge area.

If the results of the whole core testing find that sediments may be unsuitable for aquatic disposal, then "high resolution" testing could be conducted. Forms of high resolution testing include separate analysis of individual cores or core segments and/or collection of additional samples to further delineate aerial extent. All proposed higher resolution or re-testing of sediments will be presented to and approved by the agencies prior to sampling.

Chemical and physical analyses will be conducted on the core samples. The maximum holding time for sediment samples is eight weeks according to the ITM (*EPA/USACE, 1998*). It is feasible that chemical and physical test results on whole cores can be received and future analyses (i.e., biological tests) decided upon such that holding times are met. If deviations from holding time requirements are necessary, agency consultation will occur prior to testing. All testing will be initiated as soon as possible following sample collection. Conditions under which samples must be held as well as holding times are discussed in more detail in Section 3.2.

2.2 Suitability Determinations

Suitability determinations for disposal will be determined by the regulatory agencies. For Ross Island disposal determinations, results for test site sediments will be compared to screening levels (*USACE, 1998*). Because Ross Island is the preferred option, this SAP describes the requirements for aquatic disposal as outlined in DMEF (*USACE, 1998*). If upland disposal is deemed more appropriate than aquatic disposal, any additional testing (which depends upon the specific requirements of the final destination of the material) may be fulfilled using archived sediment samples at the discretion of the regulating agencies.

An effort will be made to present results to appropriate agencies as soon as possible after laboratory reports are received. Therefore, it will be possible to determine if repeat analyses, if necessary, can be conducted without re-sampling. If samples exceed holding times before these decisions are made and re-testing is required, re-sampling may be necessary.

3.0 PROPOSED SAMPLING AND ANALYSIS

Sediments will be collected from each of the four sample locations and tested as a single composite sample, as appropriate, to address the potential for Ross Island disposal. As shown on Plate 2 and discussed above, four stations will be sampled and composited for chemical and physical testing as well as archived for possible future analysis. Quality Assurance /Quality Control (QA/QC; Section 3.3) will be performed by subcontractors (field samplers and laboratories) for each method or analysis with specificity for every appropriate method or analyte requested and/or representative analytes listed in the test method's QA/QC. QA/QC data will be reported in summary form for all samples submitted.

3.1 Sediment Sampling and Preparation

Sample preparation and testing methods are outlined below. If the methods outlined below are modified, the regulatory agencies will be notified, where possible, prior to the change (i.e., if the change is made following sample receipt in the laboratory). This includes method modifications of chemical, physical, or biological protocols. Sufficient volume will be collected to conduct the tests described in Section 3.2 as well as archived for possible future additional analysis. Archived samples will be immediately analyzed for the all the remaining chemical and bioassay parameters if any of the initial analytical results indicate a potential for concern.

3.1.1 Sampling Methods

Samples will be collected by both Terra Hydr, Inc. and Harding ESE staff. Plate 2 details the latest bathymetric survey (performed by Minister-Glaeser Surveying Inc.) and the proposed sample locations. Samples will be collected to the proposed dredge depth plus the permitted overdredge, -40 MLLW. It is proposed that a push-corer be used for sampling. If proposed dredge depths are not achieved, the dredge depth may need to be modified to reflect the depth achieved during sampling. If refusal is encountered during sampling, the sample will be relocated, if possible. If refusal is still encountered, a subsample of the refusal tip material (e.g. that material representing the deepest penetration of the sampler) will be archived for analysis, if required. Following regulatory consultation, refusal tip material may be analyzed as a representative sample of the deepest sediment. Only material that has been appropriately sampled,

tested, and approved will be dredged. Any sediment collected below the proposed core depth will be discarded.

In general, sampling will consist of several stages. First the sampling station is located using either visual landmarks or a Global Positioning System (GPS) system. The station may be marked with a buoy or the boat fixed over the position. The sampler is cleaned or loaded with a clean liner, if required, and deployed over the side of the boat. When the sampler makes contact with the sediment the final sample location is recorded through the GPS system. The sampler is recovered to the boat, and the sediment carefully removed and processed.

Actual sampling locations will be as close as possible to the proposed locations presented in Plate 2. If any scour, holes, obstacles, or refusal (as described above) are encountered at the location proposed for sampling or other problems are encountered in the field, the sampling location may be moved to a new position (as close as possible to the original location, at the discretion of the sampling crew). The target and final location of each sample will be plotted graphically in the final report, and rationale will be provided in cases where the sample locations deviated from those shown in the SAP.

Each core sample, or section of core, will be homogenized separately and a subsample archived at 4°C for up to eight weeks (and/or frozen at -20°C for up to a year for chemical analysis) for possible future testing, should that become necessary. The composite sample will be made by subsampling the homogenized individual core samples proportionally according to the length of each core section and mixing the subsamples together to create the composite. The composite sample will then be placed into a deionized water-rinsed, food-grade plastic bag or glass container and shipped for physical testing, chemical testing, and/or stored for possible future testing.

Samples will be handled using approved methods and materials. EPA standard cleaning procedures will be adhered to; utensils and mixing containers will be stainless steel or Teflon; pre-cleaned glass jars will be used for chemistry samples; and clean polyethylene bags will be used for bioassay sediment storage. Standard cleaning techniques include rinsing equipment with deionized water, washing with laboratory soap (e.g. Alconox), and when appropriate, rinsing with solvents.

3.1.2 Sample Handling and Chain-of-Custody

Proper chain of custody (COC) procedures will be followed at all times and at all stages of any sample collection and analysis process. If core samples are composited in the field, the COC will list each individual core sample and indicate which cores were composited. If composited in the laboratory, a separate COC will be prepared for composite samples and will indicate which cores were composited. The following information will be recorded on core log sheets and/or COC records for each core taken (copies of core logs and COC forms will be provided in the testing report):

- Date and time of collection
- Sample identification
- Sample location (latitude and longitude) (coring log only)
- Water depth, tide height (coring log only)
- Core penetration and core retrieval amount, portion of core used (feet) (coring log only)
- Description of core (color, odor, stratification, particle type/size) (coring log only)
- Identification of sampler and recorder
- Number and size of sample containers
- Type of samples (e.g. composite)
- Analyses to be performed (COC record only).

Samples will be labeled and placed in coolers on ice following collection and will be shipped to the laboratory for storage and analysis. Samples shipped through subcontractor, courier, or overnight service, will be secured to avoid sample breakage, placed on ice, and sealed in an ice chest with appropriate COC forms. A trip/temperature blank will be included in each ice chest to record arrival temperature with a target of 4°C as soon after collection as possible. Once received at the laboratory, the samples will be maintained at 4 ± 2 °C (or lower; see below) at all times.

The holding time begins at the time the sample is collected (i.e., taken out of the water) until the sample is analyzed (or extracted). Samples may be held up to 8 weeks for bioassays. Holding times for analytical tests range from 7 days for total solids to 6 months for metals (except mercury) and grain size. Every effort will be made to analyze samples as soon as possible. Samples for organic analyses (butyltins,

pesticides, PCBs, PAHs) can be held up to 40 days after extraction. An archive of all samples (individual cores and composite sample) will be frozen (-20 ± 2 °C) in case reanalysis of samples or individual core analyses (as part of higher resolution testing) are necessary. Samples can be frozen for some analytes to extend the holding time (*EPA/USACE, 1998*). Samples for bioassay testing may not be frozen.

An effort will be made to present results to the appropriate agencies as soon as possible, after the laboratory reports are received. Therefore it will be possible to determine if repeat analyses and/or additional tests, if necessary, can be conducted without re-sampling. If samples exceed holding times before these decisions are made and re-testing is required, re-sampling may be necessary.

3.2 Sediment Testing

Testing methods are outlined below. If test methods outlined here are changed, agencies will be notified in writing prior to the change. This includes method modifications of chemical, physical, or biological protocols.

3.2.1 Chemical and Physical Analyses

The composite sample sediment will be tested for the list of chemicals shown in Table 3. The detection limits specified for the analyses correspond to those specified in DMEF (*USACE, 1998*). Analytical methods are also listed in Table 3. Note that the reporting limits listed are "target detection limits" and may not be able to be met in all samples because of matrix interferences. Any deviations from the listed detection limits will be discussed in the testing report. All sediment chemistry results will be reported on a dry weight basis.

3.2.2 Bioassay Analyses

Testing methods are not part of the initial testing, however, sufficient sample will be collected and archived during the field work should bioassay analysis be deemed necessary. Any bioassay methods will follow, the Green Book (*EPA/USACE, 1991*), the ITM (*EPA/USACE, 1998*), and the DMEF (*USACE, 1998*). The ITM and the Green Book require tests to cover different phyla/trophic levels as well as bioaccumulation testing. If bioassay testing is proposed, an addendum to this SAP will discuss the tests required in more detail.

3.3 Quality Assurance / Quality Control

Quality Control (QC) is performed throughout sampling and analysis and is the overall system of technical activities that measures attributes and performance to verify that they meet stated requirements. Quality Assurance (QA) is an ongoing process and is an integrated system that insures that the process is of the quality needed. QA/QC measures and performance goals are necessary to ensure that the data collected are of the quantity and quality necessary to facilitate decision-making, as discussed in Section 1.4 (DQOs). Field and laboratory QA/QC measures and goals and the consequences related to compliance with these measures and goals are discussed below.

Field Sampling

Field QC measures include ensuring that sampling equipment is rinsed between stations and washed and rinsed thoroughly between sites to prevent cross-contamination of samples. Field sampling personnel maintain a log of sampling activities that includes general weather conditions, date and specific time of sampling, tide at the specific time of sampling, GPS or other accurate information on the location of sample, written description of sample location, hand-drawn map of sample location, depth of sample, achieved length of sample, and any characteristics of the sample (e.g. odor, color), and any deviations from the sampling plan. Photodocumentation of sampling events or specific samples occurs frequently. As samples are collected, a COC record is initiated. Field personnel maintain custody of the samples until they are submitted to the laboratory. If sediment samples are composited, a new chain of custody record is initiated for the transfer of sediments for biological, chemical, and/or physical analysis.

Additionally, field personnel ensure that the samples are shipped to the laboratories under appropriate conditions (on ice in sealed ice chests) and the laboratories record the arrival temperature using trip/temperature blanks included in each ice chest.

Chemical Analyses

QA/QC for chemical analyses consists of analyzing one laboratory control standard (LCS), one matrix spike (MS), one matrix spike duplicate (MSD), and one method blank per analytical batch analyzed. A batch consists of up to 20 samples. Surrogate spikes are reported for every sample analyzed for organic chemicals. All procedural blanks, reagent blanks, and standard reference materials are analyzed, and

results are considered into final calculations of contaminant levels in sediments. Analytical results are reported in dry weight and wet weight, as applicable. The final report from the laboratory will include a QA/QC report, which will present the results of the laboratory QA/QC (blank results, relative percent difference for duplicates, surrogate recoveries for organic analyses, and MS/MSD/LCS results) and compare the results to the laboratory acceptance range. Any "difficulties" with the analyses, detects in blanks, elevated reporting limits, or results outside of laboratory acceptance ranges will be reported in the Case Narrative.

Reporting and Data Acceptability

The final report will include the results and a discussion of the QA/QC program. Any deviations from protocols or exceedances of QA/QC limits or acceptability requirements will be presented. Not all deviations or exceedances of QA/QC limits are considered significant or critical to the quality and acceptability of the analysis. The report will include a discussion of any deviations and/or exceedances and their effect on the overall data acceptability.

4.0 REPORTING

Upon completion of the sampling and testing for each project, reports containing a brief description of the sampling and analysis program (including any deviations from this SAP), findings, conclusions, and recommendations, where appropriate, will be prepared in accordance with USACE and EPA/USACE guidelines *(USACE, 1998,; EPA/USACE, 1991; EPA/USACE, 1998)*. Maps showing the actual sampling locations, copies of core logs, data tables, and copies of original laboratory reports (including case narratives, QA/QC information, and completed COC records) will be attached to the final report.

Upon completion of the sampling and testing for each project, reports containing findings, conclusions, and recommendations, where appropriate, will be prepared in accordance with the appropriate guidelines.

5.0 PROJECT SCHEDULE

Cargill would like to begin sampling and testing of the Terminal area in mid March, 2001. Test results will be submitted within 4 weeks of the sampling date. Dredging is planned to commence in May, 2001. No areas will be dredged without prior agency approval.

6.0 REFERENCES

Hart Crowser, 1999. Report #J-5760.

Jones, D.S., R.N. Hull, and G.W. Suter II, 1996. *Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Sediment-Associated Biota*. Prepared by Oak Ridge National Laboratory. June.

Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder, 1995. Incidence of Adverse Biological Effects Within Ranges of Chemical Concentrations in Marine and Estuarine Sediments. *Environmental Management*. 19(1): 81-97.

U.S. Army Corps of Engineers (USACE), 1998. *Dredged Material Evaluation Framework: Lower Columbia River Management Area*. November.

U.S. Environmental Protection Agency (EPA) and USACE, 1991. *Evaluation of Dredged Material Proposed for Ocean Disposal, Testing Manual*. (Green Book). EPA-503/8-91/001. February 1.

_____, 1998. *Evaluation of Dredged Material Proposed for Discharge in Waters of the U.S. - Testing Manual*. EPA-823-B-98-004.

EPA, 1994. *Guidance for Data Quality Objectives Process*. EPA QA/G-4. September.

Table 1. 1998 Historical Samples *
Sampling and Analysis Plan
Cargill Irving Elevator Terminal
Portland, Oregon

	LCRMA Criteria		Terminal Sample Result	
Constituent (Units)	SL	ML	Top (0 to 3 feet)	Bottom (3 to 5 feet)
Conventionals				
Total Solids (%)	NA	NA	--	--
Total Volatile Solids (%)	NA	NA	--	--
TOC (%)	NA	NA	1.03	0.91
Total Sulfides	NA	NA	58	2
Ammonia	NA	NA	65	100
Grain Size	NA	NA	--	--
Metals (mg/kg)				
Antimony (Sb)	150	200	0.19	0.26
Arsenic (As)	57	700	1.9	2.1
Cadmium (Cd)	5.1	14	0.26	0.26
Chromium (Cr)	NA	NA	19.1	47.8
Copper (Cu)	390	1,300	26.6	25.6
Lead (Pb)	450	1,200	29	367
Mercury (Hg)	0.41	2.3	0.07	0.08
Nickel (Ni)	140	370	20.1	25.5
Silver (Ag)	6.1	8.4	0.18	0.2
Zinc (Zn)	410	3,800	90.1	115
Organotin (µg/kg)				
Tributyltin (interstitial water)	0.15	NA	0.05	--
PAHs (µg/kg)				
Naphthalene	2,100	2,400	190	<20
Acenaphthylene	560	1,300	240	<20
Acenaphthene	500	2,000	34	<20
Fluorene	540	3,600	190	<20
Phenanthrene	1,500	21,000	6,800	45
Anthracene	960	13,000	2,200	<20
2-Methylnaphthalene	670	1,900	--	--
Total LPAHs	5,200	29,000	9,654	45
Fluoranthene	1,700	30,000	16,000	98
Pyrene	2,600	16,000	19,000	110
Benzo(a)anthracene	1,300	5,100	6,400	37
Chrysene	1,400	21,000	8,100	40
Benzo(k)fluoranthene	NA	NA	5,100	26
Benzo(b)fluoranthene	NA	NA	2,900	31
Benzo(b+k)fluoranthene	3,200	9,900	8,000	57
Benzo(a)pyrene	1,600	3,600	7,300	61
Indeno(1,2,3-cd)pyrene	600	16,000	4,600	360
Dibenzo(a,h)anthracene	230	1,900	660	53
Benzo(g,h,i)perylene	670	3,200	4,400	270
Total HPAHs	12,000	69,000	74,460	1,086

Table 1. 1998 Historical Samples
Sampling and Analysis Plan
Cargill Irving Elevator Terminal
Portland, Oregon

	LCRMA Criteria		Terminal Sample Result	
Constituent (Units)	SL	ML	Top (0 to 3 feet)	Bottom (3 to 5 feet)
Chlorinated Hydrocarbons (µg/kg)				
1,3-Dichlorobenzene	170	NA	<1	<1
1,4-Dichlorobenzene	110	120	<1	<1
1,2-Dichlorobenzene	35	110	<1	<1
1,2,4-Trichlorobenzene	31	64	--	--
Hexachlorobenzene (HCB)	22	230	<20	<20
Phthalates (µg/kg)				
Dimethyl phthalate	1,400	NA	<20	<20
Diethyl phthalate	1,200	NA	<20	<20
Di-n-butyl phthalate	5,100	NA	<20	<20
Butyl benzyl phthalate	970	NA	28	<20
Bis(2-ethylhexyl)phthalate	8,300	NA	220	160
Di-n-octyl phthalate	6,200	NA	<20	<20
Phenols (µg/kg)				
Phenol	420	1,200	<20	<20
2-Methylphenol	63	77	<6	<6
4-Methylphenol	670	3,600	44	52
2,4-Dimethylphenol	29	210	<6	<6
Pentachlorophenol	400	690	<61	<61
Miscellaneous Extractables (µg/kg)				
Benzyl alcohol	57	870	<6	<6
Benzoic acid	650	760	<100	<100
Dibenzofuran	540	1,700	27	<20
Hexachloroethane	1,400	14,000	--	--
Hexachlorobutadiene	29	290	<20	<20
N-Nitrosodiphenylamine	28	130	<12	<12
Pesticides/PCBs (µg/kg)				
4,4'-DDD	NA	NA	<20	<2
4,4'-DDE	NA	NA	<20	<2
4,4'-DDT	NA	NA	<20	<2
Total DDT	6.9	69	<20	<2
Aldrin	10	NA	<2	<2
Chlordane	10	NA	--	--
Dieldrin	10	NA	<65	<2
Heptachlor	10	NA	<2	<2
Gamma-BHC (Lindane)	10	NA	<2	<2
Total PCBs	130	3,100	7,100	710

LCRMA	Lower Columbia River Management Area.
SL	Screening Level.
ML	Maximum Level.
NA	Not Available.
--	Not Tested.
<20	Not Detected at the detection limit.

Table 1. 1998 Historical Samples [a]
Sampling and Analysis Plan
Cargill Irving Elevator Terminal
Portland, Oregon

	LCRMA Criteria		Terminal Sample Result	
Constituent (Units)	SL	ML	Top (0 to 3 feet)	Bottom (3 to 5 feet)

Detection limit value above criteria level.

Value above SL criteria level.

Value above ML criteria level.

[a] From Hart Crowser report #J-5760, 1999.

Table 2. Data Quality Objectives
Sampling and Analysis Plan
Cargill Irving Elevator Terminal
Portland, Oregon

State the Problem	Identify the Decision	Identify Inputs to the Decision	Define the Study Boundaries	Develop Decision Rules	Specify Limits on Decision Errors	Optimize the Sampling Design
(1) Sediments proposed for dredging from within the Cargill Terminal jurisdiction could contain levels of chemical contaminants that may pose a threat to human or ecological receptors is disposed of at an unconfined aquatic disposal site. (2) Levels of chemical contaminants in marine sediments may vary and previous tests results may not accurately reflect level the levels of contaminants present for subsequent dredging events. (3) Historical testing is not readily available.	(1) Do concentrations of chemical contaminants in sediments proposed for dredging from the Terminal and disposal at Ross Island indicate the potential for: • significant toxicity to water column marine aquatic organisms? • exceedance of water quality objectives? • significant toxicity to benthic marine aquatic organisms? • significant bioaccumulation and trophic transfer (e.g., effects on higher trophic level ecological receptors and/or humans)? (2) Are concentrations of chemical contaminants present above ambient/reference levels?	(1) Lack of data from previous dredged material testing events. (2) Information on potential sources of chemical contaminants. (3) Volume of dredged material and dredging depths. (3) Additional data to be collected as proposed in this SAP (as appropriate): • Sediment chemical and physical tests • Toxicity test potential/testing (4) Relevant screening values/procedures: • NOAA ER-Ls and ER-Ms and other relevant sediment screening levels • Toxicity thresholds • Water column mixing models • Water quality objectives • Theoretical bioaccumulation/food chain modeling, literature data on no-effect tissue levels, and/or human health consumption values (i.e., FDA action levels) • Other benchmarks, as applicable.	(1) Geographic boundaries of the dredging site: • samples should be collected from locations representative of the dredge area and potential contaminant source areas present • samples should be taken to the dredge depth plus overdepth. Constraints include: • the potential to encounter refusal during sampling • the potential for obstructions (ships in berth, underwater objects, etc.). (2) Temporal boundaries include: • tidal and weather related influences • samples should be collected as close as possible to the proposed dredging date (preferably within 90-120 days).	(1) If sediment chemical concentrations (current or historical) are within screening levels <u>and/or</u> are below levels that may indicate a potential for significant bioaccumulation, then material will be considered SUAD. (2) If chemical concentrations are above screening levels <u>and</u> levels that may indicate a potential for significant bioaccumulation, then further testing (bioassay or higher resolution) and/or UWR disposal will be pursued. (3) If further testing indicates that adverse effects on ecological receptors and/or humans are unlikely, then the material will be considered SUAD. (4) If further testing indicates that adverse effects on ecological receptors and/or humans are likely, then the material will be considered NUAD.	The two main decision errors are: • To find material NUAD and implement upland disposal at significant cost when the material is actually SUAD • To find material SUAD and expose ecological and/or human populations to detrimental chemical contamination when the material is actually NUAD. Decision errors can be controlled by: • Developing an appropriate sampling strategy • Using reasonable approaches to evaluating the data • Collecting data of appropriate quality.	(1) An authoritative sampling design will be used, as discussed in Section 2.0 of the SAP. Samples will be collected near shallow areas (where the core lengths will be longest) and in representative "quadrants" of the dredge area. (2) Analyses will include: TOC, grain size, metals, organotins, PAHs, pesticides, and PCBs, water column and benthic bioassays (including ammonia and sulfide measurements), and bioaccumulation tests, as needed.

Table 3. Analytical Methods and Target Detection Limits[a] for Bulk Sediment
Sampling and Analysis Plan
Cargill Irving Elevator Terminal
Portland, Oregon

Constituent (Units)	Method	Detection Limit (dry weight)
Conventionals		
Total Solids (%)	Pg. 17 (1)	0.1
Total Volatile Solids (%)	Pg. 20 (1)	0.1
TOC (%)	Pg. 23 (1, 2)	0.1
Total Sulfides	Pg. 32 (1)	1
Ammonia	Plumb, 1981 (3)	1
Grain Size	Modified ASTM D422 with Hydrometer	NA
Metals (mg/kg)	EPA 6010	
Antimony (Sb)		2.5
Arsenic (As)		2.5
Cadmium (Cd)		0.3
Chromium (Cr)		0.3
Copper (Cu)		15.0
Lead (Pb)		0.5
Nickel (Ni)		2.5
Silver (Ag)		0.2
Zinc (Zn)		15.0
Mercury (Hg)	EPA 7471	0.02
Organotin (µg/kg)	GC-FPD (Krone)	
Tributyltin (interstitial water)		0.01
PAHs (µg/kg)	EPA 8270SIM	
Naphthalene		20
Acenaphthylene		20
Acenaphthene		20
Fluorene		20
Phenanthrene		20
Anthracene		20
2-Methylnaphthalene		20
Fluoranthene		20
Pyrene		20
Benzo(a)anthracene		20
Chrysene		20
Benzo(k)fluoranthene		20
Benzo(b)fluoranthene		20
Benzo(a)pyrene		20
Indeno(1,2,3-cd)pyrene		20
Dibenzo(a,h)anthracene		20
Benzo(g,h,i)perylene		20

Table 3. Analytical Methods and Target Detection Limits[a] for Bulk Sediment
Sampling and Analysis Plan
Cargill Irving Elevator Terminal
Portland, Oregon

Constituent (Units)	Method	Detection Limit (dry weight)
Chlorinated Hydrocarbons	8260	
1,3-Dichlorobenzene		3.2
1,4-Dichlorobenzene		3.2
1,2-Dichlorobenzene		3.2
1,2,4-Trichlorobenzene		6
Hexachlorobenzene (HCB)		12
Phthalates	8270SIM	
Dimethyl phthalate		20
Diethyl phthalate		20
Di-n-butyl phthalate		20
Butyl benzyl phthalate		20
Bis(2-ethylhexyl)phthalate		20
Di-n-octyl phthalate		20
Phenols	8270SIM	
Phenol		20
2-Methylphenol		6
4-Methylphenol		20
2,4-Dimethylphenol		6
Pentachlorophenol		61
Miscellaneous Extractables	8270SIM	
Benzyl alcohol		6
Benzoic acid		100
Dibenzofuran		20
Hexachloroethane		20
Hexachlorobutadiene		20
N-Nitrosodiphenylamine		12
Pesticides/PCBs (µg/kg)	8081	
4,4'-DDD		2
4,4'-DDE		2
4,4'-DDT		2
Aldrin		1.7
Chlordane		1.7
Dieldrin		2.3
Heptachlor		1.7
Gamma-BHC (Lindane)		1.7
Total PCBs	8082	67

mg/kg	Milligrams per kilogram.
µg/kg	Micrograms per kilogram.
PCBs	Polychlorinated biphenyls.
PAHs	Polycyclic aromatic hydrocarbons.

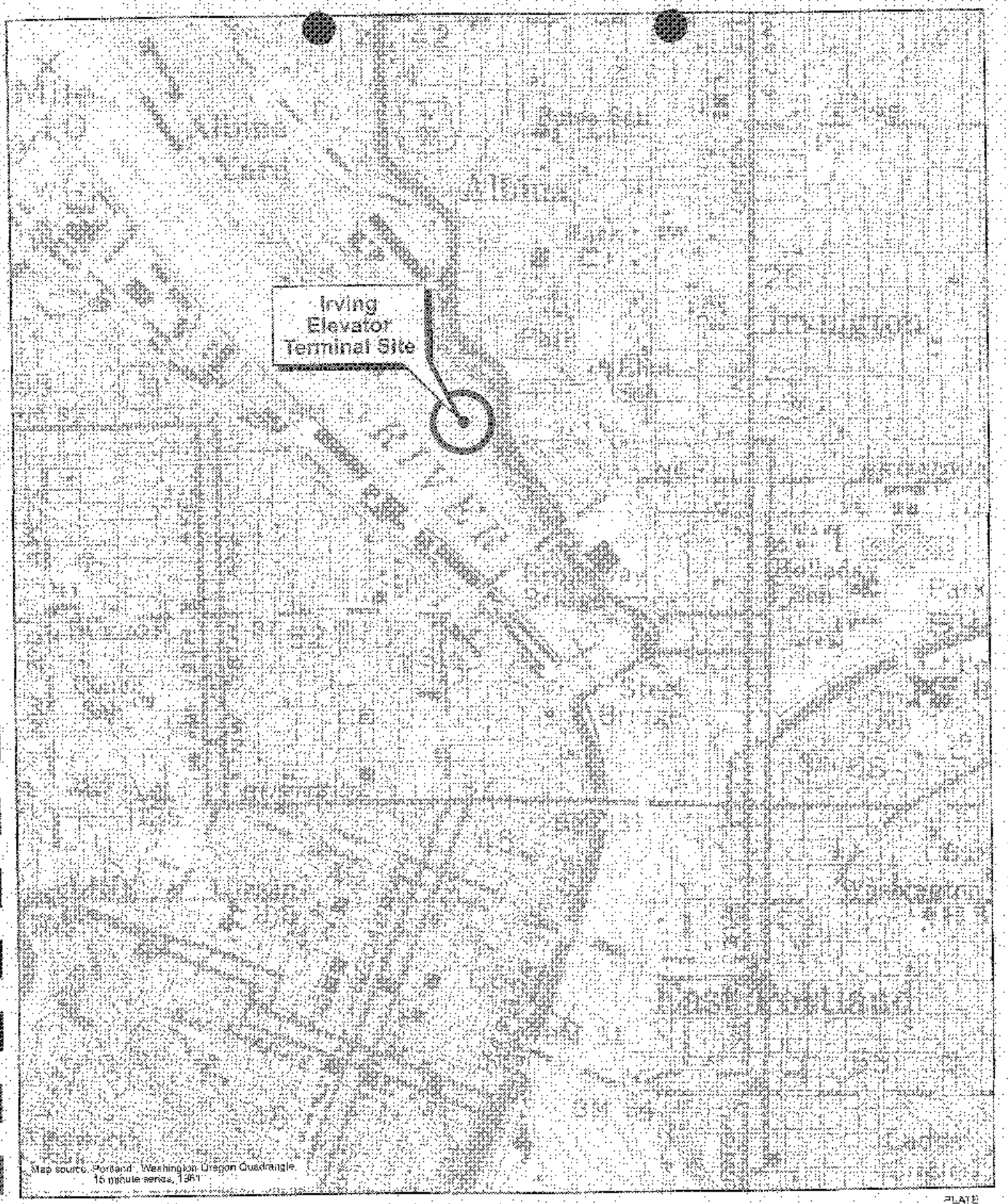
Table 3. Analytical Methods and Target Detection Limits[a] for Bulk Sediment
Sampling and Analysis Plan
Cargill Irving Elevator Terminal
Portland, Oregon

Constituent (Units)	Method	Detection Limit (dry weight)

NA Not Applicable.

GC Gas chromatography.
SIM Selective ion monitoring.
FPD Flame photometric detector.
ASTM American Society for Testing and Materials
% Percent.
TOC Total organic carbon.
[a] Target detection limits may not be met for some analytes in samples with extensive matrix interferences.

(1) Recommended Protocols for Measuring Conventional Sediment Variables in Puget Sound, Puget Sound Estuary Program, 1997.
(2) Recommended Methods for Measuring TOC in Sediments, Kathryn Bragdon-Cook, Clarification Paper, Puget Sound Dredged Disposal Analysis Annual Review, May, 1993.
(3) Procedures For Handling and Chemical Analysis of Sediment and Water Samples, Russell H. Plumb, Jr., EPA/Corps of Engineers, May, 1981.



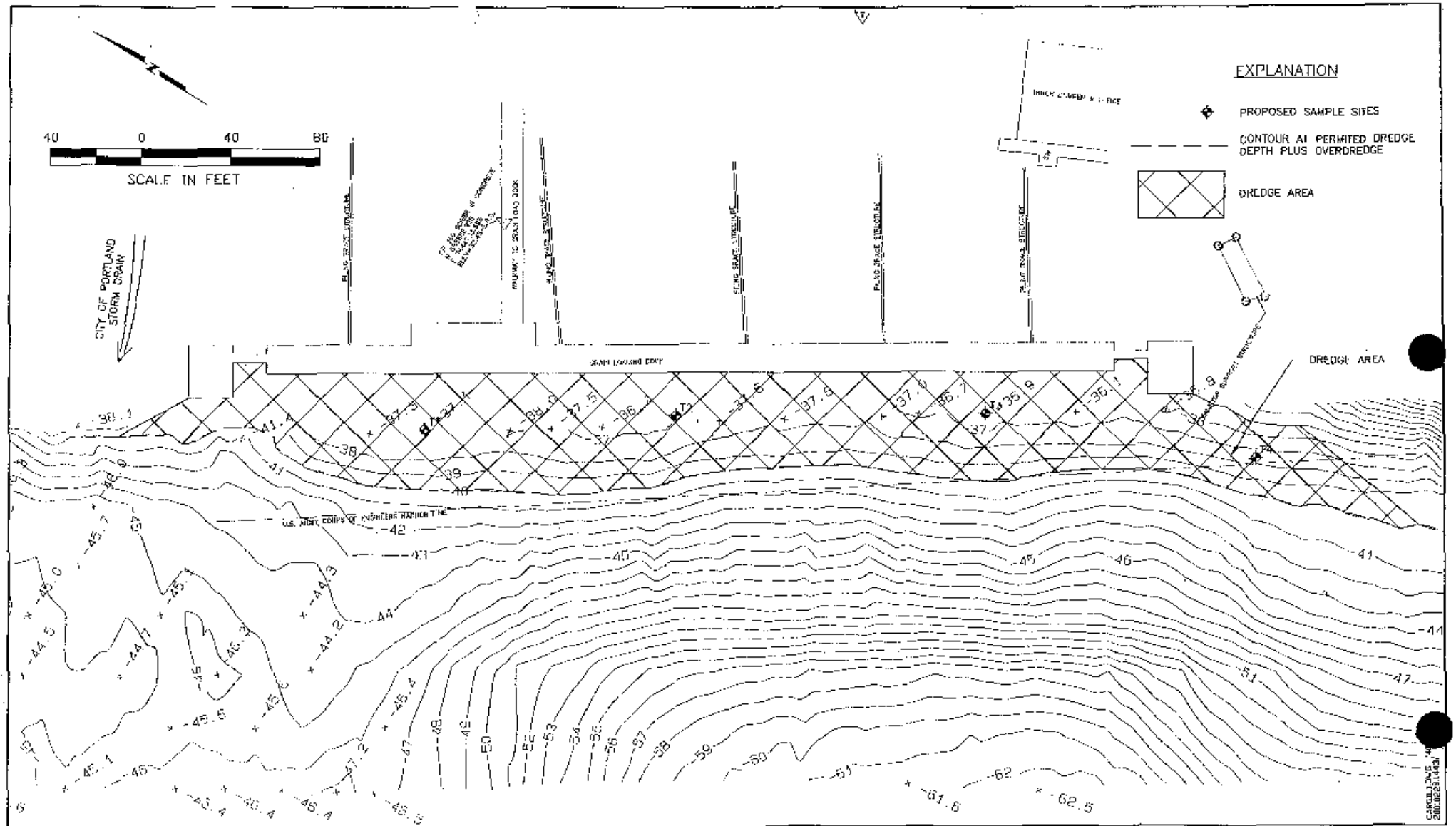
Map source: Portland, Washington-Oregon Quadrangle, 15 minute series, 1961

Harding ESE
A MACTEC COMPANY
Engineering and Environmental Services

Site Overview
Sampling and Analysis Plan
Cargill Irving Elevator Terminal
Portland, Oregon

PLATE
1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED
DJP	52852.001		02/01	



Harding ESE
A MACTEC Company

Dredge Site
Sampling and Analysis Plan
Irving Elevator Terminal
Portland, Oregon

PLATE
2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISION DATE
PH	52852.001		02/01	

DISTRIBUTION

Sampling and Analysis Plan
Dredge Material Disposal Planning
Cargill Irving Elevator Terminal, Portland, Oregon

March 19, 2001

Copy No. 1

Copies 1-4:	Ms. Judy Litton U.S. Army Corps of Engineers, Portland District P.O. Box 2946 Portland, Oregon 97208-2946
Copy 5:	Mr. Dennis Klein Cargill, Incorporated P.O. Box 5624 Minneapolis, Minnesota 55440-5624
Copy 6:	Mr. Christopher Putnam Cargill, Incorporated P.O. Box 5624 Minneapolis, Minnesota 55440-5624
Copy 7:	Mr. Gene Loffler Cargill, Incorporated 800 River Street Portland, Oregon 97227-1715
Copies 8-11:	Harding ESE Project Files
Copy 12:	Corporate Records

JG/Cargill_sap.doc

CENPP-CO-GP *(1145b/Permit Files)* DATE: _____

MEMORANDUM FOR Regulatory Case File: 2001-00031, Cargill

SUBJECT:

3/5 Conversation w/ Angie Tomlinson 227-1332 x7

- her firm is going to conduct sediment sampling for Cargill. I told her to prepare sampling plan and provide it for our review.

3/22/01 Received four copies of sampling + Analysis Plan for Cargill. Forwarded three copies to Mark Silpola for review by Corps, DEQ, + EPA.

NPP Form 1145-2, Jul 96 Proponent Office: CENPP-CO-GP

PROJECT MANAGER *(Signature)*

US Army Corps
of Engineers®
Portland District

REGULATORY
PERMIT APPLICATION RECEIPT

TO:	APPLICANT *(Printed Name)* CARGILL INC.	DATE 1/16/01
RE:	PROJECT NAME 800 N RIVER STREET	
	CORPS APPLICATION ID NUMBER ▶ 200100031	

After preliminary evaluation of your application, we may contact you if additional information is required. Please refer to the Corps Application Identification (ID) Number above when you contact this office regarding your project/property.

If you have questions, please contact the project manager below by telephone or written request.

FROM:	PROJECT MANAGER *(Printed Name)* JUDY LINTON	PHONE NUMBER (503)808-4382

NWP FL 1145-1 (Jul 2000) *Previous editions not usable.* *Proponent Office: CENWP-OP-G*

US Army Corps of Engineers
Portland District

JOINT PERMIT APPLICATION FORM

THIS APPLICATION WILL MEET THE REQUIREMENTS OF BOTH AGENCIES

AGENCIES WILL ASSIGN NUMBERS

Corps Number 2001 00031 Oregon Division of State Lands Number _____

SEND ONE SIGNED COPY OF YOUR APPLICATION TO EACH AGENCY

District Engineer
ATTN: CENPP-OP-GP
PO Box 2946
Portland OR 97208-2946
503-808-4373

JAN 16 2001

State of Oregon
Division of State Lands
775 Summer Street NE
Salem OR 97310-1337
503-378-3805

① Applicant Name and Address: Cargill Inc.
Irving Elevator
800 N River Street
Portland, OR 97227

business phone # 503-281-9177
home phone # 503-698-3327
FAX # 503-281-1971

O Co-Applicant
O Authorized Agent
O Contractor
Name and Address

business phone #
home phone #
FAX #

Property Owner
(if different than applicant)
Name and Address

business phone #
home phone #
FAX #

② **PROJECT LOCATION**

Street, Road or other descriptive location	Legal Description: Quarter	Section	Township	Range
800 N River Street	2829	27	1 ☒ North O South	1 ☒ East O West

In or Near (City or Town)	County	Tax Map #	Tax Lot #
Portland	Multnomah		39

Waterway	River Mile	Latitude	Longitude
Willamette	11.4	45° 32' 18"	122° 40' 20"

Is consent to enter property granted to the Corps and the Division of State Lands? ☒ Yes O No O With prior notification

③ **PROPOSED PROJECT INFORMATION**

Activity Type: O Fill ☒ Excavation (removal) O In-Water Structure O Maintain/Repair an Existing Structure

Brief Description: Maintenance dredging (must have a current permit in case berth silts in)

Fill will involve _____ cubic yards annually and/or _____ cubic yards for the total project

_____ cubic yards in a wetland or below the ordinary high water or high tide line

Fill will be O Riprap O Rock O Gravel O Sand O Silt O Clay O Organics O Other _____

Fill Impact Area is _____ Acres; _____ length; _____ width; _____ depth

Removal will involve up to 8,000 cubic yards annually and/or 24,000 cubic yards for the total project

_____ cubic yards below the ordinary high water or high tide line

Removal will be O Riprap O Rock O Gravel O Sand ☒ Silt O Clay O Organics O Other _____

Removal Impact Area is _____ Acres; 1,400 ft length; 60 ft width; 40 ft depth

Is the Disposal area: Upland? ☒ Yes O No Wetland / Waterway? ☒ Yes O No Requesting approval for both

Are you aware of any Endangered Species on the project site? O Yes ☒ No

Are you aware of any Cultural Resources on the project site? O Yes ☒ No

Is the project site near a Wild and Scenic River? O Yes ☒ No

If Yes, please explain in the project description (on page 2, block 4).

④ Proposed Project Purpose & Description

Project Purpose and Need: To have adequate depth of water to accept ocean going vessels at at dockside and during grain loading operations.
Current permits expire: Corp 1/17/01 State Lands 2/28/01

Project Description:

Dredge along 1,400 ft of ship dock area to 40 ft depth for berthing ocean going vessels. Barge clamshell type crane to be used. Requesting disposal site to be upland at Ross Island Sand & Gravel or other approved upland site, or in water disposal at an approved site. Spoil material will be tested and an approved disposal site agreed upon with the Corps of Engineers and State Lands before maintenance dredging starts.

How many project drawing sheets are included with this application? 4

NOTE: A complete application must include drawings and a location map submitted on separate $8^1/_2$ X 11 sheets.

Will any material, construction debris, runoff, etc. enter a wetland or waterway? ○ Yes ⊗ No

If yes, describe the type of discharge (above) and show the discharge location on the site plan.

Estimated Start Date after 5/15/01 Estimated Completion Date before 7/31/01

⑤ Project Impacts and Alternatives

Describe alternative sites and project designs that were considered to avoid impacts to the waterway or wetland.

N/A

Describe what measures you will use (before and after construction) to minimize impacts to the waterway or wetland.

NOTE: If necessary, use additional sheets.

⑥ Additional Information

Adjoining Property Owners and Their Addresses and Phone Numbers

Glacier Northwest
921 N River Street
503-288-5175

Union Pacific Railroad
2745 N Interstate Avenue
503-249-2711

Has the proposed activity or any related activity received the attention of the Corps of Engineers or the State of Oregon in the past, e.g., wetland delineation, violation, permit, lease request, etc.? ○ YES ⊗ NO

If yes, what identification number(s) were assigned by the respective agencies:

Corps # _____

State of Oregon# _____

⑦

CITY / COUNTY PLANNING DEPARTMENT AFFIDAVIT

(to be completed by local planning official)

○ This project is not regulated by the local comprehensive plan and zoning ordinance.

● This project has been reviewed and is consistent with the local comprehensive plan and zoning ordinance.

Dredging is exempt from greenway review.

○ This project has been reviewed and is not consistent with the local comprehensive plan and zoning ordinance.

○ Consistency of this project with the local planning ordinance cannot be determined until the following local approval(s) are obtained:

○ Conditional Use Approval ○ Development Permit

○ Plan Amendment ○ Zone Change

○ Other _____

City of Portland
Office of Planning
and Development Review
Development Services Center
1900 SW Fourth Ave., Suite 5000
Portland, OR 97201

An application ○ has ○ has not been made for local approvals checked above.

Signature (of local planning official)	Title	City / County	Date
[signature]	City Planner	Portland	1-12-01

⑧

COASTAL ZONE CERTIFICATION

If the proposed activity described in your permit application is within the Oregon coastal zone, the following certification is required before your application can be processed. A public notice will be issued with the certification statement which will be forwarded to the Oregon Department of Land Conservation and Development (DLCD) for its concurrence or objection. For additional information on the Oregon Coastal Zone Management Program, contact the department at 1175 Court Street NE, Salem, Oregon 97310 or call 503-373-0050.

CERTIFICATION STATEMENT

I certify that, to the best of my knowledge and belief, the proposed activity described in this application complies with the approved Oregon Coastal Zone Management Program and will be completed in a manner consistent with the program.

Print/Type Name _____ Title _____

Applicant Signature _____ Date _____

⑨

SIGNATURE FOR JOINT APPLICATION

(REQUIRED)

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete, and accurate. I further certify that I possess the authority including the necessary requisite property interests to undertake the proposed activities. I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. I understand that local permits may be required before the state removal-fill permit is issued. I understand that payment of the required state processing fee does not guarantee permit issuance.

Gene Loffler — Facility Manager

Print/Type Name (coapplicant) Title

[signature] — 12/8/00

Applicant Signature (coapplicant) Date

I certify that I may act as the duly authorized agent of the applicant.

Gene Loffler — Facility Manager

Print/Type Name Title

[signature] — 12/8/00

Authorized Agent Signature Date

Supplemental Wetland Impact Information
(For Wetland Fills Only)

Site Conditions of impact area

Impact area is ○ Ocean ○ Estuary ⊗ River ○ Lake ○ Stream ○ Freshwater Wetland

Note: Estuarian Resource Replacement is required by state law for projects involving intertidal or tidal marsh alterations. A separate Wetlands Resource Compensation Plan may be appended to the application.

Has a wetland delineation been completed for this site? ○ Yes ⊗ No

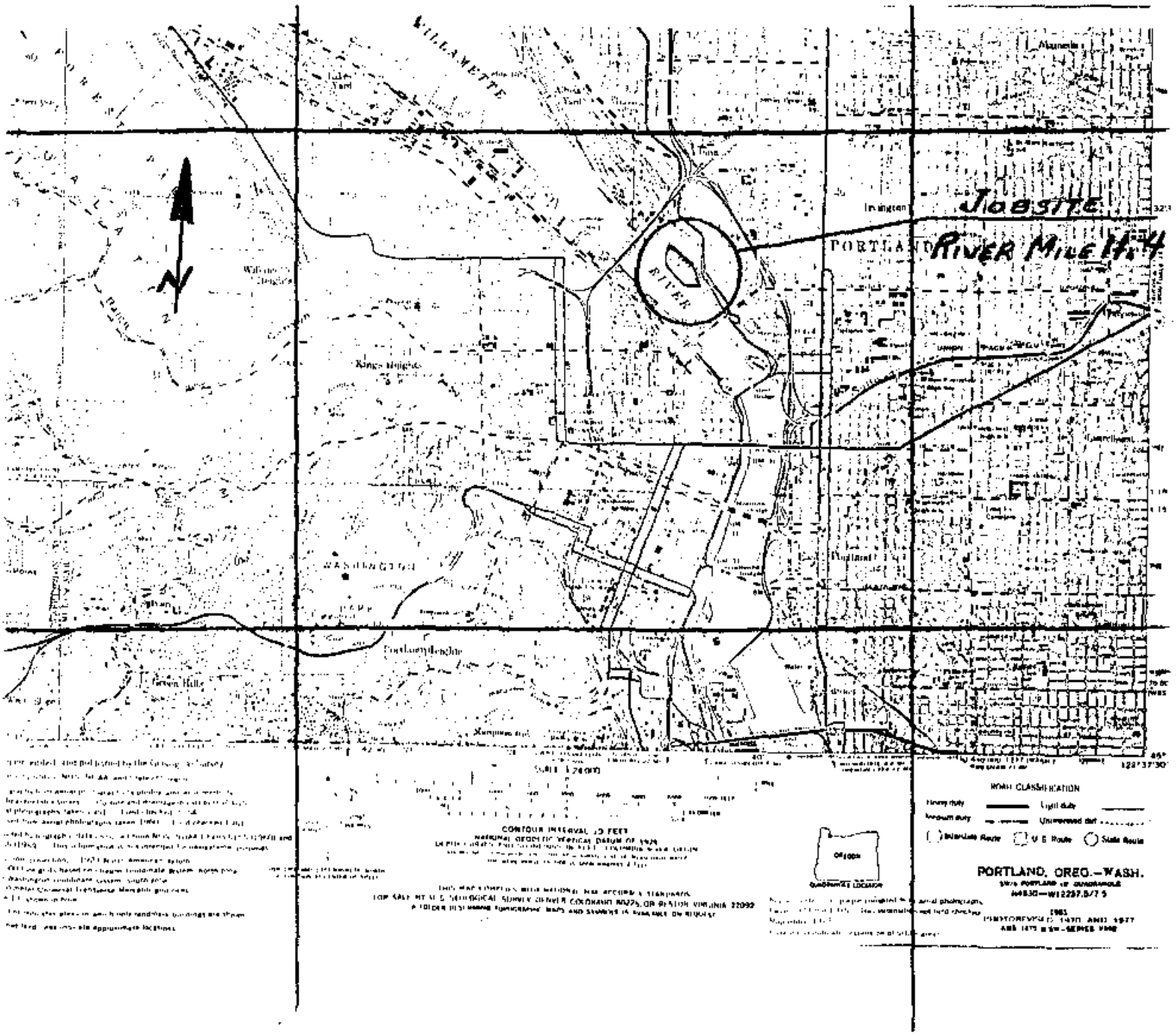
If yes, by whom:

Describe the existing physical and biological character of the wetland/waterway site by area and type of resource (use separate sheets and photos, if necessary)

Resource Replacement Mitigation

Describe measures to be taken to replace unavoidably impacted wetland resources

* Because this information is not necessary for a complete application, you may submit this sheet and other environmental information after submitting your application.



VICINITY MAP

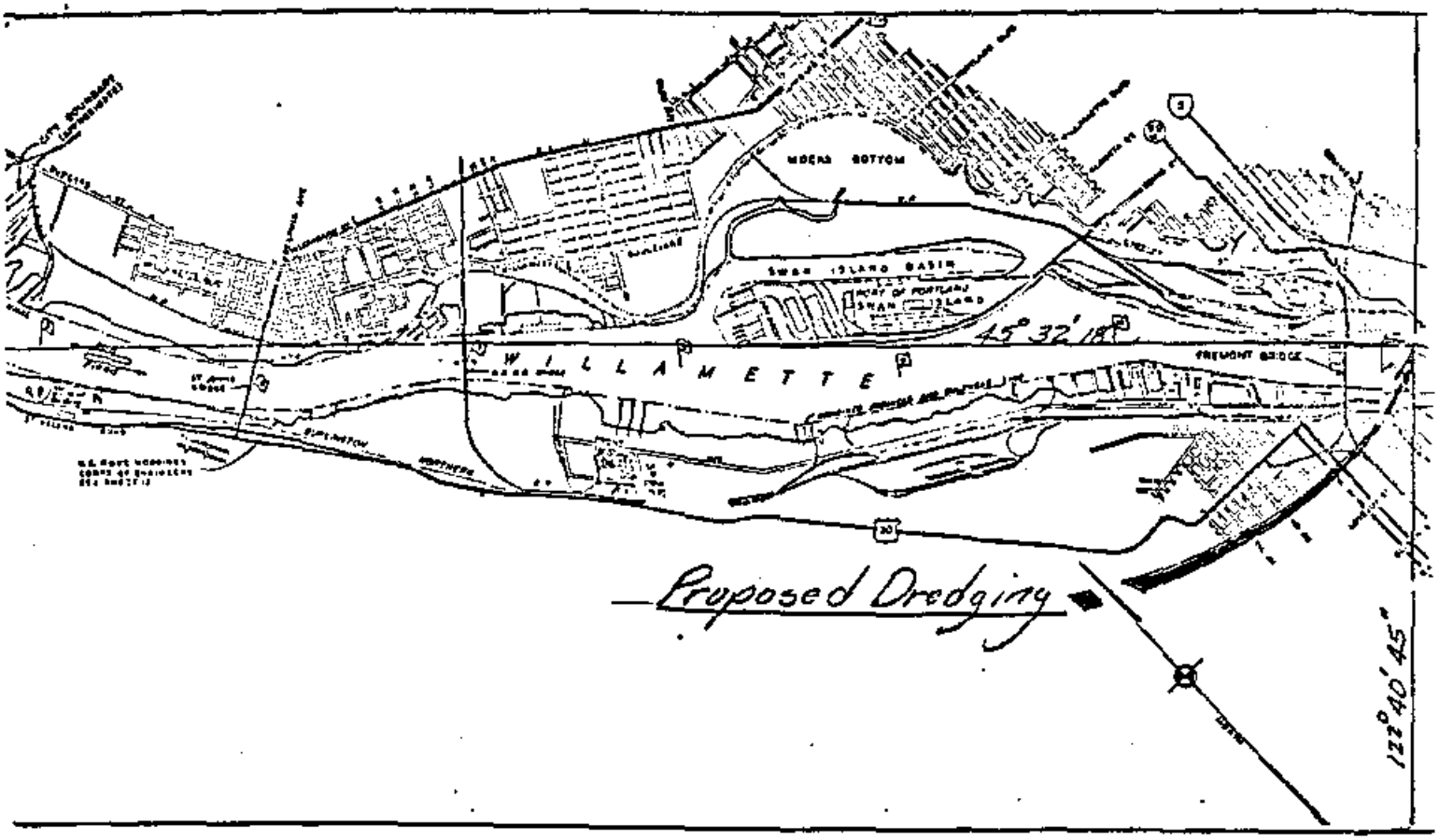
MAINTENANCE DREDGING

in WILLAMETTE RIVER

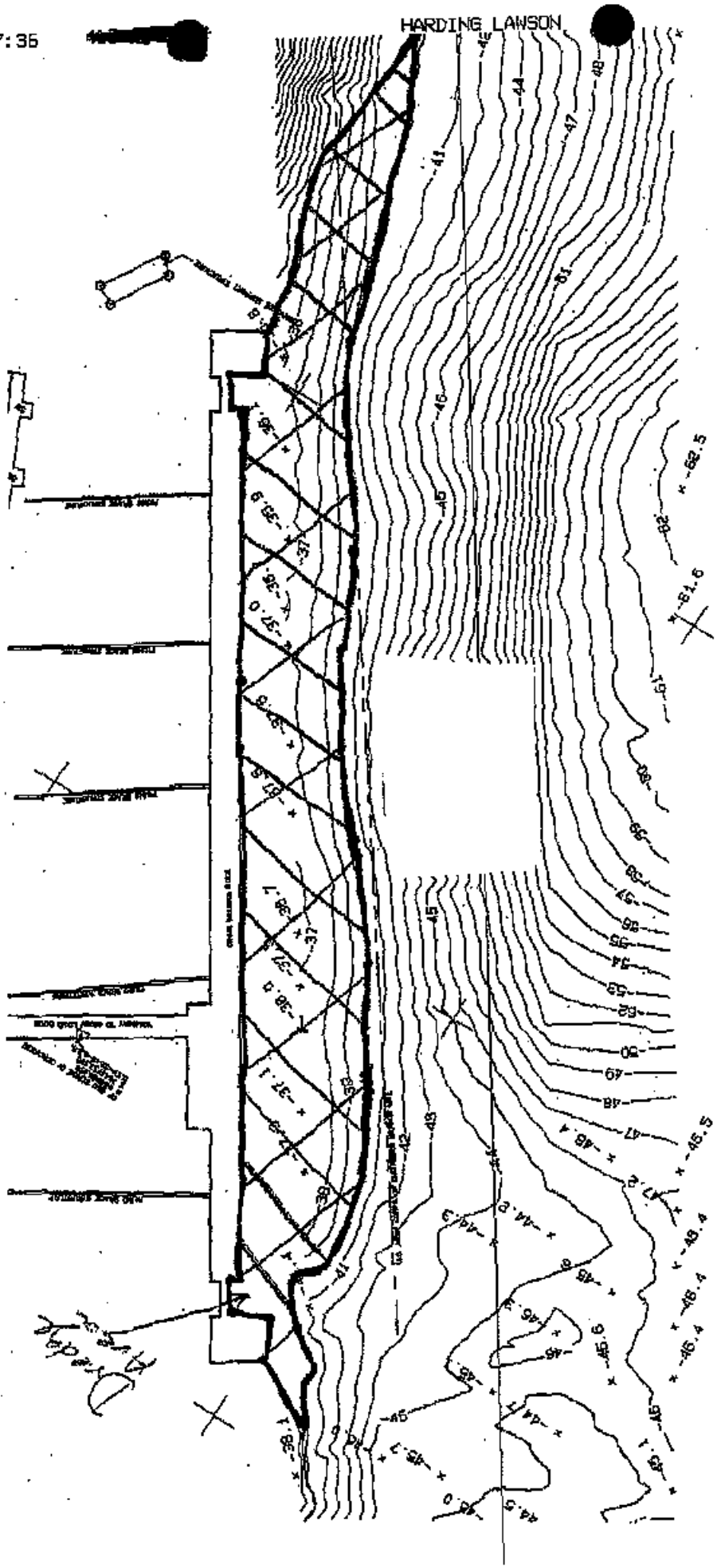
at RIVER MILE 11.4

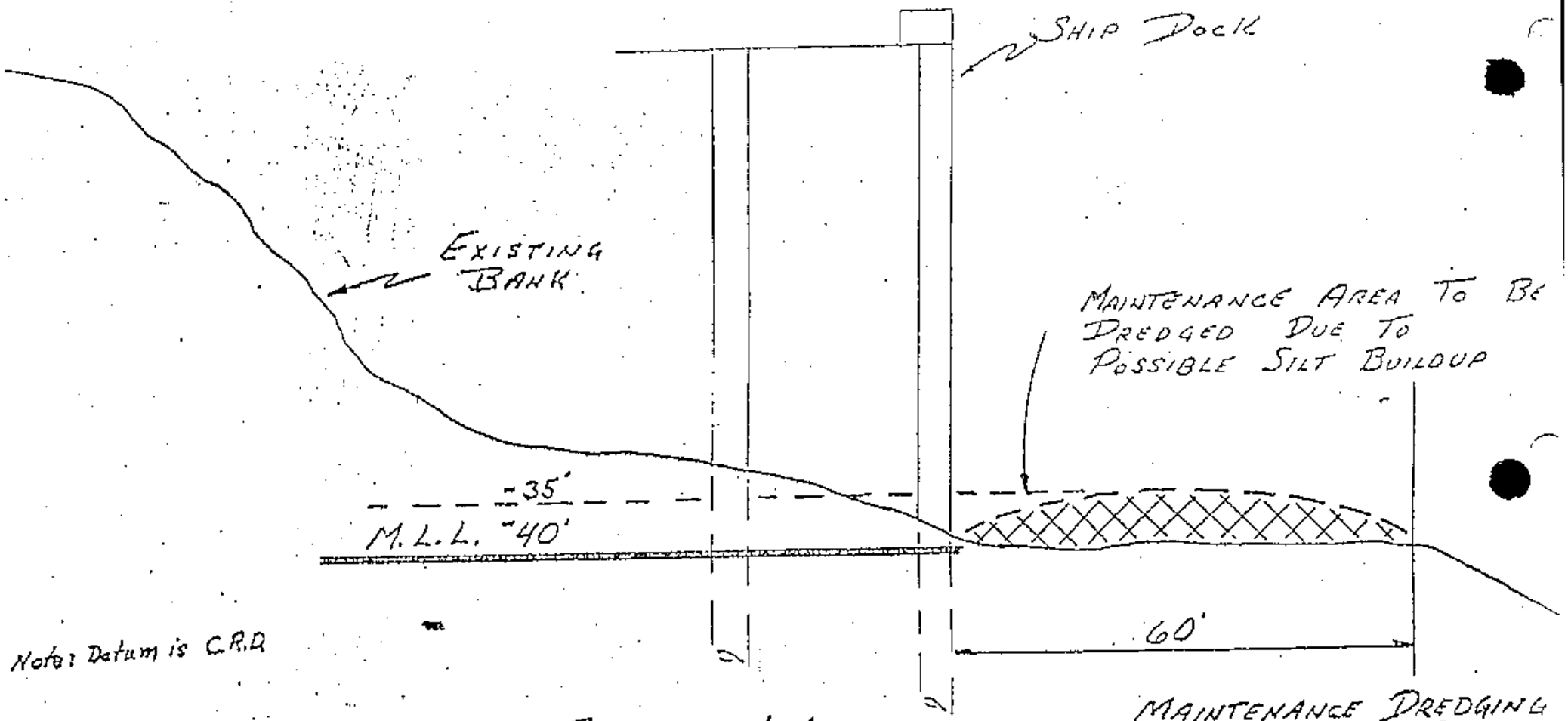
County of MULTNOMA, State OREG

003496 (Willamette River-Dredging)



Proposed Dredging
in Willamette River
at River Mile 11.4
County of Multnomah, State OR





Note: Datum is C.R.D.

SECTION A A

NOT TO SCALE

MAINTENANCE DREDGING IN WILLAMETTE RIVER AT RIVER MILE 11.4 COUNTY: MULTNOMAH, STATE ORE