Pavitt Land Use Consulting, LLC

134 SW Lee St.
P.O. Box 5
Newport, OR 97365
(541) 265.4452 Telephone
~~(541) 265.5688~~ Facsimile
dawn@pavittlanduse.com
www.pavittlanduse.com

September 6, 2011

DEQ Western Region
DEQ Solid Waste Programs
750 Front Street, NE Suite 120
Salem, OR 97301
RE: Request for Tier 1 Beneficial Use Determination for Port of Toledo Transit Dock Dredge Spoil

Dear Sir or Madam:

I enclose an application for Tier 1 Beneficial Use Determination for the Port of Toledo's transit dock dredge spoil. At the request of DEQ's Mary Camarata, I am sending the required second copy of the submittal directly to her for review. I enclose for you the application fee of $1000.00 in a check from the Port of Toledo with the required application materials. I have also enclosed a courtesy copy of the accompanying materials submitted directly to the Corps for the permit modification of NWP-2008-172(2).

If you have any questions, please contact me directly. Thank you.

Sincerely,

Dawn Pavitt

Enclosures

c. Mary Camarata – DEQ
Port of Toledo
Jason Kirchner, ODFW
Carrie Landrum, DSL

RECEIVED
SEP - 7 2011
DEQ-SALEM OFFICE

State of Oregon
Department of
Environmental
Quality

Application for a

Solid Waste Beneficial Use Determination

DEQ USE ONLY – BUSINESS OFFICE
Date Received:
Amount Received:
Check No.:
Deposit No.:
Forward confirmation of fee payment for: Eastern Region to DEQ, The Dalles Northwestern Region to DEQ-NWR, Portland Western Region to DEQ, Salem

A. REFERENCE INFORMATION *(Please type or print clearly.)*

Port of Toledo				
Legal name of applicant		Business name of applicant if different		
PO Box 428, Toledo, OR 97391				
Mailing address		City	State	Zip
541-336-5207		info@portoftoledo.org	541-336-5160	
Phone	Mobile	E-mail	Fax	

dredge spoil disposal from Depot Slough				
Generator of solid waste (may be same as applicant)				
same as applicant				
Mailing address		City	State	Zip
Phone	Mobile	E-mail	Fax	

B. TYPE OF BENEFICIAL USE DETERMINATION REQUESTED

Beneficial Use Determination applications are categorized based on the type of information and potential amount of work required by DEQ staff to review application materials and render a decision. A tiered review and fee system has been established in rule. The tiers are:

- Tier 1 For a beneficial use of a solid waste that does not contain hazardous substances significantly exceeding the concentration in a comparable raw material or commercial product and that will be used in a manufactured product;
- Tier 2 For a beneficial use of a solid waste that contains hazardous substances significantly exceeding the concentration in a comparable raw material or commercial product, or involves application on the land;
- Tier 3 For a beneficial use of a solid waste that requires research, such as a literature review or risk assessment, or for a demonstration project to demonstrate compliance with this rule.

I am applying for a ☒ Tier 1 ☐ Tier 2 ☐ Tier 3 determination.

C. DOES THIS PROPOSED BENEFICIAL USE INVOLVE LAND APPLICATION OF ANY MATERIAL?

☒ Yes ☐ No

D. SIGNATURE

I hereby certify by my signature below that the information contained in this application, and the documents I have attached, are true and correct to the best of my knowledge and belief.

X Bud Shoemake	Bud Shoemake	Port Manager	9/2/11
Signature of legally authorized representative	Print name	Title	Date

E. REQUIRED ATTACHMENTS TO THIS APPLICATION *(For an application to be complete, it must provide the required information for each listed item of the tier which is being applied for.)*

Tier 1

- ☒ A description of the material, manner of generation, and estimated quantity to be used each year;
- ☒ A description of the proposed use;
- ☒ A comparison of the chemical and physical characteristics of the material proposed for use with the material it will replace;
- ☒ A demonstration of compliance with the performance criteria in OAR 340-093-0280 based on knowledge of the process that generated the material, properties of the finished product, or testing; and
- ☐ Any other information that DEQ may require to evaluate the proposal.

Tier 2

- ☐ The information required for a Tier 1 application;
- ☐ Sampling and analysis that provides chemical, physical, and biological characterization of the material and that identifies potential contaminants in the material or the end product, as applicable;
- ☐ A risk screening comparing the concentration of hazardous substances in the material to existing, DEQ approved, risk-based screening level values, and demonstrating compliance with acceptable risk levels;
- ☐ Location or type of land use where the material will be applied, consistent with the risk scenarios used to evaluate risk;
- ☐ Contact information of property owner(s) if this is a site-specific land application proposal, including name, address, phone number, e-mail, site address and site coordinates (latitude and longitude); and
- ☐ A description of how the material will be managed to minimize potential adverse impacts to public health, safety, welfare, or the environment.

Tier 3

- ☐ The information required for a Tier 1 & 2 application;
- ☐ A discussion of the justification for the proposal;
- ☐ An estimate of the expected length of time that would be required to complete the project, if it is a demonstration; and
- ☐ If it is a demonstration project, the methods proposed to ensure safe and proper management of the material.

F. PERFORMANCE CRITERIA *(For all tiers - An application for a beneficial use determination must demonstrate satisfactory compliance with the following performance criteria.)*

The use is productive, including:

- There is an identified or reasonably likely use for the material that is not speculative;
- The use is a valuable part of a manufacturing process, an effective substitute for a valuable raw material or commercial product, or otherwise authorized by DEQ, and does not constitute disposal; and
- The use is in accordance with applicable engineering standards, commercial standards, and agricultural or horticultural practices.

The use will not create an adverse impact to public health, safety, welfare, or the environment, including:

- The material is not a hazardous waste under ORS 466.005;
- Until the time the material is used in accordance with a beneficial use determination, the material will be managed, including any storage, transportation, or processing, to prevent releases to the environment or nuisance conditions;
- Hazardous substances in the material do not significantly exceed the concentration in a comparable raw material or commercial product, or do not exceed naturally occurring background concentrations, or do not exceed acceptable risk levels, including evaluation of persistence and potential bioaccumulation, when the material is managed according to a beneficial use determination.

The use will not result in the increase of a hazardous substance in a sensitive environment.

The use will not create objectionable odors, dust, unsightliness, fire, or other nuisance conditions.

The use will comply with all applicable federal, state, and local regulations.

G. FEES *(Must accompany the application for it to be considered complete)*

☒	Tier 1 beneficial use determination	$1,000
☐	Tier 2 beneficial use determination	$2,000
☐	Tier 3 beneficial use determination	$5,000

Make checks out to: **Oregon DEQ**

Total fees included: _____

H. APPLICATION PROCEDURE

Step 1
Contact a DEQ staff person for assistance with the preparation of the application. DEQ staff will help with: 1) Determination of the eligibility for a beneficial use determination of a particular waste or process; and, 2) If eligible, establish the tier of beneficial use determination review required and associated fee to submit with the application.

Step 2
Mail the original signed application, all attachments, including the fee payment plus one extra copy to the appropriate regional office (see listing below.) Note that DEQ review work will not begin until a complete application packet is received. Incomplete applications may be returned. DEQ recommends the applicant keep a full copy of all application materials to guard against possible loss in transit.

Step 3
DEQ will contact the applicant, acknowledging receipt of the application, and will identify the staff person assigned to carryout the review. This staff person will contact the applicant if any additional information is needed.

Region	Counties Served	Address & Phone
Eastern Region	Baker, Crook, Deschutes, Gilliam, Grant, Harney, Hood River, Jefferson, Klamath, Lake, Malheur, Morrow, Sherman, Umatilla, Union, Wallowa, Wasco, and Wheeler	Eastern Region Department of Environmental Quality 400 E Scenic Drive, Ste 2.307 The Dalles, OR 97058 (541) 298-7255 ext. 221
Northwest Region	Clatsop, Clackamas, Columbia, Multnomah, Tillamook, and Washington	Northwest Region DEQ Solid Waste Programs 2020 SW Fourth Ave. Ste 400 Portland, OR 97201 (503) 229-5353
Western Region	Benton, Coos, Curry, Douglas, Jackson, Josephine, Lane, Lincoln, Linn, Marion, Polk, and Yamhill	Western Region DEQ Solid Waste Programs 750 Front St. NE Suite 120 Salem, OR 97301 (503) 378-5047

Application for Solid Waste Beneficial Use Determination from DEQ

September 2, 2011

Applicant – Port of Toledo, PO Box 428, Toledo, OR 97391

Section F. Performance Criteria

The use is productive, including:

1. *There is an identified or reasonably likely use for the material that is not speculative.*
   The port plans to hold the clean dredge spoil material in the upland settling pond until the spoil is ready to be used and spread on the property. The fill will be used to better level the property and help raise the elevation of the property above flood level. The property is designated Water Dependent and will be ultimately developed in accordance with the port's Waterfront Development Plan. The property will incorporate park like features and meet the port's design criteria.

2. *The use is a valuable part of a manufacturing process, an effective substitute for a valuable raw material or commercial product, or otherwise authorized by DEQ, and does not constitute disposal.*
   The port needs clean fill on this property in order to raise the property elevation above flood level. The property is designated for Water Dependent use. The spoil is a valuable part of the development process for this port property. If this fill is not used the port will have to either purchase fill or obtain it from another location in order to make the Water Dependent property usable for development.

3. *The use is in accordance with applicable engineering standards, commercial standards, and agricultural or horticultural practices.*
   The dredge spoil disposal area including the weir and decanting area were designed by Ray Lanham, PE, an engineer employed by the Oregon State Marine Board. The design meets current engineering and commercial standards. The dredging area has been tested and the sediment was found to meet in-water standards. Applicant understands that this sediment meets the standards for horticultural practices and can safely be used in a public upland setting.

The use will not create an adverse impact to public health, safety, welfare or the environment, including:

1. *The use is not a hazardous waste under ORS 466.005.*
   The sediment has been found to be clean and suitable for in-water disposal.

2. *Until the time the material is used in accordance with a beneficial use determination, the material will be managed, including any storage, transportation, or in processing, to prevent releases to the environment or nuisance conditions.*
   This has been fully covered in the DEQ Request for 401 Certification. All dredging and handling of sediment will be done according to the required BMPs. The dredge spoil will

settle in the containment area for as long as is necessary for the soil to decant and the soil to be ready for upland use.

3. *Hazardous substances in the material do not significantly exceed the concentration in a comparable raw material or commercial product, or do not exceed naturally occurring background concentrations, or do not exceed acceptable risk levels, including evaluation of persistence and potential bioaccumulation, when the material is managed according to a beneficial use determination.*
   The Sediment Quality Evaluation Report prepared by the US Army Corps of Engineers found that the "sediments represented by all samples in this sampling event are determined to be suitable for unconfined, in-water placement without further characterization."

4. *The use will not result in the increase of a hazardous substance in a sensitive environment.*
   The fill has not been found to be a hazardous substance. Please see the attached Sediment Quality Evaluation Report prepared by the US Army Corps of Engineers dated December 2003.

5. *The use will not create objectionable odors, dust, unsightliness, fire, or other nuisance conditions.*
   The spoil containment area is an open area. The dredge spoil will only be clean spoil settling within an earthen berm. No objectionable odors should be detected. Dust control measures will be taken, if necessary. The surrounding area will be vegetated with grass and it is next to an existing vegetated drainage swale and within a turf area. The containment area should not be unsightly given these measures to vegetate the location. Given the climate and water in the dredge spoil, fire concerns are unlikely. No other nuisance conditions are expected but the spoil will be closely monitored by port staff.

6. *The use will comply with all applicable federal, state, and local regulations.*
   The port has made every effort to comply with all federal applicable federal, state, and local regulations. NWP-2008-172 regulates the federal dredging approval. The port received permit number 40176-RF Renewal from Oregon DSL for state dredging approval. A request is being made at this time for modification to NWP-2008-172(2) to change the disposal method from ocean disposal to upland disposal. An accompanying request for 401 Certification has also been prepared and is included. The City of Toledo has supported the requests by signing the LUCS statements.

Oregon Department of Environmental Quality
LAND USE COMPATIBILITY STATEMENT (LUCS)

SECTION 1 - TO BE COMPLETED BY APPLICANT

A. Applicant Name: Port of Toledo	**B. Project Name:** Dredging Under Transit Dock
Contact Name: Bud Shoemake	**Physical Address:** off of NW A Street (vacant)
Mailing Address: PO Box 428	**City, State, Zip:** Toledo, OR 07391
City, State, Zip: Toledo, OR 97391	**Tax Lot #:** 2200 for spoil disposal area
Telephone: 541-336-5207	**Township:** 11s **Range:** 10w **Section:** 18A
Tax Account #: 93-0748646	**Latitude:** 44.619647
	Longitude: 123.937339

C. Describe the project, include the type of development, business, or facility and services or products provided (attach additional information if necessary):
The Port of Toledo is modifying the permits for the transient dock so that the disposal is placed upland rather than in-water ocean. The spoil will be placed on port-owned level land near the dredging area. This dredging work will take approximately 2 to 3 days. The spoil containment area will be built as soon as allowed.

D. Check the type of DEQ permit(s) or approval(s) being applied for at this time.

- ☐ Air Quality Notice of Construction
- ☐ Air Contaminant Discharge Permit *(excludes portable facility permits)*
- ☐ Air Quality Title V Permit
- ☐ Air Quality Indirect Source Permit
- ☐ Parking/Traffic Circulation Plan
- ☐ Solid Waste Land Disposal Site Permit
- ☐ Solid Waste Treatment Facility Permit
- ☐ Solid Waste Compost Facility Registration or Permit
- ☐ Solid Waste Letter Authorization Permit
- ☐ Solid Waste Material Recovery Facility Permit
- ☐ Solid Waste Energy Recovery Facility Permit
- ☐ Solid Waste Transfer Station Permit
- ☐ Waste Tire Storage Site Permit
- ☐ Pollution Control Bond Request
- ☐ Hazardous Waste Treatment, Storage, or Disposal Permit
- ☐ Clean Water State Revolving Fund Loan Request
- ☐ Wastewater/Sewer Construction Plan/Specifications *(includes review of plan changes that require use of new land)*
- ☐ Water Quality NPDES Individual Permit
- ☐ Water Quality WPCF Individual Permit *(for onsite construction-installation permits use the DEQ Onsite LUCS form)*
- ☐ Water Quality NPDES Stormwater General Permit *(1200-A, 1200-C, 1200-CA, 1200-COLS, and 1200-Z)*
- ☐ Water Quality General Permit *(all general permits, except 600, 700-PM, 1700-A, and 1700-B when they are mobile.)*
- ☑ Water Quality 401 Certification for federal permit or license

E. This application is for: ☐ Permit Renewal ☐ New Permit ☑ Permit Modification ☐ Other:

SECTION 2 - TO BE COMPLETED BY CITY OR COUNTY PLANNING OFFICIAL

Instructions: Written findings of fact for all local decisions are required; written findings from previous actions are acceptable. For uses allowed outright by the acknowledged comprehensive plan, DEQ will accept written findings in the form of a reference to the specific plan policies, criteria, or standards that were relied upon in rendering the decision with an indication of why the decision is justified based on the plan policies, criteria, or standards.

A. The project proposal is located: ☑ Inside city limits ☐ Inside UGB ☐ Outside UGB

B. Name of the city or county that has land use jurisdiction *(the legal entity responsible for land use decisions for the subject property or land use)*:
City of Toledo

SECTION 2 - TO BE COMPLETED BY CITY OR COUNTY PLANNING OFFICIAL

Applicant Name: PORT OF TOLEDO | **Project Name:** DREDGING UNDER TRANSIT DOCK

C. Is the activity or use allowed under Measure 49? ☒ No, Measure 49 is not applicable ☐ Yes; if yes, then check one:

- ☐ Express; approved by DLCD order #:
- ☐ Conditional; approved by DLCD order #:
- ☐ Vested; approved by local government decision or court judgment docket or order #:

D. Is the activity or use compatible with your acknowledged comprehensive plan as required by OAR 660-031?
Please complete this form to address the activity or use for which the applicant is seeking approval (see 1.C on the previous page). If the activity or use is to occur in multiple phases, please ensure that your approval addresses the phases described in 1.C. For example, if the applicant's project is described in 1.C as a subdivision and the LUCS indicates that only clearing and grading are allowed outright but does not indicate whether the subdivision is approved, DEQ will delay permit issuance until approval for the subdivision is obtained from the local planning official.

- ☐ The activity or use is not regulated by the acknowledged comprehensive plan; explain:
- ☐ **YES,** the activity or use is pre-existing nonconforming use allowed outright by *(provide reference for local ordinance)*:
- ☒ **YES,** the activity or use is allowed outright by *(provide reference for local ordinance)*:
  TMC SECTION 17.32.020(I) AND SECTION 17.32.040 (MGT. UNIT #31)
- ☐ **YES,** the activity or use received preliminary approval that includes requirements to fully comply with local requirements; findings are attached.
- ☐ **YES,** the activity or use is allowed; findings are attached.
- ☐ **NO,** see 2.C above, activity or use allowed under Measure 49; findings are attached.
- ☐ **NO,** *(complete below or attach findings for noncompliance and identify requirements the applicant must comply with before compatibility can be determined)*:
  Relevant specific plan policies, criteria, or standards:

  Provide the reasons for the decision:

Additional comments (attach additional information as needed):

Planning Official Signature: Stuart Cowie **Title:** CITY PLANNER

Print Name: STUART COWIE **Telephone #:** 541-336-2247 **Date:** 09/02/11

If necessary, depending upon city/county agreement on jurisdiction outside city limits but within UGB:

Planning Official Signature: **Title:**

Print Name: **Telephone #:** **Date:**

Table
Preliminary Results for Composite Sample
Depot Slough
Port of Toledo
Toledo, Oregon

Analyte	SEF SL1	SEF SL2	Concentration
Conventionals (percent)			
Total Organic Carbon	NV	NV	3.84
Metals (mg/kg)			
Antimony	NV	NV	0.189
Arsenic	20	51	5.35
Cadmium	1.1	1.5	0.222
Chromium	95	100	40
Copper	80	830	30.9
Lead	340	430	25.4
Mercury	0.28	0.75	0.105
Nickel	60	70	25.1
Silver	2.0	2.5	0.194
Zinc	130	400	**238**
Polycyclic Aromatic Hydrocarbons (µg/kg)			
2-Methylnaphthalene	470	560	14.6 U
Acenaphthene	1100	1300	14.6 U
Acenaphthylene	470	640	14.6 U
Anthracene	1200	1600	14.6 U
Benzo(a) anthracene	4300	5800	14.6 U
Benzo(a) pyrene	3300	4800	14.6 U
Benzo(b) fluoranthene	600	4000	14.6 U
Benzo(ghi) perylene	4000	5200	14.6 U
Benzo(k) fluoranthene	600	4000	14.6 U
Chrysene	5900	6400	14.6 U
Dibenzo(a,h) anthracene	800	840	14.6 U
Fluoranthene	11000	15000	14.6 U
Fluorene	1000	3000	14.6 U
Indeno(1,2,3-cd)pyrene	4100	5300	14.6 U
Naphthalene	500	1300	14.6 U
Phenanthrene	6100	7600	14.6 U
Pyrene	8800	16000	14.6 U
Total LPAH[a]	6600	9200	14.6 U
Total HPAH[b]	31000	5500	14.6 U
Chlorinated Hydrocarbons (µg/kg)			
1,4-Dichlorobenzene	NV	NV	43.8 U
1,2-Dichlorobenzene	NV	NV	43.8 U
1,2,4-Trichlorobenzene	NV	NV	43.8 U
Hexachlorobenzene	NV	NV	43.8 U

Table
Preliminary Results for Composite Sample
Depot Slough
Port of Toledo
Toledo, Oregon

Analyte	SEF SL1	SEF SL2	Concentration
Phthalates (µg/kg)			
Dimethyl Phthalate	46	440	43.8 U
Diethyl Phthalate	NA	NA	43.8 U
Di-n-butyl Phthalate	NA	NA	43.8 U
Butyl Benzyl Phthalate	260	370	43.7 U
Bis(2-ethylhexyl) phthalate (BEHP)	220	320	47.7
Di-n-octyl Phthalate	26	45	43.8 U
Phenols (µg/kg)			
Phenol	NV	NV	43.8 U
2-Methylphenol	NV	NV	43.8 U
4-Methylphenol	NV	NV	43.8 U
2,4-Dimethylphenol	NV	NV	43.8 U
Pentachlorophenol	NV	NV	65.6 U
Miscellaneous Extractables (µg/kg)			
Benzyl alcohol	NV	NV	43.8 U
Benzoic acid	NV	NV	43.8 U
Dibenzofuran	400	440	43.8 U
Hexachlorobutadiene	NV	NV	43.8 U
N-Nitrosodiphenylamine	NV	NV	65.6 U
Pesticides (µg/kg)			
4,4'-DDD	NV	NV	1.83 U
4,4'-DDE	NV	NV	1.83 U
4,4'-DDT	NV	NV	3.66 U
Aldrin	NV	NV	1.83 U
alpha-Chlordane	NV	NV	1.83 U
Dieldrin	NV	NV	1.83 U
Heptachlor	NV	NV	1.83 U
Lindane	NV	NV	1.83 U
PCBs (µg/kg)			
Aroclor 1016	NV	NV	6.56 U
Aroclor 1221	NV	NV	6.56 U
Aroclor 1232	NV	NV	6.56 U
Aroclor 1242	NV	NV	6.56 U
Aroclor 1248	NV	NV	6.56 U
Aroclor 1254	NV	NV	6.56 U
Aroclor 1260	NV	NV	6.56 U
Aroclor 1262	NV	NV	6.56 U
Aroclor 1268	NV	NV	6.56 U
Total PCBs[c]	60	120	6.56 U

Table
Preliminary Results for Composite Sample
Depot Slough
Port of Toledo
Toledo, Oregon

Analyte	SEF SL1	SEF SL2	Concentration
Dioxins/Furans (ng/kg)[d]			
2,3,7,8-TCDD	NV	5	1.0 U
1,2,3,7,8-PeCDD	NV	NV	5.0 U
1,2,3,4,7,8-HxCDD	NV	NV	5.0 U
1,2,3,6,7,8-HxCDD	NV	NV	5.0 U
1,2,3,7,8,9-HxCDD	NV	NV	5.0 U
1,2,3,4,6,7,8-HpCDD	NV	NV	72
OCDD	NV	NV	500
2,3,7,8-TCDF	NV	NV	1.0 U
1,2,3,7,8-PeCDF	NV	NV	5.0 U
2,3,4,7,8-PeCDF	NV	NV	5.0 U
1,2,3,4,7,8-HxCDF	NV	NV	5.0 U
1,2,3,6,7,8-HxCDF	NV	NV	5.0 U
1,2,3,7,8,9-HxCDF	NV	NV	5.0 U
2,3,4,6,7,8-HxCDF	NV	NV	5.0 U
1,2,3,4,6,7,8-HpCDF	NV	NV	20
1,2,3,4,7,8,9-HpCDF	NV	NV	5.0 U
OCDF	NV	NV	49
Total Dioxin TEQ[e]	NV	15	1.5

[a]Total LPAHs = total low-molecular weight polycyclic aromatic hydrocarbons (sum of detected concentrations of naphthalene, 2-methylnaphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene).

[b]Total HPAHs = total high-molecular weight polycyclic aromatic hydrocarbons (sum of detected concentrations of fluoranthene, pyrene, benza(a)anthracene, chrysene, benzo(b&k)fluoranthenes, benza(a)pyrene, indeno(1,2,3-cd)pyrene, dibenza(a,h)anthracene, and benza(g,h,i)perylene).

[c]Total PCB Aroclors includes the sum of detected Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260).

[d]Dioxin screening levels were selected by the USEPA and are not from the Sediment Evaluation Framework.

[e]Total dioxin toxicity equivalance was calculated using USEPA ITE factors.

Table
Preliminary Results for Composite Sample
Grain Size
Depot Slough
Port of Toledo
Toledo, Oregon

Analyte	Percent
Gravel	0.0
Course Sand	1.0
Medium Sand	8.7
Fine Sand	17.6
Silt	56.5
Clay	10.7
Colloids	5.6

Application for Water Quality Section 401 Certification NWP-2008-172
Port of Toledo, Depot Slough dock construction remedial dredging August 22, 2011

Water Quality Section 401 Certification Process Minimum Information Required
Per http://www.deq.state.or.us/wq/sec401cert/process.htm
All projects require submittal of all of the following types of information:

1. Basic Application
2. Water Quality Specific
3. Project Type Specific
4. Mitigation Proposal

Basic Application Information

1. Legal name and address of activity owner or operator

Bud Shoemake, Manager, Port of Toledo, 385 NW 1ST ST Unit 1, Toledo, Oregon 97391
Business Phone # 541-336-5207, FAX # 541-336-5160

2. Legal name and address of owner or operators authorized representative

Contractor To Be Determined

3. Names and addresses of contiguous property owners

Georgia Pacific - Toledo, 3001 JFK BLVD, #B, Little Rock, Arkansas 72116
Southern Pacific Corp/Union Pacific Railroad, PO Box 2500, Bloomfield, Colorado 80038
Southern Pacific Corp/Union Pacific Railroad, 1400 Douglas Stop# 1640, Omaha, Nebraska 68179
Front Street Marine LLC, 113 Bay BLVD, Newport, Oregon 97365

4. Description of existing, and proposed activity's water quality impacts

Existing activities in the area have led to Depot Slough being classified as water quality limited and it is on the Section 303(d) List of impaired water bodies for the parameter Fecal Coliform. The proposed activity is dredging of a proposed dock construction site. The proposed activity will not exacerbate the water quality listing, but will facilitate construction of a dock on which a boat sewage collector will be installed in order to reduce potential sewage disposal in the waterway. Dredging and dock construction were authorized by Corps of Engineers permit NWP 2008-172, Department of State Lands permit number 40176, and Water Quality Certification dated September 10, 2010. The DSL permit required use of a sealed-lip clamshell bucket for removal and spoil disposal must occur at the site currently proposed. The authorized disposal method and location was subsequently changed to the Yaquina Ocean Dredged Material Disposal Site.

Sediment samples were collected from the dredge site and analyzed in March 2010. Existing concentrations of Zinc were found to be 238 mg/kg. No other metals, PAHs or chemical contaminants were detected at or above screening levels. Based on the 2009 Sediment Evaluation Framework for the Pacific Northwest (SEF) the Regional Sediment Evaluation Team determined the dredged material to be suitable for unconfined, aquatic disposal.

Dredging and spoil disposal may introduce sediment, turbidity, and contaminants into the river. Water quality may be degraded in the short-term as a result of turbidity created by sediment removal and disposal.

Polycyclic aromatic hydrocarbon (PAH) chemicals are found in emissions from generators and motor vehicles such as those used in dredging activities and have some potential to degrade environmental quality. The presence of PAH in the aquatic environment may affect growth, survival, and reproduction of fish.

Construction and dredging activities may add sediment to the stream or resuspend existing sediment causing turbidity, which has the potential to interfere with feeding and can harm fish. Operation of construction equipment requires the use of fuel and lubricants that could injure or kill aquatic organisms if spilled into the water or the riparian zone. Herbicides can enter the water from riparian areas where they are sometimes used to clear vegetation. Exposure to herbicides can have detrimental effects on fish.

A sediment fence will be used during dredge spoil disposal to contain disturbed soils and dredged materials.

No maintenance or refueling activities involving construction equipment will occur within or near the waterway. No herbicides will be used for vegetation clearing.

All dredge and disposal activities will comply with DEQ stormwater management and erosion control requirements. Runoff and discharge water created by the proposed activities will be managed to ensure that such waters meet State of Oregon water quality standards before returning to the river. Site appropriate erosion control devices will be installed and maintained during construction to prevent movement of soil and sediment and to protect water quality.

5. Complete written description of activity, including maps, diagrams and other information

On September 2, 2010, the Corps of Engineers issued permit NWP2008-172 authorizing dredging of 15,000 square feet (0.344 acre) and approximately 3,000 cubic yards (cy) of silt below mean high water and dock construction at Depot Slough, RM 0.2.

On September 26, 2010, Department of State Lands modified permit number 40176 to allow removal of up to 3,000 cubic yards of material at the site. Dredge depth is limited to -12 MLLW and dredged materials must be disposed of at Yaquina ODMDS.

Dredging was partially completed. Additional dredging is required to provide uniform depth in the dock construction area as designed and permitted. The proposed work will be within the currently permitted dredge area footprint and within the allowed yardage. The Corps permit is valid through 2013. The Port is requesting to change the authorization to allow upland spoil disposal rather than ocean spoil disposal.

The project site will be dredged from its current elevation to -12' MLLW, the depth of the adjacent authorized channel, to provide sufficient depth to avoid grounding of boats using the dock.

Removal of the accumulated sediment deposits will require dredging not more than 3,000 cy of silt below Highest Water. Silt removal will be limited to the proposed dock area.

The dredge spoil disposal area will be an upland site adjacent to Depot Slough (set back 20 feet from the waterway) located approximately 500 feet upstream of the dredge site. Dredged material will be transported from the dredge site by dump truck or by barge. The disposal site is currently a vacant lot in the City of Toledo and is vegetated with mowed turf grasses. The disposal site will be a 196-foot square (0.88 acre) surrounded by a soil berm 4 to 6 feet in height with 3:1 sloped sides. The berm will be constructed of native soil. Spoils will be dewatered using a 400-square-foot decanting area constructed of precast concrete panels and untreated lumber to form a weir, which will control the rate of return water.

Once sediments have settled, the supernatant will be discharged from the decanting area through a 55-foot long, 12-inch diameter pipe to an existing open ditch where it will flow approximately 9 feet then enter an existing 45-foot long culvert through which the water will return to Depot Slough. All return flows to the waterway will be conveyed in an enclosed pipe and will meet applicable standards for discharge velocity, turbidity, and temperature. Following dewatering of the spoils, the dredged material will be retained onsite.

6. Names of affected waterways, lakes, or other water bodies

Depot Slough, tributary of Yaquina River.

7. Land Use Compatibility Statement (LUCS)

See attached form (generallucs.pdf).

8. Water Quality Specific Information

Demonstration that the activity complies with applicable Clean Water Act provisions (Sections 301, 302, 303, 306 and 307), Oregon Water Quality Standards and other state law requirements

Sections 301, 306, and 307 form the basis of the national clean water industrial regulatory program. Though the proposed work is not an industrial activity per se, on December 1, 2009, EPA published final rules relating to effluent guidelines for the construction industry. Rules will be phased in from February 1, 2010, through 2014. The rules will apply only to construction projects that are subject to NPDES permit requirements.

Sec. 301 [33 USC 1311] Effluent Limitations

FWPC Sec. 301 prohibits the discharge of any pollutant unless authorized by sections 302, 306, 307, 318, 402, or 404 of the CWA. The project complies with Sections 302, 306, and 307 as described below. Section 318 relates to the discharge of a pollutants associated with an approved aquaculture project under the National Pollutant Discharge Elimination System (NPDES). The proposed action does not include any aquaculture activities; therefore, Section 318 does not apply. Section 402 relates to the National Pollutant Discharge Elimination System. NPDES permits are required for construction activities that will disturb one or more acres and may discharge to surface waters of the state. The proposed activity will affect 0.88 acre. Whereas the affected area is less than one acre, no NPDES permit is required; therefore, the project is not subject to Section 402. Section 404 relates to the regulation of wetland fill by the Corps of

Engineers. Whereas the project includes movement of material below the ordinary high water mark in a tidal waterway, authorization for work in the waterway was obtained from the Corps of Engineers under Section 10 of the Rivers and Harbors act, rather than Section 404.

Sec. 302 [33 USC 1312] Water Quality Related Effluent Limitations
Under Section 302, EPA establishes water quality-based effluent limitations (WQBELs) for point source discharges that do not meet water quality standards despite technology-based effluent limitations. WQBELs are typically established for buildings, structures, facilities, or installations from which "pollutants" may be discharged to surface waters or estuaries. A review of 40 CFR 131 and 132 indicates that EPA has established section 302 limitations only for California and the Great Lakes System. Because WQBELs have not been implemented for pollutants in Oregon, we believe the proposed activity complies with Section 302. Laboratory analysis of the sediment indicates that no toxics are likely to be present at levels of concern and contaminants were detected only at very low levels; therefore, the Regional Sediment Evaluation Team Project Review Group determined the material to be suitable for inwater disposal. Consequently, contaminants that may be present will not contribute significantly to receiving water concentrations and water quality standards will be protected through the proposed BMPs rather than numeric WQBELs.

Sec. 303 [33 USC 1313] Water Quality Standards and Implementation Plans
Section 303 requires states to designate uses for all its waterbodies. Those uses and the measures or criteria required to protect them, plus the state's antidegradation policy make up the state water quality standards. Standards and criteria have been established for the subject waterway.

This project, at RM 0.2, is within a reach of depot Slough that is on DEQ's 303(d) List for fecal coliform. EPA approved Oregon's 2004/2006 Section 303(d) list on February 26, 2007.

The project includes removal of sediment from the dock area and placement of spoils on adjacent uplands. The spoils will be stabilized in part by vegetation and may be used for future building construction. A key objective to initial spoil removal is to facilitate construction of a dock for recreational boats. The dock will include a marine sewage collection system that will allow boaters to discharge sewage into the municipal system for treatment rather than discharging into public waters. This feature is anticipated to minimize the potential for fecal coliform increases due to a reduction of human waste in the water; therefore, the work will comply with the fecal coliform water quality standard.

Laboratory analysis of the sediment indicates that no toxics are likely to be present at levels of concern, contaminants were detected only at very low levels, and the RSET PRG determined that the material is suitable for inwater disposal. Therefore, contaminants that may be present will not contribute significantly to receiving water concentrations and the work will comply with water quality standards related to the named contaminants.

Sec. 306 [33 USC 1316] National Standards of Performance
New Source Performance Standards (NSPS) are defined in Section 306 of the CWA. NSPS reflect effluent reductions that are achievable based on the best available demonstrated control technology. Effluent limitation guidelines and new source performance standards (effluent guidelines) promulgated under section 306 of the CWA establish limitations and standards for

specified wastestreams from industrial sources. Such limitations and standards are incorporated into permits issued under section 402. Whereas the project does not involve and will not contribute to the discharge of material from industrial wastestreams, the activity will not violate standards or guidelines of Section 306. EPA does not regulate placement of fill material under effluent guidelines; therefore, Section 306 standards and guidelines do not apply to the proposed fill activities.

Sec. 307 [33 USC 1317] Toxic and Pretreatment Effluent Standards
Section 307 defines national technology-based standards that apply to discharges from specific industrial sources to publicly owned treatment works. Effluent guidelines promulgated under Section 307 address nearly 60 categories of industrial activities (see 40 CFR parts 425 to 471) or facilities that discharge directly to the water or into wastewater treatment plants. On December 1, 2009, EPA modified the rules to add effluent guidelines for the construction industry. Rules will be phased in beginning on February 1, 2010. The rules will apply only to construction projects that are subject to NPDES permit requirements and require the use of best management practices to ensure that soil disturbed during construction activities of one or more acres does not pollute nearby water bodies. The proposed activity will affect 0.40 acres. Whereas the affected area is less than one acre, no NPDES permit is required; therefore, the activity complies with Section 307.

Section 307 also lists 65 toxic pollutants that are included in the standard. Laboratory analysis of the sediment has shown that no toxics are likely to be present at levels of concern, contaminants were detected only at very low levels, and the RSET PRG determined that the material is suitable for inwater disposal. Therefore, contaminants that may be present will not contribute significantly to receiving water concentrations and the work will comply with water quality standards related to the named contaminants.

Copies of environmental information submitted to the federal licensing or permitting agency
See attached copy of biological opinion published by NOAA Fisheries, also available online at https://pcts.nmfs.noaa.gov/pls/pcts-pub/sxn7.pcts_upload.download?p_file=F21496/2010_08-25_toledo_transient%20dock_201002353.pdf.

Identification of waterway(s) impacted by the project including wetlands and tributary streams
The project is located at Depot Slough RM 0.2, near the end of the federal navigation channel. No wetlands are located on the project site.

Confirm the status of waterways impacted by the project (Integrated Report)
DEQ is currently conducting a biennial assessment of water quality in waters throughout the state and submitted a new Integrated Report to EPA May 23, 2011. The current 2004/2006 Integrated Report and 303(d) list, http://www.deq.state.or.us/wq/assessment/rpt0406/search.asp, was accessed on August 22, 2011, to confirm waterway status at the project site.

The report indicates that the Depot is classified as water quality limited under the Clean Water Act and needs a US Environmental Protection Agency (EPA) approved Total "Maximum Daily Load (TMDL) for fecal coliform. No other parameters are listed for potential concern.

Identification of potential impact to water quality parameters (Water Quality Standards, 303(d) list, TMDL)
The project includes removal of sediment from the proposed dock area and placement of spoils on adjacent uplands. Movement of sediments may resuspend particles or introduce embedded contaminants into the water column, increasing the concentration of such contaminants in the water. The project involves construction and maintenance of a public boat dock. Construction activities may directly or indirectly introduce into the water materials or compounds containing contaminants of concern. The project has the potential to increase the amounts of the contaminants, including those listed above, within the waterway, which would adversely affect water quality standards.

Evaluation of potential water quality standard violation or contribution to violation
In laboratory analysis of the sediment, contaminants were detected only at very low levels; therefore, no toxics are likely to be present at levels of concern. The RSET PRG determined that the material is suitable for inwater disposal. Therefore, contaminants that may be present will not contribute significantly to receiving water concentrations and sediment handling is not likely to adversely affect water quality standards or TMDLs related to the named contaminants.

Neither dredging, spoil disposal, or construction of the facility will result in, or contribute to, the release of sewage in the waterway; therefore, the activity will have no adverse effect on the presence of e coli and fecal coliform in the water, and will comply with related water quality standards.

Identification of measures to prevent or mitigate violations or contributions to violations
The spoils will be dewatered in an enclosed area surrounded by a sediment fence. Return water rate of flow will be controlled by use of a weir. Water will be returned to the stream only after sediments have settled out of suspension. Spoils and disturbed soil will be contained by fencing to prevent movement into the stream. Upon project completion the materials will be stabilized by vegetation and may be ultimately used for a building site.

9. Project Specific Information
In-stream Projects - Along with basic information, the following may also be required:
Sediment Evaluation Framework (SEF)
On April 16, 2010, the Corps of Engineers issued a notice stating that the PRG has determined the dredged material to be suitable for in-water disposal since contaminants were found only in very low concentrations that were well below the Corps's Sediment Evaluation Framework screening levels. See attached copy of the public notice.

Dredging Method
The project site will be dredged from its current elevation to -12' MLLW, the depth of the adjacent authorized channel, to provide sufficient depth to avoid grounding of boats using the proposed dock. Removal of the sediment will require dredging of 15,000 square feet (0.344 acre) and up to 3,000 cubic yards (cy) of silt below mean high water.

Dredging will be limited to the proposed dock area. The contractor will conduct dredging mechanically using a 5 to 10 cy environmental bucket. A standard clamshell of similar size would be used if debris is encountered.

All spoils will be loaded into dump trucks or a barge for transport to the upland disposal site. No wetlands are present in the project area or in the disposal site.

Dredging will be completed with land-based equipment. Machinery will not be allowed to drive into the water. To remain out of the water, land based equipment may be operated from a temporary work pad. If a work pad is required, it will be constructed of a minimal amount of rock fill. All temporary fill will be removed and disposed of in an upland location upon completion of the project. If spoils are transported by a floating barge, work will not be allowed when or where the barge would rest on the riverbed.

Spoil Disposal

Laboratory analysis revealed that the sediment does not contain significant concentration of contaminants; therefore, the material is suitable for inwater disposal or reuse. Ocean disposal was previously considered and authorized; however, the Port has determined that upland disposal is preferred.

Sediment removed from the boat dock area will be relocated to uplands adjacent to Depot Slough. The sediment will be placed within a soil berm located 500 feet upstream of the dock site to allow de-watering of the spoils, followed by permanent retention of spoils and potential use of the upland disposal area as a construction site.

The dredge spoil disposal area will be an upland site adjacent to Depot Slough at least 20 feet from the waterway. Dredged material will be transported to the dredge site by dump truck or by barge. The disposal site is currently a vacant lot vegetated with mowed turf grasses. The disposal site will be a 0.88 acre area surrounded by a soil berm constructed of native soil sloped 3:1 to a height of 4 to 6 feet. Spoils will be dewatered using a 400-square-foot decanting area constructed of precast concrete panels and untreated lumber to form a weir, which will control the rate of return water. Once sediments have settled, the supernatant will be discharged from the decanting area through a 55-foot long, 12-inch diameter pipe to an existing open ditch where it will flow approximately 9 feet then enter an existing 45-foot long culvert through which the water will return to Depot Slough. All return flows to the waterway will be conveyed in an enclosed pipe and will meet applicable standards for discharge velocity, turbidity, and temperature.

DEQ has indicated that a Solid Waste permit or Solid Waste Letter of Authorization maybe required for sediment spoil disposal where the sediment will be placed above the ordinary high water mark.

Isolation Measures or other Proposed BMPs

The dredge area will be isolated using a floating silt curtain. A sediment fence will also be used to contain sediment and prevent movement of material off the site. Refer to the attached *Pollution and Erosion Control Plan* and *Work Area Isolation Plan* for more information, including specific measures and practices that will be employed to protect water quality.

Elutriate Testing Methods

Sediment was sampled and analyzed for the presence of contaminants. No significant levels of

contaminants were found. See attached sediment characterization report for details. Whereas the sediments are not contaminated, no elutriate testing is proposed.

10. Mitigation Proposal

Sediment removal at the site is necessary for project construction; however, removal may alter the habitat type or value of the site. To mitigate for potential habitat loss or degradation resulting from dredging, a comparable area of intertidal mudflat will be restored offsite. For details, refer to the Port of Toledo Ollala Slough Compensatory Mitigation and Monitoring Plan dated September 3, 2009. We anticipate that the proposed restoration of habitat in the intertidal zone will improve water quality conditions and help offset project effects.

Attachments

Sediment Analysis	Prelim Data-032310.pdf
	Prelim Grain Size - 032310.pdf
LUCS form	generallucs.pdf
(http://www.deq.state.or.us/pubs/permithandbook/generallucs.pdf)	
Public Notice	PN document2010-04-16-142538.pdf
Biological Opinion	https___pcts.nmfs.noaa.gov_pls_pcts-pub_sxn7.pcts_upload.download_p_file=F21496_2010_08-25_toledo_transient dock_201002353.pdf
BMPs	Pollution and Erosion Control Plan.pdf
	Work Area Isolation Plan.pdf
Compensatory Mitigation and Monitoring Plan	

APPENDIX D

RUNOFF CONTROL BMPS

RC-1	Slope Drain
RC-2	Energy Dissipator
RC-3	Diversion of Run-on
RC-4	Temporary Diversion Dike
RC-5	Grass-lined Channel (Turf Reinforcement Mats)
RC-6	Trench Drain
RC-7	Drop Inlet
RC-8	Minimizing TSS During Instream Construction
RC-9	Instream Diversion Techniques
RC-10	Instream Isolation Techniques
RC-11	Check Dams

SLOPE DRAIN – RC-1

Construction Specifications:

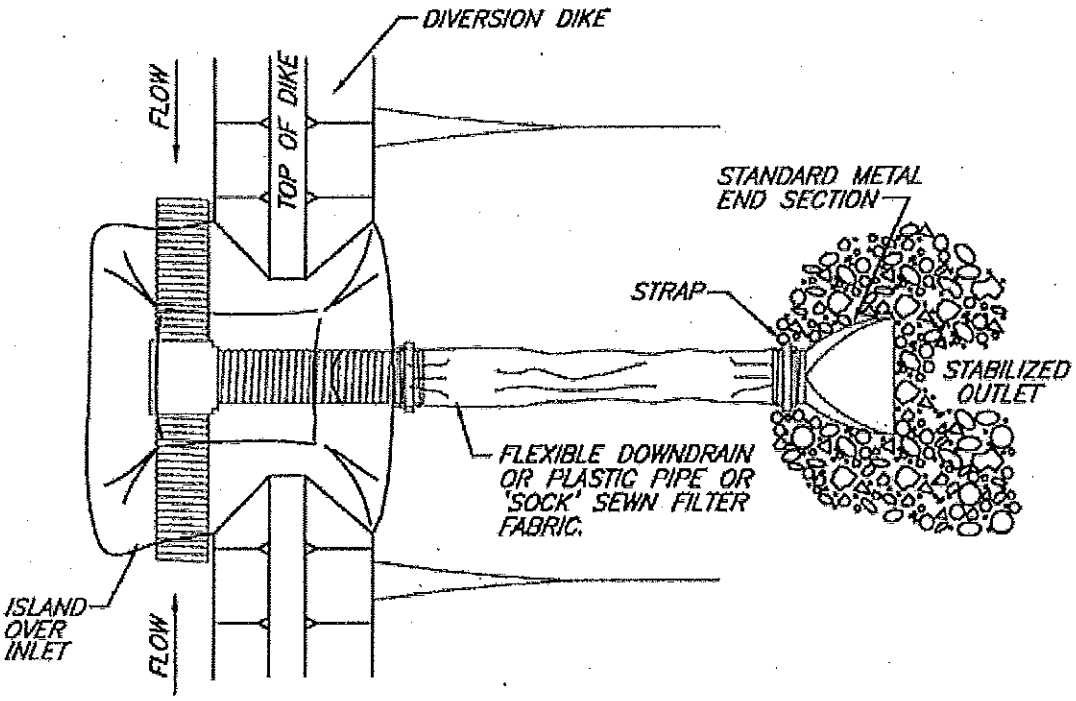
A common failure of slope drains is caused by water saturating the soil and seeping along the pipe. Proper backfilling around and under the pipe haunches with stable soil material and hand compacting in 6 inch (0.2 m) lifts to achieve firm contact between the pipe and the soil at all points will reduce this type of failure.

- Place slope drains on undisturbed soil or well-compacted fill at locations and elevations shown on the plans.
- Slightly slope the section of pipe under the dike toward its outlet.
- Compact the soil under and around the entrance section in lifts not to exceed 6 inches.
- Ensure that fill over the drain at the top of the slope has a minimum depth of 1.5 feet (0.5 m) and a minimum top width of 4 feet (1.2 m). The sides should have a 3:1 slope.
- Ensure that all slope drain connections are watertight.
- Ensure that all fill material is well-compacted. Securely fasten the exposed section of the drain with grommets or stakes spaced no more than 10 feet (3.1 m) apart. If the drain is longer than 10 feet (3.1 m), the drain must be anchored within each 10 foot (3.1 m) section and at the end section. Anchoring methods can vary depending on site conditions. At a minimum, the drain should be staked such that it is not able to move laterally or separate from the upstream diversion culvert.
- Extend the drain beyond the toe of the slope and adequately protect the outlet from erosion (see EC-10).
- Make the settled, compacted dike ridge no less than 1 foot (0.3 m) higher than the top of the pipe inlet.
- As an alternative to slope drains visqueen flume down drains may be used to convey runoff to a stabilized downstream conveyance. The visqueen shall be anchored at the top of a slope similar to erosion control blankets (EC-10). Use sandbags to stabilize the sides of the visqueen flume similar to sand bag barriers (SC-2). The visqueen (plastic sheet) shall meet the following specifications:
    - Plastic sheeting shall have a minimum thickness of 6 mil, and shall be keyed in at the top of slope and firmly held in place with sandbags or other weights placed no more than 10 ft (3 m) apart. Seams are typically taped or weighted down their entire length, and there shall be at least a 12 to 24 inches (300 mm to 600 mm) overlap of all seams. Edges shall be embedded a minimum of 6 inches (150 mm) in soil.
    - All sheeting shall be inspected periodically after installation and after significant rainstorms to check for erosion, undermining, and anchorage failure. Any failures shall be repaired immediately. If washout or breakages occurs, the material shall be re-installed after repairing the damage to the slope.
- Immediately after grading, stabilize all disturbed areas as appropriate (see Erosion Prevention BMPs).

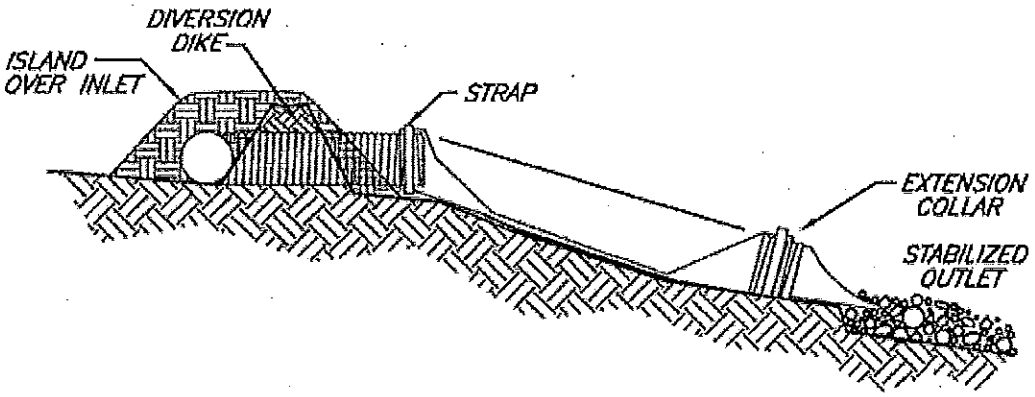
Minimum BMP standards are provided on the following detail.

Inspection and Maintenance:

- Inspect the slope drain and supporting diversions before, during, and after every storm event and promptly make necessary repairs.
- When the protected area has been permanently stabilized, temporary measures may be removed, materials disposed of properly, and all disturbed areas stabilized appropriately.



PLAN VIEW



SECTION

Alternative to Flexible downdrain:
Visqueen flume anchored with closely placed sand bags

SLOPE DRAIN

FILE: SLOPEDRN

ENERGY DISSIPATOR – RC-2

This BMP provides specifications for riprap type energy dissipators. Alternative energy dissipation methods such as mats, plates, or other stabilization techniques may be used in the project ESCP as approved by DEQ or a local agency acting as DEQ's agent.

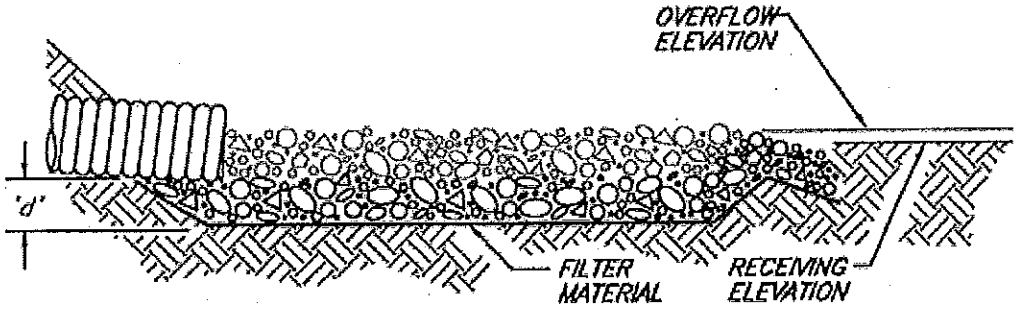
Construction Specifications:

- Ensure that the subgrade for the filter and riprap follows the required lines and grades shown on the plans. Compact any fill required in the subgrade to the density of the surrounding undisturbed material. Low areas in the subgrade on undisturbed soil may also be filled by increasing the riprap thickness.
- The riprap and gravel filter must conform to the specified grading limits shown on the plans.
- Filter fabric, when used, must meet design requirements and be properly protected from punching or tearing during installation. Repair any damaged fabric by removing the riprap and placing another piece of filter fabric over the damaged area. All connecting joints should overlap a minimum of 1 foot (0.3 m). If the damage is extensive, replace the entire filter cloth.
- Riprap may be placed by equipment, but take care to avoid damaging the fabric.
- The minimum thickness of the riprap should be 1.5 times the maximum stone diameter.
- Riprap may be field stone or rough quarry stone. It shall be hard, angular, highly weather-resistant and well graded.
- Construct the apron on zero grade with no overflow at the end. Make the top of the riprap at the downstream end level with the receiving area or slightly below it.
- Ensure that the apron is properly aligned with the receiving stream and preferably straight throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron.
- Immediately after construction, stabilize all disturbed areas with vegetation.
- Outlets of all water conveyances must be stabilized.

Minimum BMP standards are provided on the following detail.

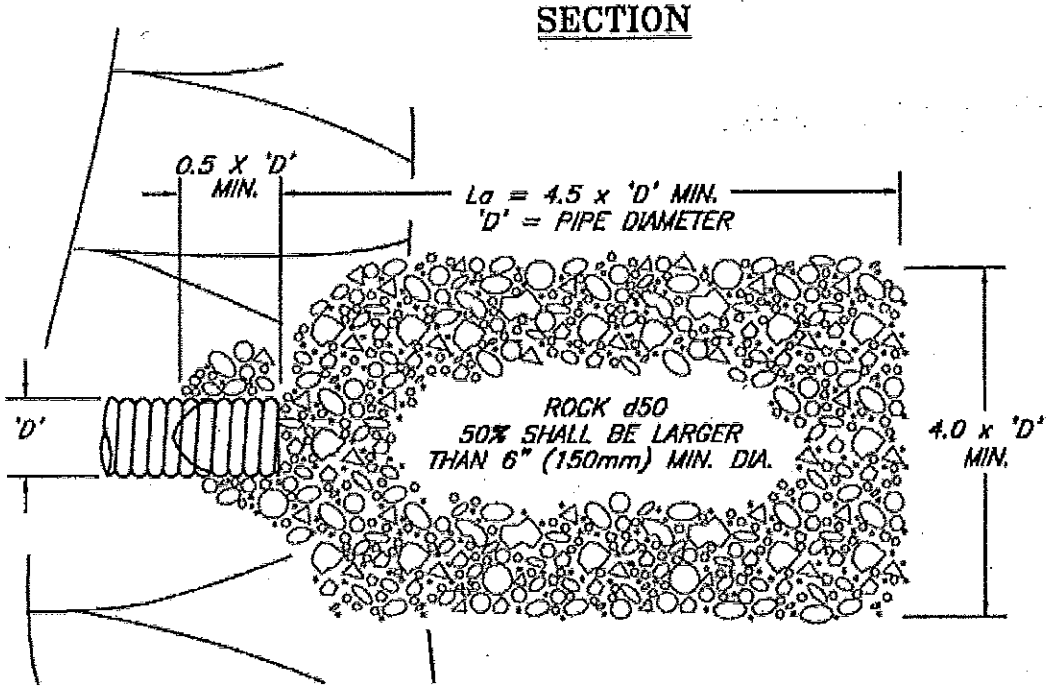
Inspection and Maintenance:

- Inspect riprap outlet structures before, during, and after rains to see if any erosion around or below the riprap has taken place or if stones have been dislodged. Immediately make all needed repairs to prevent further damage.
- Clean out energy dissipation as necessary when approximately half of the void space is filled with sediment and debris.



THICKNESS ('d') = 1.5 x MAX. ROCK DIAMETER – 6" (150mm) MIN.

SECTION



PLAN

NOTES:

1. 'La' = LENGTH OF APRON. DISTANCE 'La' SHALL BE OF SUFFICIENT LENGTH TO DISSIPATE ENERGY.
2. APRON SHALL BE SET AT A ZERO GRADE AND ALIGNED STRAIGHT.
3. FILTER MATERIAL SHALL BE FILTER FABRIC OR 6" (150mm) THICK MINIMUM GRADED GRAVEL LAYER.

ENERGY DISSIPATOR

FILE: ENRGYDIS

DIVERSION OF RUN-ON – RC-3

Diversion consists of measures that intercept, divert and convey surface run-on, generally sheet flow, to prevent erosion and transport of pollutants through and from the site.

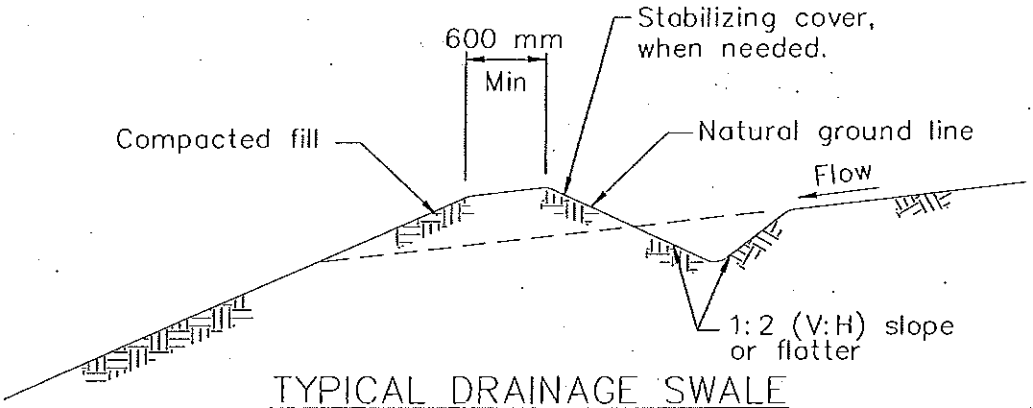
Construction Specifications:

- Construct diversion channels consisting of drainage swales; earth dikes; or other means such as sand bag barriers to intercept and divert run-on to avoid sheet flow over sloped surfaces and work areas (See SC-2 "Sand Bag Barrier").
- Construct diversion structure to adequately convey storm flows based on careful evaluation of the risks due to erosion of the measure, soil types, over topping, flow backups, washout, and drainage flow patterns for each project site.
- Use other soil stabilization and sediment controls, such as check dams, plastics, and blankets, as necessary to prevent scour and erosion in newly graded dikes, swales and ditches.
- Correctly size and locate earth dikes, drainage swales and lined ditches. Excessively steep, unlined dikes and swales are themselves subject to erosion and gully formation.
- Stabilize conveyances as necessary and use a lined ditch for high flow velocities. Refer to EC-10 entitled "Erosion Control Blankets and Mats" or line with permanent, erosion-resistant material.
- Where appropriate, use natural streambed materials such as large cobbles and boulders for temporary embankment/slope protection, or other temporary soil stabilization methods.
- Compact any fills to prevent unequal settlement.
- Divert runoff to an appropriate downstream location.
- Use level spreaders (i.e., outlets for dikes and flow channels consisting of an excavated depression constructed at zero grade across a slope), to convert concentrated runoff into sheetflow onto areas stabilized by existing vegetation.
- Do not divert runoff from the project to adjacent properties without permission.
- When possible, install and utilize permanent dikes, swales and ditches early in the construction process.
- Convey collected run-on/concentrated flows down slopes in accordance with the RC-1 ("Slope Drain")
- Provide stabilized outlets. Refer to RC-2 entitled "Energy Dissipator."

Minimum BMP standards are provided on the following detail.

Inspection and Maintenance:

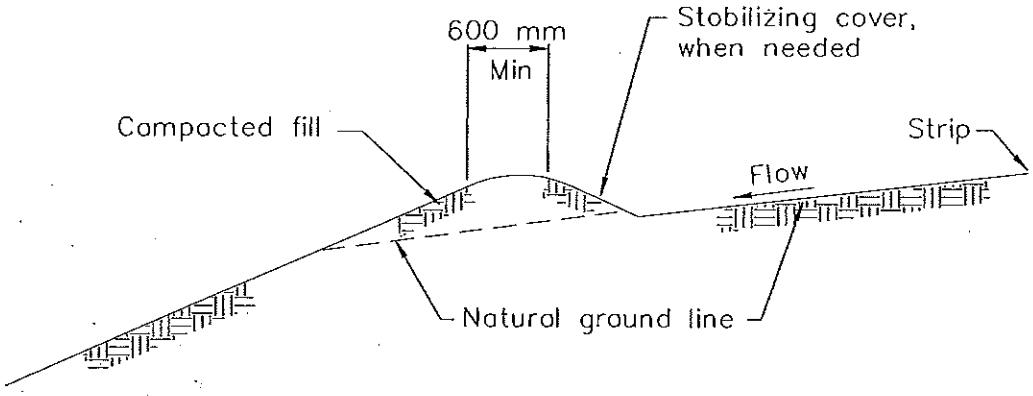
- Inspect temporary measures before, during and after rain events, and regularly.
- Inspect ditches and berms for washouts. Replace lost riprap, damaged linings or soil stabilizers as needed.
- Inspect channel linings, embankments, and beds of ditches and berms for erosion and accumulation of debris and sediment. Remove debris and sediment, and repair linings and embankments as needed or as directed by the engineer.
- Temporary conveyances shall be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.



TYPICAL DRAINAGE SWALE
NOT TO SCALE

NOTES:

1. Stabilize inlet, outlets and slopes.
2. Properly compact the subgrade, in conformance with Section 19–5 of the Caltrans Standard Specifications.



TYPICAL EARTH DIKE
NOT TO SCALE

TEMPORARY DIVERSION DIKE RC-4

Construction Specifications

A Diversion Dike is a low berm (or ditch and berm combination) that is constructed along the crest or top of a streambank. The purpose of a diversion is to intercept and divert runoff away from the face of a steep slope or streambank. Diverted runoff should outlet onto a stabilized area, a prepared level spreader, or into a slope protection structure, e.g., a slope drain. Diversion dikes are constructed from compacted earthen fill and should be used on drainage areas of 5 acres (2 ha) or less. In addition to protecting the face of a streambank from overbank runoff, diversions may also improve general slope stability by preventing runoff from infiltrating into and saturating the face of the bank.

Conditions Where Practice Applies

Diversion Dikes should be used only on drainage areas of 5 acres (2 ha) or less.

Design Guidelines / Typical Drawings

Diversion dikes are constructed from compacted earthen fill to a height of 18 in (45 cm) with side slopes 1V:2H or flatter. Height is measured from the upslope toe to the top of the dike (see Figure 1).

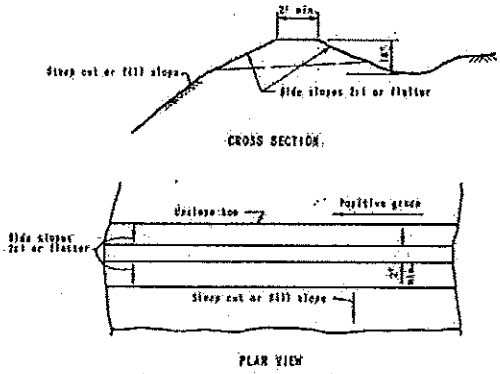


Figure 1. Cross section and plan views of diversion dike

Figure 2. Diversion dike used in combination with a flexible slope drain

The dike should have a minimum top width of 2 ft (60 cm). A conceptual design for a diversion dike, either a berm only or a berm and ditch combination is shown in Figure 1. A shallow trench or swale to contain the diverted runoff is normally incorporated into the design. Soil from the ditch can be used to construct the berm, provided it has sufficient fines to hold a 1V:2H side slope and be relatively impermeable when compacted. The swale or drainage ditch must have positive drainage to an outlet. Vegetative or mechanical stabilization may be required where grades are excessive.

Materials and Equipment

Construction of a low dike requires soil with sufficient fines to hold a 1V:2H side slope and to be relatively impermeable when compacted. The dike can be constructed by hand or with the aid of a backhoe or front-end loader.

Construction / Installation

- If overbank runoff is a problem, construction of a diversion dike or interceptor should precede other bank stabilization treatments.
- The height of the dike should be kept under 18 in (45 cm) so as not to interfere with bank access.
- Use of a ditch and bank combination allows more efficient capture and diversion of runoff.

- In addition, the soil excavated from the ditch can be used to construct the dike. Down drains or slope drains should be inserted through the dike periodically to convey the collected runoff to the stream below.
- Alternatively, the ditch should be constructed with sufficient positive grade to some other type of outlet.

Inspection and Maintenance

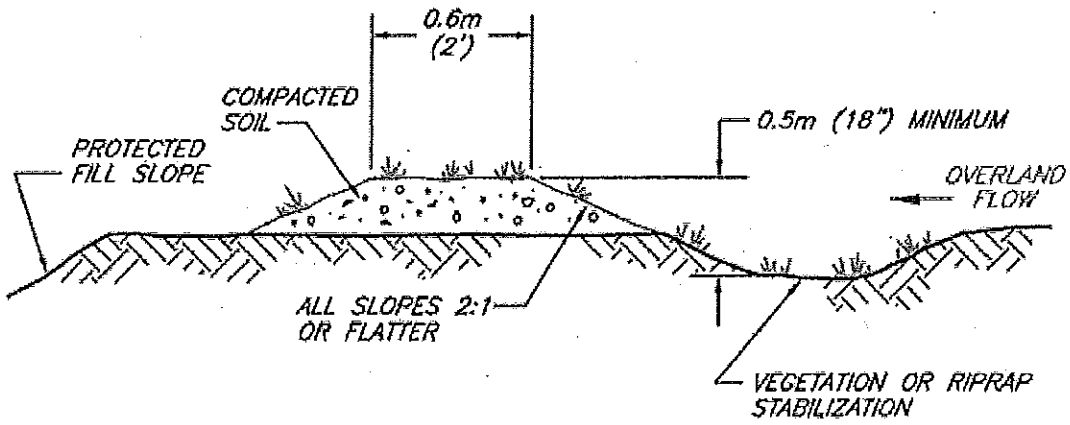
The dike or berm should be inspected to check that it has not been breached. Repair as needed. The ditch or swale behind the dike should also be checked for accumulation of sediment and debris. Excessive sediment accumulations should be removed.

Common Reasons / Circumstances for Failure

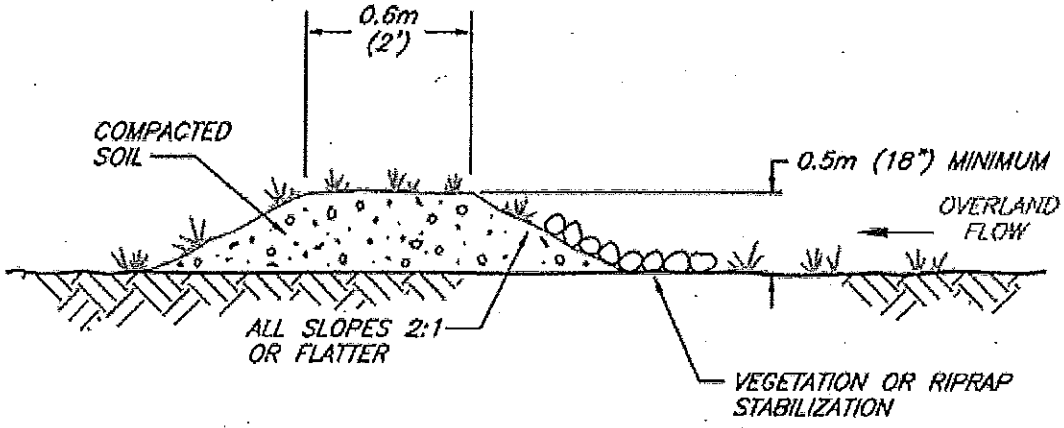
The most common reasons for failure are:

1. Overtopping and/or breaching of the dike or berm,
2. Excessive sediment accumulation in the ditch or swale behind the berm, and
3. Inadequate or insufficient outlet capacity of any appurtenant drop inlet and/or slope drains.

TEMPORARY DIVERSION DIKE RC-4



TYPICAL FILL DIVERSION



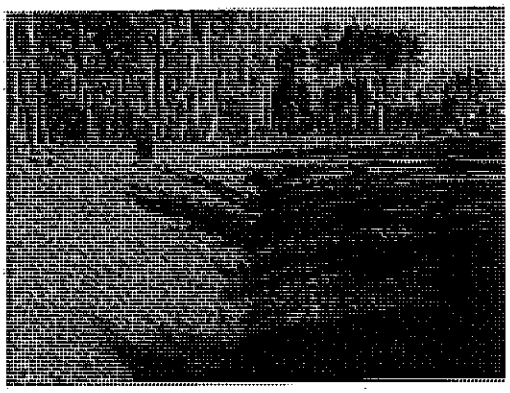
TYPICAL TEMPORARY DIVERSION DIKE

NOTES:
1. THE CHANNEL BEHIND THE DIKE SHOULD HAVE POSITIVE GRADE TO A STABILIZED OUTLET.
2. THE DIKE SHALL BE ADEQUATELY COMPACTED TO PREVENT FAILURE.
3. THE DIKE SHOULD BE STABILIZED WITH TEMPORARY OR PERMANENT SEEDING OR RIPRAP.

DIVERSION DIKE

FILE: DIVDK

GRASS-LINED CHANNEL (TURF REINFORCEMENT MATS) RC-5



Construction Specifications

Turf Reinforcement Mats (TRMs) are similar to Erosion Control Blankets, but they usually are intended for lining channels. They are composed of ultraviolet (UV) stabilized polymeric fibers, filaments, nettings and/or wire mesh, integrating together to form a three-dimensional matrix ¼ to ¾ in (5 to 20 mm) thick. The types of polymer include polypropylene, polyethylene, polyamides, and polyvinyl chloride. Often TRMs are combined with organic material such as coir to aide vegetation establishment and provide the initial temporary erosion control necessary to resist the forces of running water until the vegetation can become established. Typical vegetation includes grasses that can withstand inundation.

Conditions Where Practice Applies

TRMs are designed to provide protection to resist channel and streambank erosion, and are useful when underlying soil boundaries may subside or shift slightly after installation.

Design Specifications / Typical Drawings

There are three types of TRMs, and their application depends on the site condition, as shown in Table 1.

TRMs can be installed after applying seed to the prepared soil surface or deployed first, and then seeded following infilling with soil. The former method allows the roots and shoots to grow through and interlock with the geosynthetic matrix, as shown in the second figure above. The channel or bank surface requires careful preparation, must be uniform and relatively free of rocks, stumps, clods etc, to ensure that there is complete contact between the TRM and the soil surface.

The number of anchoring stakes or staples per ft (or per m) is site and product specific, and should be determined according to the manufacturer's specifications. See Table 2 for stake sizing recommendations. Live willow stakes may be substituted for metal or wooden anchoring stakes, although it should be noted that willows could shade out turf grass. Willow wattles or fascines may be used to anchor the mats into the slots.

Table 1. Recommendations for TRM applications (ECTC, 2001)

Type	UV Stability Minimum tensile strength retained after 1000 hr. (ASTM D 4355) (%)	Tensile Strength[1,2] (ECTC[4] mod. ASTM D5035) lb/ft (kN/m)	Application	
			Slope V:H	Channel max. shear stress[3] (ASTM D6460 or other ECTC approved tests) lb/ft^2 (Pa)
A	80	125 (1.82)	1:1	6 (288)
B	80	150 (2.19)	1:0.5	8 (384)
C	80	175 (2.55)	1:0.5	10 (480)

[1]Minimum average roll values, machine direction.

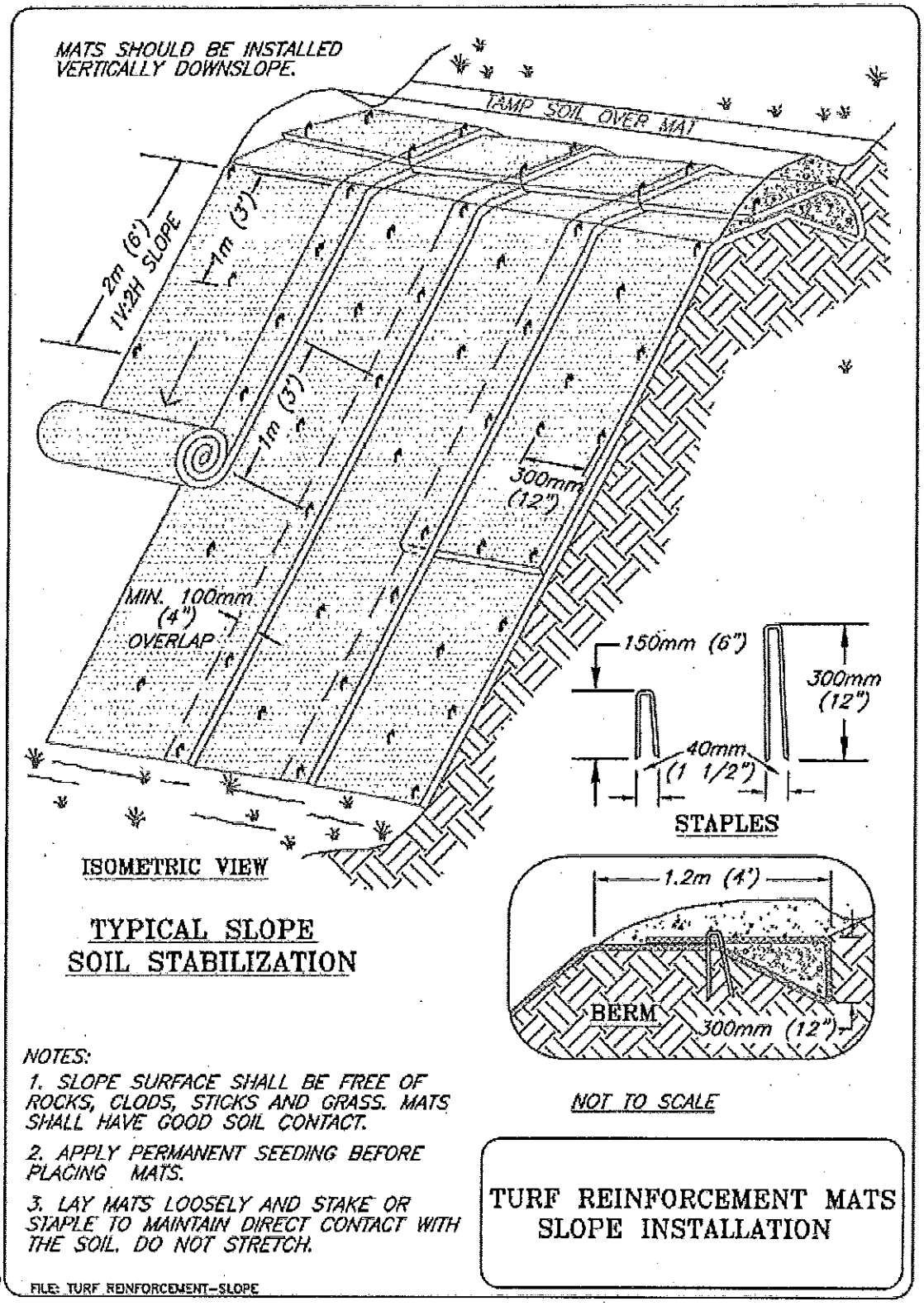
[2]Field conditions with high loading and/or high survivability requirement may warrant the use of TRMs with tensile strength of 3000 lb/ft (44 kN/m) or greater

[3]Max. shear stress TRM (fully vegetated) can sustain without physical damage or excess erosion during a 30-minute flow event. (Note: fully vegetated shear stress properties for TRMs containing degradable components must be obtained on the nondegradable portion of the matting alone.)

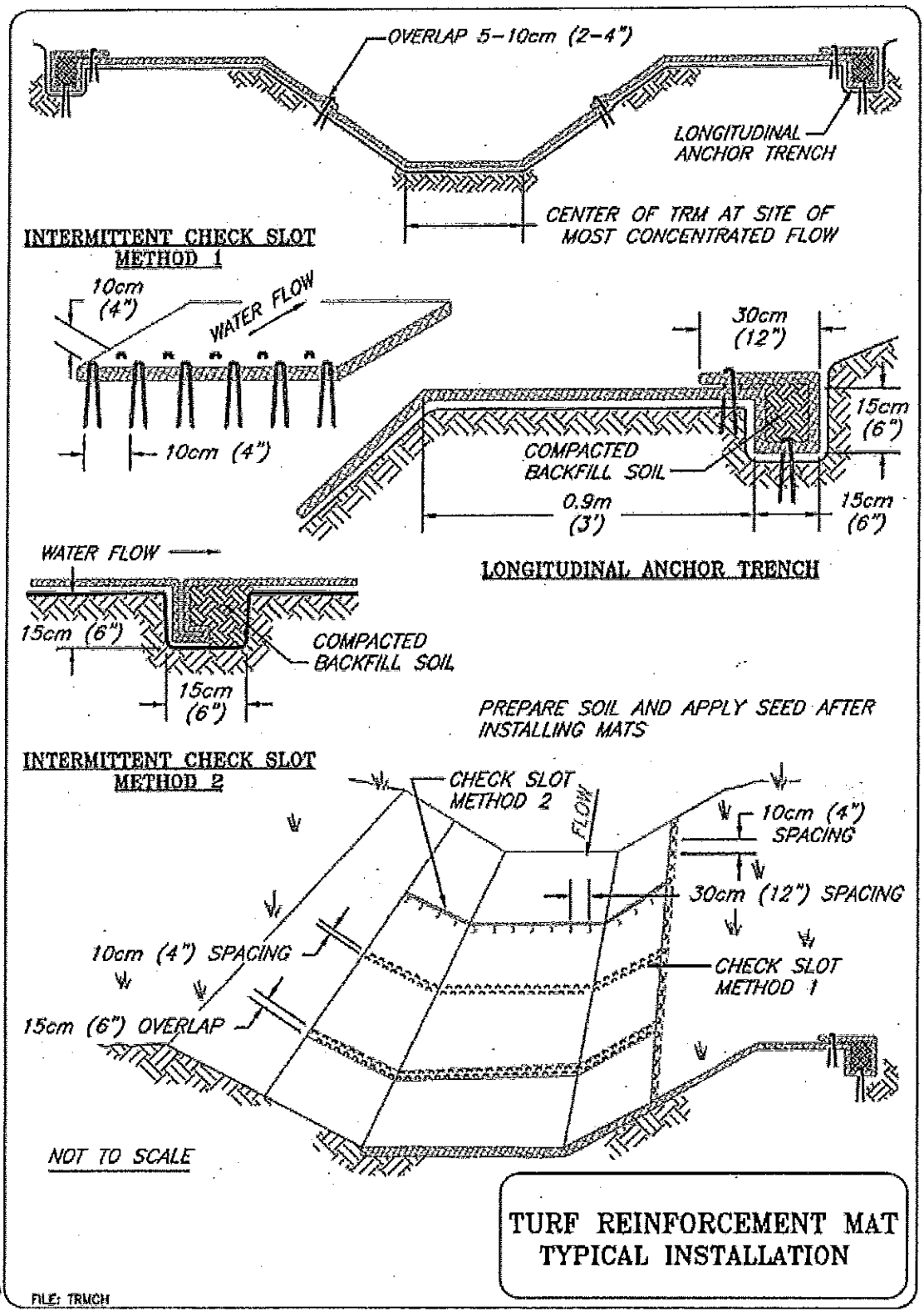
[4]Erosion Control Technology Council – Technical Guidance Manual for Testing Rolled Erosion Control Products.

Table 2. Recommendations for TRM stake selection

Stake Length	**Soil Conditions**
6 inches	Typical soil conditions. Six-inch staples used in all but loose soil types.
8 inches	Loam, relatively loose sandy loam to sandy soils. Eight-inch staples are typically used in high velocity channel applications.
> 12 inches	Excessively loose soils, slopes containing fine silt, sand, or soft mud. Deep and soft fills, loose sands, silts, loams or "quick" conditions. Staples 12 inches and longer are used in shoreline applications in which wave action is a factor or in instances where soils remain saturated for long periods of time.



TYPICAL SLOPE SOIL STABILIZATION


OVERLAP 5–10cm (2–4")
LONGITUDINAL ANCHOR TRENCH
CENTER OF TRM AT SITE OF MOST CONCENTRATED FLOW
INTERMITTENT CHECK SLOT METHOD 1
10cm (4")
WATER FLOW
10cm (4")
30cm (12")
15cm (6")
COMPACTED BACKFILL SOIL
0.9m (3')
15cm (6")
LONGITUDINAL ANCHOR TRENCH
WATER FLOW
15cm (6")
COMPACTED BACKFILL SOIL
15cm (6")
PREPARE SOIL AND APPLY SEED AFTER INSTALLING MATS
INTERMITTENT CHECK SLOT METHOD 2
CHECK SLOT METHOD 2
FLOW
10cm (4") SPACING
30cm (12") SPACING
10cm (4") SPACING
CHECK SLOT METHOD 1
15cm (6") OVERLAP
NOT TO SCALE
TURF REINFORCEMENT MAT
TYPICAL INSTALLATION
© 2004 SALIX
FILE: TRMCH

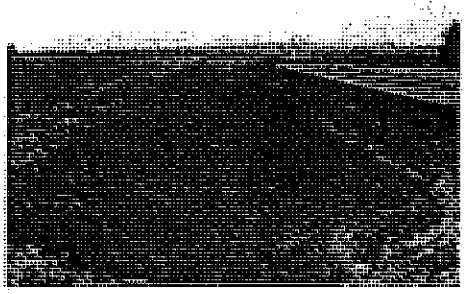
Materials and Equipment

TRMs may be installed either with hand labor or equipment; the main tools or equipment required consist of hammers, stapling devices, and shovels or equipment for trenching.

Construction / Installation

TRMs (in channels) typically require very special installation and construction techniques.

Site Preparation



The site should be fine graded to a smooth profile and relatively free from all weeds, clods, stones, roots, sticks, rills, gullies, crusting and caking.

Fill any voids and make sure that the channel is compacted properly.

Seeding

Seed the area to be vegetated with a seed mix adapted to the local geographical area and soil conditions.

Choosing the appropriate seed mix will ensure optimum germination, root system development, vegetation density, and long term functionality. The types of seeds planted above the anticipated water line may differ from those below the anticipated water line.

If the prepared seed bed becomes crusted or eroded, or if ruts or depressions exist for any reason, prior to RECP installation the contractor should rework the soil until it is smooth and re-seed reworked areas.

TRM Installation in Channel Bottom

TRMs should always be unrolled in the direction of water flow.

First, install the TRM in the channel bottom. Try to minimize the number of seams that are placed on the bottom of the channel, as these are sites of weakness. Do not put seams in the center of the channel bottom or in areas of concentrated water flow. When installing two TRMs side by side in a waterway, the center of the TRM should be centered in the area of concentrated water flow. Install adjoining TRMs away from the center of the channel bottom. Follow the manufacturer's recommendations for overlapping the TRM; generally the overlap will be 50 to 100 mm (2 to 4 in).

Secure the TRM at the beginning of the channel with a 150 mm x 150 mm (6" x 6") check slot dug perpendicular to the direction of water flow across the entire width of the channel.

Lay the TRM in the check slot with 750 mm (30 in) extending upstream of the check slot. Stake or staple the TRM in the check slot on 300 mm (12 in) centers.

Backfill the anchor trench and compact the soil. Place seed over the compacted soil if necessary.

Cover the compacted soil with the remaining 300 mm (12 in) of the terminal end of the TRM. Staple or stake the terminal end of the TRM down slope of the anchor trench on 300 mm (12 in) centers.

Check Slots

"Check slots" (cutoff trenches) must be provided every 7.5 to 15 m (25-50 ft) to ensure water moving under the TRM is forced back to the surface. Longitudinal check slots are required to ensure off site "side flows" do not get under the TRM. Similarly, beginning and terminal check slots are critical.

Check slots can be installed in one of two ways, depending upon the Engineers discretion and/or the manufacturer's recommendations.

One type of check slot is constructed by installing a double row of staples or stakes staggered and spaced 100 mm (4 in) apart.

The second option is to install a check slot 150 mm (6 in) wide by 150 mm (6 in) deep, and secure the TRM in the upstream side of the check slot with staples or stakes on 300 mm (12 in) centers.

Flip the TRM roll on the upstream edge. Back fill the check slot and compact the soil. Continue rolling the TRM downstream over the completed check slot.

Installation on Side Slopes

As the TRM is installed from the channel bottom up the slope, a shingle-type installation is recommended with the up-slope TRM overlapping the lower TRM approximately 50 to 100 mm (2 to 4 in).

Anchor the TRMs with a minimum of one staple every 60 mm (24 in) across the width and one staple every 90 mm (36 in) down the length.

If the TRM needs to be spliced, "shingle" it as discussed above, with a 100 mm (4 in) overlap. Use a staple check slot to secure the overlap.

Anchor the RECP placed at the top of the channel slope in the same manner as described in the slope section.

Terminal End

Secure the TRM at the terminal end of the channel with a check slot similar to the one made at the beginning of the channel.

Alternative Channel Installation Method

Another installation method for TRMs is to install them vertically and approximately 1 m (3 ft) onto the flat of the channel bottom. Construct a check slot in areas of concentrated water flow. Use a 50 to 100 mm (2 to 4 in) shingle-type overlap upstream to downstream.

Inspection and Maintenance

Basic monitoring consists of visual inspections to determine mat integrity and attachment performance. Rill development beneath the mat or edge lifting are evidence of inadequate attachment. Additional staking and trenching can be employed to correct defects. Recently placed mats may be replaced, but once vegetation becomes established, replacement is not a reasonable option.

Common Reasons / Circumstances for Failure

Critical points in conveyance system applications where mats can lose support include points of overlap between mats, projected water surface boundaries and channel bottoms.

Coir TRM channel installation, Guadalupe River, San Jose CA., October 2003

Same site during first large winter storms, winter 2004

Construction Specifications

A drainage trench is excavated parallel to and just behind the crest of a streambank. Ideally, the bottom of the trench should be keyed into an impermeable layer in the slope. The trench should be backfilled with a coarse graded aggregate that meets filtration criteria; i.e., it should allow unimpeded flow of groundwater while excluding fines from the seepage water. Alternatively, the trench can first be lined with a filter fabric (geotextile) that meets the filtration requirements and then be backfilled with a coarse aggregate. The purpose of the trench is to intercept and divert shallow seepage away from the face of the streambank. Note that trench drains must connect to a surface discharge pipe or otherwise may be classified as a Class V Underground Injection (UIC) well.

Conditions Where Practice Applies

Should be considered when shallow, water bearing strata conduct groundwater that emerges (daylights) at the streambank. A good example would be relatively permeable surface strata or water bearing sands up to 10 ft (3 m) thick, e.g., outwash sand or coarse alluvium, overlying relatively impermeable silty clay deposits, e.g., clay till or fine alluvium. This is a fairly common stratigraphic sequence in glaciated terrain and alluvial valleys.

Design Guidelines/ Typical Drawings

Trench Drains constructed without a pipe at the bottom are commonly known as French Drains (see Figure 1a). An efficient, well-constructed Trench Drain requires the use of perforated, jointed, slotted, or porous pipe placed near the bottom of a trench (see Figure 1b) that is surrounded with pea gravel or selected pervious filter aggregate. When a drain is excavated in erodible materials, synthetic filter fabrics (geotextiles) should be used (see Figure 1c) to line the sides and bottom of the trench to prevent soil fines from entering the coarse backfill in the drain. The main backfill should be specially selected pervious filter aggregate designed to allow unrestricted flow of water to the pipes.

Most drains should be equipped with pipes because gravel or rock-filled trenches have limited discharge capabilities even when clean aggregates are used. The discharge capabilities of drainage trenches backfilled with clean stone or coarse gravel, as estimated by Darcy's law, are given in Table 1. The required diameters of corrugated metal, concrete, and polymeric (smooth) drain pipes for a wide range of discharge quantities can be determined from the nomograph in Figure 2.

- The location of perforations and open joints in pipes should always be placed to allow unobstructed flow to pipes.

- If a drainage pipe is completely surrounded with specially selected coarse filter aggregate (refer to Figure 1b), perforations can completely surround the pipe.

Unjointed sections of pipe should be used to convey water across areas where the discharge of water into the soil from drains must be prevented. The same injunction holds for the final discharge of collected drain water, viz., it must not be allowed to discharge on to a slope and instead must be conducted safely down a slope using a chute or slope drain.

Materials and Equipment

Suitable drainage rock or gravel in addition to a perforated polymeric pipe. A small backhoe is required for excavating and backfilling the trench. A geotextile filter fabric will be required if the trench is to be lined.

Construction / Installation

- Maximum trench depths are restricted to the reach of a backhoe/excavator or approximately 2 to 2.7 m (6 to 8 ft).
- Trench widths are also determined by the width of the excavator bucket, which can range from 0.3 to 0.6 m (12 to 24 in).
- The water transmission characteristics of the drainage trench can be improved by placing a perforated or slotted drainage pipe on a slight grade at the bottom.
- The discharge from a trench drain should be conveyed in a safe, non eroding manner down the slope directly to the stream.

Inspection and Maintenance

Subsurface drains, including trench drains, are difficult to access and inspect once installed. A possible way to monitor the performance of a trench drain is to check the outflow from the pipe at the bottom of the interceptor trench. If there is steady shallow seepage towards a streambank, this exit pipe should flow continuously. The effectiveness of a trench drain for intercepting shallow seepage can be monitored indirectly by examining for signs of seepage and/or slumping/sliding at the bank face.

Common Reasons / Circumstances for Failure

The limitations of trench drains cited previously are the most common reasons for failure. Failure to excavate the trench deep enough to reach the impermeable base of a perched groundwater system may let ground water pass under the trench. Loss of drainage capacity from clogging of a drain can lead to the saturation and buildup of pore pressure in the streambank itself. Either of these conditions can lead to mass stability failure of a streambank or seepage induced erosion of the bank face.

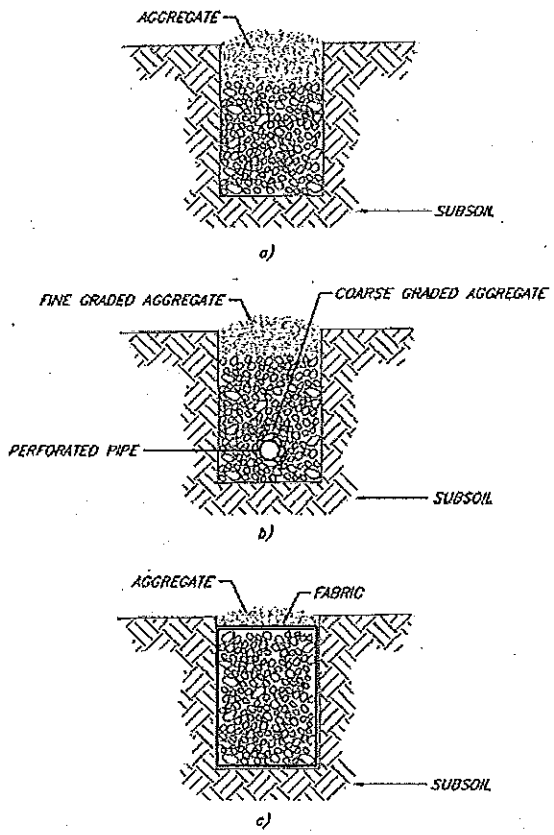


Figure 1. Cross sections of subsurface drains. a) French drain, b) conventional trench drain with pipe, c) trench drain with filter fabric.

Size of stone	Permeability, ft/day	Slope	Capacity cu ft/day	lps
¾ to 1 in.	120,000	0.01	7200	38
¾ to 1 in.	120,000	0.001	720	4
¾ to ½ in.	30,000	0.01	1800	9
¾ to ½ in.	30,000	0.001	180	1
½ to ¾ in.	6,000	0.01	360	2
½ to ¾ in.	6,000	0.001	36	0.2

Table 1. Discharge capacities of 1 x 0.7 m (3 x 2 ft) cross sections of stone filled, trench drains.

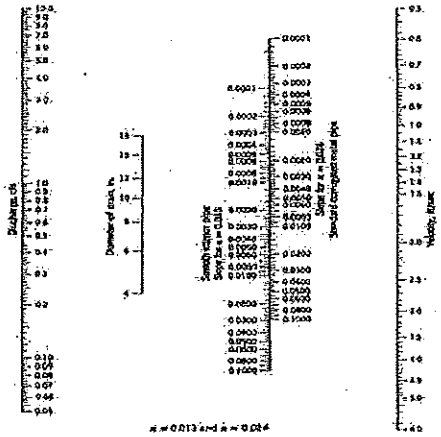


Figure 2. Nomograph for computing required size of circular drain, flowing full.

DROP INLET RC-7

Construction Specifications

Concentrated overbank runoff can be a major cause of erosion, especially along deeply incised channels. Runoff passing over the top of banks frequently triggers gully development and expansion, and water that is ponded at the top of high, steep banks, and infiltrates or seeps into the ground behind the slope face is often a major factor in erosion by piping or slope failure from the development of high pore water or seepage pressures. The gully erosion and downcutting can be addressed using a drop inlet, which is a water control structure that consists of an L-shaped corrugated pipe passing through an earthen embankment placed at the downstream end of the gully.

Conditions Where Practice Applies

Used where large amounts of surface runoff flow across a steep high, streambank along an existing tributary gully or small ravine. Small amounts of overbank runoff flowing across a relatively intact or non-incised bank crest are best handled with a diversion dike and slope drains.

Design Guidelines / Typical Drawings

The following criteria are based on practices employed by the U.S. Army Corps of Engineers and the Natural Resources Conservation Service in the Southeast USA.

- Drop pipe structures are generally placed in gullies deeper than 10ft (3 m), and embankments are typically 15 to 20 ft (4.5 to 6 m) high.
- Minimum safety factors for embankments are 1.3, dictating side slopes of 1:2 to 1:3 (V:H).
- Pipes are sized to convey the 2- to 10-year event based on standard SCS runoff curve number computations, and an emergency spillway is provided to convey flows larger than the design discharge.
- Design discharges are typically less than 200 cfs (5.7 m^3/s), and the vertical distance from the inlet weir crest to the outlet pipe invert is less than 30 ft (9 m). Pipe diameter and length are used to compute head-discharge relations, and pipe diameter is adjusted to avoid orifice flow at discharges less than or equal to design flow.

Drop pipes may be designated non-storage structures, which are sized to pass the two- to five-year event, or as temporary storage structures, which are designed to impound run-off from the 25-year event. Water retention is governed by site factors (soils, topography, and water supply) and by the elevation of the inlet weir and emergency spillway.

If uncontrolled erosion occurs in the drainage area behind the slope crest, the runoff may carry large amounts of sediment. A drop inlet can convey this sediment-laden runoff directly into an adjoining stream. If erosion is extensive, the drain itself may clog and lose a significant portion of its capacity. In these cases, sediment should be prevented from entering the drop inlet by providing some type of filtering and/or inlet protection, either filter fabric, gravel & wire mesh, or block and gravel sediment barrier. A photograph of a trash rack used to prevent large debris from entering and clogging a drop pipe is shown in Figure 1.

- Pipe materials can be aluminized or galvanized polymer-coated metal or polymeric materials. Seepage through the earthen embankment is controlled with seepage collars for structures with conduits 4 ft (1.2 m) in diameter or smaller, and with annular filter drainage rings for larger conduits.

- Where the structure will impound water permanently, a filter drainage diaphragm is used. Concrete pads are provided at the top and bottom of the vertical pipe, and an anti-vortex baffle is placed in the inlet to maintain weir flow and avoid vibration during very large events (see Figure 2). Outlets are supported with grouted riprap and secured with screw anchors. In addition, stone erosion protection is provided at the outlet for structures larger than 4 ft (1.2 m) in diameter.

Materials and Equipment

Earthmoving equipment and standard erosion control measures are needed for construction of the embankment. A source of fill for the dam is needed, and pipes, trashracks, and stone for scour protection are essential materials. Pipe materials can be aluminized or galvanized polymer-coated metal or polymeric materials.

Common Reasons / Circumstances for Failure

- Clogging of the down-pipe can lead to possible overtopping of the containment embankment and erosion of the downstream face of the dam in the absence of a properly designed emergency spillway.

- Excessive sediment in the runoff can be conveyed to the stream channel below in the absence of suitable filtering at the inlet and/or a long enough residence time in the ponded area behind the embankment dike.

- Ponding of water atop a streambank can exacerbate piping and seepage related bank instability. This latter problem is minimized, however, if the embankment and pond are located at the downstream end of the gully and if pond water levels are maintained as low as possible.

Inspection and Maintenance

Clogging of the inlet can be prevented by periodic inspection of the entrance protection structure or trash rack (see Figure 1 and 2). If sediment in the pond behind the dam accumulates to the base of the pipe entrance, it may be necessary to raise the entrance elevation of the pipe. A gully treatment program in the upstream reaches of the gully or gully network can also be employed to reduce sediment loading.

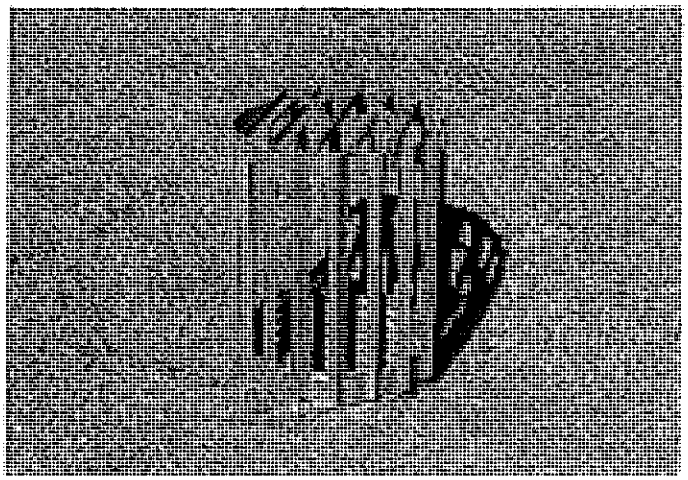


Figure 1. Metal trash rack used to protect drop inlet

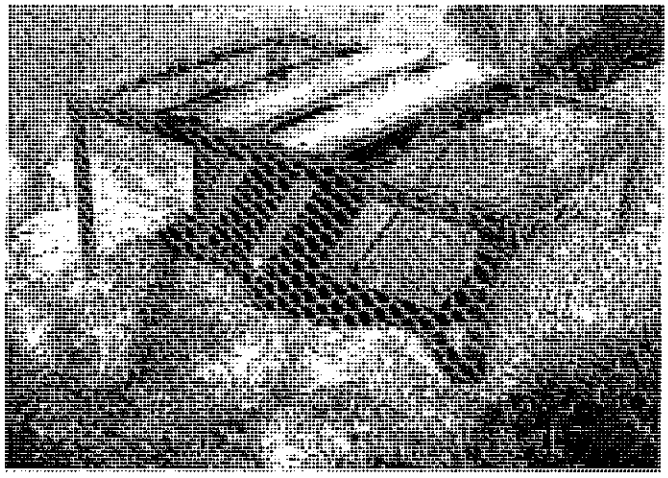
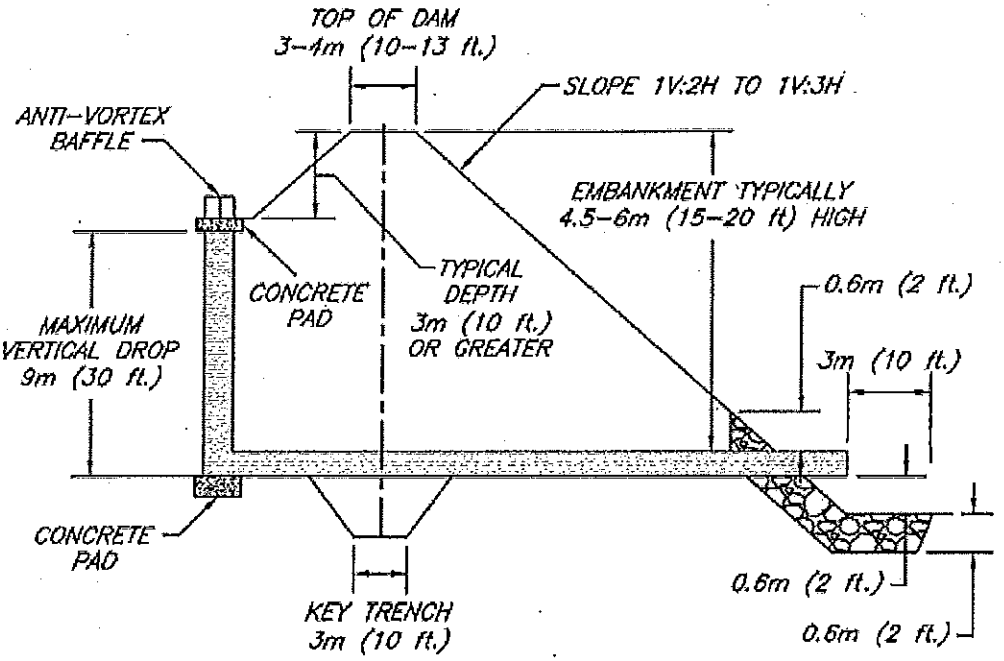


Figure 2. Drop inlet pipe with anti-vortex baffle and trash rack

DROP INLET RC-7



DROP INLET

FILE: DI

MINIMIZING TOTAL SUSPENDED SOLIDS (TSS) RC-8

Construction Specifications

Whatever technique you decide to implement, an important thing to remember is that dilution can sometimes be the solution. A probable "worst time" to release high TSS into a stream system might be when the stream is very low; summer low flow, for example. During these times, the flow may be low while the biological activity in the stream is very high. Conversely, the addition of high TSS or sediment during a big storm discharge might have a relatively low impact, because the stream is already turbid, and the stream energy is capable of transporting both suspended solids, and large quantities of bedload through the system. The optimum time to "pull" in-stream structures may be during the rising limb of a storm hydrograph.

Techniques to Minimize Total Suspended Solids (TSS)

Padding

Padding, usually manufactured from coir and or other natural fibers, that is laid in the stream below the work site may trap some solids that are deposited in the stream during construction. After work is done, the padding is removed from the stream, and placed on the bank to assist in revegetation.

Clean, washed gravel

Clean, washed gravel can be placed on the stream bottom both during and after construction to minimize re-mobilizing the "fines". Clean gravel or spawning gravel can often be specified to mitigate or enhance the existing substrate. Therefore, gravel "injection" can minimize TSS during construction while providing environmental and habitat enhancements with long-term benefits.

Excavation using a large bucket

Each time a bucket of soil is excavated or placed in the stream, a portion is of the soil is suspended. The resulting amount of sediment suspended increases proportionally to the number of scoops rather than the total of excavated soil. Therefore, using a large excavator bucket instead of a small one will reduce the total amount of soil that is suspended and available to wash downstream. Each time a bucket of soil is placed in the stream, a portion is suspended. Approximately the same amount is suspended whether a small amount of soil is placed in the stream, or a large amount.

Use of dozer for backfilling

Using a dozer for backfilling instead of a backhoe follows the same principles – the fewer times soil is deposited in the stream, the less soil will be suspended.

Partial dewatering with a pump

Partially dewatering a stream with a pump reduces the amount of water, and thus the amount of water that can suspend sediment.

How to know if you have high TSS:

Some commonly accepted standards for high TSS are:

- 50 mg/l or
- 10 mg/l above background TSS or,
- 10% above background TSS.

These standards are very stringent, and are very difficult to achieve in many situations. The background + 10 % (mg/l) is probably the most realistic and reasonable standard for protecting the aquatic resources, while allowing a restoration project to be implemented. Check with local ordinances for standards.

Inspection and Maintenance

- Inspect the stability and performance of all erosion and sediment control measures during construction.
- Monitor TSS levels before, during and after construction.

IN-STREAM DIVERSION TECHNIQUES RC-9

Construction Specifications

A stream diversion is a temporary bypass through a pipe, flume, or excavated channel that carries water flow around work areas. Stream diversion is commonly used during culvert installation or replacement. Where possible, a stream diversion should be the first choice to control erosion and sediment during the construction of culverts or other in-stream structures. During construction in a watercourse, particularly culvert installation and repair, these temporary water bypass structures are an effective sediment and erosion control technique. Check with local, state and federal regulatory authorities for permitting and design requirements.

Design Considerations

The selection of which stream diversion technique to use will depend upon the type of work involved, physical characteristics of the site, and the volume of water flowing through the project.

Advantages of a pumped diversion include:

- Downstream sediment transport can almost be eliminated
- De-watering of the work area is possible
- Pipes can be moved about to allow construction operations
- The dams can serve as temporary access.
- Increased flows can be managed by adding more pumping capacity.

Some disadvantages of a pumped diversion are:

- Flow volume is limited by pump capacity
- Requires 24-hour monitoring of pumps
- Sudden rain could overtop dams
- Minor in-stream disturbance to install and remove dams

Advantages of excavated channels and flumes are:

- Isolates work from water flow and allows dewatering
- Can handle larger flows than pumps

Disadvantages of excavated channels and flumes are:

- Bypass channel or flume must be sized to handle flows, including possible floods
- Channels must be protected from erosion
- Flow diversion and then re-direction with small dams causes in-stream disturbance and sediment

Stream diversions should not be used:

- Without identifying potential impacts to the stream channel
- In or adjacent to water bodies until all necessary permits have been obtained

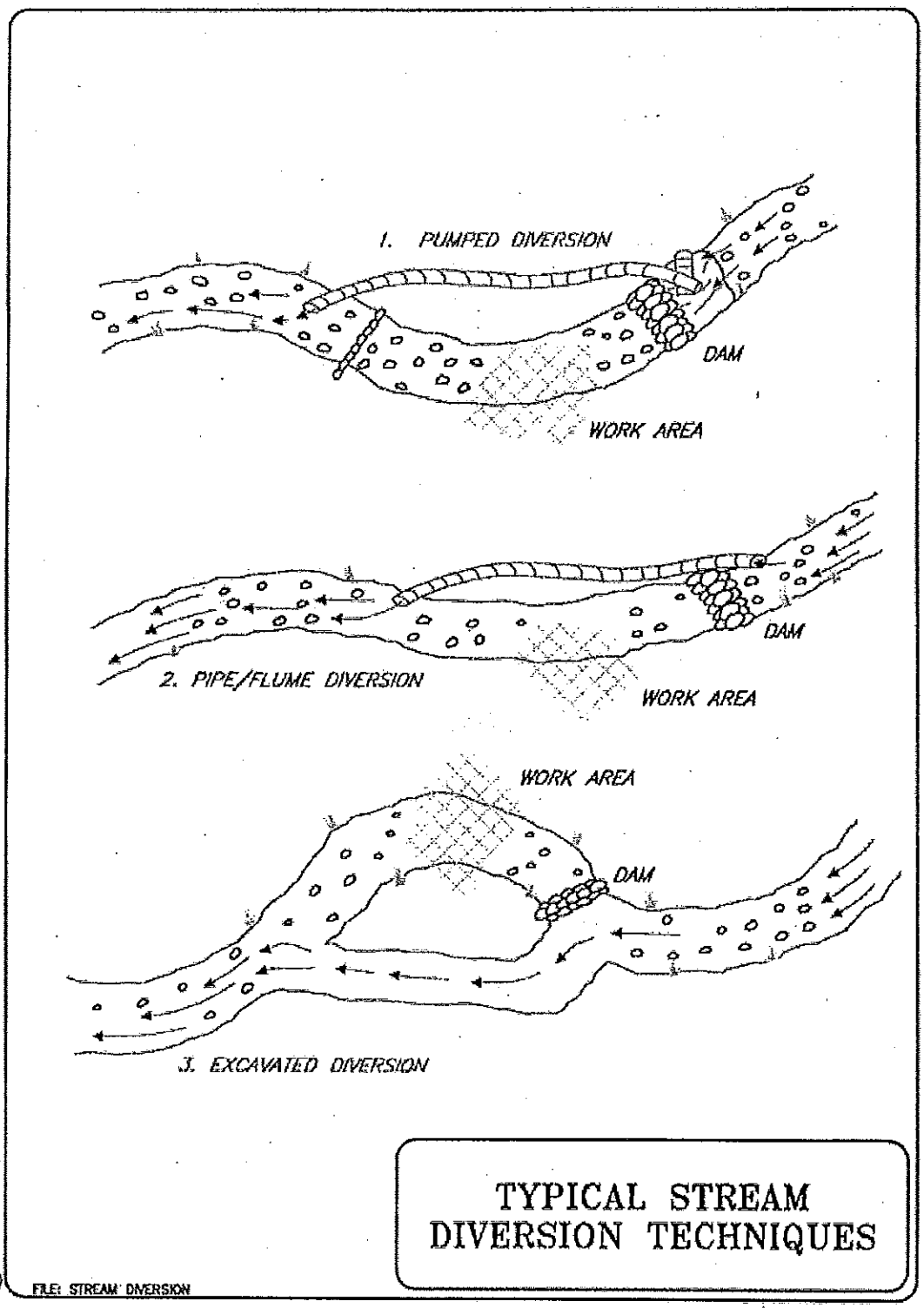
Installation

- The pumped diversion is suitable for intermittent and low flow streams that can be pumped. Pump capacity must be sufficient for design flow. The upper limit is about 10ft^3/sec (0.28 m^3/sec), the capacity of two 8 inch (20 cm) pumps.
- A temporary dam is constructed upstream and downstream of the work area and water is pumped through the construction project in pipes. Dam materials should be selected to be erosion resistant, such as steel plate, sheetpile, sandbags, continuous berms, inflatable water bladders, etc.
- A temporary bypass channel can also be constructed by excavating a temporary channel or passing the flow through a heavy pipe (called a "flume"), and excavating a trench under it. Typical stream sizes are less than 20 ft (6 m) wide and less than 100 ft^3/sec (2.8 m^3/sec).

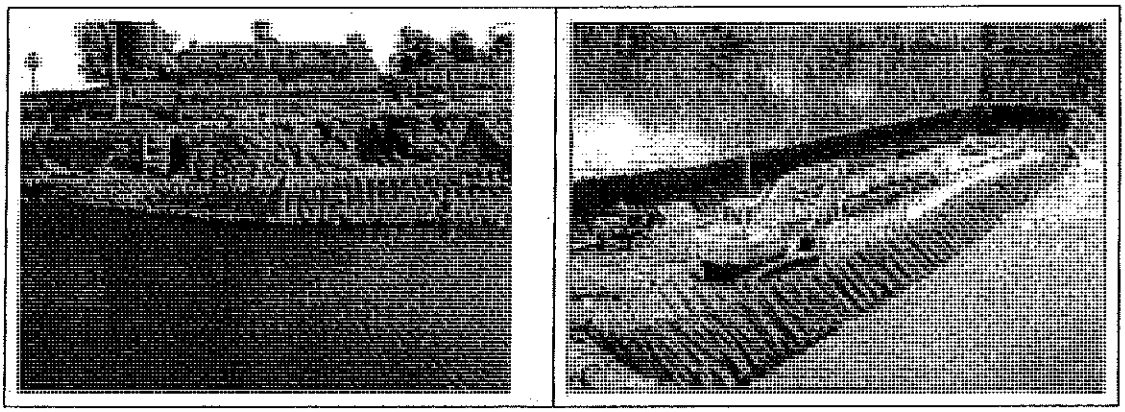
IN-STREAM DIVERSION TECHNIQUES RC-9

Inspection and Maintenance

- All stream diversions must be closely maintained and monitored
- Pumped diversions require 24-hour monitoring of pumps
- Upon completion of the work performed, the stream diversion should be removed and flow should be re-directed through the new culvert or back into the original stream channel.



INSTREAM ISOLATION TECHNIQUES RC-10



Portable dams installed in Santa Cruz Ca. and in Alberta Canada.

Construction Specifications

An instream isolation technique is a temporary structure built into a waterway to enclose a construction area and reduce sediment pollution from construction work in or adjacent to water. The structures may be made of rock, sand bags, wood or water-filled geotextiles (aqua barriers). During construction in a watercourse, these structures are designed to reduce turbidity and sediment discharge, allowing contractors to follow clean water regulations.

Design Considerations

Isolation structures may be used in construction activities such as streambank stabilization, culvert installation, bridges, piers or abutments. It may be used in combination with other methods such as clean water bypasses and/or pumps.

This technique should not be used:

- If there is insufficient streamflow to support aquatic species.
- In deep water unless designed or reviewed by and engineer.
- To completely dam streamflows.

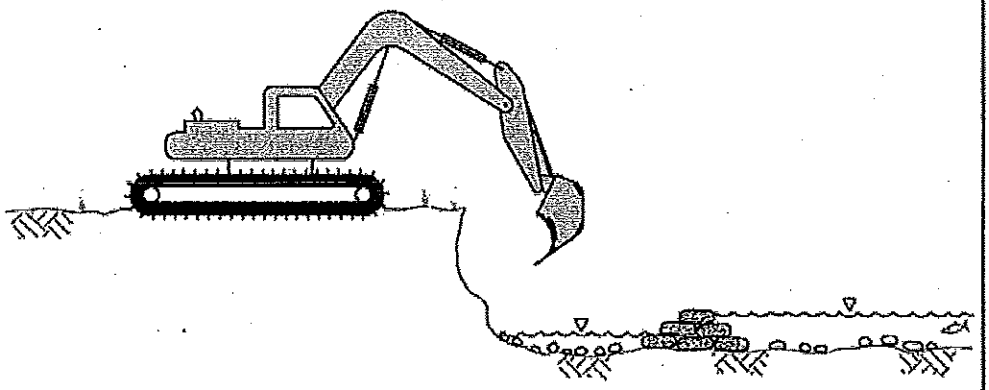
Installation

When used in watercourses or streams, cofferdams must be used in accordance with permit requirements. Materials for cofferdams should be selected based on ease of maintenance and complete removal following construction activities.

Inspection and Maintenance

- During construction, inspect daily.
- Schedule additional inspections during storm events.
- Immediately repair any gaps, holes or scour.
- Upon construction completion, the structure is removed.
- Remove sediment buildup.
- Remove structure. Recycle or re-use if applicable.
- Revegetate areas disturbed by cofferdam removal if applicable.

BENEFITS/LIMITATIONS
- *Difficult to dewater*
- *Inexpensive*
- *Labor intensive to install and remove*
- *Sand may be deposited in stream if bags break, better to use clean gravel*

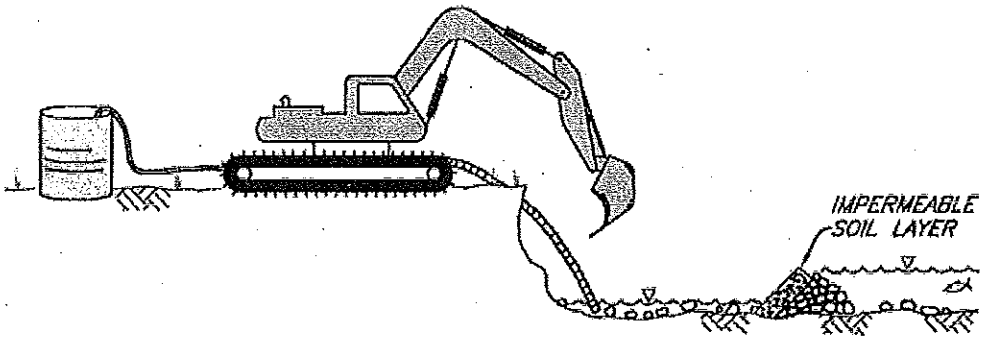


SAND BAG/GRAVEL BAG TECHNIQUE

FILE: INSTREAM TECHNIQUES3

INSTREAM EROSION AND SEDIMENT CONTROL ISOLATION TECHNIQUES

BENEFITS/LIMITATIONS
- Allows partial dewatering
- Relatively inexpensive
- Useful for small streams
- Minimal TSS when removed



NOTES:

Step 1. Install clean gravel

Step 2. Place impermeable soil

Step 3. Do work

Step 4. Decommission berm by removing soil layer first

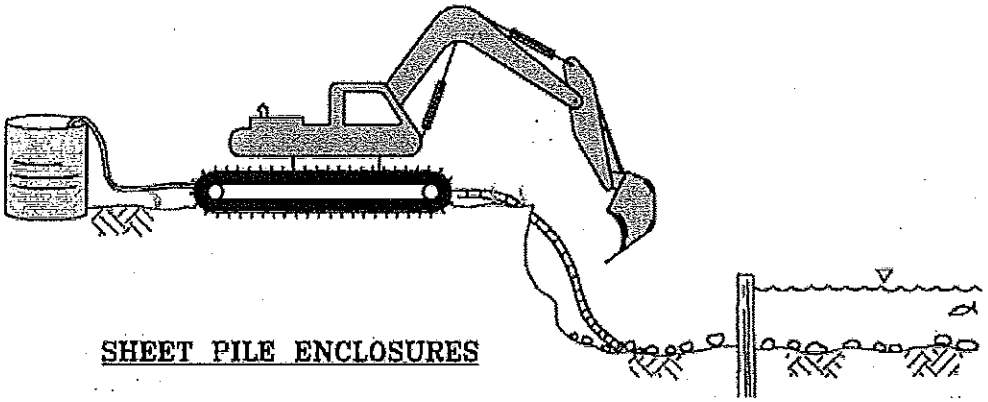
Step 5. Pump work area. Head differential will cause turbid water to flow into work area through gravel

Step 6. Remove or spread gravel

GRAVEL/SOIL BERM INSTREAM ISOLATION TECHNIQUE

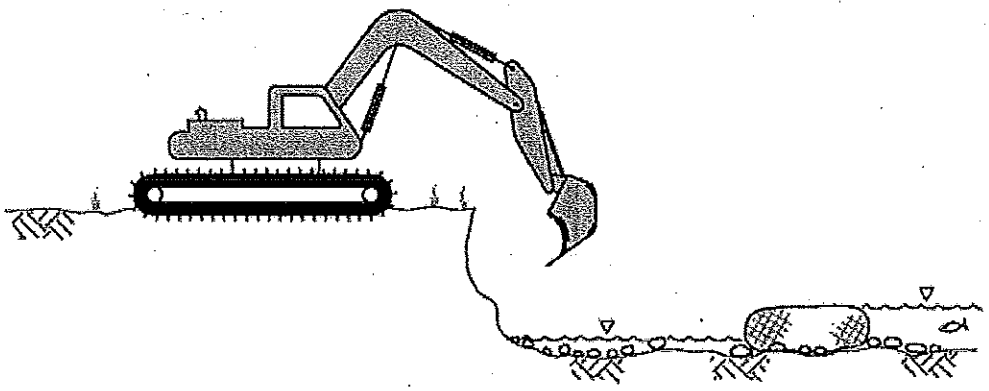
FILE: BERM INSTREAM TECHNIQUES

BENEFITS/LIMITATIONS
- Allows full dewatering
- Relatively expensive
- Useful in large rivers, lakes, high velocity
- Not really appropriate for small streams
- Requires staging and heavy equipment access areas



SHEET PILE ENCLOSURES

BENEFITS/LIMITATIONS
- Allows partial dewatering
- Moderately expensive
- Ease of installation and removal unknown
- Can be designed for small streams to large rivers

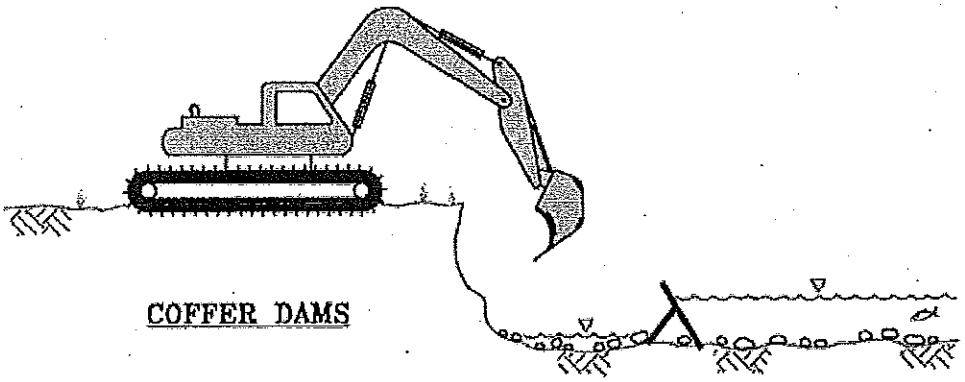


WATER-FILLED GEOTEXTILE (AQUA DAM)

INSTREAM EROSION AND SEDIMENT CONTROL ISOLATION TECHNIQUES

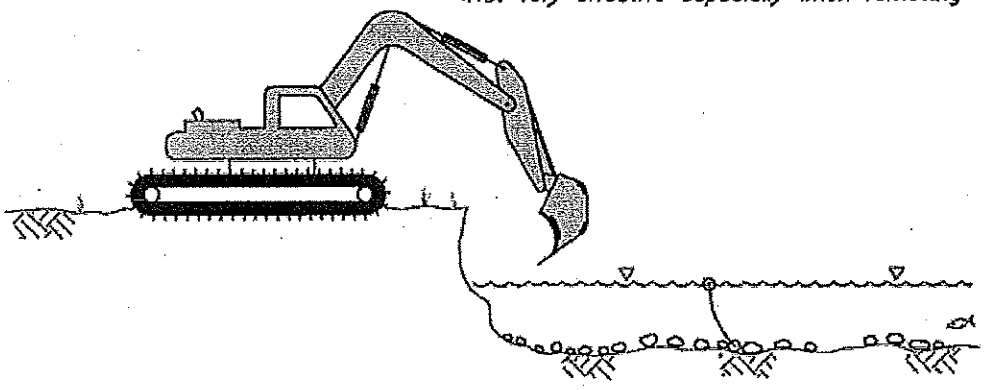
FILE: INSTREAM TECHNIQUES2

BENEFITS/LIMITATIONS
- *Allows partial dewatering*
- *Many different types available*
- *Relatively expensive*
- *Can be designed for large and small streams*
- *Ease of installation and removal unknown*



COFFER DAMS

BENEFITS/LIMITATIONS
- *Does not allow dewatering*
- *Inexpensive*
- *Used in slow water or lakes only*
- *Not very effective especially when removing*



GEOTEXTILES, SILT BARRIERS, CURTAINS

INSTREAM EROSION AND SEDIMENT CONTROL ISOLATION TECHNIQUES

FILE: INSTREAM TECHNIQUES1

CHECK DAMS –RC-11

Construction Specifications:

- Check dams shall be placed at a distance and height to allow small pools to form behind them. The maximum spacing between the dams shall be such that the toe of the upstream dam is at the same elevation as the top of the downstream dam.
- High flows (typically a 2-year storm or larger) shall safely flow over the check dam without an increase in upstream flooding or damage to the check dam.
- Where grass is used to line ditches, check dams shall be removed when grass has matured sufficiently to protect the ditch or swale.
- Construct rock dams such that structures are not damaged by vehicles and do not impede travel ways.
- Rock dams shall be constructed of 2 to 15-inch rock.
- Keep the center rock (spillway) section at least 6 inches lower than the outer edges.
- Extend the abutments 18" into the channel bank.
- Only gravel bags may be used as check dams with the following specifications:

  Materials

  - Bag Material: Bags shall be either polypropylene, polyethylene or polyamide woven fabric, minimum unit weight four ounces per square yard (135 g/m^2), mullen burst strength exceeding 300 psi (2,070 kPa) in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.
  - Bag Size: Each gravel-filled bag shall have a length of 18 in (450 mm), width of 12 in (300 mm), thickness of 3 in (75 mm), and mass of approximately 33 lb (15 kg). Bag dimensions are nominal, and may vary based on locally available materials. Alternative bag sizes shall be submitted to the engineer for approval prior to deployment.
  - Fill Material: Fill material shall be between 10 mm and 20 mm (0.4 and 0.8 inch) in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials. The opening of gravel-filled bags shall be secured such that gravel does not escape. Gravel-filled bags shall be between 28 and 48 lb (13 kg and 22 kg) in mass. Fill material is subject to approval by the engineer.

  Installation

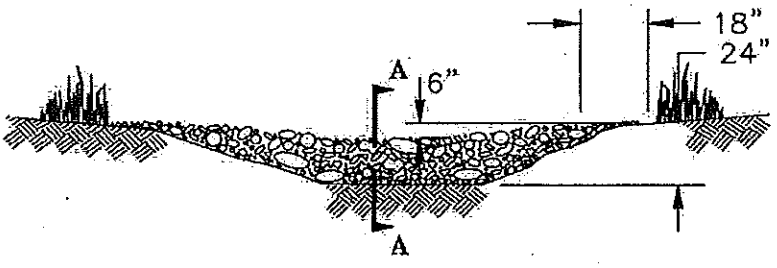
  - Install along a level contour.
  - Tightly abut bags and stack gravel bags using a pyramid approach. Gravel bags shall not be stacked any higher than 3.2 ft (1 meter).
  - Upper rows of gravel bags shall overlap joints in lower rows.
  - Local and state requirements shall be met concerning fencing and signs warning the public of hazards of soft sediment and floodwater.

Minimum BMP standards are provided on the following illustrations.

Inspection and Maintenance:

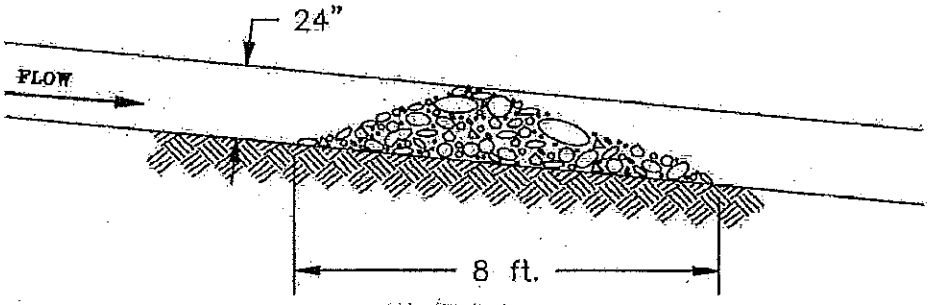
- Inspect check dams before, during, and after each rainfall event. Repair damage as needed.
- Remove sediment when depth reaches one-third of the check dam height.
- Remove accumulated sediment prior to permanent seeding or soil stabilization.
- Remove check dam and accumulated sediment when check dams are no longer needed.
- Removed sediment shall be incorporated in the project or disposed of properly.

CHECK DAMS –RC-11

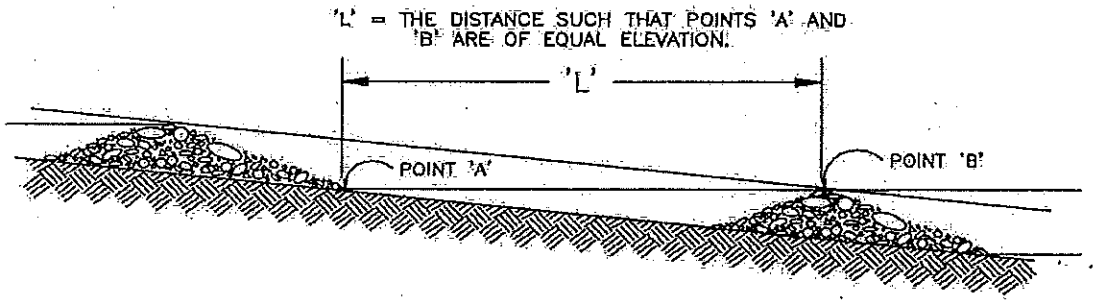


VIEW LOOKING UPSTREAM

NOTE:
KEY STONE INTO THE CHANNEL BANKS AND EXTEND CHECK DAM A MINIMUM OF 18" TO PREVENT FLOW AROUND DAM.

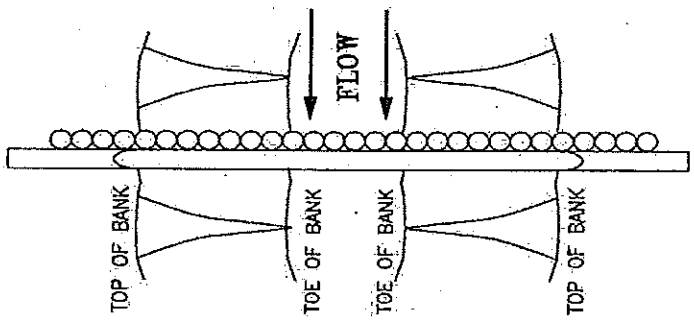


SECTION A – A

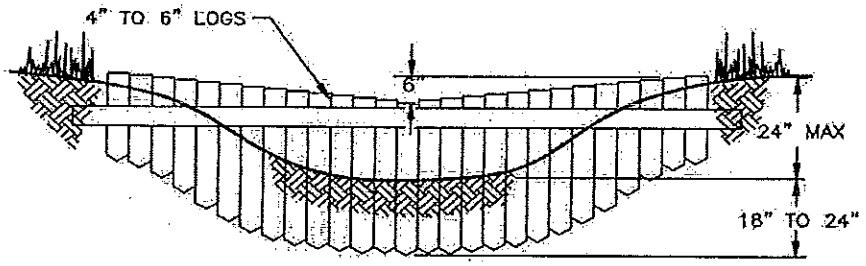


SPACING BETWEEN CHECK DAMS

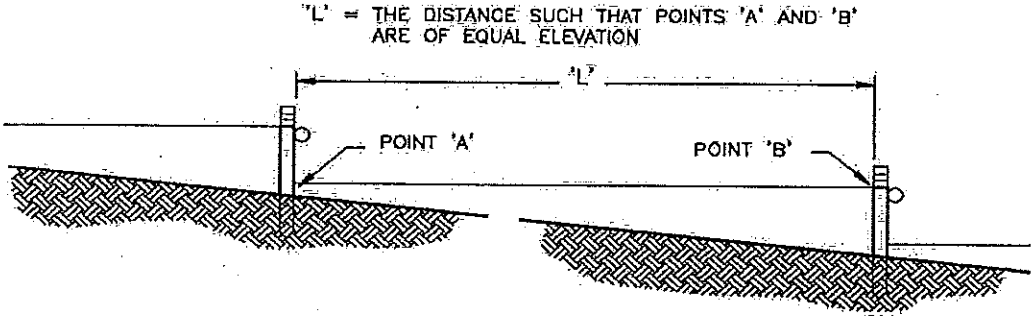
CHECK DAMS –RC-11



PLAN VIEW



VIEW LOOKING UPSTREAM



SPACING BETWEEN CHECK DAMS

NOTE:
KEY THE ENDS OF THE CHECK DAM INTO THE CHANNEL BANK. LOGS SHALL BE PRESSURE TREATED IF GRADE STABILIZATION STRUCTURE IS INTENDED TO BE PERMANENT.

Dawn Pavitt

From: McMillan, James M NWP [James.M.McMillan@usace.army.mil]
Sent: Tuesday, May 04, 2010 11:07 AM
To: Madi Novak
Cc: info@portoftoledo.org; freedman.jonathan@epa.gov; Siipola, Mark D NWP
Subject: PRG Suitability Determination: NWP-2008-172 Port of Toledo Transient Dock

Attachments: NWP-2008-172 Po Toledo SCR TM 05-03-10.doc

NWP-2008-172 Po Toledo SCR TM ...

Madi,

Please see the attached memo. The project dredged material is suitable for unconfined aquatic disposal without additional testing.

EPA is in the loop on the ocean disposal component of this project. We will continue to coordinate with EPA to ensure that we receive their timely concurrence for disposal at the North Yaquina site.

Regards,
James

James M. McMillan
Sr. Regulatory Project Manager/
Sediment Evaluation Specialist
U.S. Army Corps of Engineers
CENWP-0D-GP
333 SW First Avenue, P.O. Box 2946
Portland, Oregon 97208-2946
tel: 503.808.4376 fax: 503.808.4375

CENWP-OD-G May 3, 2010

Memorandum for: Portland District Regulatory Branch, Mr. James McMillan

Subject: Project Review Group (PRG) review of the *Sediment Characterization Report* (SCR), *Port of Toledo Transient Dock Construction, Toledo, Oregon*; dredged material and new surface material (NSM) suitability determinations for the Port of Newport's project (NWP-2008-172).

Reviewers: The following summary reflects the consensus determination of the Portland District Project Review Group (PRG) agencies (U.S. Army Corps of Engineers, Environmental Protection Agency, National Marine Fisheries Service, Washington Department of Ecology, and Oregon Department of Environmental Quality) regarding the consistency of the SCR with the 2009 *Sediment Evaluation Framework for the Pacific Northwest* (SEF). James McMillan (Corps), Dan Gambetta (NMFS), Peter Anderson (Oregon DEQ), and Jonathan Freedman (EPA) reviewed the SCR for consistency with the SEF guidance. Washington Department of Ecology and the U.S. Fish and Wildlife Service did not review the SCR.

Prepared by: James M. McMillan (CENWP-OD-G)

Project Authorities: Section 10 of the Rivers and Harbors Act, Section 103 of the Marine Protection, Research, and Sanctuaries Act, Section 7 of the Endangered Species Act, Section 305 of the Magnuson-Stevens Act, et al.

Project Description: The Port proposes to dredge approximately 3,000 cubic yards (CY) of material from the project site to facilitate construction of a concrete boat dock. The site would be dredged from its current elevation of 1-foot mean lower low water (MLLW) to -12 foot MLLW, the depth of the adjacent authorized channel, to provide sufficient depth to avoid grounding of boats using the proposed dock. Dredging will be limited to the proposed dock area.

Method: The dredging contractor would conduct dredging mechanically, using a 5- to 10-CY environmental bucket. A standard clamshell of similar size would be used if debris were encountered.

Transport and Disposal: Dredged material would be transported on a dumping scow with a tow and placed at the northern half of the north site of the Yaquina Ocean Dredged Material Disposal Site.

Management Area Ranking/ Recency: The PRG has assigned a "Low-Moderate" management area rank to the project. Data from low-moderate ranked sites may be used for six years without additional chemical testing.

The PRG initially assigned a "Moderate" management area rank to the project due to the proximity of Georgia-Pacific's Toledo facility to the project area. During the first round of sediment sampling, we requested that the Port conduct a screen for dioxin and furan congeners (the CALUX screen, EPA Method 4435). The screen indicated that dioxin-furan congeners *could* be present in the project area. The dredged material from the project area was initially determined to be unsuitable without additional chemical testing.

The Port's contractor, Maul, Foster & Alongi re-sampled the dredge area in January 2010. Based on the latest round of testing and the 2003 sediment quality evaluation report prepared by the Corps for the adjacent Depot Slough federal navigation channel, a moderate management area rank was determined to be too high. Therefore, the management area rank was reduced to low-moderate.

Sampling and Analysis Summary: Sediment analytical results were compared to the SEF marine screening levels (SLs) for benthic toxicity. The Environmental Protection Agency – Region 10 (EPA) provided in-water disposal dioxin thresholds of 5 parts per trillion (pptr) 2,3,7,8-tetrachlorodibenzodioxin (TCDD) and 15 pptr dioxin TEQ for this project.

Dredge Prism: A single DMMU was designated for the project. Three cores were taken from the dredge prism. The vibracorer was advanced to refusal: at 5.5 feet below the mudline (bml) at the SS1 core location, 4 feet and SS2 bml, and 6 feet bml at SS3. Cores were split into 1-foot increments and archived for future analysis. All of the 1-foot increments from each core were composited into a single sample. Consistent with the SAP addendum, samples were analyzed for the SEF chemicals of concern (CoCs), dioxins, grain size, and total organic carbon.

NSM: During an earlier sampling effort, the Port could not sample to -11 feet bml with a vibracore to sample the NSM. The sample taken at -8 feet bml was used as a surrogate for the -10-foot NSM interval due to vibracore refusal by a compacted layer of silt/clay.

Results:

Dredge Prism: No chemical concentrations exceeded the SEF marine SLs or the USEPA-selected dioxin criteria. A summary of detected CoCs follows:

- Metals antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc were detected in the composite sample, but concentrations were well below the marine SL values.
- Polycyclic aromatic hydrocarbons, chlorinated hydrocarbons, phenols, miscellaneous extractables, pesticides, and polychlorinated biphenyls were not detected. All method reporting limits (MRLs) were below marine SL1 values except for benzoic acid. The benzoic acid dryweight corrected MRL was 876 micrograms per kilogram (µg/kg) and the marine SL1 is 650 µg/kg.
- Only one phthalate, bis(2-ethylhexyl)phthalate (DEHP), was detected. At 47.7 µg/kg, the DEHP concentration was well below the marine SL of 1,300 µg/kg.
- The dioxin congener 2,3,7,8-TCDD was not detected; the MRL of 1.0 pptr was below the EPA threshold of 5 pptr.

The method reporting limits (MRLs) for six CoCs (1,2,4-Trichlorobenzene; 1,2-Dichlorobenzene; 2,4-Dimethylphenol; Hexachlorobenzene; Hexachlorobutadiene (HCBD); and N-Nitrosodiphenylamine) were above the SEF marine SLs. The Port's laboratory contractor provided a summary of the method detection limits (MDLs) for these CoCs, and all of these were below the SLs, except HCBD.

HCBD is most commonly used as a solvent for other chlorine-containing compounds in fire extinguishers, carbon tetrachloride cleaning agents, and dry cleaning chemicals (tetrachloroethene). It is also a byproduct in the production of both carbon tetrachloride and tetrachloroethene. Sources of HCBD in and around Depot Slough, in the City of Toledo, are insignificant: there are no manufacturers of fire extinguishers in the Toledo area, nor are there any dry cleaners in Toledo. Therefore, there is no reason to believe that HCBD would be present in the Depot Slough, and the non-detect reported by the laboratory is most likely a true non-detect for this CoC.

NSM: In the sample collected at -8 feet bml, some metals (arsenic, chromium, copper, nickel, silver, and zinc) and Dibenzo(a,h) anthracene were detected. The dioxin TEQ was <0.1 pptr per the dioxin screen conducted in 2009.

Dredged Material and NSM Suitability Determination

Suitability Determination (Dredged Material): Per the SEF guidance, dredged material for the Port of Toledo's proposed transient dock is suitable for unconfined, in-water placement without further testing.

Suitability Determination (New Surface Material): Per the SEF guidance, the NSM is suitable for unconfined, aquatic exposure without additional testing.

Contact: If you have questions regarding the content of this memorandum, please contact James McMillan (PRG Lead) by telephone at (503) 808.4376 or by email at james.m.mcmillan@usace.army.mil.

US Army Corps
of Engineers
Portland District

PUBLIC NOTICE
for PERMIT APPLICATION

Issue Date: April 16, 2010
Expiration Date: May 6, 2010
Corps of Engineers Action ID: NWP-2008-172
20 Day Notice Oregon Department of State Lands Number: No. 40176-RF

Interested parties are hereby notified that a modification to an existing 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. The primary modification to the project is the disposal area; the Port of Toledo proposes ocean disposal of the dredged material at a Corps-designated disposal area.

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:

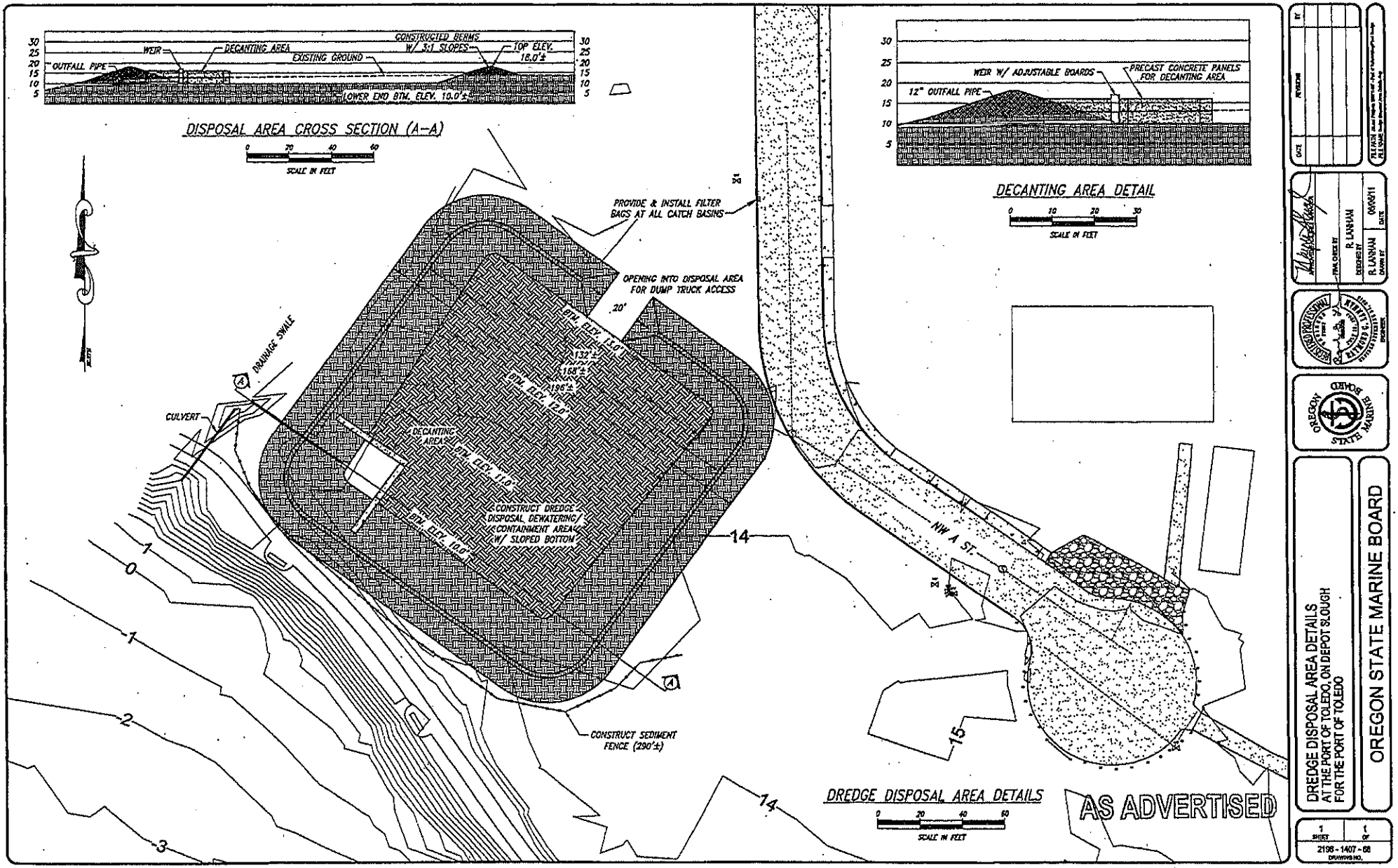
U.S. Army Corps of Engineers
ATTN: CENWP-OP-GP (Mr. McMillan)
P.O. Box 2946
Portland, Oregon 97208-2946

Applicant: Port of Toledo, Attn: Bud Shoemake, 385 NW 1st Street, Unit 1, Toledo, Oregon 97391

Location: The proposed project is located in the Depot Slough at River Mile 0.2 in Toledo, Lincoln County, Oregon (Section 17, Township 11 South, Range 10 West). The north site of the Yaquina Ocean Dredged Material Disposal Site (ODMDS) is located approximately 1.75 nautical miles from the Yaquina Bay entrance channel; the site is 4,000 ft. wide by 6,500 ft. long and defined by the following corner coordinates:
44° 38' 17.98" N, 124° 07' 25.95" W
44° 38' 12.86" N, 124° 06' 31.10" W
44° 37' 14.33" N, 124° 07' 37.57" W
44° 37' 09.22" N, 124° 06' 42.73" W

Project Description:

DREDGING PROJECT DESCRIPTION
The project site will be dredged from its current elevation of 1' MLLW to -12' MLLW, the depth of the adjacent authorized channel, to provide sufficient depth to avoid grounding of boats using the proposed dock. Removal of the accumulated sediment deposits will require dredging of 15,000 square feet (0.344 acre) and approximately 3,000 cubic yards (cy) of silt below mean high water. Dredging will be limited to the proposed dock area.



DREDGE DISPOSAL AREA DETAILS
AT THE PORT OF TOLEDO, ON DEPOT SLOUGH
FOR THE PORT OF TOLEDO

OREGON STATE MARINE BOARD

SHEET 1 OF —

2196 - 1407 - 68
DRAWING NO.

Table
Preliminary Results for Composite Sample
Depot Slough
Port of Toledo
Toledo, Oregon

Analyte	SEF SL1	SEF SL2	Concentration
Conventionals (percent)			
Total Organic Carbon	NV	NV	3.84
Metals (mg/kg)			
Antimony	NV	NV	0.189
Arsenic	20	51	5.35
Cadmium	1.1	1.5	0.222
Chromium	95	100	40
Copper	80	830	30.9
Lead	340	430	25.4
Mercury	0.28	0.75	0.105
Nickel	60	70	25.1
Silver	2.0	2.5	0.194
Zinc	130	400	**238**
Polycyclic Aromatic Hydrocarbons (µg/kg)			
2-Methylnaphthalene	470	560	14.6 U
Acenaphthene	1100	1300	14.6 U
Acenaphthylene	470	640	14.6 U
Anthracene	1200	1600	14.6 U
Benzo(a) anthracene	4300	5800	14.6 U
Benzo(a) pyrene	3300	4800	14.6 U
Benzo(b) fluoranthene	600	4000	14.6 U
Benzo(ghi) perylene	4000	5200	14.6 U
Benzo(k) fluoranthene	600	4000	14.6 U
Chrysene	5900	6400	14.6 U
Dibenzo(a,h) anthracene	800	840	14.6 U
Fluoranthene	11000	15000	14.6 U
Fluorene	1000	3000	14.6 U
Indeno(1,2,3-cd)pyrene	4100	5300	14.6 U
Naphthalene	500	1300	14.6 U
Phenanthrene	6100	7600	14.6 U
Pyrene	8800	16000	14.6 U
Total LPAH[a]	6600	9200	14.6 U
Total HPAH[b]	31000	5500	14.6 U
Chlorinated Hydrocarbons (µg/kg)			
1,4-Dichlorobenzene	NV	NV	43.8 U
1,2-Dichlorobenzene	NV	NV	43.8 U
1,2,4-Trichlorobenzene	NV	NV	43.8 U
Hexachlorobenzene	NV	NV	43.8 U

Table
Preliminary Results for Composite Sample
Depot Slough
Port of Toledo
Toledo, Oregon

Analyte	SEF SL1	SEF SL2	Concentration
Phthalates (µg/kg)			
Dimethyl Phthalate	46	440	43.8 U
Diethyl Phthalate	NA	NA	43.8 U
Di-n-butyl Phthalate	NA	NA	43.8 U
Butyl Benzyl Phthalate	260	370	43.7 U
Bis(2-ethylhexyl) phthalate (BEHP)	220	320	47.7
Di-n-octyl Phthalate	26	45	43.8 U
Phenols (µg/kg)			
Phenol	NV	NV	43.8 U
2-Methylphenol	NV	NV	43.8 U
4-Methylphenol	NV	NV	43.8 U
2,4-Dimethylphenol	NV	NV	43.8 U
Pentachlorophenol	NV	NV	65.6 U
Miscellaneous Extractables (µg/kg)			
Benzyl alcohol	NV	NV	43.8 U
Benzoic acid	NV	NV	43.8 U
Dibenzofuran	400	440	43.8 U
Hexachlorobutadiene	NV	NV	43.8 U
N-Nitrosodiphenylamine	NV	NV	65.6 U
Pesticides (µg/kg)			
4,4'-DDD	NV	NV	1.83 U
4,4'-DDE	NV	NV	1.83 U
4,4'-DDT	NV	NV	3.66 U
Aldrin	NV	NV	1.83 U
alpha-Chlordane	NV	NV	1.83 U
Dieldrin	NV	NV	1.83 U
Heptachlor	NV	NV	1.83 U
Lindane	NV	NV	1.83 U
PCBs (µg/kg)			
Aroclor 1016	NV	NV	6.56 U
Aroclor 1221	NV	NV	6.56 U
Aroclor 1232	NV	NV	6.56 U
Aroclor 1242	NV	NV	6.56 U
Aroclor 1248	NV	NV	6.56 U
Aroclor 1254	NV	NV	6.56 U
Araclor 1260	NV	NV	6.56 U
Araclor 1262	NV	NV	6.56 U
Aroclor 1268	NV	NV	6.56 U
Total PCBs[c]	60	120	6.56 U

Table
Preliminary Results for Composite Sample
Depot Slough
Port of Toledo
Toledo, Oregon

Analyte	SEF SL1	SEF SL2	Concentration
Dioxins/Furans (ng/kg)[d]			
2,3,7,8-TCDD	NV	5	1.0 U
1,2,3,7,8-PeCDD	NV	NV	5.0 U
1,2,3,4,7,8-HxCDD	NV	NV	5.0 U
1,2,3,6,7,8-HxCDD	NV	NV	5.0 U
1,2,3,7,8,9-HxCDD	NV	NV	5.0 U
1,2,3,4,6,7,8-HpCDD	NV	NV	72
OCDD	NV	NV	500
2,3,7,8-TCDF	NV	NV	1.0 U
1,2,3,7,8-PeCDF	NV	NV	5.0 U
2,3,4,7,8-PeCDF	NV	NV	5.0 U
1,2,3,4,7,8-HxCDF	NV	NV	5.0 U
1,2,3,6,7,8-HxCDF	NV	NV	5.0 U
1,2,3,7,8,9-HxCDF	NV	NV	5.0 U
2,3,4,6,7,8-HxCDF	NV	NV	5.0 U
1,2,3,4,6,7,8-HpCDF	NV	NV	20
1,2,3,4,7,8,9-HpCDF	NV	NV	5.0 U
OCDF	NV	NV	49
Total Dioxin TEQ[e]	NV	15	1.5

[a]Total LPAHs = total low-molecular weight polycyclic aromatic hydrocarbons (sum of detected concentrations of naphthalene, 2-methylnaphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, and anthracene).

[b]Total HPAHs = total high-molecular weight polycyclic aromatic hydrocarbons (sum of detected concentrations of fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b&k)fluoranthenes, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i)perylene).

[c]Total PCB Aroclors includes the sum of detected Aroclors 1016, 1221, 1232, 1242, 1248, 1254, 1260).

[d]Dioxin screening levels were selected by the USEPA and are not from the Sediment Evaluation Framework.

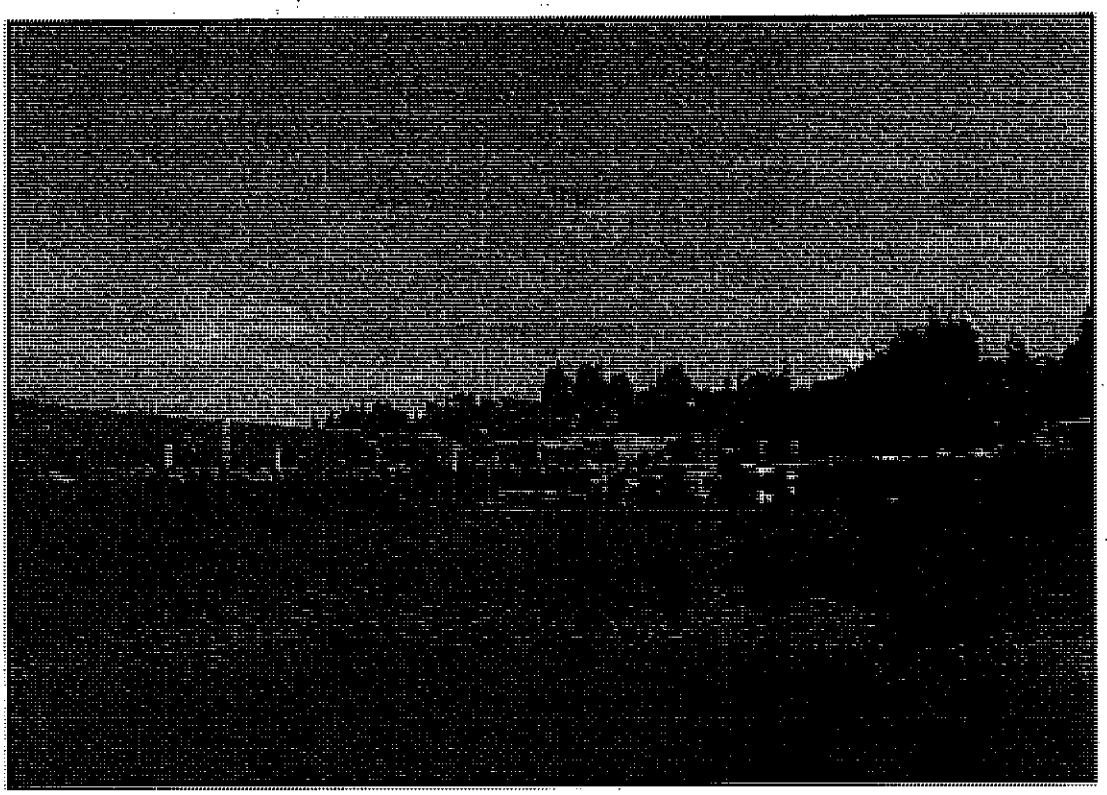
[e]Total dioxin toxicity equivelance was calculated using USEPA ITE factors.

Table
Preliminary Results for Composite Sample
Grain Size
Depot Slough
Port of Toledo
Toledo, Oregon

Analyte	Percent
Gravel	0.0
Course Sand	1.0
Medium Sand	8.7
Fine Sand	17.6
Silt	56.5
Clay	10.7
Colloids	5.6

US Army Corps
of Engineers®
Portland District

DEPOT SLOUGH (YAQUINA RIVER) SEDIMENT QUALITY EVALUATION REPORT



DECEMBER 2003

Prepared by:
Tim Sherman

Portland District
Corps of Engineers
CENWP-EC-HR

US Army Corps of Engineers
Portland District

EPA	Environmental Protection Agency
USACE	U.S. Army Corps of Engineers
WDOE	Washington Department of Ecology
ODEQ	Oregon Department of Environmental Quality
WDNR	Washington Department of Natural Resources
DMEF	Dredge Material Evaluation Framework
NES	Newly Exposed Surface
QA/QC	Quality Assurance/Quality Control
TEL	Threshold Effects Level
TOC	Total Organic Carbon
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
MDL	Method Detection Limit
PQL	Practical Quantitation Limit
MRL	Method Reporting Limit
TVS	Total Volatile Solids
TEF	Toxicity Equivalent Factor
TEQ	Toxicity Equivalent Quotient
ND	non-detect
pptr	parts per trillion – ng/kg
SL	Screening level
As	Arsenic
Cd	Cadmium
Ni	Nickel
Cu	Copper
Sb	Thallium
Cr	Chromium
Pb	Lead
Hg	Mercury
Ni	Nickel
Ag	Silver
Zn	Zi

US Army Corps of Engineers® Portland District

Table of Contents

US Army Corps of Engineers Portland District

DEPOT SLOUGH SEDIMENT QUALITY EVALUATION
Sampled August 12, 2003

ABSTRACT

The project is located within the Yaquina River, Oregon, drainage basin, approximately 100 miles south of the Columbia River. The existing project provides for a navigation channel 10 feet deep and 150 feet wide from river mile 4 to river mile 14 with a turning basin 10 feet deep, 350 feet wide and 300 feet long. It also provides for a channel 10 feet deep and 200 feet wide and approximately 2000 feet long in Depot Slough at Toledo, Oregon (see figure 1).

This evaluation was conducted following procedures set forth in the Ocean Testing Manual and Inland Testing Manual, developed jointly by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency to assess dredged material. Guidelines used are those developed to implement the Clean Water Act and Marine Protection, Research and Sanctuaries Act. These national guidelines and associated local screening levels are those adopted for use in the regional Dredge Material Evaluation Framework (DMEF), November 1998.

A total of five (5) gravity-core sediment samples were collected along the length of the authorized channel at Depot Slough, on August 12, 2003 (see figure 2). All samples were submitted for physical analyses including total volatile solids and were, also, analyzed for metals (9 inorganic), total organic carbon, pesticides and polychlorinated biphenyls, phenols, phthalates, miscellaneous extractables, polynuclear aromatic hydrocarbon, dioxin/furan, and for both total and pore-water tributyltin.

The physical analyses resulted in mean values of 0.0% gravel, 4.71% sand (2.40%-6.06% range), and 95.3% silt/clay (93.94%-97.60% range), with 10.5% volatile solids (9.43%-11.85% range). Mean grain-size for all the samples is 0.042mm; this material is classified as silt.

The chemical analyses indicated only very low levels of contamination in any of the samples, with all levels well below their respective DMEF screening levels (SLs). No pesticides, PCBs, low molecular weight PAHs, or tributyltin were detected in any of the samples. Several high molecular weight PAHs, dioxin/furans and phthalates were detected, but at very low levels. Detection levels were sufficiently low enough to evaluate material proposed for dredging. The analytical results of this characterization are consistent with historical data.

Sediments represented by all samples in this sampling event are determined to be suitable for unconfined, in-water placement without further characterization.

INTRODUCTION

The sampling and analysis objectives are stated in the Sampling and Analysis Plan (SAP August 2003), and are, also, listed below. This report will characterize the sediment to be dredged and outline the procedures used to accomplish these objectives.

Sampling and Analysis Objectives

Characterize sediments in accordance with the regional dredge material-testing manual, the DMEF.

- Gravity-core samples are planned for this sampling event. The sediment type, silt, is well suited for gravity coring and no difficulty collecting cores is anticipated.
- Collect, handle and analyze representative sediment of the purposed dredging prism, in accordance with protocols and Quality Assurance/Quality Control (QA/QC) requirements.
- Characterize sediments, to be dredged, for evaluation of environmental impact during disposal.
- Conduct physical and chemical characterization only, for this sediment evaluation, unless further characterization is required.

PREVIOUS STUDIES

In 1980 two (2) sediment samples were collected in Depot Slough. Physical analyses describe Depot Slough sediments as loosely compacted, very porous, with high amounts of organic material, silt and clay. The 1980 chemical report indicates that Depot Slough sediments contain insoluble heavy metals and soluble iron, manganese and phenols. When compared to the 1998 DMEF screening levels, the 1980 reported values are within acceptable levels for inwater disposal of tested material.

The 1994 sediment sampling report indicates Depot Slough material to contain a mean of 6-9% sand. 67% silt and 23-27% clay, with 12% volatile solids. Chemical analyses of the sampled material indicated material is suitable for inwater placement (1998 DMEF, Tier IIb).

On August 12, 2003, Portland District Corps of Engineers, in addition to the five (5) samples collected for Corps maintenance dredging, collected three (3) samples, which were analyzed by the Port of Toledo for their proposed dredging. All samples were submitted for physical and chemical analyses. The Port analyses include, metals (9 inorganic), total organic carbon, pesticides and polychlorinated biphenyls (PCBs), phenols, phthalates, miscellaneous extractables, polynuclear aromatic hydrocarbons (PAHs), total and pore water organotin and dioxin/furan. Some of the Ports analyses had higher than desirable detection limits, but no DMEF screening levels were exceeded in this sampling event.

CURRENT SAMPLING EVENT/DISCUSSION

A total of five (5) gravity-core sediment samples were collected along the length of the authorized channel at Depot Slough, on August 12, 2003 (see figure 2). All samples were submitted for physical analyses including total volatile solids and were, also, analyzed for metals (9 inorganic), total organic carbon, pesticides and polychlorinated biphenyls, phenols, phthalates, miscellaneous extractables, polynuclear aromatic hydrocarbon, dioxin/furan, and for both total and pore-water tributyltin.

The physical analyses resulted in mean values of 0.0% gravel, 4.71% sand (2.40%-6.06% range), and 95.3% silt/clay (93.94%-97.60% range), with 10.5% volatile solids (9.43%-11.85% range). Mean grain-size for all the samples is 0.042mm; this material is classified as silt.

The chemical analyses indicated only very low levels of contamination in any of the samples, with all levels well below their respective DMEF SLs. No pesticides, PCBs, low molecular weight PAHs, or tributyltin were detected in any of the samples. Several high molecular weight PAHs, dioxin/furans and phthalates were detected, but at very low levels. Detection levels were sufficiently low enough to evaluate material proposed for dredging.

Sediments represented by all samples in this sampling event are determined to be suitable for unconfined, in-water placement without further characterization.

Gravity–core sample recovery lengths were as follows: DEPS-GC-01=56", DESP-GC-02=48", DESP-GC-03=47", DESP-GC-04=46", DESP-GC-05=45".

Table 1. Sample Location Coordinates (NAD 83, Oregon State Plane South)

DEPS-GC-01	44° 36' 57.8" 123° 56' 20.8"	DEPS-GC-02	44° 37' 00.8" 123° 56' 16.5"
DEPS-GC-03	44° 37' 05.1" 123° 56' 16.8"	DEPS-GC-04	44° 37' 08.4" 123° 56' 18.9"
DEPS-GC-05	44° 37' 09.2" 123° 56' 22.0"		

RESULTS

Physical and Volatile Solids (ASTM methods)

Five (5) samples were submitted for testing, with data presented in Table 2. All samples were classified as " silt" with 4 of the 5 samples designated "elastic silt". The physical analyses resulted in mean values of 0.0% gravel, 4.71% sand (2.40%-6.06% range), and 95.3% silt/clay (93.94%-97.60% range), with 10.5% volatile solids (9.43%-11.85% range). Mean grain-size for all the samples is 0.042mm; this material is classified as silt.

Metals (EPA method 6020/7471), Total Organic Carbon (EPA method 9060)

Five (5) samples were submitted for testing, with data presented in Table 3. The TOC ranged from 35700 to 40300 mg/kg in the samples.

Low levels of As, Cd, Cu, Pb and Zn were detected in all samples, Hg was detected in 1 sample, but no levels approach their respective DMEF SL.

Pesticides/PCBs (EPA method 8081A/8082), Phenols, Phthalates and Miscellaneous Extractables (EPA method 8270)

Five (5) samples were submitted for pesticides/PCBs testing, with data presented in Table 4. No PCBs were found at the MDL in any of the samples. No pesticides (including DDT) were detected in any of the samples. Phthalate compound, Bis(2-Ethylhexyl) was detected, at very low levels in all the samples, with Butyl benzyl phthalate detected in 2 samples, also at very low levels. The values were well below their respective DMEF SLs. Low-level contamination was present in the method blank for Di-n-octylphthalate and Butylbenzylphthalate.

Polynuclear Aromatic Hydrocarbons (EPA method 8270C)

Five (5) samples were submitted for PAHs, with data presented in Table 5. No "low molecular weight" PAHs were detected in any of the 5 samples at low detection levels. Five (5) of the 10, "High molecular weight" PAHs analyzed, were present in most of the samples, but at levels well below screening levels. All values ranged at or below 2% of their respective SLs.

Tributyltin [Total (Bulk) & Pore-Water]

Five (5) samples were submitted for total (bulk) tributyltin and pore-water tributyltin, with data presented in Table 6. No tributyltin was detected at low detection levels.

Dioxins/Furans (Method SW846 8290)

Five (5) samples were submitted for dioxin/furans, with data presented in Table 7. Dioxin (2,3,7,8-TCDD) was not found at the MDL for any of the samples. The total toxic equivalent concentration value for the samples was well below the guidance concentration value.

CONCLUSION

Collection and evaluation of the sediment data was completed using guidelines from the DMEF. The DMEF is a regional manual developed jointly with regional EPA, Corps, Oregon Department of Environmental Quality and Washington Departments of Ecology and Natural Resources. This document is guidance for implementing the Marine Protection, Research, and Sanctuaries Act and Clean Water Act (40 CFR 230), Section 404 (b)(1). The screening levels used are those adopted for use in the DMEF, final November 1998. The DMEF uses a tiered testing approach that requires material in excess of 20% fines and greater than 5% volatile solids, as well as any material with prior history or is suspected ("reason to believe") of being contaminated, be subjected to chemical as well as physical analyses.

A total of five (5) gravity-core sediment samples were collected along the length of the authorized channel at Depot Slough, on August 12, 2003 (see figure 2). All samples were submitted for physical analyses including total volatile solids and were, also, analyzed for metals (9 inorganic), total organic carbon, pesticides and polychlorinated biphenyls, phenols, phthalates, miscellaneous extractables, polynuclear aromatic hydrocarbon, dioxin/furan, and for both total and pore-water tributyltin.

The physical analyses resulted in mean values of 0.0% gravel, 4.71% sand (2.4%-6.1% range), and 95.3% silt/clay (94.4%-97.6% range), with 10.5% volatile solids (9.4%-11.9% range). Mean grain-size for all the samples is 0.042mm; this material is classified as silt.

The chemical analyses indicated only very low levels of contamination in any of the samples, with all levels well below their respective DMEF SLs. No pesticides, PCBs, low molecular weight PAHs, or tributyltin were detected in any of the samples. Several high molecular weight PAHs, dioxin/furans and phthalates were detected, but at very low levels. Detection levels were sufficiently low enough to evaluate material proposed for dredging. The analytical results of this characterization are consistent with historical data.

Sediments represented by all samples in this sampling event are determined to be suitable for unconfined, in-water placement without further characterization.

REFERENCES

1. U.S. Army Corps of Engineers, Portland District and Seattle District; U.S. Environmental Protection Agency, Region 10; Oregon Department of Environmental Quality; Washington State Department of Natural Resources and Department of Ecology. 1998 Final. Dredge Material Evaluation Framework for the Lower Columbia River Management Area.

2. U.S. Environmental Protection Agency and U.S. Army Corps of Engineers. February 1998. Evaluation of Dredged Material Proposed for Discharge in Inland and Near Coastal Waters - Testing Manual (referred to as the "Inland Testing Manual").

3. U.S. Army Corps of Engineers, U.S. Environmental Protection Agency. February 1991. Evaluation of Dredged Material Proposed for Ocean Disposal - Testing Manual (referred to as the OTM or the "Green Book").

4. U.S. Army Corps of Engineers. January 2003. Evaluation of Dredged Material Proposed for Disposal at Island, Nearshore, or Upland Confined Disposal Facilities - Testing Manual (referred to as the "Upland Testing Manual").

5. Clean Water Act, 40 CFR 230 (b)(1).

6. PSDDA. 1996. Puget Sound Dredged Disposal Analysis, Technical Information Memorandum, Testing, Reporting and Evaluation of Dioxin/furan Data in PSDDA Programs.

7. Turner, R. 1980. Findings of Compliance, Dredged Material Disposal Activities, Yaquina Bay and River Federal Navigation Channel. U.S. Army Corps of Engineers, Portland District.

8. Britton, J. 1994. Yaquina River Sediment Evaluation. U.S. Army Corps of Engineers, Portland District.

Table 2: Physical Analysis and Volatile Solids

Sample I.D.	Grain Size (mm)		Percent			
	Median	Mean	Gravel	Sand	Silt/Clay	Volatile Solids
DEPS-GC-01	0.016	0.0394	0.00	6.06	93.94	9.43
DEPS-GC-02	0.012	0.0415	0.00	2.40	97.60	9.49
DEPS-GC-03	0.012	0.0422	0.00	4.49	95.51	11.80
DEPS-GC-04	0.014	0.0449	0.00	5.61	94.39	9.78
DEPS-GC-05	0.013	0.0435	0.00	5.01	94.99	11.85
Mean	0.013	0.0423	0.00	4.71	95.29	10.47
Minimum	1.012	0.0394	0.00	2.40	94.39	9.43
Maximum	0.016	0.0449	0.00	6.06	97.60	11.85

Table 3: Inorganic Metals and TOC

Sample I.D.	As	Cd	Sb	Cu	Pb	Ni	Ag	Zn	Hg	TOC
	mg/kg (ppm)									
DEPS-GC-01	10	<0.609	<0.609	30.6	16	29.1	<0.609	101	<0.0249	35800
DEPS-GC-02	10.7	<0.701	<4.2	36	17	31.5	<0.701	116	<0.0265	35700
DEPS-GC-03	11	<0.663	<3.98	35.9	17.4	32.2	<0.663	118	<0.027	40300
DEPS-GC-04	10.1	<0.715	<4.29	35.9	17.1	31.2	<0.715	117	<0.0265	38300
DEPS-GC-05	10.7	<0.729	<4.37	34.8	17.6	32.2	<0.729	117	0.0313	40100
Screening level (SL)	57	5.1	150	390	450	140	6.1	410	0.41	

J = Estimated value (reported values are above the MDL, but below the PQL).
Symbol (<) = Non-detect (ND) at the value listed (Method Detection Limit).

Table 4: Pesticides, PCBs, Phenols, Phthalates & Misc. Extractable

Sample I.D.	Pesticides				Phthalates	
	µg/kg (ppb)					
	4,4'-DDD	4,4'-DDE	4,4'-DDT	Total DDT	bis(2-Ethylhexyl) phthalate	Butyl benzyl-phthalate
DEPS-GC-01	<1.36	<1.36	<1.36	ND	34.6 J B1	<40.4
DEPS-GC-02	<1.35	<1.35	<1.35	ND	37.7 J B1	<40.4
DEPS-GC-03	<1.21	<1.21	<1.21	ND	35.9 J B1	38.6 J
DEPS-GC-04	<1.44	<1.44	<1.44	ND	46.3 J B1	62.9 J
DEPS-GC-05	<1.57	<1.57	<1.57	ND	52.8 J B1	<40.4
Screening Level (SL)				6.9	8300	970

J = Estimated value (reported values are above the MDL, but below the PQL).
B1 = Low-level contamination was present in the method blank (reported level was < 10 times blank concentration).
Symbol (<) = Non-detect (ND) at the value listed (Method Detection Limit).
No PCB Aroclors detected at method reporting limit (MRL) < SL of 130 total PCBs.

Table 5: Polynuclear Aromatic Hydrocarbons (PAHs) Low Molecular Weight

Polynuclear Aromatic Hydrocarbons (PAHs) Low Molecular Weight Analytes µg/kg (ppb)								
Sample I.D.	**Acenaphthene**	**Acenaphthylene**	**Anthracene**	**Fluorene**	**2-Methyl naphthalene**	**Naphthalene**	**Phen-anthrene**	**Total Low PAHs**
DEPS-GC-01	<6.75	<6.75	<6.75	<6.75	<6.75	<6.75	<6.75	ND
DEPS-GC-02	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	<7.3	ND
DEPS-GC-03	<7.26	<7.26	<7.26	<7.26	<7.26	<7.26	<7.26	ND
DEPS-GC-04	<7.08	<7.08	<7.08	<7.08	<7.08	<7.08	<7.08	ND
DEPS-GC-05	<8.09	<8.09	<8.09	<8.09	<8.09	<8.09	<8.09	ND
Screen level (SL)	500	560	960	540	670	2100	1500	5200
Symbol (<) = Non-detect (ND) at the value listed (Method Detection Limit)								

Table 5 (cont'd): Polynuclear Aromatic Hydrocarbons (PAHs) High Molecular Weight

Polynuclear Aromatic Hydrocarbons (PAHs) High Molecular Weight Analytes µg/kg (ppb)										
Sample I.D.	**Benzo(a)-anthracene**	**Benzo-fluro-anthenes**	**Benzo-(g,h,i)-perylene**	**Chrysene**	**Pyrene**	**Benzo(a)-pyrene**	**Indeno-(1,2,3-cd)-pyrene**	**Dibenz(a,h) anthracene**	**Fluor-anthene**	**Total High PAHs**
DEPS-GC-01	<6.75	<6.75	<6.75	<6.75	7.09 J	<6.75	<6.75	<6.75	<6.75	7.09
DEPS-GC-02	<7.3	14.5 J	<7.3	28.3	19.8	<7.3	<7.3	<7.3	15.8	78.4
DEPS-GC-03	9.5 J	12.2 J	<7.26	11.5 J	15.9	<7.26	<7.26	<7.26	17.5	66.6
DEPS-GC-04	<7.08	12.9 J	<7.08	8.2 J	14.6	<7.08	<7.08	<7.08	15.7	51.4
DEPS-GC-05	<8.09	<8.09	<8.09	<8.09	8.63 J	<8.09	<8.09	<8.09	<8.09	8.6
Screen level (SL)	1300	3200	670	1400	2600	1600	600	230	1700	12000

J = Estimated value (reported values are above the MDL, but below the PQL).
Symbol (<) = Non-detect (ND) at the value listed (Method Detection Limit).

Table 6: Total and Pore-water Organotin

Total & Pore-Water Tributyltin		
Sample I.D.	**Total (Bulk) Tributyltin ug/kg**	**Pore-water Tributyltin ug/L**
DEPS-GC-01	<2.55	<0.004
DEPS-GC-02	<2.71	<0.004
DEPS-GC-03	<2.71	<0.004
DEPS-GC-04	<2.59	<0.004
DEPS-GC-05	<2.9	<0.004
Screen level (SL)	73	0.15
Symbol (<) = Non-detect (ND) at the value listed (Method Detection Limit).		

Table 7: Dioxins/Furans (ng/kg, pptr)

Sample I.D.	Dioxin/Furan	Result	½ MDL	TEF	TEQ	Guidance*
DEPS-GC-01 - Dioxin	2,3,7,8-TCDD	<0.65	<0.33	1.0	0.33	
	1,2,3,7,8-PeCDD	<2.0	<1.0	0.5	0.5	
	1,2,3,4,7,8-HxCDD	<1.3	<0.65	0.1	0.065	
	1,2,3,6,7,8-HxCDD	<4.8	<2.4	0.1	0.24	
	1,2,3,7,8,9-HxCDD	<2.5	<2.5	0.1	0.25	
	1,2,3,4,6,7,8-HpCDD	79		0.01	0.79	
	OCDD	770		0.001	0.77	
DEPS-GC-01 - Furan	2,3,7,8-TCDF	<1.7	<0.85	0.1	0.085	A bulk sediment 2,3,7,8-tetrachlorodibenzo-p-dioxin concentration of 5 ng/kg, or a total toxic equivalent concentration of 15 ng/kg will trigger the requirement to perform bioaccumulation testing.
	1,2,3,7,8-PeCDF	<0.71	<0.36	0.05	0.018	
	2,3,4,7,8-PeCDF	<0.71	<0.36	0.05	0.018	
	1,2,3,4,7,8-HxCDF	<1.7	<0.85	0.1	0.085	
	1,2,3,6,7,8-HxCDF	<1.1	<0.56	0.1	0.056	
	2,3,4,6,7,8-HxCDF	<3.1	<1.55	0.1	0.155	
	1,2,3,7,8,9-HxCDF	<0.82	<0.41	0.1	0.041	
	1,2,3,4,6,7,8-HpCDF	13 J		0.01	0.13	
	1,2,3,4,7,8,9-HpCDF	<0.95	<0.48	0.01	0.0048	
	OCDF	37 J		0.001	0.037	
DEPS-GC-01 - Totals	Total TCDF	4.3		0	0	
	Total PeCDF	<3.7	<1.85	0	0	
	Total HxCDF	23		0	0	
	Total HpCDF	49		0	0	
	Total TCDD	3.7		0	0	
	Total PeCDD	<2.0	<1.0	0	0	
	Total HxCDD	32		0	0	
	Total HpCDD	210		0	0	
Total Dioxins/Furans TEQ					**3.5748 ng/kg**	**<15 ng/kg**

J Estimate result. Result is < reporting limit.
MDL = Method Detection Limit
TEQ = Toxicity Equivalency Quotient
TEF = Toxicity Equivalency Factors
CON = Confirmation Analysis
*Guidance = Puget Sound Dredged Disposal Analysis (PSDDA) Program (Feb 2000) and U.S. EPA Toxicity Equivalency Factors (U.S. EPA 1989; Ahlborg et al. 1994)

Table 7 (cont'd): Dioxins/Furans (ng/kg, pptr)

Sample I.D.	Dioxin/Furan	Result	½ MDL	TEF	TEQ	Guidance*
DEPS-GC-02 - Dioxin	2,3,7,8-TCDD	<0.84	<0.42	1.0	0.42	
	1,2,3,7,8-PeCDD	<1.7	<0.85	0.5	0.425	
	1,2,3,4,7,8-HxCDD	<1.4	<0.7	0.1	0.07	
	1,2,3,6,7,8-HxCDD	<4.2	<2.1	0.1	0.21	
	1,2,3,7,8,9-HxCDD	<2.6	<1.3	0.1	0.13	
	1,2,3,4,6,7,8-HpCDD	70		0.01	0.7	
	OCDD	540		0.001	0.540	
DEPS-GC-02 - Furan	2,3,7,8-TCDF	<0.71	<0.355	0.1	0.0355	A bulk sediment 2,3,7,8-tetrachlorodibenzo-p-dioxin concentration of 5 ng/kg, or a total toxic equivalent concentration of 15 ng/kg will trigger the requirement to perform bioaccumulation testing.
	1,2,3,7,8-PeCDF	<0.87	<0.435	0.05	0.02175	
	2,3,4,7,8-PeCDF	<0.87	<0.435	0.05	0.02175	
	1,2,3,4,7,8-HxCDF	<1.8	<0.9	0.1	0.09	
	1,2,3,6,7,8-HxCDF	<0.71	<0.355	0.1	0.0355	
	2,3,4,6,7,8-HxCDF	<0.87	<0.435	0.1	0.0435	
	1,2,3,7,8,9-HxCDF	<0.99	<0.495	0.1	0.0495	
	1,2,3,4,6,7,8-HpCDF	9.1 J		0.01	0.091	
	1,2,3,4,7,8,9-HpCDF	<1.1	<0.55	0.01	0.0055	
	OCDF	23 J		0.001	0.023	
DEPS-GC-02 - Totals	Total TCDF	<0.71		0	0	
	Total PeCDF	<2.6		0	0	
	Total HxCDF	16		0	0	
	Total HpCDF	46		0	0	
	Total TCDD	2.1		0	0	
	Total PeCDD	<2.9		0	0	
	Total HxCDD	43		0	0	
	Total HpCDD	240		0	0	
Total Dioxins/Furans TEQ					**2.9125ng/kg**	**<15 ng/kg**

J Estimate result. Result is < reporting limit.
MDL = Method Detection Limit
TEQ = Toxicity Equivalency Quotient
TEF = Toxicity Equivalency Factors
CON = Confirmation Analysis
*Guidance = Puget Sound Dredged Disposal Analysis (PSDDA) Program (Feb 2000) and U.S. EPA Toxicity Equivalency Factors (U.S. EPA 1989; Ahlborg et al. 1994)

Table 7 (cont'd): Dioxins/Furans (ng/kg, pptr)

Sample I.D.	Dioxin/Furan	Result	½ MDL	TEF	TEQ	Guidance*
DEPS-GC-03 - Dioxin	2,3,7,8-TCDD	<0.58	<0.29	1.0	0.29	
	1,2,3,7,8-PeCDD	<1.0	<0.5	0.5	0.25	
	1,2,3,4,7,8-HxCDD	<1.1	<0.55	0.1	0.055	
	1,2,3,6,7,8-HxCDD	<5.2	<2.6	0.1	0.26	
	1,2,3,7,8,9-HxCDD	<3.6	<1.8	0.1	0.18	
	1,2,3,4,6,7,8-HpCDD	86		0.01	0.86	
	OCDD	770		0.001	0.77	
DEPS-GC-03 - Furan	2,3,7,8-TCDF	<0.55	<0.275	0.1	0.0275	A bulk sediment 2,3,7,8-tetrachlorodibenzo-p-dioxin concentration of 5 ng/kg, or a total toxic equivalent concentration of 15 ng/kg will trigger the requirement to perform bioaccumulation testing.
	1,2,3,7,8-PeCDF	<1.2	<0.6	0.05	0.03	
	2,3,4,7,8-PeCDF	<2.9	<1.45	0.05	0.0725	
	1,2,3,4,7,8-HxCDF	<1.5	<0.75	0.1	0.075	
	1,2,3,6,7,8-HxCDF	<1.1	<0.55	0.1	0.055	
	2,3,4,6,7,8-HxCDF	<1.5	<0.75	0.1	0.075	
	1,2,3,7,8,9-HxCDF	<1.1	<0.55	0.1	0.055	
	1,2,3,4,6,7,8-HpCDF	17 JA		0.01	0.17	
	1,2,3,4,7,8,9-HpCDF	<1.7	<0.85	0.01	0.0085	
	OCDF	46		0.001	0.046	
DEPS-GC-03 - Totals	Total TCDF	<0.76		0	0	
	Total PeCDF	<4.1		0	0	
	Total HxCDF	42		0	0	
	Total HpCDF	81		0	0	
	Total TCDD	2.0		0	0	
	Total PeCDD	<3.2		0	0	
	Total HxCDD	38		0	0	
	Total HpCDD	240		0	0	
Total Dioxins/Furans TEQ				**3.2795ng/kg**	**3.5748 ng/kg**	**<15 ng/kg**

J Estimate result. Result is < reporting limit.
MDL = Method Detection Limit
TEQ = Toxicity Equivalency Quotient
TEF = Toxicity Equivalency Factors
CON = Confirmation Analysis
*Guidance = Puget Sound Dredged Disposal Analysis (PSDDA) Program (Feb 2000) and U.S. EPA Toxicity Equivalency Factors (U.S. EPA 1989; Ahlborg et al. 1994)

Table 7 (cont'd): Dioxins/Furans (ng/kg, pptr)

Sample I.D.	Dioxin/Furan	Result	½ MDL	TEF	TEQ	Guidance*
DEPS-GC-04 - Dioxin	2,3,7,8-TCDD	<0.62	<0.31	1.0	0.31	
	1,2,3,7,8-PeCDD	<1.7	<0.85	0.5	0.425	
	1,2,3,4,7,8-HxCDD	<0.89	<0.445	0.1	0.0445	
	1,2,3,6,7,8-HxCDD	<5.2	<2.6	0.1	0.26	
	1,2,3,7,8,9-HxCDD	<2.9	<1.45	0.1	0.145	
	1,2,3,4,6,7,8-HpCDD	78		0.01	0.78	
	OCDD	570		0.001	0.57	
DEPS-GC-04 - Furan	2,3,7,8-TCDF	<1.0	<0.5	0.1	0.5	A bulk sediment 2,3,7,8-tetrachlorodibenzo-p-dioxin concentration of 5 ng/kg, or a total toxic equivalent concentration of 15 ng/kg will trigger the requirement to perform bioaccumulation testing.
	1,2,3,7,8-PeCDF	<0.77	<0.385	0.05	0.01925	
	2,3,4,7,8-PeCDF	<1.0	<0.5	0.05	0.025	
	1,2,3,4,7,8-HxCDF	<2.2	<1.1	0.1	0.11	
	1,2,3,6,7,8-HxCDF	<0.98	<0.49	0.1	0.049	
	2,3,4,6,7,8-HxCDF	<0.98	<0.49	0.1	0.049	
	1,2,3,7,8,9-HxCDF	<1.0	<0.5	0.1	0.05	
	1,2,3,4,6,7,8-HpCDF	13 J		0.01	0.13	
	1,2,3,4,7,8,9-HpCDF	<1.6	<0.8	0.01	0.008	
	OCDF	32		0.001	0.032	
DEPS-GC-04 - Totals	Total TCDF	<1.0		0	0	
	Total PeCDF	<2.7		0	0	
	Total HxCDF	26		0	0	
	Total HpCDF	66		0	0	
	Total TCDD	1.7		0	0	
	Total PeCDD	<1.7		0	0	
	Total HxCDD	44		0	0	
	Total HpCDD	230		0	0	
Total Dioxins/Furans TEQ					**3.50675 ng/kg**	**<15 ng/kg**

J Estimate result. Result is < reporting limit.
MDL = Method Detection Limit
TEQ = Toxicity Equivalency Quotient
TEF = Toxicity Equivalency Factors
CON = Confirmation Analysis
*Guidance = Puget Sound Dredged Disposal Analysis (PSDDA) Program (Feb 2000) and U.S. EPA Toxicity Equivalency Factors (U.S. EPA 1989; Ahlborg et al. 1994)

Table 7 (cont'd): Dioxins/Furans (ng/kg, pptr)

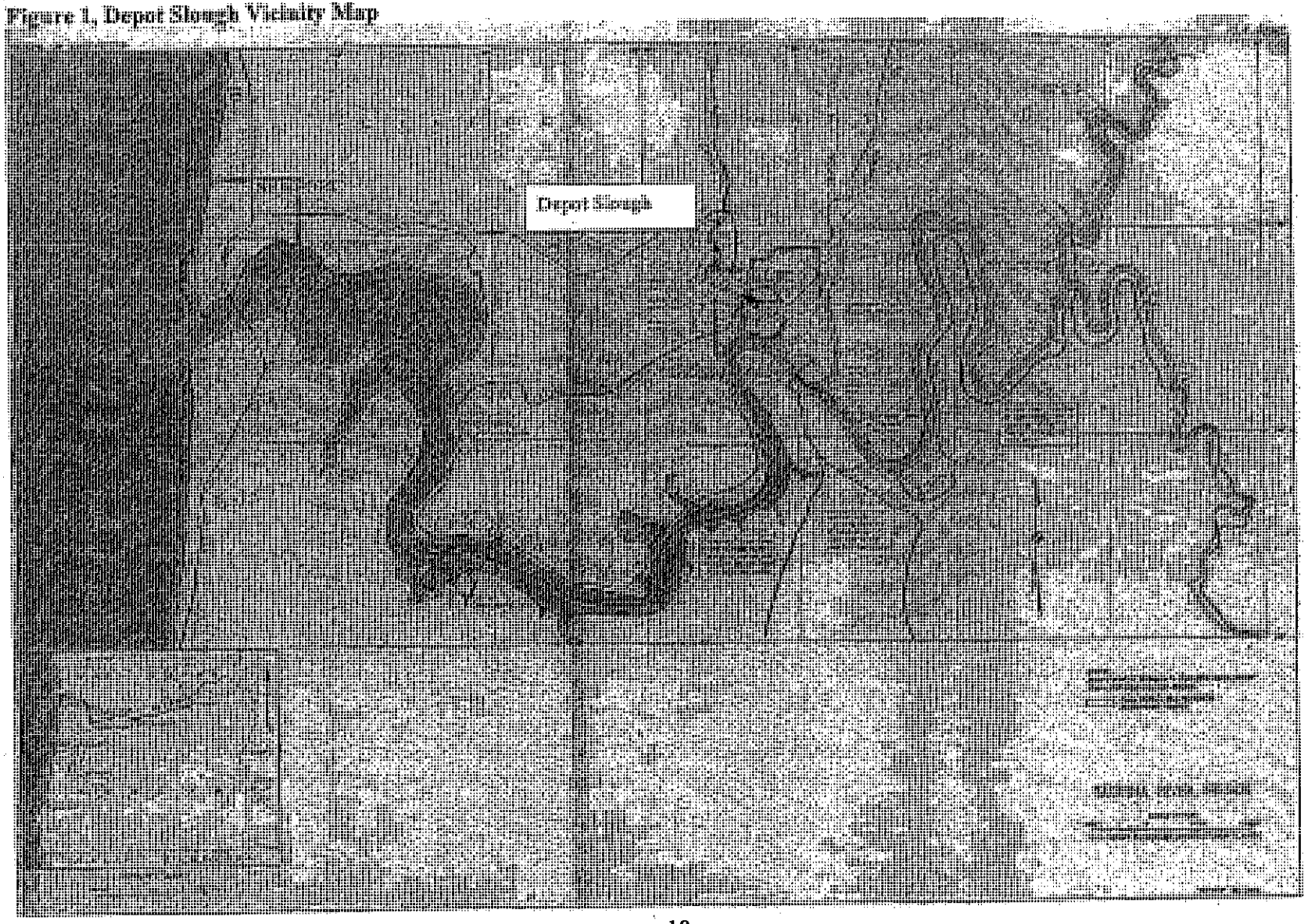
Sample I.D.	Dioxin/Furan	Result	½ MDL	TEF	TEQ	Guidance*
DEPS-GC-05 - Dioxin	2,3,7,8-TCDD	<0.91	<0.455	1.0	0.455	
	1,2,3,7,8-PeCDD	<1.3	<0.65	0.5	0.326	
	1,2,3,4,7,8-HxCDD	<6.1	<3.05	0.1	0.305	
	1,2,3,6,7,8-HxCDD	10 J		0.1	1.0	
	1,2,3,7,8,9-HxCDD	<6.9	<3.45	0.1	0.345	
	1,2,3,4,6,7,8-HpCDD	160		0.01	1.6	
	OCDD	1200		0.001	1.2	
DEPS-GC-05 - Furan	2,3,7,8-TCDF	<1.5 CON	<0.75	0.1	0.075	A bulk sediment 2,3,7,8-tetrachlorodibenzo-p-dioxin concentration of 5 ng/kg, or a total toxic equivalent concentration of 15 ng/kg will trigger the requirement to perform bioaccumulation testing.
	1,2,3,7,8-PeCDF	<0.81	<0.405	0.05	0.02025	
	2,3,4,7,8-PeCDF	<1.1	<0.55	0.05	0.0275	
	1,2,3,4,7,8-HxCDF	<2.3	<1.15	0.1	0.115	
	1,2,3,6,7,8-HxCDF	<1.2	<0.6	0.1	0.06	
	2,3,4,6,7,8-HxCDF	<0.84	<0.42	0.1	0.042	
	1,2,3,7,8,9-HxCDF	<1.1	<0.55	0.1	0.055	
	1,2,3,4,6,7,8-HpCDF	17		0.01	0.17	
	1,2,3,4,7,8,9-HpCDF	<1.6	<0.8	0.01	0.008	
	OCDF	40	20	0.001	0.02	
DEPS-GC-05 - Totals	Total TCDF	<1.5	0.75	0	0	
	Total PeCDF	<4.6	2.3	0	0	
	Total HxCDF	40		0	0	
	Total HpCDF	80		0	0	
	Total TCDD	17		0	0	
	Total PeCDD	22		0	0	
	Total HxCDD	100		0	0	
	Total HpCDD	400		0	0	
Total Dioxins/Furans TEQ					**5.82375 ng/kg**	**<15 ng/kg**

J Estimate result. Result is < reporting limit. CON =
MDL = Method Detection Limit
TEQ = Toxicity Equivalency Quotient
TEF = Toxicity Equivalency Factors
CON = Confirmation Analysis
*Guidance = Puget Sound Dredged Disposal Analysis (PSDDA) Program (Feb 2000) and U.S. EPA Toxicity Equivalency Factors (U.S. EPA 1989; Ahlborg et al. 1994)

US Army Corps of Engineers
Portland District

DEPOT SLOUGH SEDIMENT QUALITY EVALUATION
Sampled August 12, 2003

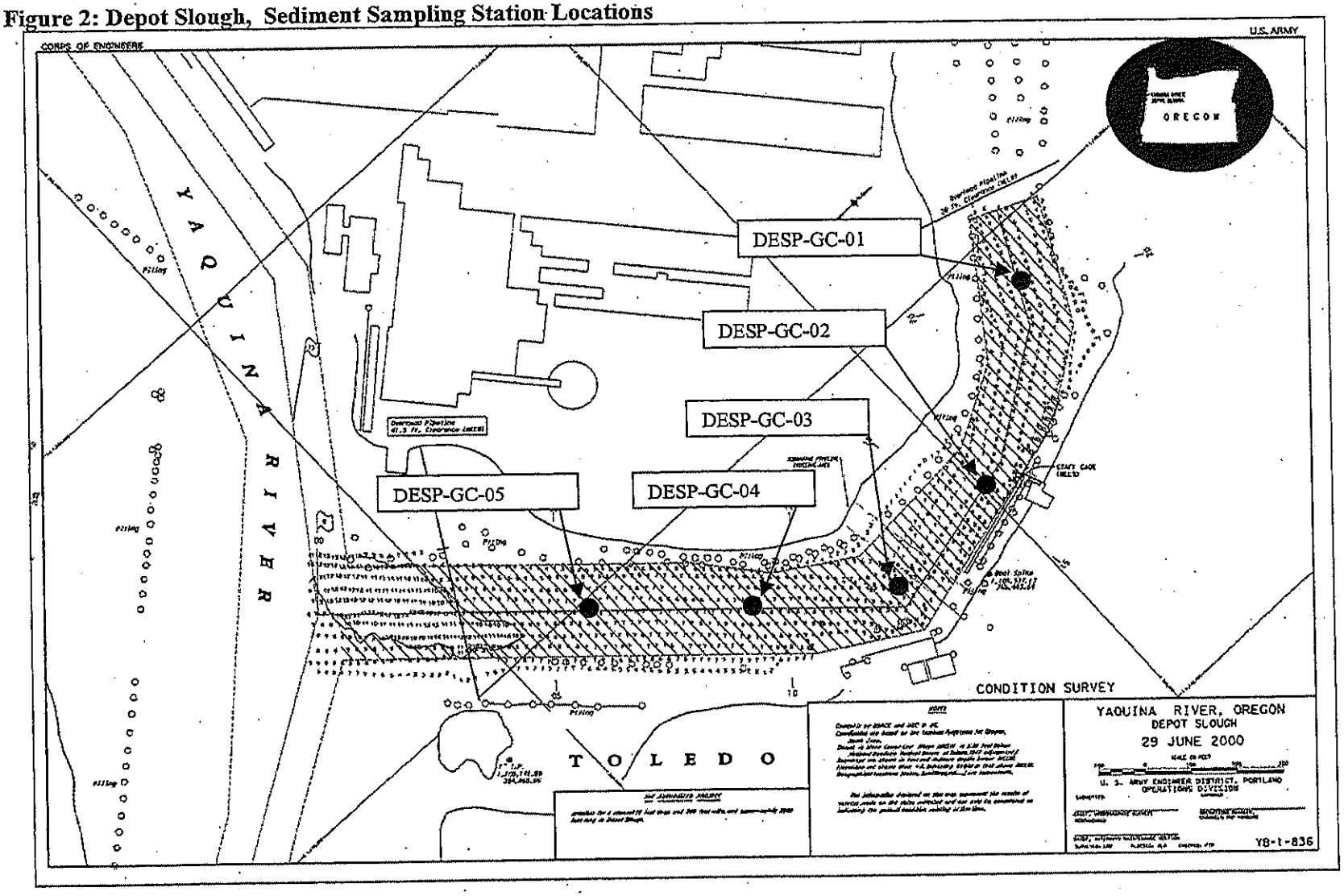
Figure 1, Depot Slough Vicinity Map



US Army Corps of Engineers
Portland District

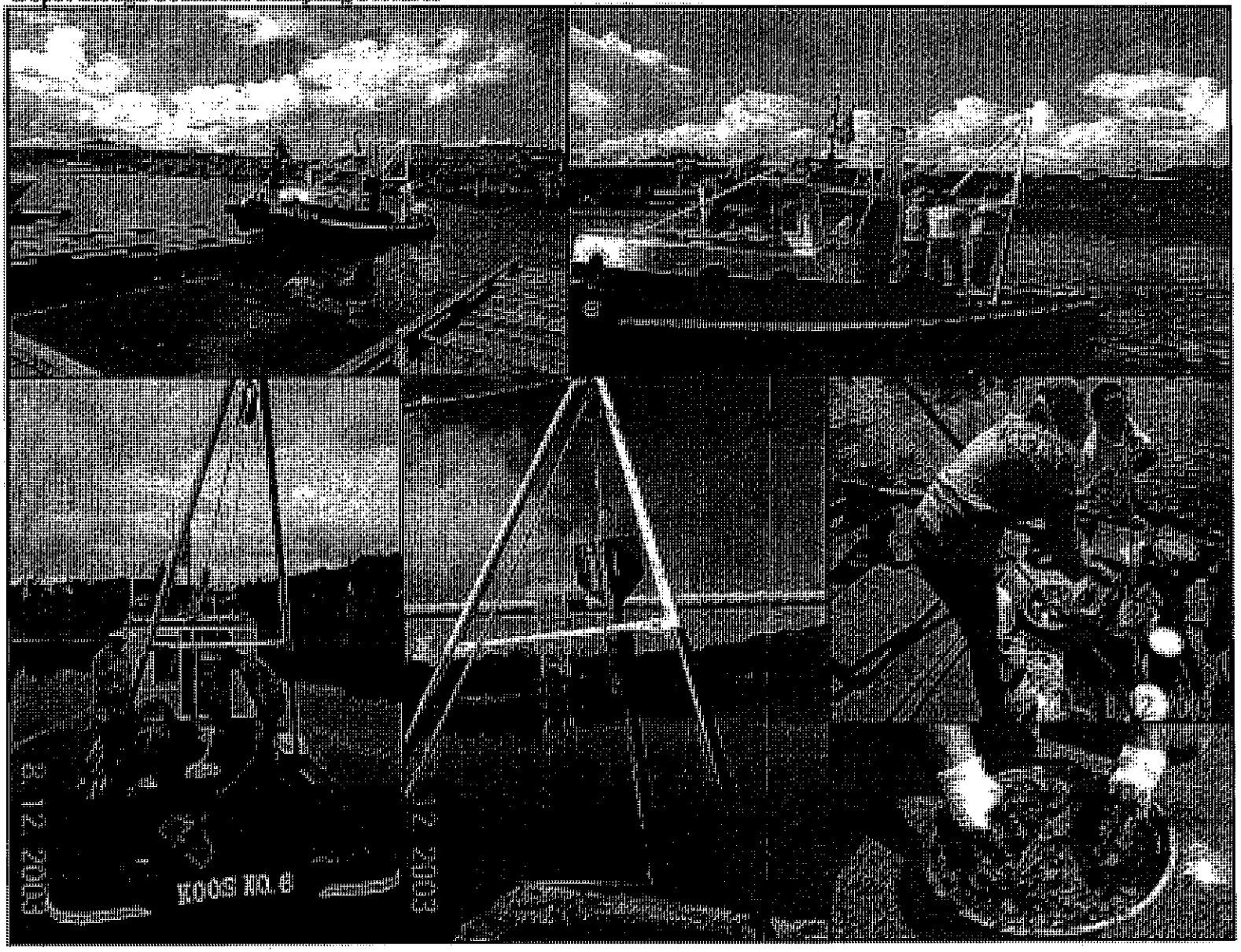
DEPOT SLOUGH SEDIMENT QUALITY EVALUATION
Sampled August 12, 2003

Figure 2: Depot Slough, Sediment Sampling Station Locations



US Army Corps of Engineers
Portland District

Depot Slough Sediment Sampling Pictures



PORT OF TOLEDO OLALLA SLOUGH MITIGATION AND MONITORING PLAN
(NWP-2008-172)

RESPONSIBLE PARTIES

1. Applicant/Permittee: Port of Toledo, Mr. Bud Shoemake

2. Preparer(s) of the Proposal/Plan: James McMillan, USACE

PROJECT REQUIRING MITIGATION

1. Location

The proposed project is located in the Depot Slough at River Mile 0.2 in Toledo, Lincoln County, Oregon (Section 17, Township 11 South, Range 10 West). See Figures 1 and 2.

2. Brief Summary of Overall Project

The Port of Toledo proposes to dredge approximately 5,160 cubic yards of silt from the Depot Slough and install a new boat dock for transient vessels. The dock area would be dredged from its current elevation at -1 foot mean lowest low water (MLLW) to -10 feet MLLW, which is the depth of the adjacent, authorized navigation channel. Silt removal would be limited to the dock area. The proposed dredging elevation (-10 MLLW) would be necessary to avoid grounding vessels.

One 10 by 170-foot concrete boat dock with five, 5 by 40-foot finger floats would be installed. One 4 by 80-foot aluminum gangway would be installed to provide pedestrian access to shore. A 10 by 10-foot concrete abutment would be cast in place and would be located above highest water at the top of the gangway to provide pedestrian access to the gangway and dock. The boat dock would be anchored using 9 hollow steel pilings, not to exceed 24 inches diameter. According to the applicant the number of pilings has been minimized to the maximum extent practicable. The boat dock is designed to be ADA compliant.

Work would be completed by crane, track excavator, pile driver or vibratory hammer, and barge or similar equipment. Dredging and pile driving would be conducted from a barge.

According to the applicant, no part of the natural stream bed or banks would be disturbed by the project; the project area consists of recently deposited silt that does not provide any significant habitat for benthic, aquatic, or other wildlife species.

The dredging method would be selected by the chosen contractor and may be completed with land-based equipment, or work may be done from a barge using a suction or hydraulic dredge for sediment removal. The contractor may elect to remove sediments with a clamshell bucket or equivalent.

All spoils would be placed in a confined upland disposal area. The dredged material would be dewatered in the disposal area through infiltration and evaporation, or it would be returned to the waterway. Any return flows would be conveyed in an enclosed pipe

and would meet applicable standards for discharge velocity, turbidity, and temperature. The dredged material would be retained on site and utilized for future Port developments.

3. Impact Site Characteristics

a. Jurisdictional Areas: The transient dock site is located in Depot Slough, a Section 10 (Rivers and Harbors Act) navigable waterway.

b. Habitat/ Aquatic Functions: The transient dock site is located in shallow, unvegetated estuarine mudflat habitat. This habitat provides some nearshore foraging opportunities for juvenile salmonids, including the federally listed Oregon Coast Coho salmon.

c. Soils/Substrate: The substrate consists of fine-textured sediment (silts and clays); this substrate likely supports benthic organisms that are a food source for juvenile salmonids.

d. Vegetation: This site is an unvegetated mudflat.

e. Threatened/Endangered Species: Oregon Coast Coho salmon

MITIGATION DESIGN

1. Location

The mitigation site is located on the Olalla Slough in Toledo, Lincoln County, Oregon (Section 17, Township 11 South, Range 10 West). See Figures 1 and 3.

2. Basis for Design

The Port of Toledo will be able to easily create shallow, unvegetated mudflat habitat by excavating uplands adjacent to an existing intertidal channel. The Port is conducting this mitigation in conjunction with the City of Toledo. The City's proposed mitigation would remove dikes along Olalla Slough (Corps Permit No. NWP-2004-811). In addition, the Port proposes to excavate 0.2 acre to between -1' and -2' MLLW. This elevation would match the existing elevations of the proposed transient dock area.

3. Proposed Mitigation Site – Current Conditions

a. Jurisdictional Areas: Jurisdictional areas are identified in Figure 5. Approximately 12.6 acres of waters of the U.S., including wetlands, occur on the site. The area identified for mudflat creation is currently upland grassland habitat.

b. Aquatic Functions: The upland habitat serves as a buffer habitat to the estuary, and provides some sediment and toxicant retention functions, by filtering runoff from the adjacent roads.

c. Hydrology/Topography: At the proposed creation site, there is not any wetland hydrology, except for the intertidal channel that bisects the proposed creation area. The topography is primarily convex and sheds water.

d. Soils/Substrate: Upland soils are likely the same texture as the adjacent wetland soils. The meandering course of Olalla Slough indicates that this channel has likely shifted over time, and fine-textured material will likely be found at the proposed depth of excavation.

e. Vegetation: Vegetation consists of upland grasses and forbs.

4. Compensatory Mitigation Site

a. Jurisdictional Areas: Jurisdictional areas are identified in Figure 5. Approximately 12.6 acres of waters of the U.S., including wetlands, occur on the site.

b. Aquatic Functions: The proposed mitigation would replace 0.2 acre of impacted unvegetated, shallow intertidal mudflat habitat; this provides foraging habitat and access to vegetated estuarine refugia for juvenile fish, including the federally listed

Oregon Coast Coho salmon.

c. Hydrology/Topography: The removal of the adjacent dike, coupled with excavation down to 0 to 1' MLW should subject the area to intertidal fluctuations, which will provide adequate hydrology to develop a shallow, unvegetated intertidal mudflat.

d. Soils/Substrate: Substrate at the mitigation site should be comparable to substrate at the impact site. It is anticipated that the substrate will be poorly drained and will maintain adequate moisture to perch tidal waters and develop a benthic community.

e. Vegetation: It is anticipated that water depth and salinity will exclude the colonization of high and low marsh plant species.

f. Compensation Ratios: 1:1 (creation)

g. Long-Term Goal(s): create shallow, unvegetated mudflat habitat that supports juvenile salmonids.

SUCCESS CRITERIA AND MONITORING

1. Success Criteria

Establish 0.2 acre of unvegetated mudflat habitat that is accessible to juvenile salmonids. The Port of Toledo must establish and maintain a 0.2 acre unvegetated mudflat; if it appears that vegetation is encroaching on the unvegetated mudflat, then the Port will need to implement their contingency plan (see below).

2. Monitoring

a. Methods: The Port shall provide photos of pre-construction conditions at the mitigation site as well as photos of mitigation site construction. The Port shall establish a minimum of 3 photo points with permanent markers (steel fence post, or similar permanent feature) surrounding the created mudflat mitigation area. Photo points will be placed to document conditions and changes at this 0.2 acre portion of the City of Toledo's mitigation area. Photos taken from these points will be taken in the cardinal directions (N, S, E, and W),

i.e., a minimum of 12 photos should be submitted with each monitoring report. Photographic monitoring shall be conducted once per year for five (5) years.

b. Monitoring Schedule: Photos should be taken during the growing season. Between monitoring years, the Port shall ensure that photos are taken within a designated 2 week period (e.g., the 1st two weeks of June). The Port shall submit their photo-monitoring report by November 1 of each monitoring year.

IMPLEMENTATION PLAN

1. Site Preparation

The Port will excavate 0.2 acre of upland to between -1 and -2 feet MLLW. The Port shall stake the excavation area and delineate the limits of disturbance so the contractor will not affect existing wetlands on the site. This means that the channel that bisects the proposed mudflat creation site shall be crossed using timber mats.

The Port shall plant the margins around the excavation site with native plant species that include upland species grading to wetland species near the open mudflat area. The Port shall consult with ODFW to determine appropriate species and seeding rates. The Port may want to consider salvaging sod from the upland excavation to ensure that the excavated margins are revegetated. The Port may also harvest plugs of wetland vegetation from the adjacent wetland areas to develop the wetland margin surrounding the constructed mudflat.

Material excavated from the site shall be disposed of at an upland site of the Port's choosing. The Port must ensure that material is trucked to an upland site.

The Port must ensure that the contractor utilizes equipment that has been cleaned and is free of foreign soil and seeds, including weedy species.

Any wetland areas damaged or disturbed during the construction of the mudflat creation area must be restored to preconstruction conditions.

The Port shall ensure that a member from ODFW's staff (preferably Mr. Dan Avery) is present on the site during grading and site preparation.

2. Implementation Schedule

The Port is scheduled to begin construction of the site prior to September 15, 2009. Photo-monitoring shall commence during the following growing season.

MAINTENANCE DURING MONITORING PERIOD

1. Maintenance Activities

The Port shall ensure that weeds are controlled in the margins surrounding the created mudflat.

The Port must ensure that the desired habitat is created. It is not anticipated that vegetation will establish at the excavated depth, and so no maintenance is proposed for the created shallow, unvegetated estuarine mudflat.

2. Maintenance Schedule

If it appears that the desired condition has not been achieved, or is not on-target towards being achieved (as determined by the Corps), then the Port shall initiate corrective measures to create the desired shallow, unvegetated estuarine mudflat habitat after the second year of monitoring.

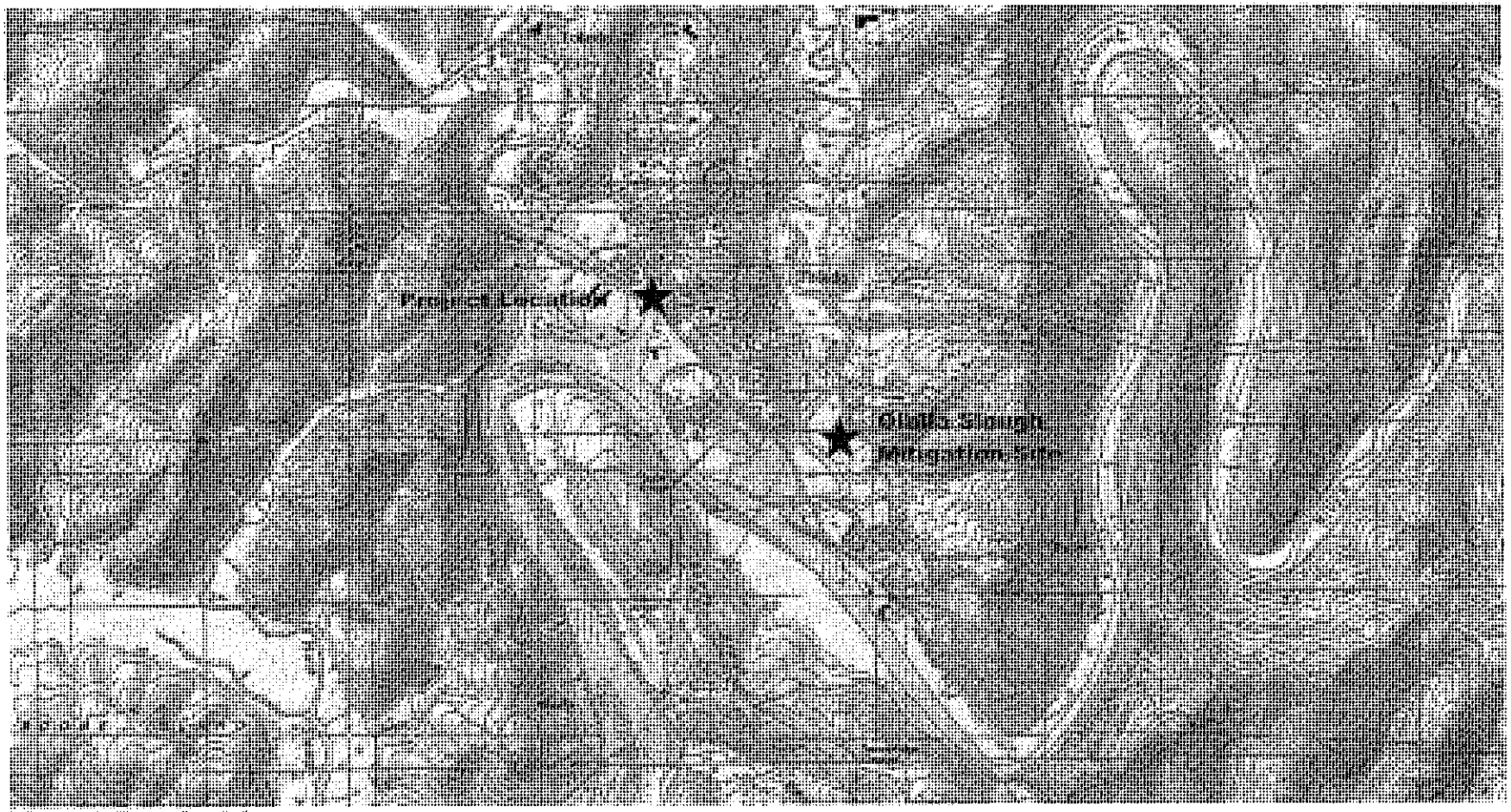
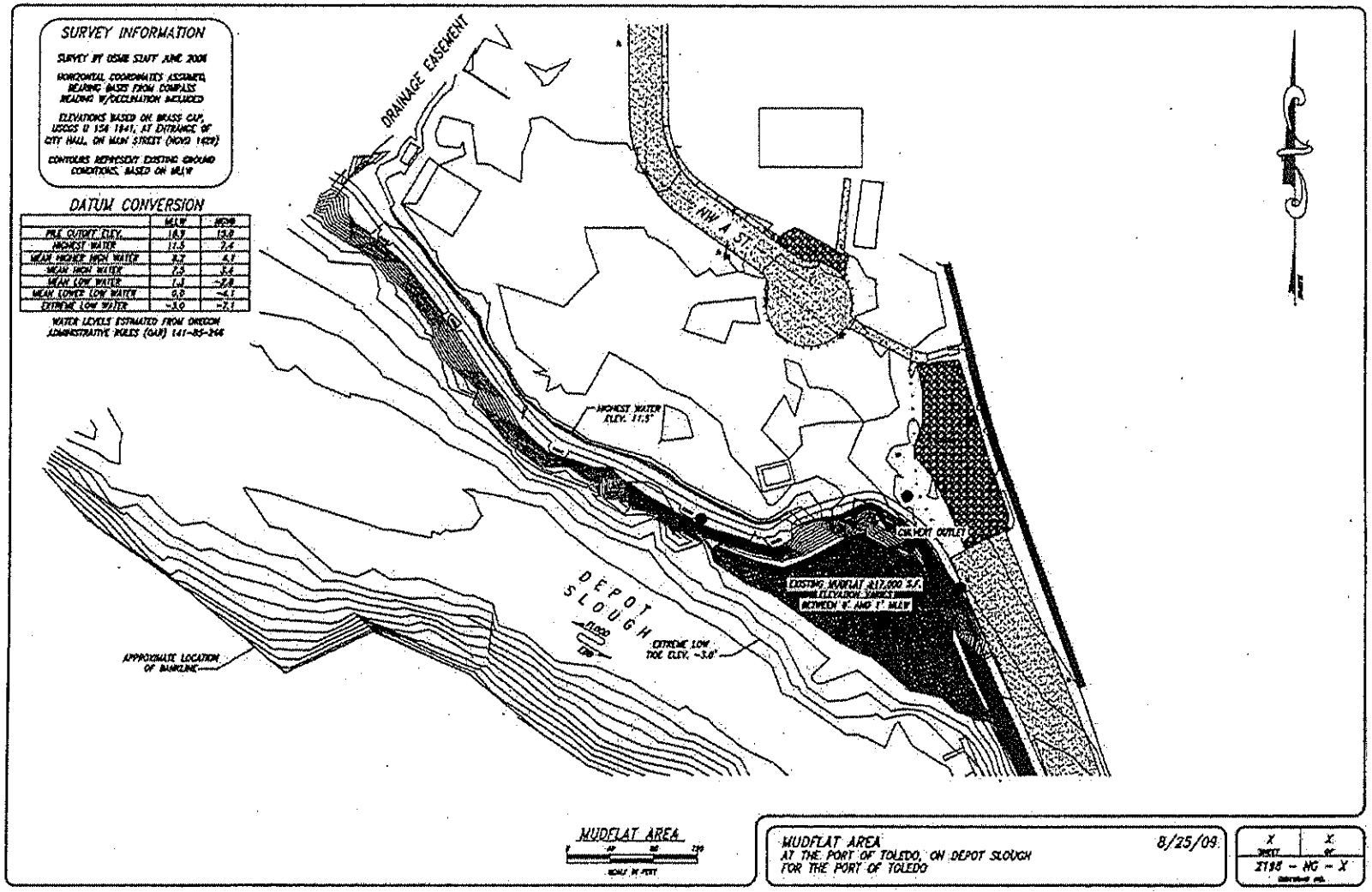


Figure 1. Location Map.



DATUM	MLW	MHHW
PIPE OUTFALL ELEV.	14.9	13.8
HIGHEST WATER	11.5	9.4
MEAN HIGHER HIGH WATER	9.7	8.1
MEAN HIGH WATER	7.5	6.4
MEAN LOW WATER	1.1	-2.8
MEAN LOWER LOW WATER	0.0	-4.1
EXTREME LOW WATER	-3.0	-7.1

Figure 2. Existing mudflat area at the impact site.

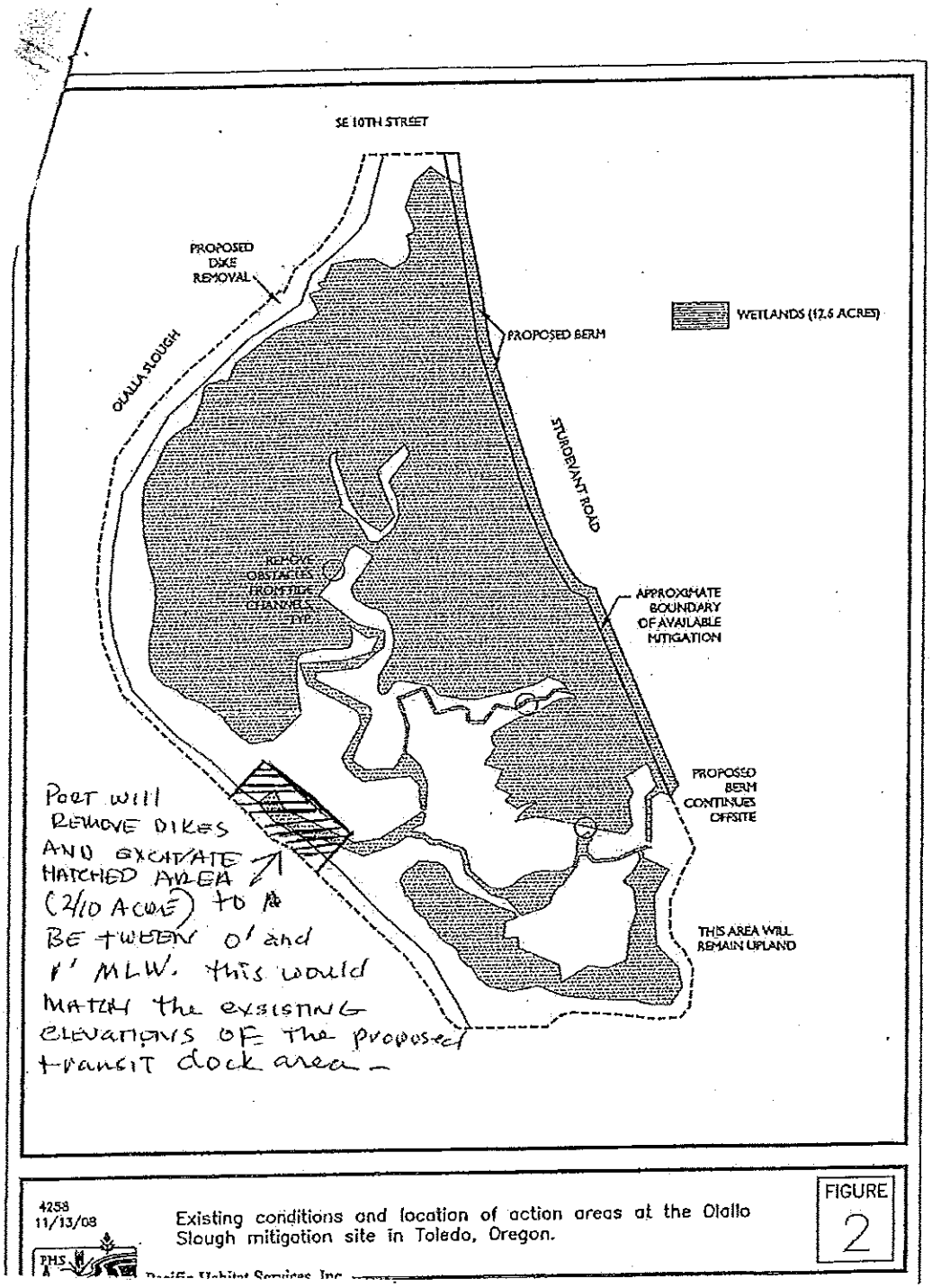


Figure 3. Proposed mudflat mitigation area, adjacent to Olalla Slough.

Pavitt Land Use Consulting, LLC

134 SW Lee St.
P.O. Box 5
Newport, OR 97365
(541) 265.4452 Telephone/
~~(541) 265.5688~~ Facsimile
dawn@pavittlanduse.com
www.pavittlanduse.com

September 1, 2011

U.S. Army Corps of Engineers
CENWP-OD-G
Attn: Tom Taylor
P.O. Box 2946
Portland, OR 97208-2946

RE: Requested Modification of Permit NWP-2008-172(2) for Clean-Up Dredging Under Transit Dock

Dear Mr. Taylor:

I am writing to you on behalf of the Port of Toledo and requesting a modification to Permit NWP-2008-172(2). The purpose of the transit dock is unchanged. It will provide essential transit moorage for recreational boaters in Depot Slough. The project is still funded by a grant from the Oregon State Marine Board. The project location is unchanged. The proposed work is within the currently permitted dredge area footprint and within the allowed yardage.

As we have discussed by email and telephone, the port will be completing the construction and placement of the last section of dock for the recreational transit moorage located in Depot Slough. This will include the placement of 9 steel piling and cleanup dredging. The port wishes to dredge in the slough, outside of the channel, under the location of the new dock so that sufficient uniform depth will be provided to avoid grounding of boats using the dock area. This is covered under the existing NWP-2008-172(2) and the State of Oregon's recently renewed permit number 40179-RF Renewal. The piling will be placed in the same manner, with a vibratory hammer.

Compensatory mitigation has been completed and accepted by permitting agencies for this project.

Modification Details -

The modification to the permit is with regard to timing of the work and location of the dredge spoil disposal. The port wishes to place the 9 steel piling for the dock and dredge in the Fall 2011 in-water work window beginning November 1 with work expected to be completed prior to December 15th. The existing permit allows dredging outside of the in-water work window. The dredging should take less than a week.

The estimated amount of material to be removed is 1,800 cy below mean high water. This is less than the 3,000 cy allowed in the existing permit. However, the port seeks to place the material in a nearby upland location with this dredging effort rather than be discharged in ocean disposal as NWP-2008-172(2) allows. The port wishes to place the spoil on a nearby upland area adjacent to Depot Slough and owned by the port.

The dredging method will remain the same as required and permitted, with a 5 to 10 cy clam shell, sealed lip environmental bucket. A standard clamshell bucket of similar size will be used if debris is encountered. The project site will be dredged from its current elevation of +1'MLLW to -12' MLLW to avoid grounding of boats using the proposed dock. Removal of the accumulated sediment deposits will require dredging an area up to 15,000 sq. ft (0.344 acre) and approximately 1,800 cy of silt below mean high water. This dredging area remains unchanged from the existing permit. This is a second effort to dredge this area using this permit and applicant believes the entire 3,000 cy permitted for removal will not be necessary.

The dredging contractor may use one of two methods for dredging. First, the in-water dredging will involve a clamshell/environmental bucket dredging method by barge and transferring that material directly to a 10 cy truck for upland disposal. Dredged material will be transported to the adjacent upland area (TL 2200 on Lincoln County assessor's map 11s-10w-18A).

The optional second method will be for the clamshell/environmental bucket dredge to be operated from the upland area and placed directly on a 10 cy truck, then disposal will be placed in the designated upland area.

The dredge disposal area is located on a level vacant piece of property owned by the Port of Toledo. This area is near the transit dock and transportation will occur only on Port property and in a safe, controlled manner. A drawing describing the dredge spoil disposal area in site plan view, cross- section and decanting area detail is attached.

The dredge spoil disposal area will be an upland site adjacent to Depot Slough (setback 20' from the waterway) and located approximately 500' upstream from the dredge site. Dredged material will be transported from the dredge site by either truck or barge. The disposal site is a vacant lot, owned by the Port of Toledo within the city limits. The lot is vegetated with mowed turf grasses. The disposal site will be a 196-foot square (0.88 acre) surrounded by a soil berm 4 to 6 feet in height with 3:1 sloped sides. The berm will be constructed of native soil. Spoils will be dewatered using a 400-square foot decanting area constructed of precast concrete panels and untreated lumber to form a weir, which will control the rate of return water.

Once sediments have settled, the supernatant will be discharged from the decanting area through a 55-foot long, 12-inch diameter pipe to an existing drainage swale where it will flow approximately 9 feet then enter an existing 45-foot long culvert through which the water will return to Depot Slough. All return flows to the waterway will be conveyed in an enclosed pipe

and will meet applicable standards for discharge velocity, turbidity, clarity and temperature. Following dewatering of the spoils, dredge material will remain onsite. The material will remain on-site as upland fill.

Additional information regarding the details for the spoil disposal is described in the attached request for a 401 certification for the upland disposal. Appropriate detailed drawings of the project with the modification requested are also enclosed for your review.

One informational note – the office for the Port of Toledo has recently moved. The new address is:

P.O. Box 428, 496 NE Hwy 20, Unit 1
Toledo Oregon 97391

Thank you for your assistance and consideration as we have prepared for this modification. If you have any questions, please let me know.

Sincerely,

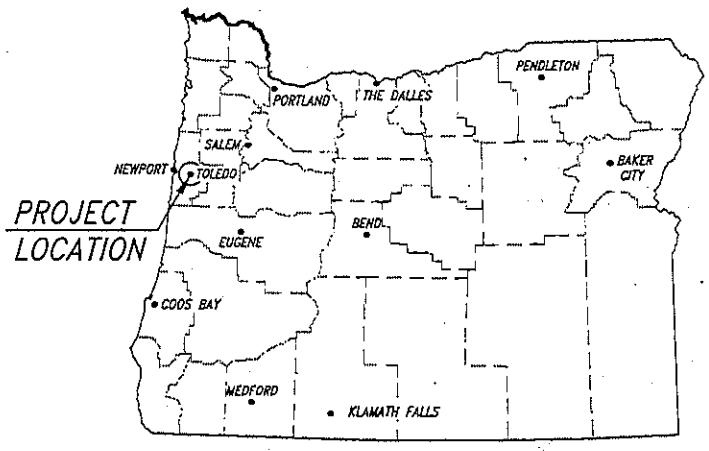
Dawn Pavitt

Attachments – See accompanying list.

c. Bud Shoemake, Port of Toledo
Carrie Landrum, DSL
Mary Camarata and Chris Stine, DEQ
Jason Kirchner, ODFW

List of Attachments to Requested Modification of NWP-2008-172(2)

1. Lincoln County Assessor's Maps for 11-10-17BC and 11-10-18A
2. Set of Five Drawings – Dredging Project at the Port of Toledo, on Depot Slough for the Port of Toledo, dated 8/02/11. Prepared by OSMB staff.
3. Application for Water Quality Section 401 Certification with attachments, dated 8/22/11
4. Application for Solid Waste Beneficial Use Determination, dated 9/2/11
5. Oregon DSL Permit 40176-RF Renewal



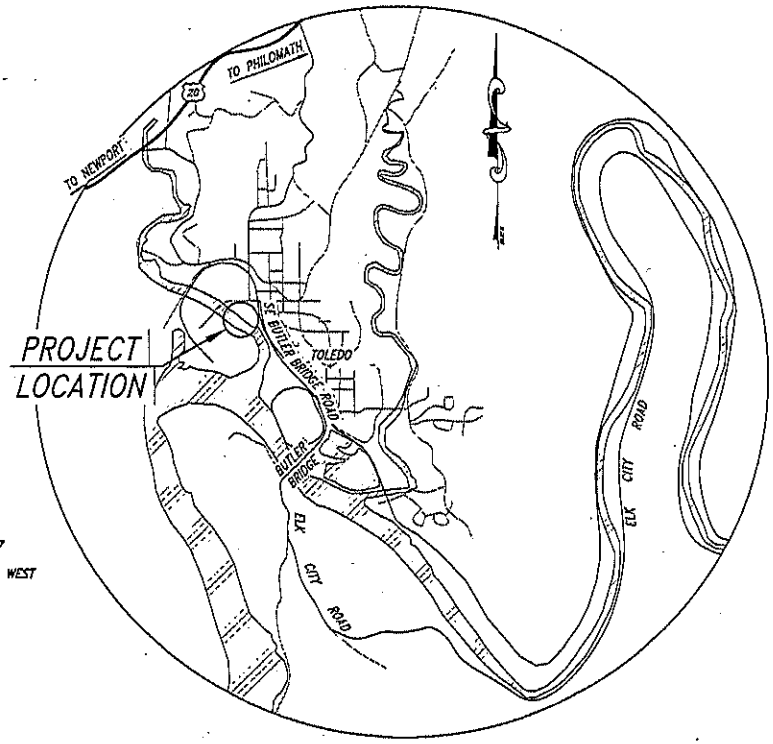
LOCATION MAP

NTS

GEOGRAPHIC LOCATION

TOWNSHIP 11 SOUTH, RANGE 10 WEST, SECTION 17
WILLAMETTE MERIDIAN, LINCOLN COUNTY, OREGON
LATITUDE 44°37'20" NORTH, LONGITUDE 123°56'30" WEST

DRAWING INDEX



VICINITY MAP

DREDGING PROJECT

AT THE PORT OF TOLEDO, ON DEPOT SLOUGH

FOR THE PORT OF TOLEDO

PERMIT REVIEW
NOT FOR CONSTRUCTION

BY
REVISIONS
DATE

APPROVED / FACILITIES MANAGER
FINAL CHECK BY
R. LANHAM
DESIGNED BY
R. LANHAM
DRAWN BY
06/02/11
DATE

ENGINEER

OREGON STATE MARINE BOARD

TITLE SHEET
AT THE PORT OF TOLEDO, ON DEPOT SLOUGH
FOR THE PORT OF TOLEDO

OREGON STATE MARINE BOARD

1 SHEET 4 OF

2108 - PERMIT - 30
DRAWING NO.

SURVEY INFORMATION

SURVEY BY OSMB STAFF JUNE 2006 AND NOVEMBER 2010

HORIZONTAL COORDINATES ASSUMED, BEARING BASIS FROM COMPASS READING W/DECLINATION INCLUDED

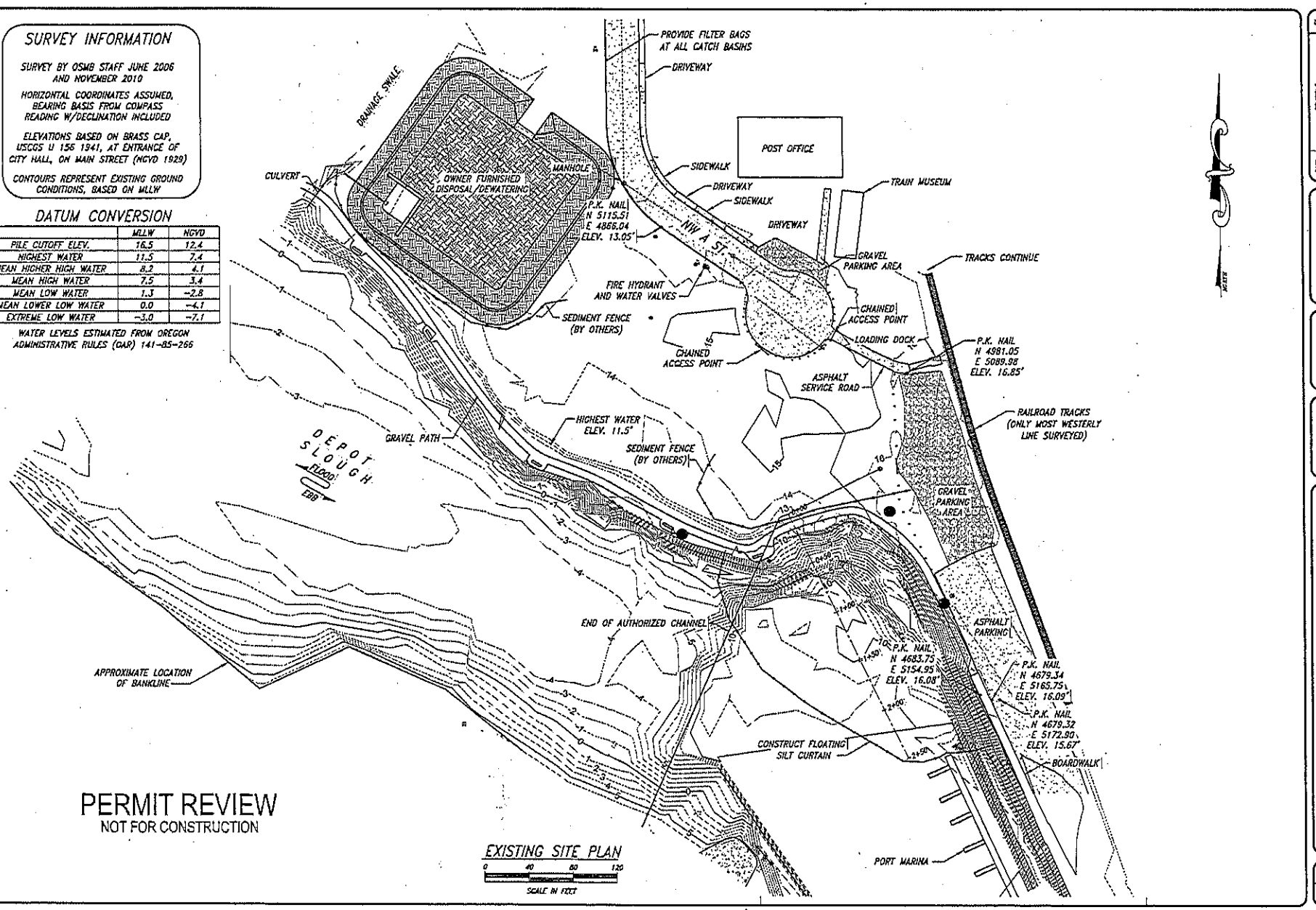
ELEVATIONS BASED ON BRASS CAP, USCGS U 156 1941, AT ENTRANCE OF CITY HALL, ON MAIN STREET (NGVD 1929)

CONTOURS REPRESENT EXISTING GROUND CONDITIONS, BASED ON MLLW

DATUM CONVERSION

	MLLW	NGVD
PILE CUTOFF ELEV.	16.5	12.4
HIGHEST WATER	11.5	7.4
MEAN HIGHER HIGH WATER	8.2	4.1
MEAN HIGH WATER	7.5	3.4
MEAN LOW WATER	1.3	-2.8
MEAN LOWER LOW WATER	0.0	-4.1
EXTREME LOW WATER	-3.0	-7.1

WATER LEVELS ESTIMATED FROM OREGON ADMINISTRATIVE RULES (OAR) 141-85-266



PERMIT REVIEW
NOT FOR CONSTRUCTION

EXISTING SITE PLAN
0 40 80 120
SCALE IN FEET

BY	REVISIONS	DATE

APPROVED FACILITIES MANAGER
J.PAN, OSMB CIVIL
DESIGNED BY R. LANHAM
DRAWN BY R. LANHAM
DATE 08/02/11

ENGINEER

OREGON STATE MARINE BOARD

EXISTING SITE PLAN
AT THE PORT OF TOLEDO, ON DEPOT SLOUGH
FOR THE PORT OF TOLEDO

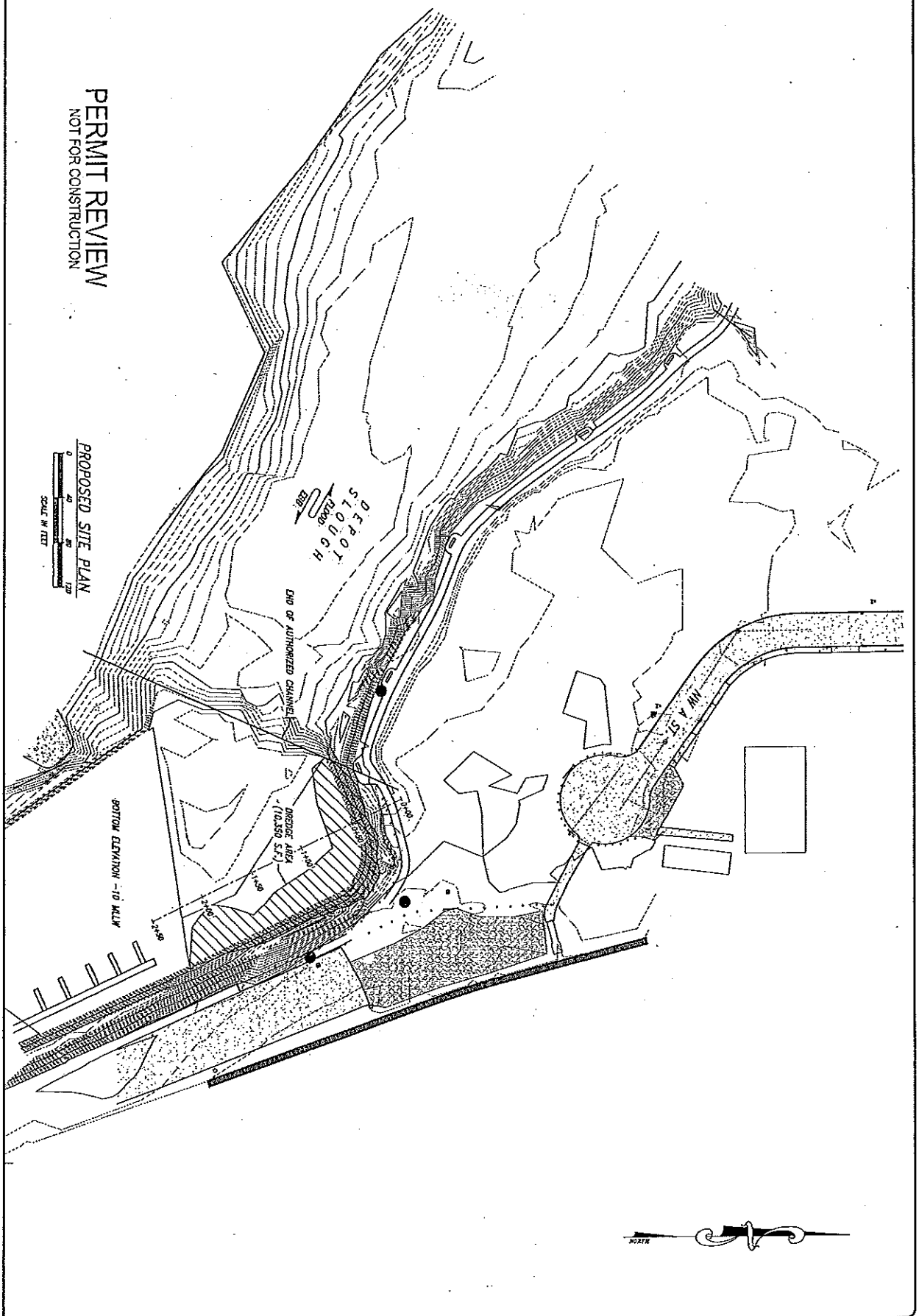
OREGON STATE MARINE BOARD

SHEET 2 OF 4

DRAWING NO. 2198 - PERMIT- 31

PERMIT REVIEW
NOT FOR CONSTRUCTION

PROPOSED SITE PLAN



PROPOSED SITE PLAN
AT THE PORT OF TOLEDO, ON DEPOT SLOUGH
FOR THE PORT OF TOLEDO

OREGON STATE MARINE BOARD

OREGON STATE MARINE BOARD

ENGINEER

APPROVED FACILITIES MANAGER

FINAL CHECK BY

DESIGNED BY: R. LANHAM

DRAWN BY: R. LANHAM — DATE: 08/02/11

DATE	REVISIONS	BY

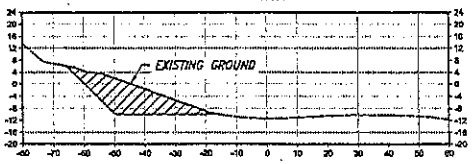
FILE PATH:

FILE NAME:

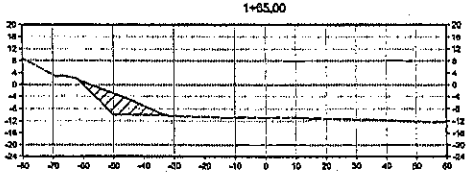
SHEET 3 OF 4

2198 - PERMIT - 2D

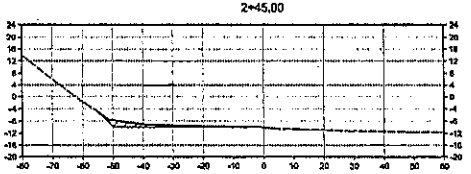
0+65.00



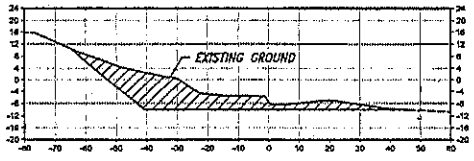
1+65.00



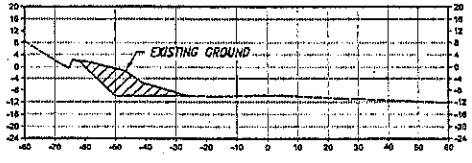
2+45.00



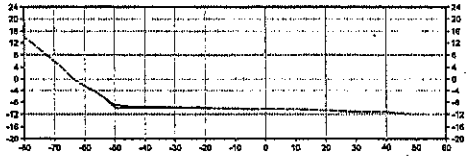
0+65.00



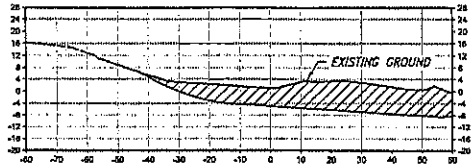
1+45.00



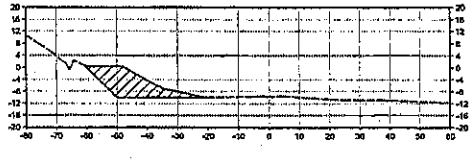
2+25.00



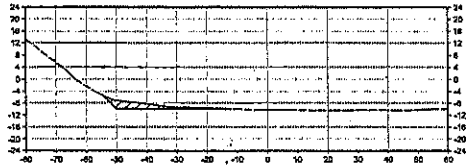
0+45.00



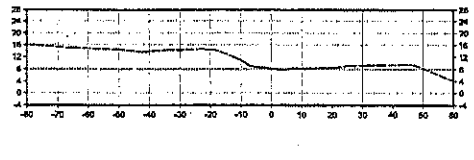
1+25.00



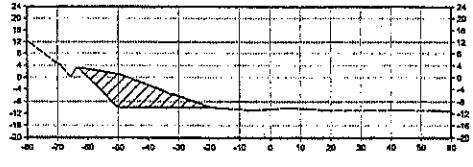
2+05.00



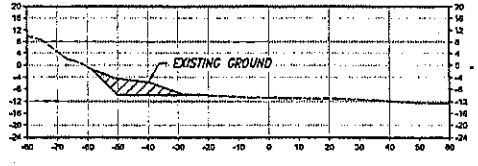
0+25.00



1+05.00



1+85.00



DREDGE VOL.: 1,700 C.Y.

DREDGE CROSS SECTIONS

0 20 40 60

SCALE IN FEET

PERMIT REVIEW
NOT FOR CONSTRUCTION

DATE	REVISIONS	BY

APPROVED PROJECT MANAGER

ENGINEER

DESIGNED BY R. LANHAM

DRAWN BY R. LANHAM

CHECKED BY

DATE 03/2011

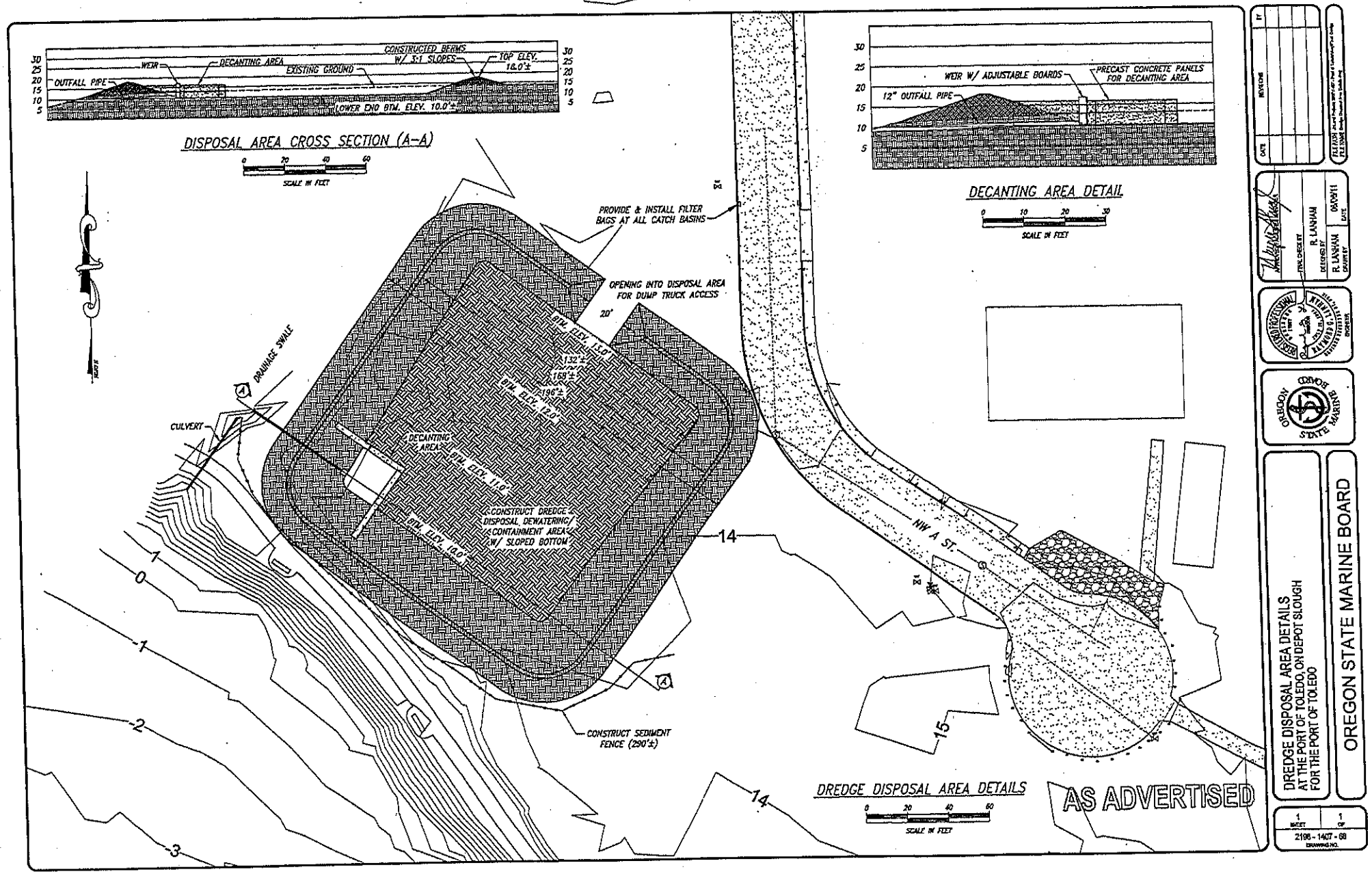
OREGON STATE MARINE BOARD

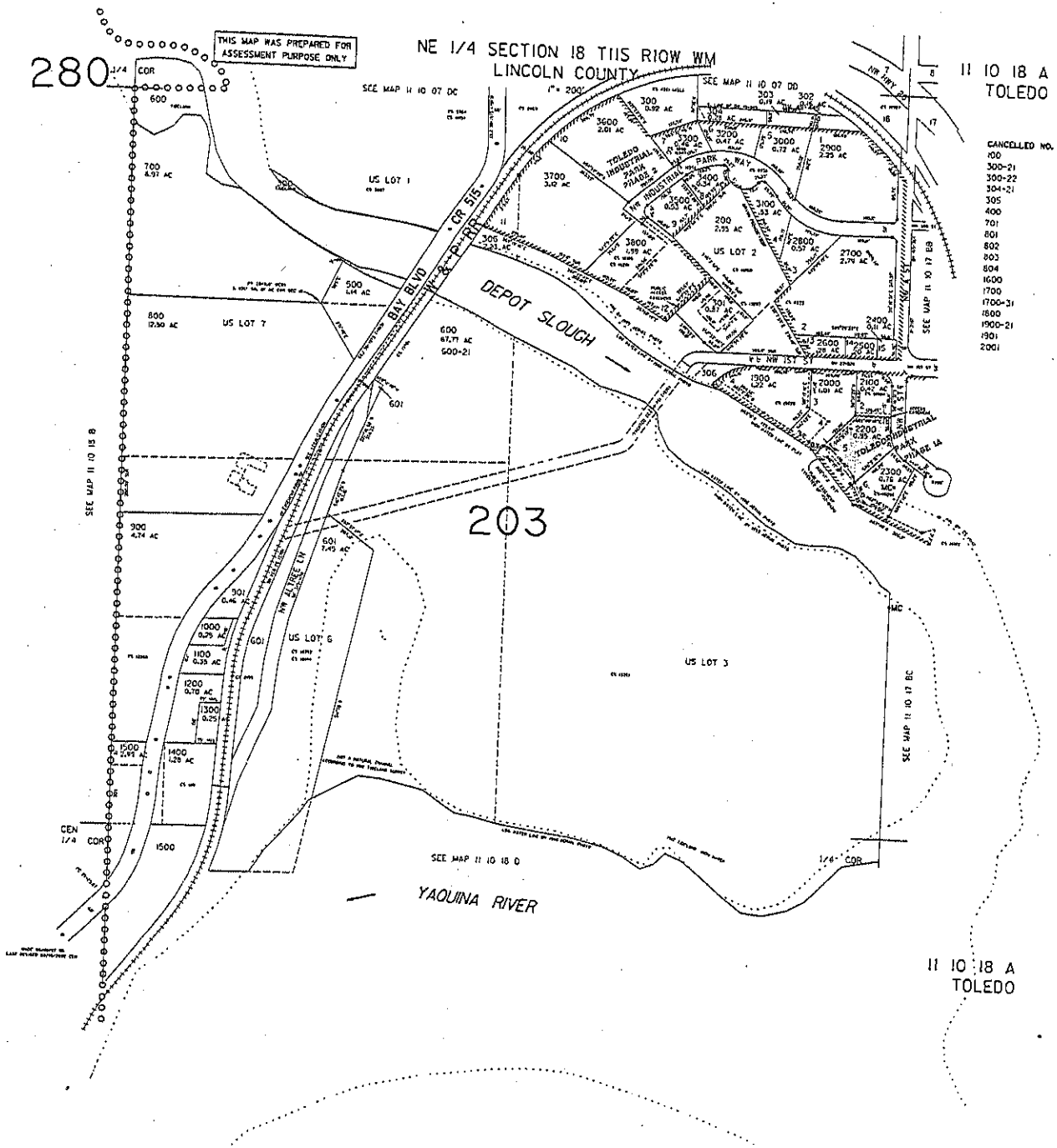
DREDGE CROSS SECTIONS
AT THE PORT OF TOLEDO, ON DEPOT SLOUGH
FOR THE PORT OF TOLEDO

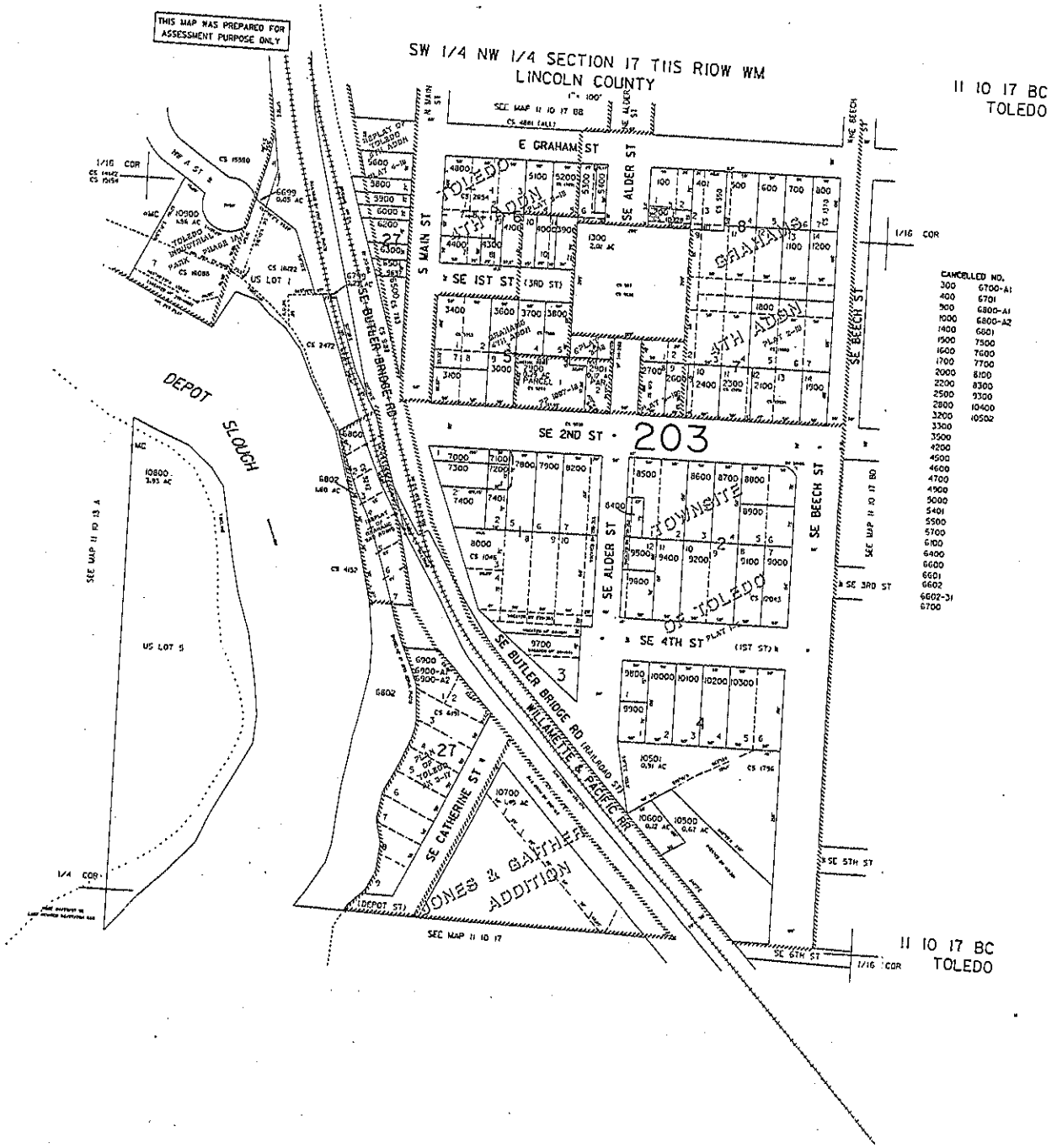
OREGON STATE MARINE BOARD

SHEET 4 OF 4

DRAWING NO. 2198 - PERMIT - 33


DISPOSAL AREA CROSS SECTION (A-A)
SCALE IN FEET
WEIR
DECANTING AREA
CONSTRUCTED BERMS W/ 3:1 SLOPES
TOP ELEV. 18.0'±
EXISTING GROUND
OUTFALL PIPE
LOWER END BTM. ELEV. 10.0'±
DECANTING AREA DETAIL
SCALE IN FEET
WEIR W/ ADJUSTABLE BOARDS
PRECAST CONCRETE PANELS FOR DECANTING AREA
12" OUTFALL PIPE
PROVIDE & INSTALL FILTER BAGS AT ALL CATCH BASINS
OPENING INTO DISPOSAL AREA FOR DUMP TRUCK ACCESS
20'
BTM. ELEV. 12.0'
132'±
169'±
196'±
BTM. ELEV. 12.0'
DRAINAGE SWALE
CULVERT
DECANTING AREA BTM. ELEV. 11.0'
CONSTRUCT DREDGE DISPOSAL DEWATERING/ CONTAINMENT AREA W/ SLOPED BOTTOM
BTM. ELEV. 10.0'±
CONSTRUCT SEDIMENT FENCE (290'±)
NW A ST.
DREDGE DISPOSAL AREA DETAILS
SCALE IN FEET
AS ADVERTISED
DREDGE DISPOSAL AREA DETAILS
AT THE PORT OF TOLEDO, ON DEPOT SLOUGH
FOR THE PORT OF TOLEDO
OREGON STATE MARINE BOARD
2196 - 1407 - 08
DRAWING NO.


THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY
NE 1/4 SECTION 18 T11S R10W WM
LINCOLN COUNTY
280
203
11 10 18 A
TOLEDO
DEPOT SLOUGH
BAY BLVD
CR 515
YAQUINA RIVER
NW ALDER LN
NW INDUSTRIAL WAY
NW PARK WAY
NW 1ST ST
US LOT 1
US LOT 2
US LOT 3
US LOT 6
US LOT 7
SEE MAP 11 10 07 DC
SEE MAP 11 10 07 DD
SEE MAP 11 10 17 BB
SEE MAP 11 10 17 BC
SEE MAP 11 10 18 B
SEE MAP 11 10 18 D
CANCELLED NO.
100
300-21
300-22
304-21
305
400
701
801
802
803
804
1600
1700
1700-31
1800
1900-21
1901
2001


THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY
SW 1/4 NW 1/4 SECTION 17 T11S R10W WM
LINCOLN COUNTY
11 10 17 BC
TOLEDO
E GRAHAM ST
SE 1ST ST (3RD ST)
SE 2ND ST
SE 3RD ST
SE 4TH ST (1ST ST)
SE 5TH ST
SE 6TH ST
SE ALDER ST
SE BEECH ST
S MAIN ST
SE BUTLER BRIDGE RD
SE CATHERINE ST
WILLAMETTE & PACIFIC RR
DEPOT SLOUGH
TOLEDO INDUSTRIAL PARK
TOLEDO
GRAHAMS ADDN
DOWNSITE
JONES & GAFFIN ADDITION
203
CANCELLED NO.
300 6700-A1
400 6701
900 6800-A1
1000 6800-A2
1400 6601
1500 7500
1600 7600
1700 7700
2000 8100
2200 8300
2500 9300
2800 10400
3200 10502
3300
3500
4200
4500
4600
4700
4900
5000
5401
5500
5700
6100
6400
6600
6601
6602
6602-31
6700
SEE MAP 11 10 17 BB
SEE MAP 11 10 17 BD
SEE MAP 11 10 17 A
SEE MAP 11 10 17
1/16 COR
1/4 COR
US LOT 1
US LOT 5
11 10 17 BC
TOLEDO