Joint Permit Application

This is a joint application, and must be sent to all agencies (Corps, DSL, and DEQ). Alternative forms of permit applications may be acceptable; contact the Corps and DSL for more information.

Date Stamp

U.S. Army Corps of Engineers Portland District	Oregon Department of State Lands	Oregon Department of Environmental Quality
Action ID Number	Number	

(1) TYPE OF PERMIT(S) IF KNOWN (check all that apply)

Corps: Individual Nationwide No.: _57_____ Regional General Permit _____ Other (specify): _____

DSL: Individual GP Trans GP Min Wet GP Maint Dredge GP Ocean Energy No Permit Waiver

(2) APPLICANT AND LANDOWNER CONTACT INFORMATION

	Applicant	Property Owner (if different)	Authorized Agent (if applicable) ☒ Consultant ☐ Contractor
Name (Required) Business Name Mailing Address 1 Mailing Address 2 City, State, Zip	Matt Whitty, Engineering Manager Coos Bay-North Bend Water Board 2305 Ocean Blvd. Coos Bay, OR 97420-0108	Varies by site, Easements will be established	Angela Mosieur, PE The Dyer Partnership Engineers and Planners, Inc. 1330 Teakwood Ave. Coos Bay, OR 97420
Business Phone Cell Phone Fax Email	541-267-3128 -- 541-269-5370 matt_whitty@cbnbh20.com		541-269-0732 -- (541) 269-2044 amosieur@dyerpart.como

(3) PROJECT INFORMATION

A. Provide the project location.

Project Name: Cathodic Protection Grounded Installation (Isthmus Slough and South Slough)	Latitude & Longitude* South (43.338056, 124.326028) Isthmus (43.358572, 124.195167)

Project Address / Location	City (nearest)	County
• South Slough: West of 63235 Roosevelt Road, Coos Bay, 97420 (43.338056, 124.326028) • Isthmus Slough: West of 93783 Newport Ln, Coos Bay, 97420)	Coos Bay	Coos

Township		Range	Section	Quarter / Quarter	Tax Lot
South Slough:	26S	14W	2	SW/SE	
Isthmus Slough:	25S	13W	35		

Brief Directions to the Site:

- South Slough: From Hwy 101 travel west on Newmark (Hwy 540) to Cape Arago Highway. Travel south toward Charleston. Turn left on Roosevelt Rd.
- Isthmus Slough: From Hwy 101 travel East on Newport Ln. Turn left onto Port of Coos Bay property to access project area.

B. What types of waterbodies or wetlands are present in your project area? (Check all that apply.)

☐ River / Stream ☐ Non-Tidal Wetland ☐ Lake / Reservoir / Pond
☒ Estuary or Tidal Wetland ☐ Other ☐ Pacific Ocean

Waterbody or Wetland Name**	River Mile	6th Field HUC Name	6th Field HUC (12 digits)
South Slough Isthmus Slough		Pony Creek Lower Millicoma	171003040404 171003040402

* In decimal format (e.g., 44.9399, -123.0283)

** If there is no official name for the wetland or waterbody, create a unique name (such as "Wetland 1" or "Tributary A").

C. Indicate the project category. (Check all that apply.)

☐ Commercial Development	☐ Industrial Development	☐ Residential Development
☐ Institutional Development	☐ Agricultural	☐ Recreational
☐ Transportation	☐ Restoration	☐ Bridge
☐ Dredging	☐ Utility lines	☐ Survey or Sampling
☐ In- or Over-Water Structure	☒ Maintenance	☐ Other:

(4) PROJECT DESCRIPTION

A. Summarize the overall project including work in areas both in and outside of waters or wetlands.

Cathodic Protection will be installed at each of two sites: The South Slough located near Charleston, OR, and the Isthmus Slough located on the east side of Coos Bay. A 30% conceptual design is included with the drawings in Appendix A. Both sites are located within Coos County, Oregon and project activities for each site are as follows:

- South Slough project activities consist of installing fifteen impressed current anodes, two silver/silver chloride reference electrodes, and 1,100 feet of conductor. The average depth of excavation at the South Slough will be approximately 5 ft below existing ground surface, which varies in elevation. Depths of bury for anodes will vary between 5 ft to 10 ft as they are to be installed within the centerline elevation of the water line. The length of the new cathodic protection is approximately 600 ft.

- the Isthmus Slough project activities consist of installing ten impressed current anodes, two silver/silver chloride reference electrodes, 500 feet of conductor, and one test station. The average depth of excavation at the Isthmus Slough is approximately 5 ft below existing ground surface. The average depth of excavation at the Isthmus Slough will be approximately 5 ft below existing ground surface. The length of the new cathodic protection is approximately 315 ft.

At both locations, trenches will be excavated, exposing existing pipelines. Once cathodic protection has been installed, excavated materials will be used as backfill for the trenches. No materials will be disposed. The existing, non-functioning cathodic protection systems will be left in place.

Cathodic protection is a technique to control the corrosion of a metal surface. It works by placing an easily corroded metal like zinc or aluminum (“anode”) in contact with the metal to be protected (“cathode”) so that the anode is preferentially consumed (sacrificed), thus keeping the protected structure from corroding. Cathodic protection systems are most commonly used to protect steel products (water lines, fuel pipelines, storage tanks, pier piles), ships, offshore oil platforms and onshore oil well casings.

Impressed Current Cathodic Protection (ICCP) is a form of cathodic protection that does not use a sacrificial anode but instead uses high silicon cast iron, graphite, mixed metal oxide, platinum, or niobium anodes connected to a direct current (DC) power source. The DC power provides similar corrosion protection (“electrochemical potential”) as a sacrificial anode, but because of this power input, the anode is not consumed. In this case, the anodes proposed for the new water main are coated with a ceramic material (“mixed metal oxide”) and will not appreciably be consumed over the life of the wharf. Therefore, additional levels of metals will not enter the water column due to operation of the proposed ICCP system (DEQ, 2010).

B. Describe work within waters and wetlands.

The highest measured tide at Charleston, Oregon is 10.68 ft NAVD88 (measured on 1/26/1983 at 22:06), which is considered the jurisdictional boundary for this work. The Ordinary High Water (OHW) at the South Slough is 6.46 ft NAVD88. The OHW at the Isthmus Slough is 7.57 ft NAVD88. Note: the Isthmus Slough station does not contain data for the highest observed tide. A value of 11.79 ft NAVD88 (7.57+7.57-6.46) is assumed for the highest tide elevation at the Isthmus Slough.

Isthmus Slough: Work at the Isthmus Slough will be performed along both the west and east banks. No work is proposed in the channel of the Slough. On the west bank, the installation of the cathodic protection bed will occur approximately 50 feet into the waterway from OHW parallel to the bank. On the east bank, the installation of a reference anode will occur approximately 20 feet into the slough from OHW, perpendicular to the bank. The work on both sides of the Isthmus Slough will occur only during low tide conditions.

South Slough: Work at the South Slough will be performed along both the west and east banks. No work is proposed in the channel of the Slough. On the west bank, the installation of the cathodic bed will occur approximately 454 feet from OHW, perpendicular to the bank and adjacent to the existing water line. On the east bank, the installation of a reference anode will occur approximately 26 feet from the bank, perpendicular to the bank, and adjacent to the existing water line.

The South Slough is included as a NWI-designated wetland area and work will be performed within this wetland area. A wetland evaluation of the South Slough is included in Appendix B. The results of the evaluation are consistent with the NWI wetland designation. The work at the South Slough will be performed to the extent possible during low-tide conditions.

C. Construction Methods. Describe how the removal and/or fill activities will be accomplished to minimize impacts to waters and wetlands.

Construction/installation of the new systems at both locations will parallel the existing cathodic protection systems. The following methods will be used at both locations:

- No groundwork is anticipated within the main slough channels.
- Methods will include use of light equipment for installation, or a barge if the use of equipment on slough tidal muds is not feasible.
- The number of anodes at each location remains the same as the existing systems.
- The depths of bury for the anodes will vary between 5 to 10 ft as they are to be installed within a specific elevation of the existing water line.
- The existing, failing systems will be abandoned in place.
- Trenching will be performed during low tide stage.
- Multi-day excavations will require backfill of open trenches during the low-tide window. Excavations will not remain open between low-tide work windows.

Best Management Practices (BMPs) and erosion control measures will include:

- Equipment mats to reduce disturbance (See Appendix D for an example of recommended mat type)
- Type 2 Floating turbidity curtain
- Turbidity monitoring
- No Equipment in the water
- Barge proposed (as needed for Isthmus Slough Location)

The project will adhere to any applicable Proposed Design Criteria of the SLOPES STU biological opinion.

(4) PROJECT DESCRIPTION (continued)

D. Describe source of fill material and disposal locations if known.

The fill materials will be the materials removed during excavation to install cathodic protection system. No additional (new) fill materials will be imported. Additionally, no materials will be removed from either location; therefore, no disposal of materials will be required.

E. Construction timeline.

What is the estimated project start date?	**October 1, 2023**
What is the estimated project completion date?	**February 15, 2024**

	Yes	**No**
Is any of the work underway or already complete?		
If yes, please describe.	☐	☒

F. Removal Volumes and Dimensions (if more than 7 impact sites, include a summary table as an attachment)							
Wetland / Waterbody Name *	**Removal Dimensions**					**Time Removal is to remain****	**Material*****
	Length (ft.)	**Width (ft.)**	**Depth (ft.)**	**Area (sq.ft. or ac.)**	**Volume (c.y.)**		
South Slough – West Bank	487	10	10	4,870 SF	1,804	Temporary	Soil will be temporarily excavated, but will be used as backfill source. There will be a net zero removal at this location.
Isthmus Slough – East Bank	97	10	10	970 SF	359	Temporary	Soil will be temporarily excavated, but will be used as backfill source. There will be a net zero removal at this location.
Isthmus Slough – West Bank	190	10	10	1,900 SF	704	Temporary	Soil will be temporarily excavated, but will be used as backfill source. There will be a net zero removal at this location.
Isthmus Slough – East Bank	30	10	10	300 SF	111	Temporary	Soil will be temporarily excavated, but will be used as backfill source. There will be a net zero removal at this location.

G. Total Removal Volumes and Dimensions (COMBINED SOUTH SLOUGH AND ISTHMUS SLOUGH)			
Total Removal to Wetlands and Other Waters	**Length (ft.)**	**Area (sq. ft or ac.)**	**Volume (c.y.)**
Total Removal to Wetlands	730	7,300 SF	2,704
Total Removal Below Ordinary High Water	875	8,750 SF	3,241
Total Removal Below Highest Measured Tide	730	7,300 SF	2,704
Total Removal Below High Tide Line	--	--	--
Total Removal Below Mean High Water Tidal Elevation	--	--	--

H. Fill Volumes and Dimensions (if more than 7 impact sites, include a summary table as an attachment)							
Wetland / Waterbody Name*	**Fill Dimensions**					**Time Fill is to remain****	**Material*****
	Length (ft.)	**Width (ft.)**	**Depth (ft.)**	**Area (sq. ft. or ac.)**	**Volume (c.y.)**		
South Slough	487	10	10	4,870 SF	1,804	Permanent	The backfill will be the excavated fill described in Section F. No additional fill will be used.
Isthmus Slough	97	10	10	970 SF	359	Permanent	The backfill will be the excavated fill described in Section F. No additional fill will be used.
Isthmus Slough – West Bank	190	10	10	1,900 SF	704	Permanent	The backfill will be the excavated fill described in Section F. No additional fill will be used.
Isthmus Slough – East Bank	30	10	10	300 SF	111	Permanent	The backfill will be the excavated fill described in Section F. No additional fill will be used.

(4) PROJECT DESCRIPTION (CONTINUED)

I. Total Fill Volumes and Dimensions			
Total Fill to Wetlands and Other Waters	**Length (ft.)**	**Area (sq. ft or ac.)**	**Volume (c.y.)**
Total Fill to Wetlands	730	7,300 SF	2,704
Total Fill Below Ordinary High Water	875	8,750 SF	3,241
Total Fill Below Highest Measured Tide	730	7,300 SF	2,704
Total Fill Below High Tide Line	--	--	--
Total Fill Below Mean High Water Tidal Elevation	--	--	--

*If there is no official name for the wetland or waterbody, create a unique name (such as "Wetland 1" or "Tributary A").
**Indicate whether the proposed area of removal or fill is permanent or, if you are proposing temporary impacts, specify the days, months or years the fill or removal is to remain.
*** Example: soil, gravel, wood, concrete, pilings, rock etc.

(5) PROJECT PURPOSE AND NEED

Provide a statement of the purpose and need for the overall project.

The purpose of this project is to replace the failed cathodic protection systems which serve the existing water lines located across the South Slough and Isthmus Slough. Cathodic protection is required to prevent corrosion of the submerged metal surface of the pipe and associated equipment. The system was found to have failed during a routine yearly check

Without cathodic protection, the existing water line will corrode and fail. The result would be catastrophic for the communities across each slough who depend on the water.

Failure of the existing water lines would also create a much larger project and impact water resources to users across the respective Sloughs. In order to replace the water lines this would include work across both the Isthmus and South Sloughs. The environmental impact and project cost would be much larger.

(6) DESCRIPTION OF RESOURCES IN PROJECT AREA

A. Describe the existing physical, chemical, and biological characteristics of each wetland or waterbody. Reference the wetland and waters delineation report if one is available. Include the list of items provided in the instructions.

Isthmus Slough: This area was not included in the NWI wetland resource. However, the Coastal Habitat tool showed the presence of native oyster habitat on the east bank of the slough. The upland vegetation and soils associated with the Isthmus Slough are consistent with those found at the South Slough. Soils within the slough consist of sand, mud, and tidal flats. The area adjacent to the project area is heavily disturbed; consisting of industrial lots located within the Port of Coos Bay.

South Slough: A wetland evaluation was completed for the South Slough project area and is included in Appendix B. To summarize, the work in the South Slough will be performed in an area designated as a NWI wetland. This wetland consists of sandy, tidal muds that are tidally influenced and frequently under water.

Fresh and tidal marsh plants in the general area of the South Slough can include baltic rush, fleshy jaumea, Lyngby's sedge, Pacific silverweed, pickleweed, salt grass, seaside arrowgrass, skunk cabbage, Slough sedge, salt-marsh bird's beak, western bog lily, and tufted hairgrass. However, within the Study Area very little vegetation exists beyond green algae (Enteromorpha and ulva), sparse patches of non-native Japanese eelgrass (Zostera japonica), and a small section of native eelgrass (Zostera marina).

At the South Slough Study Area, a small section of the project will occur in a vegetated area between Roosevelt Road and the edge of the slough. The soils consist of udorthents soils, which comprise moderately well-drained to excessively well-drained soils that have been disturbed by cutting or filling. This area is covered by buildings, gravel, lawn, and pavement. The soils within the slough itself, consist of sand, mud, and tidal flats.

Per *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al), 2013 Edition, the wetland

system is classified as E2USN; where E = Estuarine, 2 = Intertidal subsystem, US = Unconsolidated Shore, N = Regularly Flooded.)

The Hydrogeomorphic (HGM) classification for the South Slough is as a Tidal Fringe. Tidal fringe wetlands occur along coasts and estuaries and are under the influence of the sea level.

B. Describe the existing navigation, fishing and recreational use of the waterbody or wetland.

South Slough: The South Slough estuary surface area is approximately 2.11 square miles at maximum high water (MHW), making it Coos estuary's largest slough. Over 140 miles of freshwater streams flow into the estuary from the 19,600 acres of the South Slough watershed.

The South Slough Reserve encompasses a mixture of open water channels, tidal and freshwater wetlands, riparian areas, and forested uplands. The reserve supports and coordinates research, education, and stewardship programs that serve to enhance a scientific and public understanding of estuaries and contribute to improved estuarine management. The South Slough National Estuarine Research Reserve, of which South Slough is part, is an important habitat for salmon, great blue herons, bald eagles, migrating ducks, elk, sea otters, oysters, and crabs.

The unincorporated town of Charleston is situated at the mouth of South Slough and includes stores, restaurants, a motel, a marina, fishing processing plants, and a shipyard.

The South Slough is a major navigational channel serving Charleston and rural areas to the south. The primary access to the Charleston marina is located just to the north of the project area near the mouth of the South Slough.

There are numerous recreational opportunities available within the South Slough, including kayaking, fishing (from land or by boat), clamming, and bird-watching.

The South Slough National Estuarine Research Reserve is located within the South Slough and provides an abundance of educational and research opportunities for the area. This reserve is managed by the Oregon Department of State Lands and is protected for long-term research, water-quality monitoring, education, and coastal stewardship. The NOAA Office for Coastal Management provides funding, national guidance, and technical assistance.

The portion of the South Slough where the cathodic protection will be installed is adjacent to residential and commercial land uses. The materials excavated to install the new cathodic protection will be reused as backfill materials. No additional fill materials will be brought on site and no disposal of materials is planned. Since this project is located partially within the South Slough waterway, it is located within the 100 Year flood plain.

Located within the South Slough project boundary is a protected plant species *eelgrass*. Additionally, the *snowy plover* is listed as an endangered species and is known to be in the South Slough National Estuarine Research Reserve, though it is not known if this species is present within the South Slough project boundary.

Isthmus Slough: The Isthmus Slough consists of a dredged shipping channel. The main channel up to the Isthmus Slough is approximately 45 feet deep and 700 ft wide. The shoreline of Isthmus Slough, the second largest slough subsystem in the Coos estuary, is well developed. It includes the southernmost portion of the Coos estuary's commercial shipping channel. Coalbank Slough, Shinglehouse Slough, and Davis Slough are all tributary to Isthmus Slough which has a wetted surface area of 1.31 square miles at MHW. Isthmus Slough watershed covers 21,456 acres, which is 5.4% of the entire Coos watershed.

Historically, many of the marshes in Isthmus Slough were eliminated by diking, filling, and log storage. On the western bank of the lower Isthmus Slough, multiple boat terminals and a marina can be accessed off the main shipping channel. A recreational boat launch can be found on the eastern shore.

The portion of the Isthmus Slough where the cathodic protection will be installed is a heavily industrialized region. The materials excavated to install the new cathodic protection will be reused as backfill materials. No additional fill materials

will be brought on site and no disposal of materials is planned.

There are no known endangered species located within the Isthmus Slough project boundary. Since this project is located partially within the Isthmus Slough waterway, it is located within the 100 Year flood plain.

The Isthmus Slough is also a major navigational channel serving Coos Bay and the communities of Bunker Hill, Millington, and Southport to the south. The Isthmus Slough is accessed via the North Bend and Ferndale channels

As with the South Slough, there are numerous recreational opportunities available within the Isthmus Slough, including kayaking, fishing (from land or by boat), clamming, and bird-watching; however, the area in the immediate vicinity of the project activities is primarily for industrial uses.

(7) PROJECT SPECIFIC CRITERIA AND ALTERNATIVES ANALYSIS

Describe project-specific criteria necessary to achieve the project purpose. Describe alternative sites and project designs that were considered to avoid or minimize impacts to the water body or wetland.*

Alternative 1: No action
A no-action alternative was considered and determined to not be viable. The existing cathodic protection, which protected the existing water line from corrosion, has failed and is beyond the design life. Not replacing the cathodic protection system would cause the existing water line to corrode and eventually fail. The result would be the loss of water to the opposite side of the respective sloughs and the need to replace the water lines. Construction of new water lines across the respective sloughs would have a greater impact on cost and disturbance to the area.

Alternative 2: Relocate Cathodic Protection
Since the water lines that require cathodic protection were previously constructed within the South Slough and Isthmus Slough areas at their present locations, there are no alternative sites possible. Cathodic protection must be installed in proximity to the water line being protected. The plan to replace existing cathodic protection with in-kind systems, that are as close to existing systems as practical, is the simplest, least impactful design. The alternative would require installation of completely new water lines with associated cathodic protection, which would have considerably greater impact on cost and disturbance to the area.

(8) ADDITIONAL INFORMATION

Are there state or federally listed species on the project site?	☒ **Yes**	☐ **No**	☐ **Unknown**
Is the project site within designated or proposed critical habitat?	☐ **Yes**	☒ **No**	☐ **Unknown**
Is the project site within a national Wild and Scenic River ?	☐ **Yes**	☒ **No**	☐ **Unknown**
Is the project site within a State Scenic Waterway?	☐ **Yes**	☒ **No**	☐ **Unknown**
Is the project site within the 100-year floodplain?	☒ **Yes**	☐ **No**	☐ **Unknown**

If yes to any above, explain in Block 6 and describe measures to minimize adverse effects to those resources in Block 7.

Is the project site within the Territorial Sea Plan (TSP) Area?	☐ **Yes**	☒ **No**	☐ **Unknown**

If yes, attach TSP review as a separate document for DSL.

Is the project site within a designated Marine Reserve?	☐ **Yes**	☒ **No**	☐ **Unknown**

If yes, certain additional DSL restrictions will apply.

Will the overall project involve ground disturbance of one acre or more?	☐ **Yes**	☒ **No**	☐ **Unknown**

If yes, you may need a 1200-C permit from the Oregon Department of Environmental Quality (DEQ).

Is the fill or dredged material a carrier of contaminants from on-site or off-site spills?	☐ **Yes**	☒ **No**	☐ **Unknown**
Has the fill or dredged material been physically and/or chemically tested? **If yes, explain in Block 6 and provide references to any physical/chemical testing report(s).**	☐ **Yes**	☒ **No**	☐ **Unknown**
Has a cultural resource (archaeological and/or built environment) survey been performed on the project area?	☐ **Yes**	☒ **No**	☐ **Unknown**
Do you have any additional archaeological or built environment documentation, or correspondence from tribes or the State Historic Preservation Office? **If yes, provide a copy of the survey and/or documentation of correspondence with this application to the Corps only. Do not describe any resources in this document. Do not provide the survey or documentation to DSL.**	☐ **Yes**	☒ **No**	☐ **Unknown**

[*] Not required by the Corps for a complete application, but is necessary for individual permits before a permit decision can be rendered.

Is the project part of a DEQ Cleanup Site? No ☒ Yes☐ Permit number _____ DEQ contact.

Will the project result in new impervious surfaces or the redevelopment of existing surfaces? Yes ☐ No ☒

If yes, the applicant must submit a post-construction stormwater management plan as part of this application to DEQ's 401 WQC program for review and approval, see https://www.oregon.gov/deq/FilterDocs/401wqcertPostCon.pdf

Identify any other federal agency that is funding, authorizing or implementing the project.

Agency Name	Contact Name	Phone Number	Most Recent Date of Contact
N/A	N/A	N/A	N/A

List other certificates or approvals/denials required or received from other federal, state or local agencies for work described in this application.

Agency	Certificate / approval / denial description	Date Applied
N/A	N/A	N/A

Other DSL and/or Corps Actions Associated with this Site (Check all that apply.)

☐ Work proposed on or over lands owned by or leased from the Corps (may require authorization pursuant to 33 USC 408). These could include the federal navigation channel, structures, levees, real estate, dikes, dams, and other Corps projects.

State owned waterway — DSL Waterway Lease #:

Other Corps or DSL Permits — Corps # — DSL #

☐ Violation for Unauthorized Activity — Corps # — DSL #

☐ Wetland and Waters Delineation — Corps # — DSL #

Submit the entire delineation report to the Corps; submit only the concurrence letter (if complete) and approved maps to DSL. If not previously submitted to DSL, send under a separate cover letter

(9) IMPACTS, RESTORATION/REHABILITATION, AND COMPENSATORY MITIGATION

A. Describe unavoidable environmental impacts that are likely to result from the proposed project. Include permanent, temporary, direct, and indirect impacts.

Isthmus Slough: The work activities associated with trenching the Isthmus Slough will temporarily impact soils and native vegetation. The use of a barge for the installation of the system has the potential to set on areas of wetland vegetation below the water line during low tide. Soils will also be disturbed during trenching and backfill activities which will occur during low tide to reduce turbidity. The native oyster habitat found on the east bank will be protected during construction activities.

Work activities will be conducted entirely during low-tide events. Navigational and recreational activities in the area will not be impacted as the deeper channels will still be available for kayaking or boating activities.

South Slough: The work activities associated with trenching the South Slough will temporarily impact native vegetation, in particular eelgrass, that is found throughout the South Slough. Eelgrass beds will be identified prior to construction activities and avoided as possible. See Appendix E for a site evaluation of the eelgrass present in the project area and a plan for mitigation. Soils will also be disturbed during trenching activities and backfill activities which will occur during low tide to reduce turbidity issues.

Work activities will be conducted entirely during low-tide events. Navigational and recreational activities in the area will not be impacted as the deeper channels will still be available for kayaking or boating activities. A temporary disturbance of local clamming activities will occur during construction.

B. For temporary removal or fill or disturbance of vegetation in waterbodies, wetlands or riparian (i.e., streamside) areas, discuss how the site will be restored after construction to include the timeline for restoration.

Excavations, including into wetland areas, will be backfilled using the removed materials to the same extent and elevation as exists prior to start of construction. The disturbed sites will be returned to their prior conditions to the extent possible.

See Appendix E for an evaluation of *eelgrass* within the project area.

Compensatory Mitigation

C. Proposed mitigation approach. Check all that apply: No mitigation will be performed.

Permittee responsible	Permittee responsible	Mitigation Bank or	Payment In-Lieu
☐ Onsite Mitigation	☐ Offsite Mitigation	☐ In-Lieu Fee Program	☐ (Not approved for use with Corps permits)

C. Provide a brief description of proposed mitigation approach and the rationale for choosing that approach. If you believe mitigation should not be required, explain why.

☐
☐ No mitigation efforts are anticipated or planned. Vegetation on site is sparse as the excavation areas are typically under water; therefore, impacts will be minimal. Surface elevations of tidal flats mud will be restored to pre-construction levels at the completion of the above-described work scope.

Mitigation Bank / In-Lieu Fee Information:

Name of mitigation bank or in-lieu fee project: N/A

Type and amount of credits to be purchased: N/A

If you are proposing permittee-responsible mitigation, have you prepared a compensatory mitigation plan? NA

☐ Yes. Submit the plan with this application and complete the remainder of this section.

☐ No. A mitigation plan will need to be submitted (for DSL, this plan is required for a complete application).

Mitigation Location Information (Fill out only if permittee-responsible mitigation is proposed)

Mitigation Site Name/Legal Description	Mitigation Site Address	Tax Lot #
County	City	Latitude & Longitude (in DD.DDDD format)

Township	Range	Section	Quarter/Quarter

(10) ADJACENT PROPERTY OWNERS FOR PROJECT AND MITIGATION SITE		
☐ **Pre-printed mailing labels of adjacent property owners attached separately (if more than 30).**	**Project Site Adjacent Property Owners**	**Mitigation Site Adjacent Property Owners**
Contact Name **Address 1** **Address 2** **City, ST ZIP Code**	Timothy and Summer James (Parcel 5400) 63259 ROOSEVELT RD Coos Bay, OR 97420	N/A
Contact Name **Address 1** **Address 2** **City, ST ZIP Code**	Joseph Leberti, et al (Parcel 5201) 63229 ROOSEVELT RD Coos Bay, OR 97420	N/A
Contact Name **Address 1** **Address 2** **City, ST ZIP Code**		

(11) CITY/COUNTY PLANNING DEPARTMENT LAND USE AFFIDAVIT (TO BE COMPLETED BY LOCAL PLANNING OFFICIAL)

I have reviewed the project described in this application and have determined that:

- ☐ This project is not regulated by the comprehensive plan and land use regulations
- ☐ This project is consistent with the comprehensive plan and land use regulations
- ☐ This project is consistent with the comprehensive plan and land use regulations with the following:
  - ☐ Conditional Use Approval
  - ☐ Development Permit
  - ☐ Other Permit (explain in comment section below)
- ☐ This project is not currently consistent with the comprehensive plan and land use regulations. To be consistent requires:
  - ☐ Plan Amendment
  - ☐ Zone Change
  - ☐ Other Approval or Review (explain in comment section below)

An application or variance request ☐ has ☐ has not been filed for the approvals required above.

Local planning official name (print)	Title	City / County
Signature	Date	
Comments:		

(12) COASTAL ZONE CERTIFICATION

If the proposed activity described in your permit application is within the Oregon Coastal Zone, the following certification is required before your application can be processed. The signed statement will be forwarded to the Oregon Department of Land Conservation and Development (DLCD) for its concurrence or objection. For additional information on the Oregon Coastal Zone Management Program and consistency reviews of federally permitted projects, contact DLCD at 635 Capitol Street NE, Suite 150, Salem, Oregon 97301 or call 503-373-0050 or click here.

CERTIFICATION STATEMENT

I certify that, to the best of my knowledge and belief, the proposed activity described in this application complies with the approved Oregon Coastal Zone Management Program and will be completed in a manner consistent with the program.

Print /Type Applicant Name	Title
Matt Whitty	Engineering Manager
Applicant Signature	Date

(13) SIGNATURES

Application is hereby made for the activities described herein. I certify that I am familiar with the information contained in the application, and, to the best of my knowledge and belief, this information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities. By signing this application I consent to allow Corps or DSL staff to enter into the above-described property to inspect the project location and to determine compliance with an authorization, if granted. I hereby authorize the person identified in the authorized agent block below to act in my behalf as my agent in the processing of this application and to furnish supplemental information in support of this permit application. I understand that the granting of other permits by local, county, state or federal agencies does not release me from the requirement of obtaining the permits requested before commencing the project. I understand that payment of the required state processing fee does not guarantee permit issuance.

To be considered complete, the fee must accompany the application to DSL. The fee is not required for submittal of an application to the Corps.

Fee Amount Enclosed	$1,537 to be paid by the Water Board
Applicant Signature (required) must match the name in Block 2	
Print Name Matt Whitty	Title Engineering Manager
Signature	Date
Authorized Agent Signature	
Print Name Angela Mosieur	Title Engineer
Signature	Date

Landowner Signature(s)*	
Landowner of the Project Site (if different from applicant)	
Print Name	Title
Signature	Date
Landowner of the Mitigation Site (if different from applicant)	
Print Name	Title
Signature	Date
Department of State Lands, Property Manager (to be completed by DSL)	
If the project is located on state-owned submerged and submersible lands, DSL staff will obtain a signature from the Land Management Division of DSL. A signature by DSL for activities proposed on state-owned submerged/submersible lands only grants the applicant consent to apply for a removal-fill permit. A signature for activities on state-owned submerged and submersible lands grants no other authority, express or implied and a separate proprietary authorization may be required.	
Print Name	Title
Signature	Date

* Not required by the Corps.

(14) ATTACHMENTS

- ☒ Drawings
  - ☒ Location map with roads identified
  - ☒ U.S.G.S topographic map
  - ☒ Tax lot map
  - ☒ Site plan(s)
  - ☒ Plan view and cross section drawing(s)
  - ☒ Recent aerial photo
  - ☐ Project photos
  - ☐ Erosion and Pollution Control Plan(s), if applicable
  - ☐ DSL / Corps Wetland Concurrence letter and map, if approved and applicable
- ☐ Pre-printed labels for adjacent property owners (Required if more than 30)
- ☐ Incumbency Certificate if applicant is a partnership or corporation
- ☒ Restoration plan or rehabilitation plan for temporary impacts
- ☐ Mitigation plan
- ☐ Wetland functional assessments, if applicable
  - ☐ Cover Page
  - ☐ Score Sheets
  - ☐ ORWAP OR, F, T, & S forms ORWAP Reports
  - ☐ Assessment Maps
  - ☐ ORWAP Reports: Soils, Topo, Assessment area, Contributing area
- ☐ Stream Functional Assessments, if applicable
  - ☐ Cover Page
  - ☐ Score Sheets
  - ☐ SFAM PA, PAA, & EAA forms SFAM Report
  - ☐ Assessment Maps
    - ☐ Aerial Photo Site Map and Topo Site Map (Both maps should document the PA, PAA, & EAA)
  - ☐ Compensatory Mitigation (CM) Eligibility & Accounting Worksheet
  - ☐ Matching Quickguide sheet(s)
  - ☐ CM Eligibility & Accounting sheet
- ☐ Alternatives analysis
- ☐ Biological assessment (if requested by the Corps project manager during pre-application coordination)
- ☐ Stormwater management plan (may be required by the Corps or DEQ)
- ☐ Other
  - ☐ Please describe:

For U.S. Army Corps of Engineers send application to:

USACE Portland District
ATTN: CENWP-ODG-P
PO Box 2946
Portland, OR 97208-2946
Phone: 503-808-4373
portlandpermits@usace.army.mil

Counties:
Baker, Benton, Clackamas, Clatsop, Columbia, Gilliam, Grant, Hood River, Jefferson, Lincoln, Linn, Malheur, Marion, Morrow, Multnomah, Polk, Sherman, Tillamook, Umatilla, Union, Wallowa, Wasco, Washington, Wheeler, Yamhill

U.S. Army Corps of Engineers
ATTN: CENWP-ODG-E
211 E. 7th AVE, Suite 105
Eugene, OR 97401-2722
Phone: 541-465-6868
portlandpermits@usace.army.mil

Counties:
Coos, Crook, Curry, Deschutes, Douglas, Jackson, Josephine, Harney, Klamath, Lake, Lane

For Department of State Lands send application to:

West of the Cascades:
Department of State Lands
775 Summer Street NE, Ste 100
Salem, OR 97301-1279
Phone: 503-986-5200
https://www.oregon.gov/dsl/WW/Documents/uploadinstructions_removalfill.pdf

East of the Cascades:
Department of State Lands
951 SW Simpson Ave, Ste 104
Bend, OR 97702
Phone: 541-388-6112
https://www.oregon.gov/dsl/WW/Documents/uploadinstructions_removalfill.pdf

For Department of Environmental Quality:

Submit all application materials electronically through *Your DEQ Online*.

For questions related to *Your DEQ Online*, please visit the *Your DEQ Online* help page, email YourDEQOnline@deq.state.or.us, or call 503-229-6184

APPENDICES

Appendix A: **30% Design Plans**

Appendix B: **Wetland Memo**

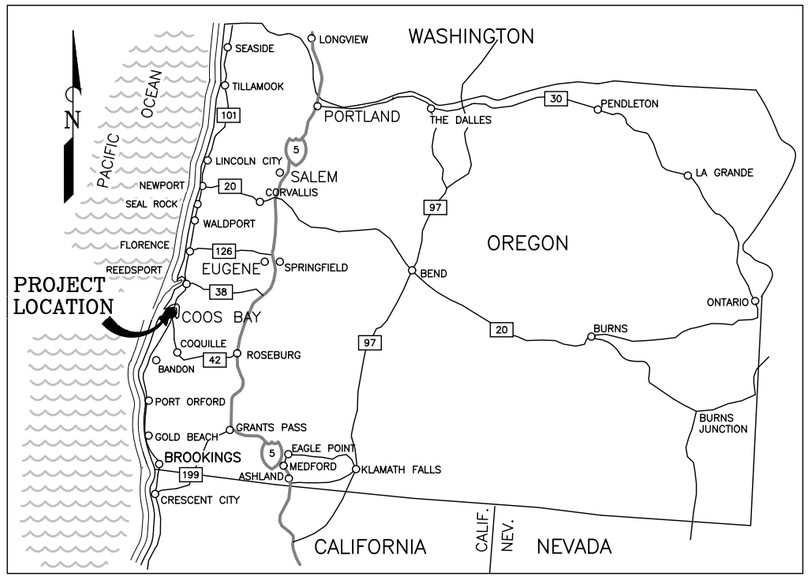
Appendix C: **Project Photos**

Appendix D: **Equipment mats**

Appendix E: **Eelgrass Memo**

APPENDIX A: 30% DESIGN PLANS

CATHODIC PROTECTION GROUNDBED INSTALLATION ISTHMUS SLOUGH & SOUTH SLOUGH



LOCATION MAP

0 20 40 60
SCALE IN MILES

COOS BAY - NORTH BEND WATER BOARD
COOS COUNTY, OREGON

PROJECT NO. 110.27

JULY, 2023

ENGINEER:

THE DYER PARTNERSHIP
ENGINEERS & PLANNERS, INC.
1330 Teakwood Avenue / Coos Bay, Oregon 97420
(541) 269-0732 / WWW.DYERPART.COM

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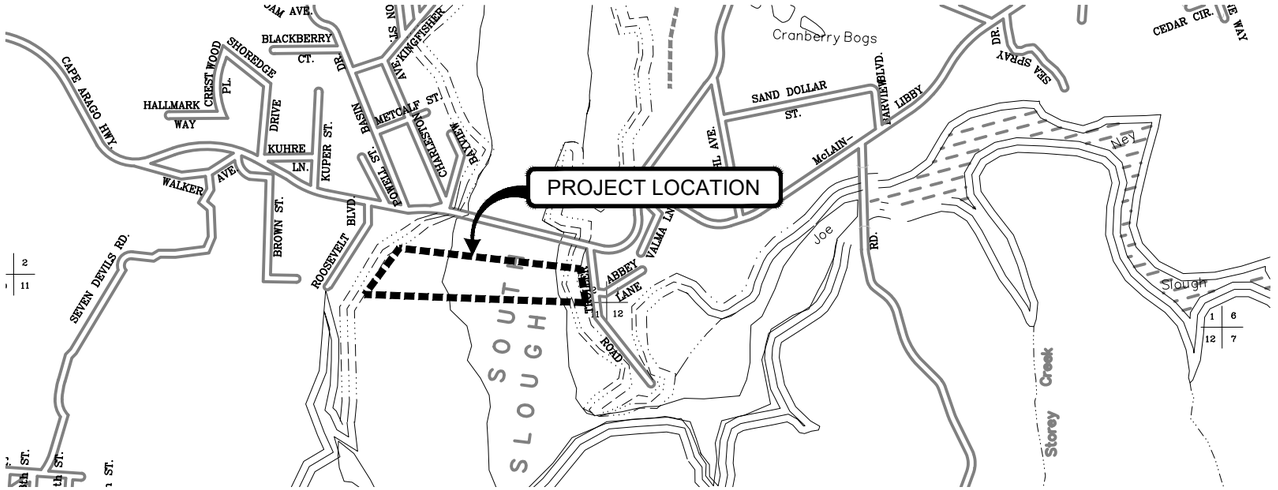
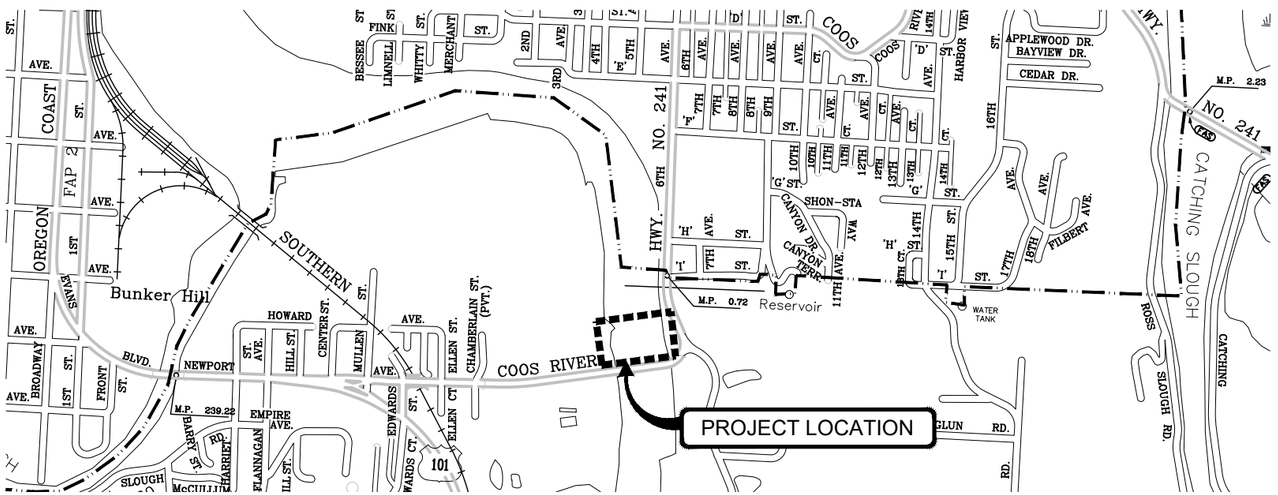


VICINITY MAP - SOUTH SLOUGH

NOT TO SCALE

N



VICINITY MAP - ISTHMUS SLOUGH

NOT TO SCALE

N

PRELIMINARY – NOT FOR CONSTRUCTION

DRAWING INDEX

DESIGNED:	DRAWN:
ABM	RAD

APPROVED BY: _____ DATE: _____

REVISIONS

REVISED	DESCRIPTION	SUBMIT.	APPR'D.	DATE

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GENERAL
VICINITY MAP & INDEX TO DRAWINGS

PROJECT NO.	DRAWING NO.
110.27	G1
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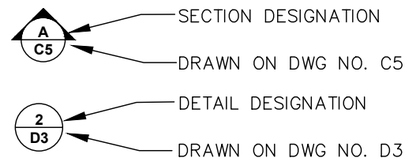
ABBREVIATIONS

A	AIR
AB	ANCHOR BOLT
AC	ASPHALTIC CONCRETE
ADPTR	ADAPTER
AGG	AGGREGATE
AL	ALUMINUM
APPROX	APPROXIMATE
ARV	AIR RELEASE VALVE
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
BKFL	BACKFILL
BLDG	BUILDING
BM	BENCH MARK
C	CONDUIT
CARV	COMBINATION AIR RELEASE VALVE
CB	CATCH BASIN
CI	CAST IRON
CMP	CORRUGATED METAL PIPE
CNTRL	CONTROL
CO	CLEAN OUT
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CORP	CORPORATION
CP	CONTROL POINT
CPLG	COUPLING
CTR	CENTER
CUL	CULVERT
D	DRAIN
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DWG	DRAWING
EA	EACH
EFF	EFFLUENT
EL/ELEV	ELEVATION
ELB	ELBOW
E/ELEC	ELECTRICAL
EOP	EDGE OF PAVEMENT
EW	EACH WAY
EXIST'G	EXISTING
EXT	EXTERIOR
FCA	FLANGE COUPLING ADAPTER
FD	FLOOR DRAIN
FE	FLOW ELEMENT
FF/FIN FLR	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FL	FLOWLINE
FLG	FLANGED
FM	FORCE MAIN
FO	FIBER OPTIC
FOC	FACE OF CURB
FT	FEET
FTG	FOOTING
GALV	GALVANIZED
GIP	GALVANIZED IRON PIPE
GND	GROUND (ELEC)
GPD,H,M	GALLONS PER DAY, HOUR, MINUTE
GV	GATE VALVE
HB	HOSE BIB
HDPE	HIGH DENSITY POLYETHYLENE
HMWPE	HIGH MOLECULAR WEIGHT POLYETHYLENE
HORIZ	HORIZONTAL
HP	HORSE POWER
HPT	HIGH POINT
HT	HEIGHT
IE	INVERT ELEVATION
INT	INTERIOR
INV	INVERT
JB	JUNCTION BOX
LAT	LATERAL
L	LENGTH
LF	LINEAR FEET
LPT	LOWPOINT
LT	LEFT
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MSTR	MASTER
NTS	NOT TO SCALE
NIC	NOT IN CONTRACT
NO	NUMBER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OVERFLOW
P	PHASE (ELEC)/PUMP
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE
PE	PLAIN END
PERF	PERFORATED
PI	POWER INPUT
PL	PLATE
PV	PLUG VALVE
PM	PRESSURE MAIN
POC	POINT ON CURVE
P/P	POWER POLE/UTILITY POLE
PRESS.	PRESSURE
P/S	PUMPING STATION
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PTDF	PRESSURE TREATED DOUG. FIR
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
R	RADIUS
RDCR	REDUCER
REINF	REINFORCING
REQ'D	REQUIRED
ROW	RIGHT OF WAY
RT	RIGHT
SCH	SCHEDULE
SD	STORM DRAIN
SEC	SECTION
SPEC	SPECIFICATIONS
SQ	SQUARE
SS	SANITARY SEWER
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL
SUBM	SUBMERSION
SOG	SLAB-ON-GRADE
SVC	SERVICE
T	TELEPHONE
TBC	TOP BACK CURB
TCPLG	TRANSITION COUPLING
TOB	TOP OF BANK
TOE	TOE OF BANK
TOF	TOP OF FOOTING
TOW	TOP OF WALL
THD	THREADED
THWN	THERMOPLASTIC WATER-RESISTANT NYLON-COATED
TRANS	TRANSITION
TYP	TYPICAL
VLV	VALVE
VAR	VARIES
W	WATER LINE
W/	WITH
W/O	WITHOUT
YD	YARD
(W)	WEST
(E)	EAST
(N)	NORTH
(S)	SOUTH
ø	DIAMETER

GENERAL NOTES

1. VERTICAL DATUM BASED ON ORGN NETWORK SYSTEM USING THE 1988 NAVD.
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES, AS SHOWN ON THESE PLANS, IS BASED ON FIELD LOCATES AND RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE MEASUREMENTS IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CONTACT "ONE-CALL" AT 1-800-332-2344 FOR UTILITY LOCATES AT LEAST 48 HOURS BEFORE ANY EXCAVATION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL VERIFY PERTINENT LOCATIONS AND ELEVATIONS ESPECIALLY AT CONNECTIONS AND AT POTENTIAL UTILITY CONFLICTS.
3. THE LOCAL OVERHEAD ELECTRIC DISTRIBUTION SYSTEMS AND INDIVIDUAL SERVICE LINES ARE NOT SPECIFICALLY INDICATED ON THE DRAWINGS BUT DO EXIST ALONG THE INTENDED ROUTE OF NEW CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE CAUTION WHILE WORKING NEAR, OR UNDER, ALL ELECTRIC LINES.

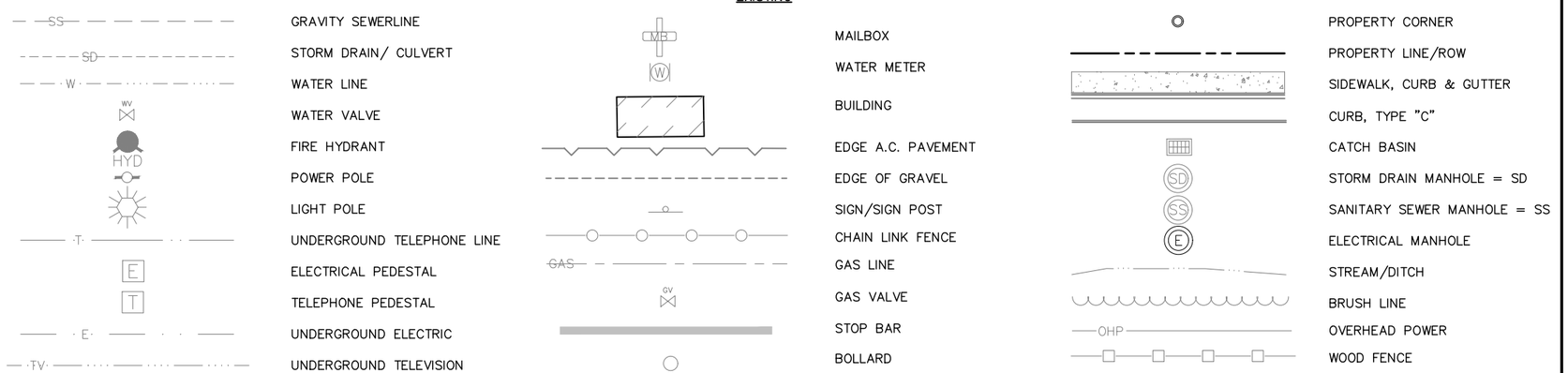
REFERENCE SYMBOLS



UNDERGROUND SERVICE ALERT
ONE-CALL NUMBER
1-800-332-2344
CALL TWO BUSINESS DAYS BEFORE YOU DIG

LEGEND

EXISTING



NEW

REFER TO PLANS FOR NEW IMPROVEMENTS

PRELIMINARY - NOT FOR CONSTRUCTION

DESIGNED:	DRAWN:
ABM	RAD

APPROVED BY: _____ DATE: _____

REVISIONS

REVISED	DESCRIPTION	SUBMIT.	APPR'D.	DATE

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COOS BAY - NORTH BEND WATER BOARD

GENERAL
ABBREVIATIONS, GENERAL NOTES & LEGEND

PROJECT NO.	DRAWING NO.
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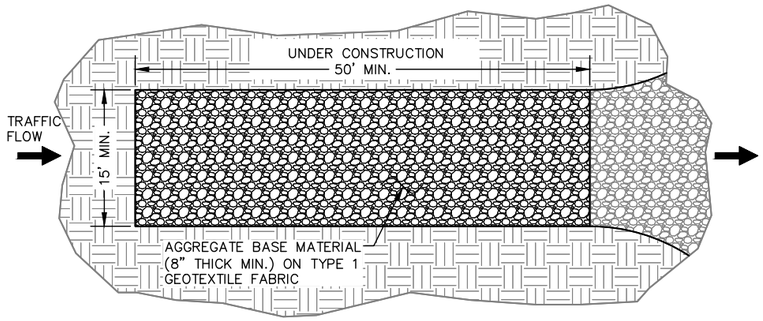
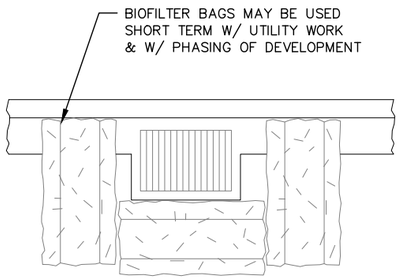
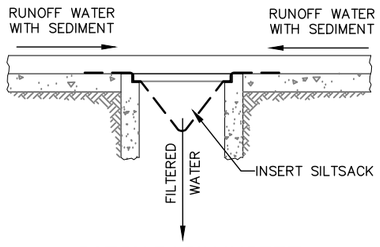


PLAN VIEW - VEHICLE TRACKING CONTROL PAD (1 / C1)

NOT TO SCALE

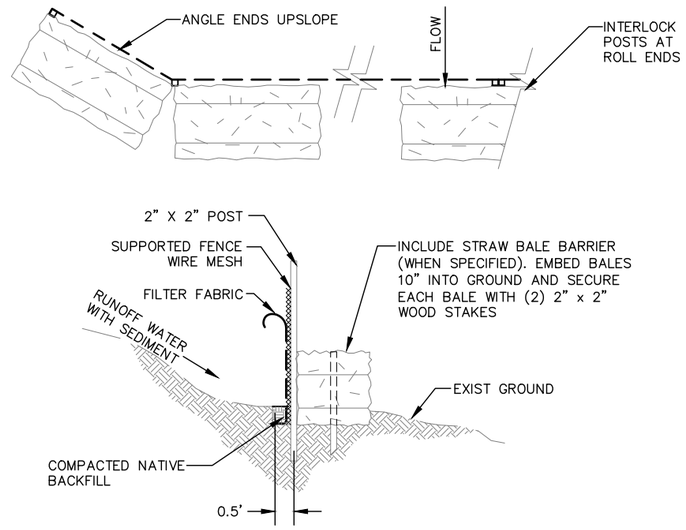


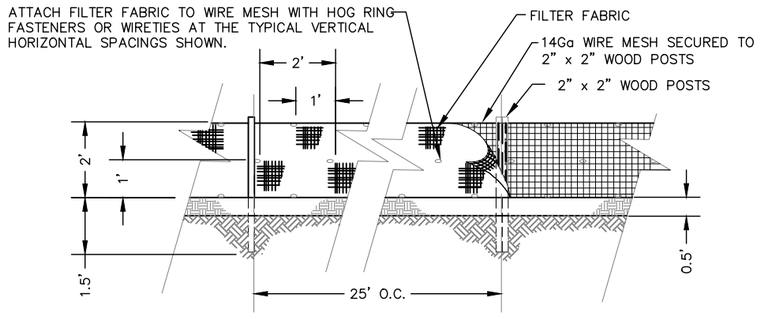


CATCH BASIN INSERT

INLET PROTECTION DETAIL (2 / C1)

NOT TO SCALE





FIELD FABRICATED SILT FENCE DETAIL (3 / C1)

NOT TO SCALE

GENERAL NOTES

1. THE IMPLEMENTATION OF THESE EROSION CONTROL PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT AND UPGRADING OF THESE FACILITIES ARE THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED.
2. THE EROSION CONTROL FACILITIES SHOWN ON THE PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS DURING THE CONSTRUCTION PERIOD. THESE FACILITIES SHALL BE UPGRADED AS NEEDED FOR THE UNEXPECTED STORM EVENTS AND TO INSURE THAT SEDIMENT AND SEDIMENTATION–LADEN WATER DOES NOT LEAVE THE PROJECT.
3. CONTRACTOR SHALL USE VEHICLE TRACKING CONTROL AT ALL DRIVEWAYS WHERE VEHICLES WILL ENTER OR EXIT ACROSS THE CONSTRUCTION AREAS OVER DISTURBED GROUND (I.E. EXPOSED SEDIMENT AND SOILS). CONTROL FACILITIES WILL BE MAINTAINED WHILE CONSTRUCTION IS IN PROGRESS, MOVED WHEN NECESSARY AND REMOVED WHEN THE ROADWAY IS PAVED.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING DRAINAGE AND EROSION CONTROL FACILITIES AS REQUIRED. AND ADJACENT STREETS SHALL BE KEPT CLEAN OF DEBRIS FROM TRAFFIC LEAVING THE SITE.
5. EROSION CONTROL STRUCTURES BELOW SODDEN AREAS MAY BE REMOVED ONCE SOD AND FINAL LANDSCAPING IS IN PLACE. EROSION CONTROL STRUCTURES BELOW SEEDED AREAS MUST REMAIN IN PLACE UNTIL THE ENTIRE AREA HAS ESTABLISHED A MATURE COVERING OF HEALTHY VEGETATION. PROPOSED PAVED AREAS SHALL REMAIN IN PLACE UNTIL PAVEMENT IS COMPLETE.
6. INLET PROTECTION DEVICES SHALL BE INSTALLED IMMEDIATELY UPON INDIVIDUAL INLETS BECOMING FUNCTIONAL.
7. ALL WASH WATER (CONCRETE TRUCKS, VEHICLE CLEANING, ETC.) SHALL BE DISPOSED OF IN A MANNER THAT PREVENTS CONTACT WITH STORM WATER DISCHARGE FROM THE SITE.
8. MAINTAIN ON THE SITE OR HAVE READILY AVAILABLE SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOATATION BOOMS TO CONTAIN AND CLEANUP FUEL OR CHEMICAL SPILLS AND LEAKS.
9. FUGITIVE DUST BLOWING FROM THE SITE SHALL BE CONTROLLED BY SPRAYING WATER AND DUST CONTROL POLYMERS, AS NEEDED, ON DRY AREAS OF THE SITE. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION OPERATIONS IS ABSOLUTELY PROHIBITED.
10. NO RUBBISH, TRASH, GARBAGE OR OTHER SUCH MATERIALS SHALL BE DISCHARGED INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
11. IF THE VEHICLE TRACKING CONTROL AREAS ARE NOT EFFECTIVE IN REMOVING THE MAJORITY OF DIRT OR MUD FROM THE TIRES OF THE CONSTRUCTION VEHICLES, THEN THE TIRES MUST BE WASHED BEFORE THE VEHICLES ENTER A PUBLIC ROAD, IF WASHING IS USED, PROVISIONS MUST BE MADE TO INTERCEPT THE WASH WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE,
12. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS MUST BE REMOVED IMMEDIATELY.
13. IF SOIL STOCKPILING IS EMPLOYED ON THE SITE, FILTER FENCES SHALL BE USED TO HELP CONTAIN THE SEDIMENT. SUCH FILTER FENCES SHALL BE CONSIDERED TO BE THE CONTRACTORS RESPONSIBILITY AND NOT INCLUDED IN THE QUANTITY OF FILTER FENCE AS SHOWN OR DESCRIBED IN THIS PLAN.
14. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE DISPOSED OF WITHIN 30 DAYS AFTER FINAL STABILIZATION. FINAL STABILIZATION HAS OCCURRED WHEN ALL SOIL DISTURBING ACTIVITIES ARE COMPLETED AND A UNIFORM PERENNIAL VEGETATIVE COVER WITH A DENSITY OF 70% OF THE COVER FOR UNPAVED AREAS AND AREAS NOT COVERED BY PERMANENT STRUCTURES HAS BEEN EMPLOYED.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADJUSTING THE EROSION CONTROL MEASURES (SILT FENCES, STRAW BALES, ETC.) DUE TO GRADE CHANGES DURING THE DEVELOPMENT OF THE PROJECT.
16. ALL MEASURES CONTAINED IN THIS PLAN SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL FINAL STABILIZATION OF THE SITE. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE CHECKED BY A QUALIFIED PERSON AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A RAINFALL EVENT, AND SHOULD BE CLEANED AND REPAIRED IN ACCORDANCE WITH THE FOLLOWING.
    A. INLET PROTECTION DEVICES AND BARRIERS SHALL BE FIXED OR REPLACED IF THEY SHOW SIGNS OF CLOGGING, OR SHALL BE REPLACED IF THEY SHOW SIGNS OF DETERIORATION.
    B. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND IS MAINTAINED. AREAS SHOULD BE FERTILIZED, RESEEDED, AND WATERED AS NEEDED.
    C. FILTER FENCES SHALL BE REPAIRED TO THEIR ORIGINAL CONDITIONS IF DAMAGED. SEDIMENT SHALL BE REMOVED FROM THE SILT FENCES WHEN IT REACHES ONE–THIRD TO ONE–HALF THE HEIGHT OF THE SILT FENCE.
    D. THE CONSTRUCTION ENTRANCES SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC REPLACING OR TOP DRESSING OF THE CONSTRUCTION ENTRANCES WITH CLEAN ROCK, AS CONDITIONS DEMAND.
    E. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE TOP DRESSING OF THE TEMPORARY PARKING AREA AS CONDITIONS DEMAND.
    F. OUTLET STRUCTURES IN THE SEDIMENTATION BASINS SHALL BE MAINTAINED IN OPERATIONAL CONDITIONS AT ALL TIMES, SEDIMENT IN THE SEDIMENTATION BASINS SHALL NOT EXCEED THE SEDIMENTATION CLEANOUT LEVEL.
    G. SUB–GRADE GRAVEL BARRIERS SHALL BE INSTALLED BETWEEN DISTURBED AREAS AND NEW CURBS. GRAVEL BARRIERS SHALL BE INSTALLED AS PART OF FOOTINGS, FOUNDATIONS, DRIVEWAYS, ETC. SUB–GRADE GRAVEL BARRIERS SHALL HAVE A MINIMUM WIDTH OF 4 FEET AND A MINIMUM DEPTH OF 4 INCHES.
17. CONTRACTOR TO SUBMIT TRAFFIC CONTROL PLAN AND EROSION CONTROL PLAN.

DESIGNED: ABM | **DRAWN:** RAD | **APPROVED BY:** _____ DATE: _____

REVISIONS

REVISED	DESCRIPTION	SUBMIT.	APPR'D.	DATE

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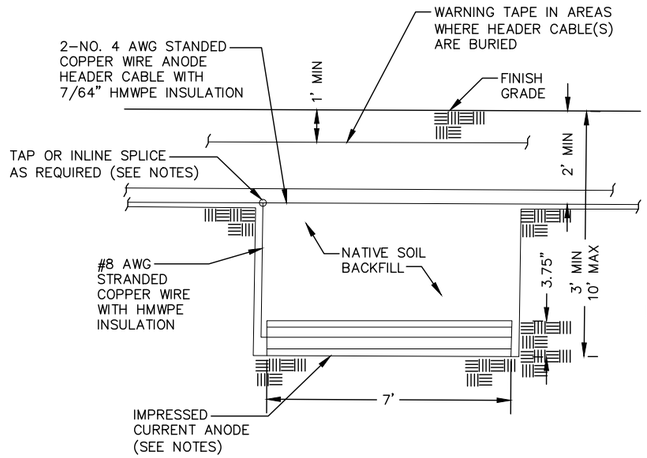
COOS BAY - NORTH BEND WATER BOARD

CIVIL
EROSION CONTROL DETAILS & NOTES

PROJECT NO.	DRAWING NO.
110.27	C1
DATE	SHEET NO.
JULY 2023	3 OF ##

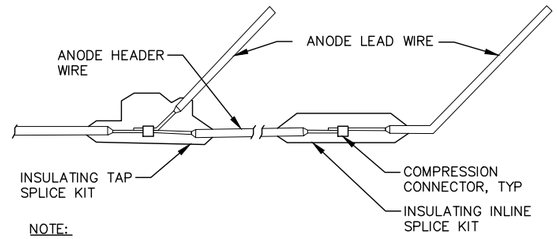
CITY OF COOS BAY PROJECT # 225270



HORIZONTAL ANODE INSTALLATION — 1/C2
NTS

NOTES:

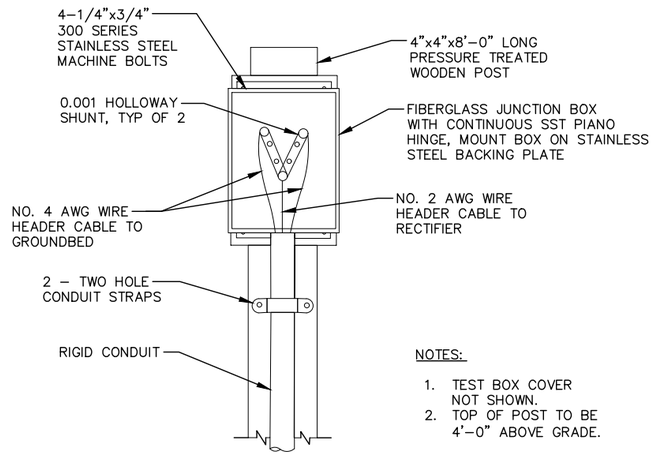
1. SOUTH SLOUGH – 15 ANODES REQUIRED (BURIED IN MUD FLATS)
2. ISTHMUS SLOUGH – 10 ANODES REQUIRED (LOWERED INTO MUD LINE)
3. ALTERNATE CONNECTION OF ANODES TO HEADER CABLE
4. INSTALL ANODES 10' (CENTER TO CENTER) APART



NOTE:

1. EPOXY SPLICE KITS SHALL BE CURED A MINIMUM OF 1 HOUR BEFORE BURIAL OR SUBMERSION.

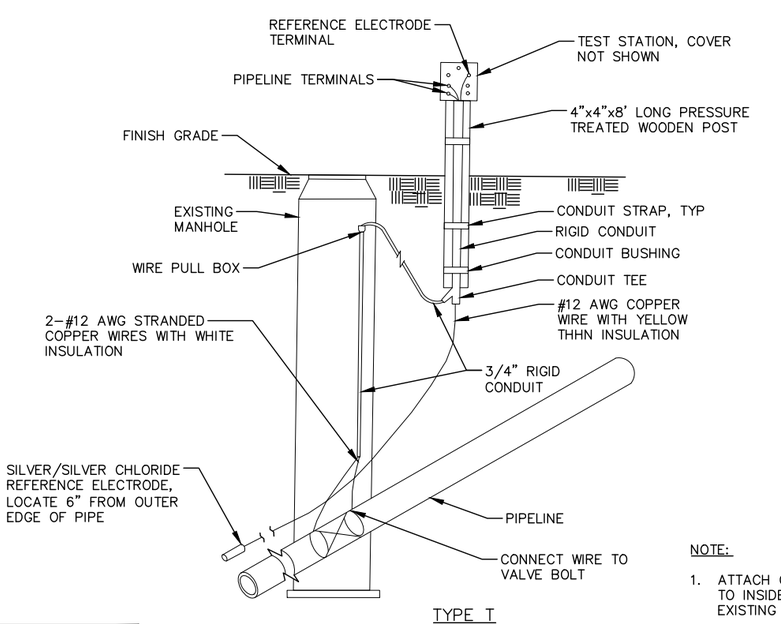
IMPRESSED CURRENT ANODE WIRE SPLICE — 2/C2
NTS



NOTES:

1. TEST BOX COVER NOT SHOWN.
2. TOP OF POST TO BE 4'–0" ABOVE GRADE.

POST MOUNTED ANODE JUNCTION BOX — 3/C2
NTS

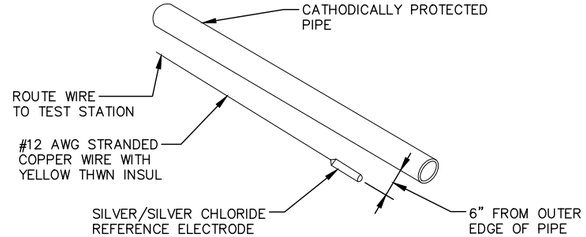


TYPE T

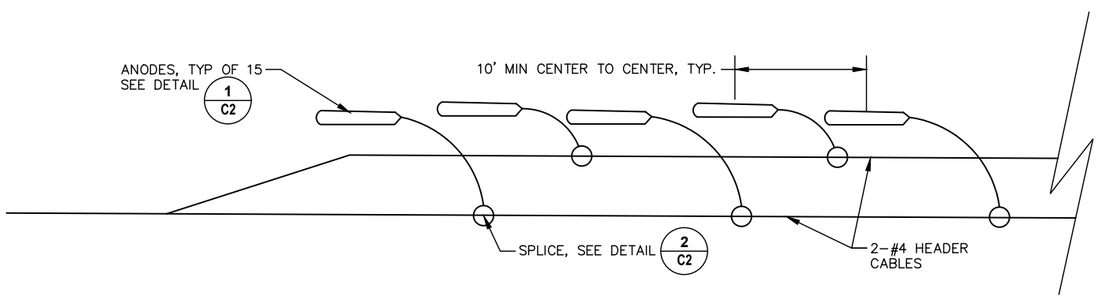
NOTE:

1. ATTACH CONDUIT TO INSIDE WALL OF EXISTING MAN HOLE

POST MOUNTED TEST STATION — 4/C2
NTS



REFERENCE ANODE INSTALLATION — 5/C2
NTS



ANODE SPACING INSTALLATION — 6/C2
NTS

PRELIMINARY – NOT FOR CONSTRUCTION

DESIGNED:	DRAWN:
ABM	RAD

APPROVED BY: _____ DATE: _____

REVISIONS

REVISED	DESCRIPTION	SUBMIT.	APPR'D.	DATE

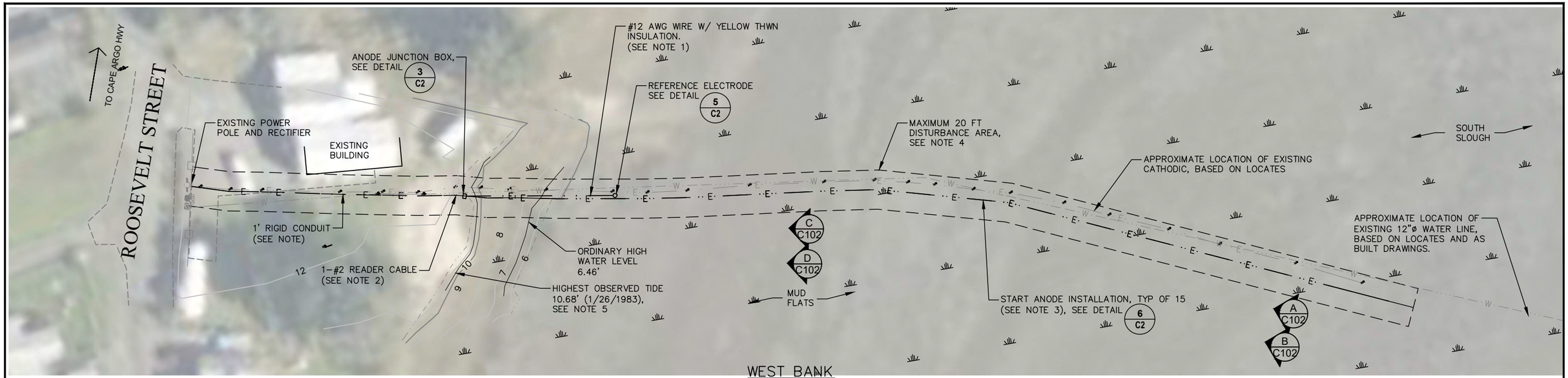
THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.
1330 TEAKWOOD AVENUE
COOS BAY, OREGON 97420
TELEPHONE: (541) 269–0732
www.dyerpart.com

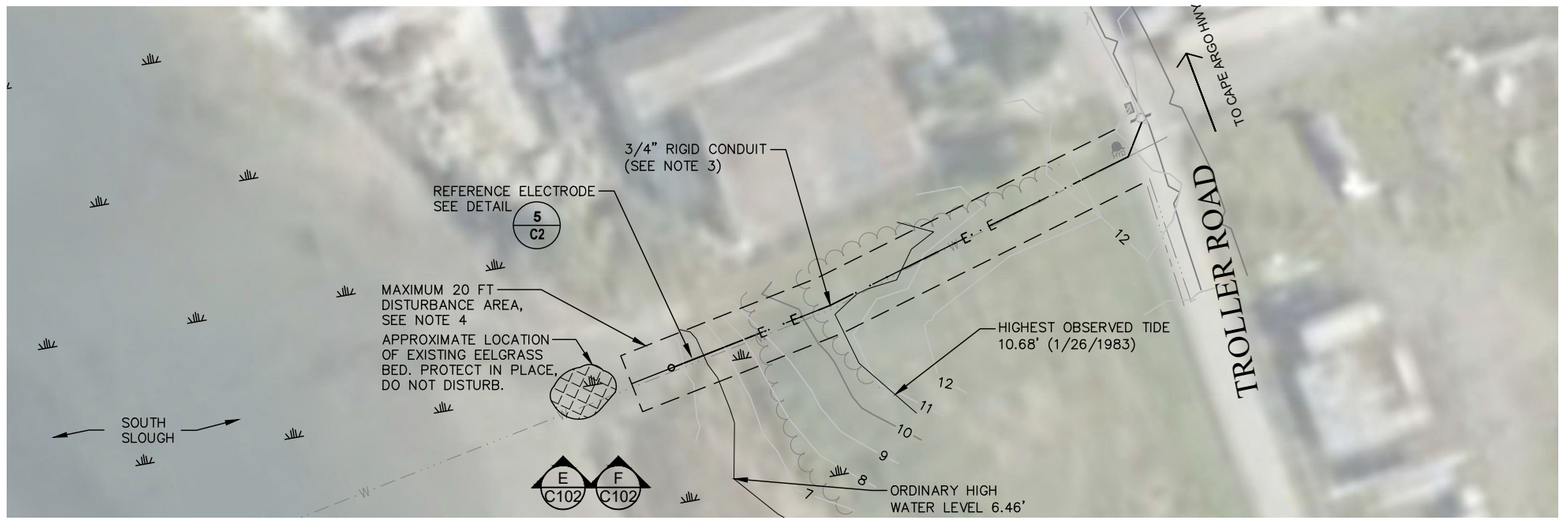
LINE IS 1 INCH AT FULL SCALE
IF NOT 1-INCH - SCALE ACCORDINGLY

CATHODIC PROTECTION-30% PERMIT PLANS
COOS BAY - NORTH BEND WATER BOARD

CIVIL
STANDARD DETAILS

PROJECT NO.	DRAWING NO.
110.27	C2
DATE	SHEET NO.
JULY 2023	4 OF 7





LEGEND

WETLAND

A/C102 PHOTO REFERENCE AND DIRECTION

PLAN SCALE

25 0 25 50

SOUTH SLOUGH GROUNDBED INSTALLATION 1/C100

NOTES:

1. REFERENCE LEAD TO BE TERMINATED INSIDE RECTIFIER BOX.
2. ANODE HEADER CABLE TO BE CONNECTED TO ANODE TERMINAL INSIDE EXISTING JUNCTION BOX.
3. INSTALL RIGID CONDUIT WITHIN THE WATER BOARD 20' EASEMENT.
4. MAXIMUM DISTURBANCE AREA SHOWN INCLUDES TRENCHING, SIDECAST OF MATERIALS AND EQUIPMENT ACCESS.
5. WETLAND BOUNDARY WAS DETERMINED TO BE FROM THE HIGHEST MEASURED TIDE ON THE WEST BANK TO THE HIGHEST MEASURE TIDE OF THE EAST BANK OF THE SOUTH SLOUGH.

PRELIMINARY – NOT FOR CONSTRUCTION

DESIGNED:	DRAWN:
ABM	RAD

APPROVED BY: _____ DATE: _____

REVISIONS

REVISED	DESCRIPTION	SUBMIT.	APPR'D.	DATE

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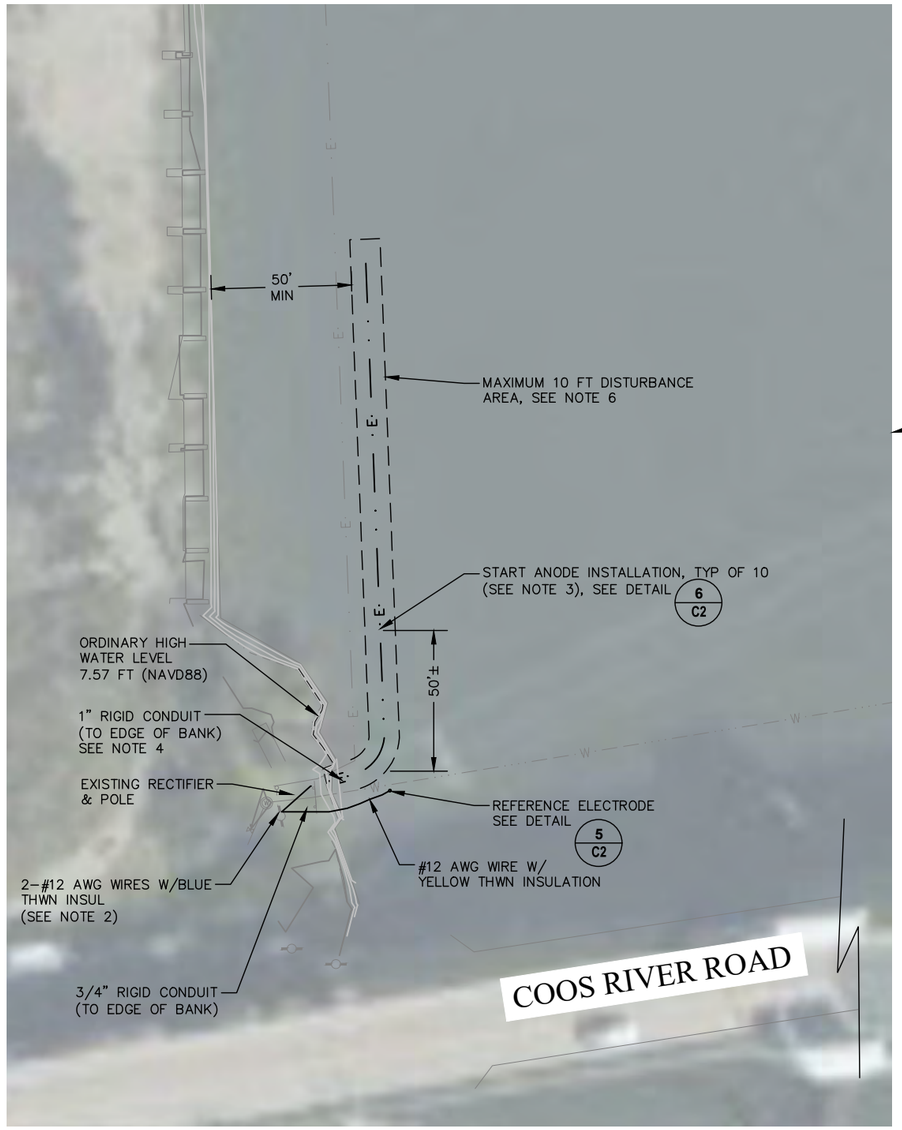
CATHODIC PROTECTION-30% PERMIT PLANS
COOS BAY - NORTH BEND WATER BOARD

CIVIL
SOUTH SLOUGH CATHODIC PROTECTION INSTALLATION

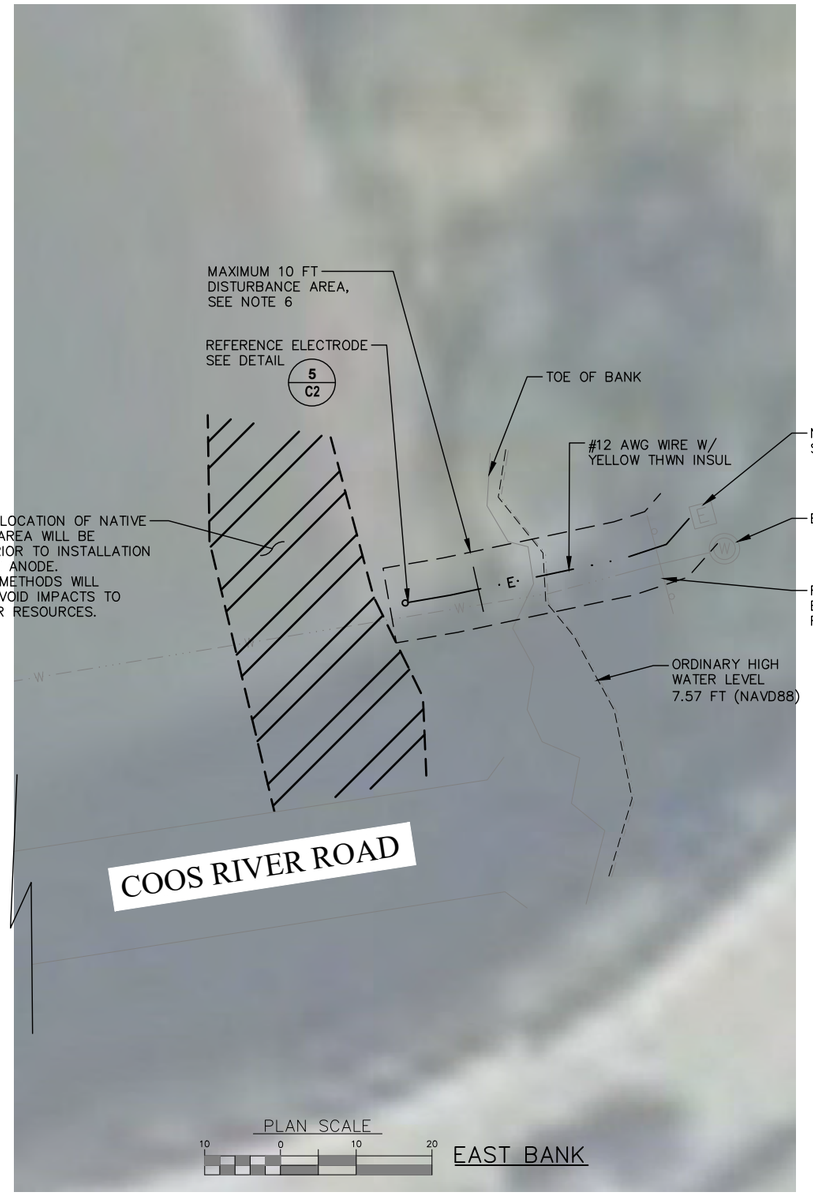
PROJECT NO.	DRAWING NO.
110.27	C100
DATE	SHEET NO.
JULY 2023	5 OF 7



PLAN SCALE
25 0 25 50

WEST BANK

ISTHMUS SLOUGH



PLAN SCALE
10 0 10 20

EAST BANK

ISTHMUS SLOUGH GROUNDBED INSTALLATION 1/C101

N

NOTES:

1. CONNECT TEST LEADS TO VALVE BOLTS, COAT AND ROUTE TO NEW TEST STATION.
2. CONNECT TEST LEADS TO METER BOLTS AND ROUTE TO EXISTING TEST STATION.
3. LOWER ANODES AND HEADER CABLES AND REFERENCE HEADER INTO MUD LINE.
4. INSTALL RIGID CONDUIT WITHIN THE WATER BOARDS 20' EASEMENT
5. ANODE HEADER CABLE TO BE CONNECTED TO THE (+) TERMINAL OF RECTIFIER
6. MAXIMUM DISTURBANCE AREA SHOWN INCLUDES TRENCHING, SIDECAST OF MATERIALS AND EQUIPMENT ACCESS.

PRELIMINARY - NOT FOR CONSTRUCTION

DESIGNED: ABM
DRAWN: RAD
APPROVED BY: _____ DATE: _____

REVISIONS

REVISED	DESCRIPTION	SUBMIT.	APPR'D.	DATE

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CATHODIC PROTECTION-30% PERMIT PLANS
COOS BAY - NORTH BEND WATER BOARD

CIVIL
ISTHMUS SLOUGH CATHODIC PROTECTION INSTALLATION

PROJECT NO.	DRAWING NO.
110.27	C101
DATE	SHEET NO.
JULY 2023	6 OF 7

A
C102

B
C102

C
C102

D
C102

E
C102

F
C102

PRELIMINARY – NOT FOR CONSTRUCTION

DESIGNED: ABM

DRAWN: RAD

APPROVED BY: _____ **DATE:** _____

REVISIONS

REVISED	DESCRIPTION	SUBMIT.	APPR'D.	DATE

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CATHODIC PROTECTION-30% PERMIT PLANS
COOS BAY - NORTH BEND WATER BOARD

CIVIL
SITE PHOTOS

PROJECT NO.	DRAWING NO.
110.27	C102
DATE	**SHEET NO.**
JULY 2023	7 OF 7

APPENDIX B: WETLAND MEMO

THE DYER PARTNERSHIP
ENGINEERS & PLANNERS, INC.

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Coos Bay, Oregon 97420
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Fx: (541) 269-2044
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M E M O R A N D U M

DATE	July 11, 2023
TO	Lauren Stebbens, Oregon Department of State Lands Tyler Krug, US Army Corps of Engineers
FROM	Tina M. Blakley, PE
PROJECT NAME	CB-NB Water Board Wetland Evaluation Results for South Slough Cathodic Protection Installation
PROJECT NO.	110.27

Introduction

This wetland evaluation has been prepared for the Coos Bay-North Bend (CB-NB) Water Board in relation to identification of potential wetland conditions that may be encountered during installation of cathodic protection on existing water lines located within and adjacent to public water ways of the South Slough, located in Coos County, Oregon.

The CB-NB Water Board has an existing cathodic protection system for a buried water transmission line, which crosses the South Slough. This system was installed in approximately 1994, and has exceeded its intended design life and was discovered to have failed during a routine test. Figure 1 shows the location of South Slough Study Area; which has an East side and West side component.

This evaluation and report are based on US Army Corps of Engineers (USACE) and Oregon Department of State Lands (DSL) standards for wetland delineation and reporting within the State of Oregon. Information collected and a summary of the wetlands evaluation results are summarized hereafter.

On February 14, 2023 a wetland investigation was conducted within the South Slough Study Area and focused on the West side of the slough which will contain a higher percentage of the disturbance. The Eastern portion of the project area was visually observed and determined to be consistent with the Western side in soil type, concentration, and type of vegetation. Both sides are affected by tidal waters of the South Slough.

This work was performed during the winter wet season. The day was sunny and clear at a temperature of 44°F and during low tide conditions to allow access to the underlying soils. Two separate test pits were excavated on the western bank and one on the eastern bank to evaluate soil conditions and to confirm expected wetland conditions within the Study Area.

Due to the hydrologic conditions of the soil, test pits were only able to be excavated to a total depth of 10 inches. Attempts were made to dig deeper; however, the sandy sidewalls continued to slough into the open holes and water immediately started to refill the pits. The entire Study Area is located on the tidal mud flats and only sparse vegetation was observed.

Landscape Setting and Land Use

The South Slough Study Area is contained within or adjacent to public waterways and is managed under the jurisdiction of the CB-NB Water Board. The Study Area consists of a small portion of the South Slough (Section 2, Township 26 South, Range 14 West), within Coos County, Oregon Willamette Meridian; Empire 7.5-minute US Geological Survey topographic quadrangle. The Study Area is approximately 8,000 square feet (0.2 acres) in area.

Local Wetland Inventory (LWI) and National Wetland Inventory (NWI) searches indicate that no LWI exists for Coos County. The NWI maps wetlands that closely coincide with the Study Area. The South Slough Study Area is located within the National Wetland Inventory identified wetlands (E2USN) shown in Figure 2. Explanations for wetland code elements are provided below.

E = Estuarine
The Estuarine System consists of deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have open, partly obstructed, or sporadic access to the open ocean, and in which ocean water is at least occasionally diluted by freshwater runoff from the land. The salinity may be periodically increased above that of the open ocean by evaporation. Along some low-energy coastlines there is appreciable dilution of sea water. Offshore areas with typical estuarine plants and animals, such as red mangroves (Rhizophora mangle) and eastern oysters (Crassostrea virginica), are also included in the Estuarine System.

2 = Intertidal
The Subsystem Intertidal is the substrate in these habitats is flooded and exposed by tides; includes the associated splash zone.

US = Unconsolidated Shore
Class Unconsolidated Shore includes all wetland habitats having two characteristics: (1) unconsolidated substrates with less than 75 percent areal cover of stones, boulders, or bedrock and; (2) less than 30 percent areal cover of vegetation. Landforms such as beaches, bars, and flats are included in the Unconsolidated Shore class.

N = Regularly Flooded
Water regime Regularly Flooded are tides which alternately flood and expose the substrate at least once daily.

Coos Bay is an estuary where the Coos River enters the Pacific Ocean, the estuary is approximately 12 miles long and up to two miles wide. It is the largest estuary completely within Oregon state lines. The Coos Bay watershed covers an area of about 600 square miles and is located in northern Coos County. The South Slough branches off from the bay directly before its entrance into the Pacific Ocean. The City of Charleston is located near the entrance to the South Slough.

The work to be performed will require excavation into a portion of the South Slough. Elevations for the work to be performed range between 3.53 ft and 12.01 ft North American Vertical Datum of 1988 (NAVD88). The mean high-water elevation is 6.46 ft NAVD88. The highest measured tide within the Study Area is 10.68 ft NAVD88, which was observed on January 26, 1983 at 22:06. Topography of the area is gently sloping from near Roosevelt Road toward the center of the Slough.

Fresh and tidal marsh plants in the general area of the South Slough can include Baltic rush, fleshy jaumea, Lyngby's sedge, Pacific silverweed, pickleweed, salt grass, seaside arrowgrass, skunk cabbage, Slough sedge, salt-marsh bird's beak, western bog lily, and tufted hairgrass. However, within the Study Area very little vegetation exists beyond sparse patches of Japanese eel grass (*Zostera japonica*).

According to the US Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey 2.1, most of the area of interest is under water depending on the tide level. At the South Slough Study Area, a small section of vegetated area between Roosevelt Road and the edge of the Slough consists of udorthents soils, which comprise moderately well drained to excessively well drained soils that have been disturbed by cutting or filling, and areas that are covered by buildings and pavement. The soils within the Slough itself, consist of sand, mud, and tidal flats.

Precipitation Data

Precipitation data was obtained from the NOAA National Centers for Environmental Information associated with the weather station at North Bend, Oregon (North Bend Southwest Oregon Regional Airport, Network: ID GHCND:USW00024284). The precipitation data collection station is located approximately 6.5 miles northeast of the Study Area.

Monthly precipitation totals, related to the beginning of the 2022 water year through the date of field work are presented in Table 1. Along with 2022 to 2023 water year information, monthly precipitation averages for data collected for the years 2009 through 2023 are presented in Table 1 for comparison purposes. Precipitation on the day and two weeks before the respective fieldwork date and three months prior to the field investigations is presented in Table 2. Monthly precipitation data was also reviewed in relation to the information was and then compared to the NRCS WETS data (Table 3) and is based on the monthly normal precipitation from 2003 to 2023 and analyzed in relation to the NRCS Engineering Field Handbook.

TABLE 1
MONTHLY PRECIPITATION TOTALS

Month	Actual (2022-2023)	Average (2009-2023)	Percent of Normal
February	8.47	6.74	126%
March	6.75	6.81	99%
April	5.41	5.84	93%
May	6.49	3.82	170%
June	4.18	2.80	149%
July	0.31	0.68	46%
August	0.00	1.03	0%
September	0.07	3.62	2%
October	3.27	7.34	45%
November	6.81	8.74	78%
December	8.06	2.45	329%
January (2023)	10.23	8.49	120%
Total	**60.05**	**58.36**	**103%**

Source: https://www.northbendweather.com/wxrainsummary.php

TABLE 2
DAILY PRECIPITATION FOR FEBRUARY 14, 2023
AND TWO WEEKS PRIOR
NORTH BEND FAA AIRPORT (356073)[1]

Day	Observed Precipitation (inches)
February 14, 2023	0.00
February 13, 2023	0.64
February 12, 2023	0.19
February 11, 2023	0.00
February 10, 2023	0.24
February 9, 2023	0.04
February 8, 2023	0.01
February 7, 2023	0.84
February 6, 2023	0.03
February 5, 2023	0.44
February 4, 2023	0.25
February 3, 2023	0.11
February 2, 2023	0.25
February 1, 2023	0.00
January 31, 2023	0.00
Total (prior to date of field activities)	3.04

[1] Reference: NOWData – NOAA Online Weather Data

As concluded in Table 3, the months prior to performing the fieldwork were wetter than normal.

TABLE 3
RAINFALL ASSESSMENT1, PRECIPITATION THREE MONTHS PRIOR TO CONDUCTING FIELDWORK ON FEBRUARY 14, 2023 AND NRCS WETS DATA

	Month	30% Chance <	30% Chance >	Precipitation (see Table 1)	Condition Dry, Wet Normal	Condition Value	Month Weight Value	Product of Previous 2 Columns
1st Prior Month	January	5.03	9.13	10.23	W	3.00	3.00	9.00
2nd Prior Month	December	6.84	11.66	8.06	N	2.00	2.00	4.00
3rd Prior Month	September[2]	0.74	1.92	6.81	W	3.00	1.00	3.00
							Sum	**16.00**

Note: If sum is	
6-9	Prior period has been drier than normal
10-14	Prior period has been normal
15-18	Prior period has been wetter than normal

Condition Value:
Dry = 1
Normal = 2
Wet = 3

Conclusions: Prior period has been dryer than normal.

[1] NRCS Engineering Field Handbook Chapter 19

[2] Data is not available for the actual 3rd or 4th prior months, November, and December 2022; therefore, data from the fifth prior month, September 2022, was used. The same result would occur if only two months data was used.

Site Specific Methods

The field investigation utilized "Routine Onsite" method from the Corps' Wetland Delineation Manual (USACE 1987) as guidance. The Study Area was traversed by foot and a visual assessment was conducted of hydrophytic vegetation, suspect topographical features and wetland hydrology indicators. Two sample plots were established to characterize the extent of Study Area wetlands and uplands in Figure 4. Photo points were established near each sample point to document site conditions at the time of field investigation and are included Appendix.

At each sample point, the vegetation stratum was inspected and identified to the lowest taxonomic level (species) possible at the time of the field visit. However, it should be noted that seasonality dictates species presence or absence, thus it is possible that some herbaceous species were not present at the time

our fieldwork was conducted. It should be noted that there was very little vegetation within the Study Area, beyond residential lawn grasses around the perimeter of the Slough boundary and sparse patches of eel grass.

Soils were field-verified for the presence or absence of hydric conditions. Considering that the vast majority of the Study Area is within the South Slough waterway, the entire soil column demonstrated hydric conditions.

Each sample point was dug to a depth of ten (10) inches. Deeper excavations were not possible due to sloughing of the sandy soils and the quickness of holes refilling with water. There was no distinct differentiation in soil horizon, as the entire soil column consisted of the same saturated sand / tidal mud.

The Munsell Soil Color Chart (Kollmorgen Instruments Corporation, 2009) was referenced to determine the wetted soil matrix. Color variations were not observed.

- In the first sample point, the top one to two inches of soil was a sandy brownish grey and the remaining soil column to the depth of pit consisted of sandy, grey soil. Evaluation of soil hydrology showed start of refilling of test pit with water almost immediately.

- The second sample point was consistent with the conditions and observations described for test pit 1.

Soils were closely inspected for hydric soil indicators, as defined by the NRCS Field Indicators of Hydric Soils in the United States Version 7.0 (USDA, 2010), as well as primary and secondary hydrology indicators.

Wetlands

In order to be considered a wetland, one or more of the following criteria must be met.

1. At least periodically the land supports hydrophytes (a plant which only grows in or on water).

   Findings: Eel grass is an Obligate Wetland Plant (OBL) plant which was found growing sparsely on the soil surface throughout the Study Area.

2. The substrate is predominantly undrained hydric soils.

   Findings: The vast majority of the Study Area consists of undrained, hydric soils.

3. The substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

   Findings: The South Slough is a tidally influenced body of water; therefore, the Study Area is exposed and covered on a diurnal, tidally dictated basis.

The wetland boundary, is the boundary of the South Slough flood plain itself.

Other Non-Wetland Waters

There are no other non-wetland waters (i.e., stream or river) located within the Study Area.

Results and Conclusions

Wetlands conditions present within the project Study Area are shown in the photographs located in the Appendix. The wetland identified is consistent with an Estuarine, Intertidal, Unconsolidated Shore, Regularly Flooded wetland area.

APPENDIX

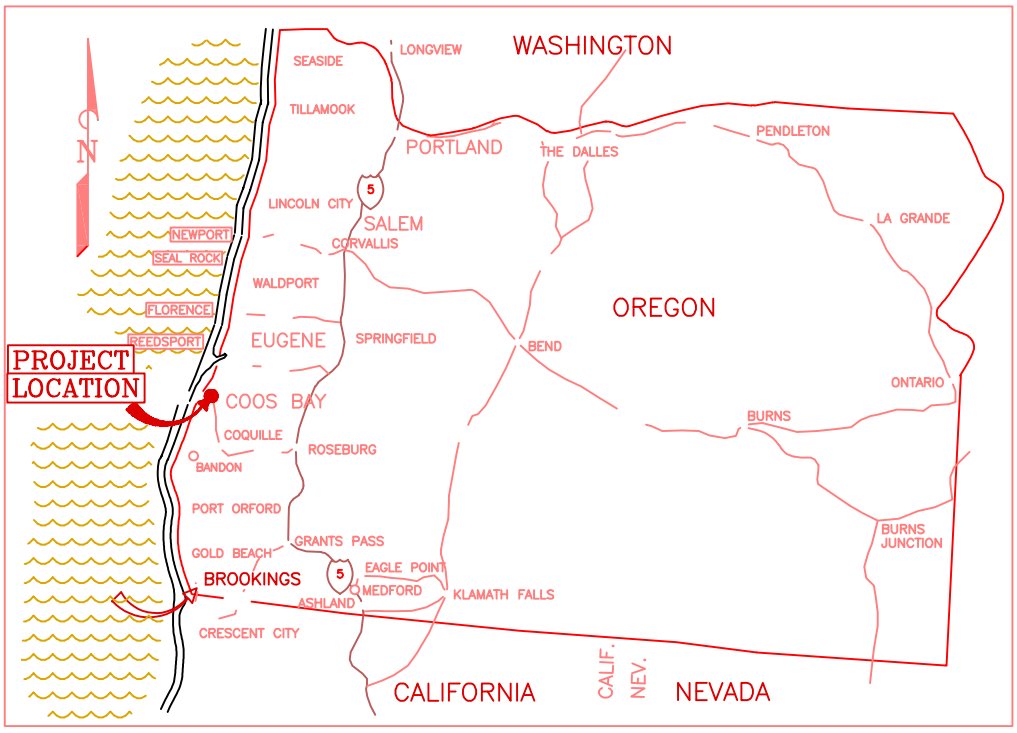
Figure 1 – Location Map of South Slough Study Area

Figure 2 – NWI Wetland Map

Figure 3 – South Slough – Section / Township / Range Map

Figure 4 – Location of Test Sites

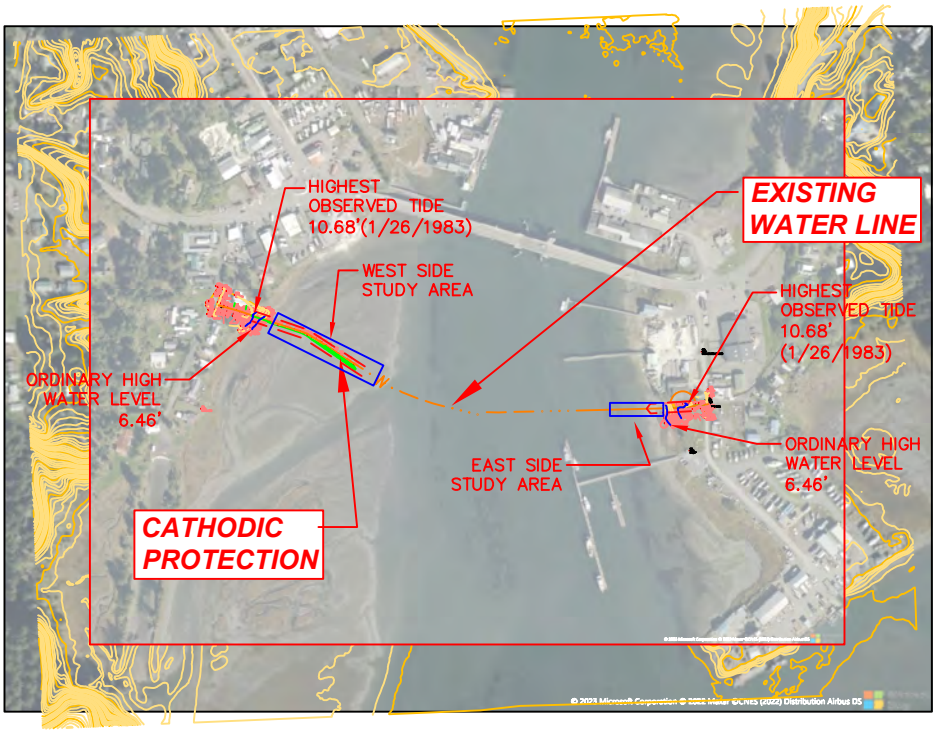
Photographs



LOCATION MAP

0 20 40 60

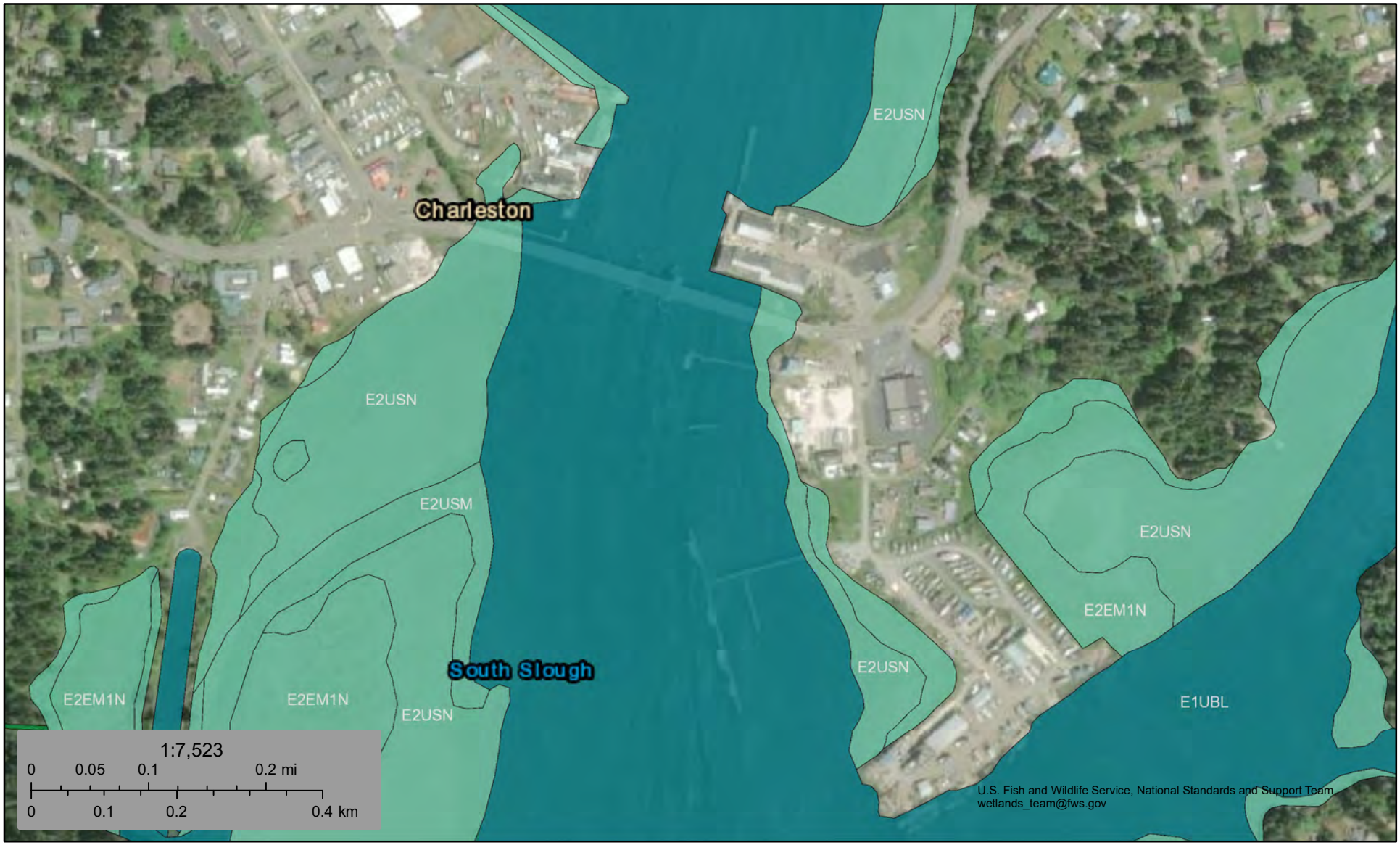
SCALE IN MILES



THE DYER PARTNERSHIP ENGINEERS & PLANNERS, INC.	**COOS BAY - NORTH BEND WATER BOARD CATHODIC PROTECTION**	FIGURE NO. **FIG. 1**
DATE: MAR, 2023	**STUDY AREA LOCATION MAP**	
PROJECT NO.: 110.27		

U.S. Fish and Wildlife Service
National Wetlands Inventory

South Slough Study Area



March 2, 2023

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSE ONLY

SW1/4 SE1/4 SEC.2 T26S R14W W.M. COOS COUNTY

26S 14W 02DC

CANCELLED NO.

1600
300
500
2601
2300
2400
700
800
900
1100
1200
1300
3600
101
6001
6201
2200A1
601
4000
5999A1
5902
5901
699
6501
5501
5601
5701
6002
2900

SEE MAP 26S 14W 02DB

1" = 100'

8-22-2016

26S 14W 02DC


SOUTH SLOUGH
TEST PIT LOCATIONS
Charleston
540
Kuper St
Boat Basin Rd
Sunrise Rd
Roosevelt Rd
CBNB TEST PIT#1
CBNB TEST PIT#2
Troller Rd
Abbey Ln
Google Earth
N
1000 ft

Photo 1: Site Boundary Vegetation

Photo 2:: Wetland Investigation

Photo 3: Plot 1 Test Pit

Photo 4: Plot 2 Test Pit

Photo 5: Plot 3 Test Pit

Photo 6: Surface Vegetation

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Slough | City/County: Coos Bay / Coos County | Sampling Date: 2/14/2023

Applicant/Owner: The Coos Bay North Bend Water Board | State: OR | Sampling Point: 1

Investigator(s): Angela Mosieur | Section, Township, Range: S02, T26S, R14W

Landform (hillslope, terrace, etc.): Slough/ Tidal Lands | Local relief (concave, convex, none): _____ | Slope (%): _____

Subregion (LRR): A | Lat: 43.337983° | Long: -124.324975° | Datum: _____

Soil Map Unit Name: Water | NWI classification: E2USN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Area is a tidally influenced slough

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. None			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Eel Grass (Zostera Marina	20	Yes	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. None			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 80

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	n/a	x 2 =	
FAC species	n/a	x 3 =	
FACU species	n/a	x 4 =	
UPL species	n/a	x 5 =	
Column Totals:	1 (A)		1 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

✓ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 5/1	100					sand	
2-10	10YR 6/1	100					sand	water present at 8"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ✓ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ✓ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): _____

Water Table Present? Yes ✓ No _____ Depth (inches): 8-10 inches

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 8-10 inches

Wetland Hydrology Present? **Yes** ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: South Slough City/County: Coos Bay / Coos County Sampling Date: 7/7/2023

Applicant/Owner: The Coos Bay North Bend Water Board State: OR Sampling Point: 3

Investigator(s): Angela Mosieur Section, Township, Range: S02, T26S, R14W

Landform (hillslope, terrace, etc.): Slough/ Tidal Lands Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): A Lat: 43.337983° Long: -124.324975° Datum: _____

Soil Map Unit Name: Water NWI classification: E2USN

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:

Area is a tidally influenced slough

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. None			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. None			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Eel Grass (Zostera Marina	20	Yes	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1. None			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 80

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	n/a	x 2 =	
FAC species	n/a	x 3 =	
FACU species	n/a	x 4 =	
UPL species	n/a	x 5 =	
Column Totals:	1 (A)		1 (B)

Prevalence Index = B/A = 1

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ✔ 2 - Dominance Test is >50%
- ✔ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-2	10YR 5/1	100					sand	
2-10	10YR 6/1	100					sand	water present at 8"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

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- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☑ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none

Depth (inches): _____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☑ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☑ No ☐ Depth (inches): _____

Water Table Present? Yes ☑ No ☐ Depth (inches): 8-10 inches

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 8-10 inches

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

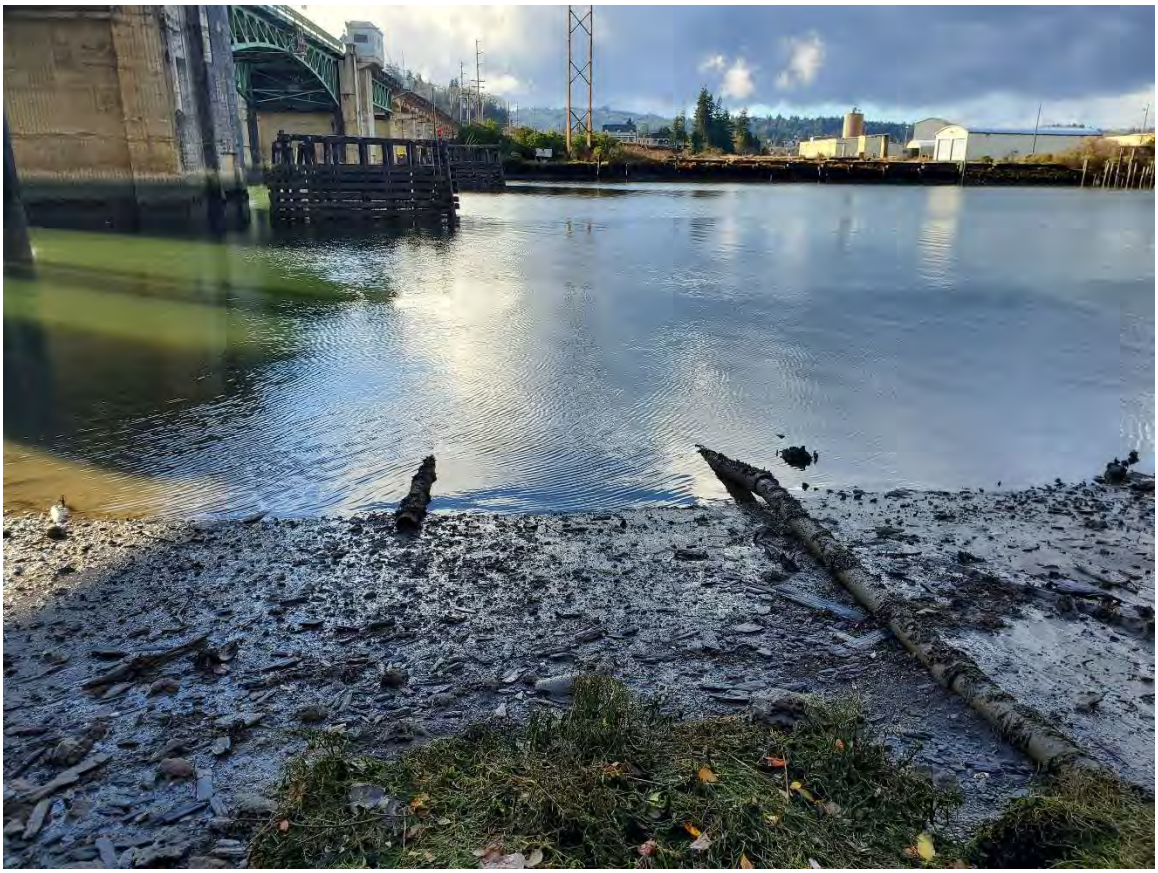
Remarks:

APPENDIX C: PROJECT PHOTOS

ISTHMUS SLOUGH

WEST BANK

WEST BANK



EAST BANK

SOUTH SLOUGH

WEST BANK

APPENDIX D: EQUIPMENT MATS

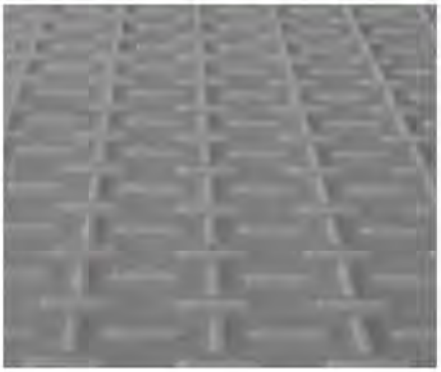
General Description

Key Information

High pressure compression molded in one piece
Quality batch control / mat identification
23 x 1200 x 2410mm
Weight: c. 79.37 lbs (manhandable)
Materials: choice of (a) Mix of HD / LDPE regenerated (b) HD / LDPE virgin / natural or green / UV protection
Two traction surfaces - vehicular and pedestrian
Connection holes / cut out hand holds

Vehicular Traction Surface

Rugged raised surface profile for excellent traction for light to heavy 175,000lb. vehicles, equipment and
machinery
Sand blasted finish for micro-traction
Low trip hazard
Chevron pattern for high visibility strips



Pedestrian Traction Surface

Uniform raised surface profile pattern for pedestrian use
Good traction for vehicular use
Sand blasted finish for micro-traction
Low trip hazard (hand cut outs blanked off on pedestrian surface)

Connection

2-way and 4-way bolt in connectors
'Quick fit' metal connectors for fast turnaround
Flexible webbing / anchor plate connectors
U-pins for stability on sideways ground
High visibility color options

Mechanical Testing of HD / LDPE Regenerated SureTrak™ Material

Factor	Value
Tensile Strength (MPa)	23 - 26
Flexural Strength (MPa)	25 - 28
Flexular Modulus (MPa)	1936 - 1967
Charpy Notched Impact Strength (kJ/m²)	5-6
Poisson's Ratio (theoretical)	0.35 - 0.38
Compression testing - maximum value reached before test terminated (tonnes)*	250

* Refers to the material strength on a firm substrate as tested by the National Physical Laboratory. The weight load distribution performance is subject to ground conditions. New South Equipment Mats, its agents or employees are not liable for any damage to existing ground or property through the use of SURETRAK™. The information provided is for guidance only. In all cases qualified engineering / geotechnical advice should be sought regarding bearing capacity of the ground where SURETRAK™ is to be used.

Generic Properties of HDPE and LDPE

Properties:

- low density
- high toughness (LDPE provides flexibility)
- high elongation
- very good electrical and dielectric properties
- very low water absorption
- low steam permeability
- high chemical resistance
- good protection against stress cracking

Resistence to Chemicals

- Dilute Acid ****
- Dilute Alkalis ****
- Oils and Greases ** variable
- Aliphatic Hydrocarbons *
- Aromatic Hydrocarbons *
- Halogenated Hydrocarbons *
- Alcohols ****

*Key: * poor ** moderate *** good **** very good*

Factor	HDPE Value	LDPE Value	Unit
Thermal expansion	110 - 130	150 - 200	e-6/K
Thermal conductivity	0.46 - 0.52	0.3 - 0.33	W/m.K
Specific heat	1800 - 2700	1800 - 3400	J/kg.K
Melting temperature	108 - 134	125 - 136	°C
Glass temperature	-110 - -110	-110 - -110	°C
Service temperature	-30 - 85	-30 - 70	°C 3
Density	940 - 965	910 - 928	kg/m
Resistivity	5e+17 - 1e+21	5e+17 - 1e+21	Ohm.mm²/m
Breakdown potential	17.7 - 19.7	17.7 - 39.4	kV/mm
Dielectric loss factor	0.0005 - 0.0008	0.0002 - 0.001	
Friction coefficient	0.25 - 0.3	0.3 - 0.5	
Refraction index	1.52 - 1.53	1.51 - 1.53	
Shrinkage	2-4	1.5 - 3	%
Water absorption	0.01 - 0.01	0.005 0 0.015	%

Note: Generic information obtained from various publicly available sources

APPENDIX E: EELGRASS MEMO

THE DYER PARTNERSHIP
ENGINEERS & PLANNERS, INC.

1330 Teakwood Avenue
Coos Bay, Oregon 97420
Ph: (541) 269-0732
Fx: (541) 269-2044
www.dyerpart.com

M E M O R A N D U M

DATE	July 10, 2023
TO	Mike Schmeiske, Oregon Department of State Lands Tyler Krug, US Army Corps of Engineers
FROM	Angela Mosieur, PE
PROJECT NAME	CB-NB Water Board Eelgrass Site Survey for South Slough Cathodic Protection Installation
PROJECT NO.	110.27

Introduction

This eelgrass onsite evaluation has been prepared for the Coos Bay-North Bend (CB-NB) Water Board in relation to identification of potential eelgrass that may be encountered during installation of cathodic protection on existing water lines located within and adjacent to public water ways of the South Slough, located in Coos County, Oregon.

The CB-NB Water Board has an existing cathodic protection system for a buried water transmission line, which crosses the South Slough. This system was installed in approximately 1994. it has exceeded its intended design life and was discovered to have failed during a recent routine test.

Survey Methodology

The location of the eelgrass beds followed the DSL survey methodology provided from the 2023 edition of the Oregon DSL Removal and Fill Guide: *"The density of eelgrass beds is naturally variable from year to year. To identify the bed boundary, proceed in a linear direction and find the last shoot that is within 1 meter of an adjacent shoot along that transect. The bed boundary (edge) is defined as the point 0.5 meter past that last shoot, in recognition of the average length of the roots and rhizomes extending from an individual shoot."*

Observations

Onsite observations were made during the eelgrass growing season on July 7, during morning low tide. Identification of the eelgrass was confirmed thru email correspondence and photos with Alicia Helms, Estuarine Monitoring Coordinator of the South Slough National Estuarine Research Reserve (NERR).

On the west and east banks of the South Slough native eelgrass (Zostera marina) was found at the edge of the water during low tide, which is well beyond our project area. A patch approximate 15 feet in diameter of non-native eelgrass (Zostera japonica) was found near our project area on the east bank of the south slough. Impacts to the non-native and native eelgrass will be avoided during construction. For reference photos of the site refer to drawing C102 of the project plans, located within appendix A.