Draft Proposed Order and ODOE Preliminary Recommendations

To:	Oregon Energy Facility Siting Council
From:	Andrea Goodwin, Energy Facility Siting Analyst
Date:	May 27, 2015
Re:	ODOE Draft Proposed Order on Application for Site Certificate for the proposed South Dunes Power Plant

Applicant:	Jordan Cove Energy Project, L.P., a wholly-owned subsidiary of Veresen, Inc.
Proposed Facility:	A nominal 420-megawatt natural gas fueled energy facility, including related and supporting facilities
Location:	Coos County, Oregon
Staff Recommendation:	Approval of site certificate, subject to recommended conditions.

Review Process:
To issue a site certificate, the Energy Facility Siting Council (EFSC or the "Council") must find that an application for site certificate demonstrates that the proposed facility satisfies, or with conditions can satisfy, each of the applicable EFSC Siting Standards set forth in OAR 345, Divisions 22 through 24 as well as all other Oregon statues and administrative rules identified in the project order as applicable to the proposed facility.

As staff to EFSC, the Oregon Department of Energy (the "department") reviewed the South Dunes Power Plant application for site certificate, in consultation with state and local reviewing agencies. Based upon its review of the application, the department recommends the Council grant the site certificate for the South Dunes Power Plant, subject to the conditions set forth in the following draft proposed order. The draft proposed order contains the department's analysis of the application and includes preliminary recommended site certificate conditions. The analysis and recommendations contained in this draft proposed order are not a final determination.

The Council will hold a public hearing on this draft proposed order and the application on June 25, 2015 in Coos Bay, Oregon. In addition, all interested persons may submit written comments on this application and draft proposed order to the department, for inclusion on the record of the public hearing. Please note, interested parties must testify on the record of the public hearing, either orally at the public hearing or in writing during the comment period, in order to preserve their right to participate further in the process. The public comment period closes on June 25, 2015 at the close of the public hearing.

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Acronyms and Abbreviations

APLIC	Avian Powerline Interaction Committee
ASC	Application for Site Certificate
BLM	Bureau of Land Management
BPA	Bonneville Power Administration
Council	Oregon Energy Facility Siting Council
CUP	Conditional Use Permit
dBA	Sound Pressure Level
department	Oregon Department of Energy
DEQ	Department of Environmental Quality
DOGAMI	Department of Geology and Mineral Industries
DPO	Draft Proposed Order
DSL	Department of State Lands
EFSC	Oregon Energy Facility Siting Council
EFU	Land Zoned For “Exclusive Farm Use”
EMF	Electric and magnetic Fields
EPC	Engineering, Procurement and Construction
ESCP	Erosion and Sediment Control Plan
FAA	Federal Aviation Administration
GL	Grassland Habitat Subtype
kV	Kilovolt(s)
LCDC	Land Conservation and Development Commission

MCE	Maximum Considered Earthquake
mG	Milligauss
MW	Megawatt(s)
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resource Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
O&M	Operations and Maintenance
OAR	Oregon Administrative Rule
ODA	Oregon Department of Agriculture
ODF	Oregon Department of Forestry
ODFW	Oregon Department of Fish and Wildlife
ODOE	Oregon Department of Energy
ODOT	Oregon Department of Transportation
OPRD	Oregon Parks and Recreation Department
ORBIC	Oregon Biodiversity Information Center
ORNHIC	Oregon Natural Heritage Information Center
ORS	Oregon Revised Statute
OWRD	Oregon Water Resources Department
PUC	Oregon Public Utility Commission
RAI	Request for Additional Information
SAG	Special Advisory Group
SCADA	Supervisory, Control and Data Acquisition
SCF	Standard Cubic Feet
SDP	South Dunes Power Plant
SHPO	Oregon State Historic Preservation Office
SSURGO	Soil Survey Geographic Database
SWA	State Wildlife Area
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WPCF	Water Pollution Control Facility
ZVI	Zone of Visual Influenc

I. INTRODUCTION

This Draft Proposed Order ("Order" or "DPO") addresses an application for a site certificate (ASC) for the construction and operation of the proposed South Dunes Power Plant ("South Dunes" or "SDP"), to be located in Coos County, Oregon. The applicant is Jordan Cove Energy Project, L.P. (the "applicant"), and the South Dunes Power Plant is a proposed 420-megawatt (MW) natural gas fueled electric generation facility.

The Oregon Department of Energy (the "department") issues this Draft Proposed Order in accordance with Oregon Revised Statute (ORS) 469.370(1), based on its review of the application and the comments and recommendations received on the application by state agencies, affected local governments, tribal organizations and the public.

Based upon the discussion and conclusions contained herein, the department recommends that the Energy Facility Siting Council (the "Council") grant the site certificate for the South Dunes Power Plant, subject to the conditions set forth in this Order.

It is the public policy of the State of Oregon that "the siting, construction and operation of energy facilities shall be accomplished in a manner consistent with protection of the public health and safety and in compliance with the energy policy and air, water, solid waste, land use and other environmental protection policies of this state."[1] The definitions in ORS 469.300 and Oregon Administrative Rule (OAR) 345-001-0010 apply to terms used in this DPO. ORS 469.320 requires a site certificate from the Council" before construction of a "facility." ORS 469.300(14) defines "facility" as an "energy facility together with any related or supporting facilities." The proposed SDP qualifies as an "energy facility" under the definition in ORS 469.300(11)(a).

A site certificate is a binding agreement between the State of Oregon and the site certificate holder, authorizing the construction and operation of a facility on an approved site, incorporating all conditions imposed by the Council on the site certificate holder. A site certificate issued by the Council binds the state and all counties, cities and political subdivisions of Oregon as to the approval of the site, the construction and operation of the facility. Once the Council issues the site certificate, the responsible state agency or local government must issue any necessary permits that are addressed in the site certificate without further proceedings.[2] The Council has continued authority over the site for which the site certificate is issued and may inspect the site at any time in order to ensure that the facility is operated consistently with the terms and conditions of the site certificate.[3]

The Council does not have jurisdiction over matters that are not included in and governed by the site certificate or amended site certificate, including design-specific construction or operating standards and practices that do not relate to siting, as well as matters relating to

[1] ORS 469.310.
[2] ORS 469.401(3).
[3] ORS 469.430.

employee health and safety, building code compliance, wage and hour or other labor regulations, or local government fees and charges. The Council recognizes that many specific tasks related to the design, construction, operation, and retirement of the facility will be undertaken by the applicant's agents or contractors. Nevertheless, the certificate holder is responsible for ensuring compliance with all provisions of the site certificate.

In addition to the conditions stated in this Order, the site certificate holder is subject to the conditions and requirements contained in the rules and standards of the Council and in local ordinances and state law in effect on the date the certificate is executed.[4] Under ORS 469.401(2), upon a clear demonstration of a significant threat to the public health, safety, or the environment that requires application of later-adopted laws or rules, the Council may require compliance with such later-adopted laws or rules.

II. DESCRIPTION OF THE FACILITY

The information presented in this section is based on details provided in the ASC. Section II.A describes the location and site boundary and Section II.B describes the energy facility and related and supporting facilities.

II.A. Location and Site Boundary

As defined in OAR 345-001-0010(55), the term "site boundary" means the perimeter of the site of a proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas and all corridors proposed by the applicant. The term "energy facility site" means all land upon which an energy facility is located or proposed to be located.[5]

The applicant provided information about the location of the proposed facility in Exhibit C of the ASC, which included associated maps and figures. The energy facility is proposed to be located in Coos County, approximately one mile north of the city of North Bend, Oregon on the east side of Jordan Cove on the North Spit of Coos Bay. The proposed South Dunes site boundary would total 137.86 acres in Township 25 South, Range 13 West, Sections 03/04/05, Willamette Meridian, Coos County. The energy facility would primarily be located within a fenced area on the site of the former Weyerhaeuser linerboard facility, which was closed and has since been demolished. Figure C-1 provides an outline of the facility site location.

II.B. The Facility

A. The Energy Facility

[4] Pursuant to ORS 469.405(b)(A), for purposes of local land use regulations, those regulations that are applicable are those in effect at the time of submittal of the preliminary application for a site certificate. The applicant submitted the pASC on January 9, 2014.

[5] OAR 345-001-0010(54)

The applicant provided information about the components of the proposed energy facility in Exhibit B of the ASC. The proposed energy facility is a natural-gas-fueled combined-cycle generating plant, consisting of two 210-megawatt blocks, with duct-firing capability. The nominal generating capacity of the proposed SDP is 420 MW for the two power blocks combined.[6] Average electrical generating capacity is defined in ORS 469.300(4) as the peak generating capacity of the facility divided by a factor determined by the facility type. Because the proposed facility uses natural gas, under ORS 469.300(4)(c), the factor to be applied to the peak generating capacity is 1.00. Therefore, the average generating capacity for the energy facility is expected to be 420 MW for the two power blocks combined. Each power block would consist of three combustion turbine generators, three heat recovery steam generators and one steam turbine generator.[7] Steam produced by the heat recovery steam generators would be delivered to gas conditioning systems for the Jordan Cove Energy Project (JCEP) liquefied natural gas (LNG) terminal, as a cogeneration terminal. The "gas conditioning facility"[8] is part of the adjacent LNG facility and, therefore, under the jurisdiction of the Federal Energy Regulatory Commission (FERC) and not within the Council's jurisdiction. Thus, the gas conditioning facility was not addressed in the ASC and is not discussed further in this Order.[9]

The applicant proposes to utilize air-cooled condensers ("ACC"). As explained in the ASC, the exhaust from the low pressure section of each steam turbine would connect to an air-cooled condenser. The proposed air-cooled condensers differ from typical cooling towers because the ACC units would rely on a closed-loop system as opposed to the open loop system, which creates a visible steam plume. The closed loop system is a dry cooling system that forces air across a number of tubes and fins, which allow the heat to dissipate without direct contact with water or exposure to the atmosphere. Therefore, the proposed air cooled condenser system eliminates water loss and does not create a steam plume.[10]

B. Fuel Consumption

Natural gas would be provided to the proposed energy facility from two sources: the Pacific Connector Gas Pipeline (approximately 4 percent), and boil-off gas and flash gas (approximately 96 percent) from the JCEP LNG terminal. The 36-inch Pacific Connector Gas Pipeline would enter the site near the southeast corner of the boundary. Natural gas would be available on a continuous basis from both sources. Assuming a 420MW average generating plant, the total natural gas consumption is estimated at 87 million standard cubic feet per day.[11] The Pacific

[6] Nominal electric generating capacity is defined in ORS 469.300(17) as the "maximum net electric power output of an energy facility based on the average temperature, barometric pressure, and relative humidity at the site during times of the year when the facility is intended to operate."

[7] ASC, Exhibit B, B-3, B-4.

[8] The gas conditioning facility consists of the Amine Reboiler and the Amine Reclaimer, which are each components of the Amine treating process that removes CO2 and hydrogen sulfide impurities from the pipeline feed gas prior to conversion to liquid natural gas. ASC, Exhibit Y, Y-19.

[9] ASC, Exhibit B, B-5.

[10] ASC, Exhibit B, B-4. See also Exhibit Z, Z-2.

[11] ASC, Exhibit B, B-7.

Connector Gas Pipeline is under the exclusive jurisdiction of FERC and, therefore, outside the Council's jurisdiction and not discussed in this Order. The boil off gas line is a related and supporting facility within the Council's jurisdiction and is discussed in more detail below as it.

C. Related or Supporting Facilities

The proposed facility would include the following related or supporting facilities:

- Electrical Switchyard
- Transmission Lines
- Substation
- Boil-Off Gas Pipeline and Metering Station
- Water System Connection and Distribution
- Roads
- Temporary Construction Facilities
- Barge Berth
- Accessory Buildings
- Stormwater Detention Basin

Electrical Switchyard

A 115-kilovolt (kV), alternating current, open-air switchyard serving both power blocks is proposed to be located immediately north of the combined turbine generators/steam turbine generators. The switchyard would be a leveled and graveled area approximately 800 by 400 feet within a security fence. The switchyard would include 115-kV circuit breakers and disconnect switches to allow for clearing faults on the connected transmission lines and for maintenance of the circuit breakers and transmission lines. Additionally, take–off towers would be provided for termination of the proposed 115-kV overhead transmission lines that would connect the switchyard with the plant generator step-up transformers and outgoing transmission lines. A small building would be included to provide a controlled environment for the protective relaying and communication equipment.[12]

Transmission Lines

The applicant proposes two transmission lines. Transmission line "A" is a proposed double-circuit line to be located between the SDP and the LNG terminal to the west. Transmission line "A" would be 115-kV and approximately one mile in length in the utility corridor. Transmission line "B" is a proposed 115-kV single circuit line to be located between the SDP and the relocated Pacific Power substation in the southeast corner of the SDP site. Transmission line "B" would be approximately 2,024 feet in length, 1,020.5 amps and 60 MW. Both transmission structures are proposed to be single steel or concrete poles.[13]

[12] ASC, Exhibit B, B-8.

[13] ASC, Exhibit B, B-8, B-9 and B-13.

Substation

The existing on-site substation for Pacific Power must be relocated in connection with the construction of the energy facility and placed in the southeast part of the SDP site. The substation would provide an alternate source for housekeeping power (via the 115-kV overhead single-circuit line) to the SDP Plant.[14]

Boil-Off Gas Pipeline and Metering Station

The applicant proposes a 10-inch boil-off gas line to provide most of the fuel for the SDP (approximately 96 percent).[15] The proposed line would have an operating pressure of 835 pounds per square inch and the normal operating capacity would be 135,000 pounds per hour. The applicant proposes to locate the line in the utility corridor. The proposed line would run underground from the non-jurisdictional LNG terminal through the utility corridor east to the bridge over Jordan Cove Road. The line would then run aboveground over the bridge and through most the SDP site and then back underground to where the gas is delivered to the combustion turbines. See Figure B-2, Sheets 1 and 2 for locational references. The width of the utility corridor is proposed to be approximately 150 feet between the non-jurisdictional LNG terminal and the SDP site, depending on the terrain.[16]

A metering station is also proposed to be located where the Pacific Connector Gas Pipeline terminates at the SDP site. The metering station would measure the gas entering the site and the amount of gas used at the power plant. The metering station facility would be approximately 200 feet by 180 feet.[17]

Water Systems

As explained in the ASC, one metered connection from the existing Coos Bay North Bend Water Board ("CBNBWB") municipal pipeline to the SDP site would be required to provide water for potable, service and demineralized water systems. The proposed facility would connect to the CBNBWB's municipal pipeline at the Transpacific Parkway. However, the final point of connection and design are not yet determined. As presented in the ASC, the line is estimated to be a 36-inch pipeline. The proposed pipeline would connect to all facilities that require water and the connection and majority of on-site piping is proposed to be installed below grade. Additional water facilities proposed include a waste water treatment plant to treat domestic sewage generated at the SDP site and a water treatment facility to include a reverse osmosis system for purifying incoming water from the CBNBWB.[18] This proposed equipment would be housed in the water treatment building to be located immediately south of the SDP power blocks. Also proposed is a stormwater detention basin approximately 1.5 acres in size and designed to provide infiltration for a two-year, 24-hour storm event.

Roads and Parking Structures

[14] ASC, Exhibit B, B-9
[15] ASC, Exhibit B, B-10.
[16] ASC, Exhibit B, B-10.
[17] ASC, Exhibit B, B10.
[18] ASC, Exhibit B, B-9.

The applicant is proposing 24-foot wide, on-site loop roads. The site entrance would connect to Transpacific Parkway at the northeast corner of the site. The access road proposed to serve the boil off gas line and the 115-kV transmission line would be located in the utility corridor (please see Figure B-2, Sheet 2 of 2). A temporary gravel haul road is also proposed to be located across the Roseburg Forest Products property between the barge berth and the SDP site to carry equipment and power plant components from the berth to the site. The haul road would be approximately 50-feet wide and 1.3 miles long.[19]

In addition, the applicant proposes parking lots to serve personnel and visitors. The proposed parking lots would occupy approximately six acres. Another parking lot, less than one-quarter acre in size, is also proposed to be built to serve the Administration, Operations and Control Buildings. All lots are proposed to be paved.[20]

Barge Berth

The applicant proposes to construct a barge berth southwest of the site for the delivery of heavy equipment and larger facility components as the existing highway and rail network is not able to support all deliveries. Construction of the barge berth would require both dredging of the access channel to provide ships access to the berth to allow placement of the marine sheet piling and riprap.[21] As explained in the ASC, the barge berth is proposed to be situated below the Highest Measured Tide (HMT) elevation and is therefore in state jurisdictional waters; however, it is situated above the mean low water line elevation of 0.36 feet and is consequently not within state-owned lands.[22] Therefore, the barge berth would be constructed within waters of the state but would not be constructed on submerged lands owned by the state. To construct the barge berth, 21,666 cubic yards of permanent fill would be placed in estuarine habitat below the HMT. Open cell sheet pile membrane walls would be installed to shield fill areas from the bay. The Open Cell sheet piles, along with a turbidity curtain, would serve to minimize sedimentation and turbidity impacts.

Accessory Buildings and Structures

The applicant proposes various accessory buildings including an administration building, control building and operations building. Each building would be a pre-engineered metal building with a metal roof and sidewall panels. Dimensions for each building are provided in Exhibit B of the ASC. Additionally, the SDP site is proposed to include a permanent refueling station for site vehicles and emergency equipment. The refueling station would include a double-walled 5,000 gallon aboveground steel storage tank for diesel fuel.[23] More information regarding chemicals on-site is discussed below with regard to soils and waste management.

[19] ASC, Exhibit B, B-9.
[20] ASC, Exhibit B, B-11.
[21] ASC, Exhibit B, B-10.
[22] See Exhibit J, Appendix J-2, Tab H, which provides a concurrence letter from the Department of State Lands regarding this matter.
[23] As explained in the ASC, the tank will be registered with the Office of the State Fire Marshal and the Oregon Department of Environmental Quality (ODEQ) as well as comply with all federal and state requirements for storage of combustible petroleum products.

III. PROCEDURAL HISTORY

III.A. Notice of Intent

The applicant submitted to the department a Notice of Intent (NOI) to submit an application for site certificate on August 1, 2012. In anticipation of the receipt of the NOI, the Council appointed the Coos County Board of Commissioners as the Special Advisory Group (SAG),[24] in accordance with ORS 469.480(1). On August 21, 2012, the department issued public notice of the NOI to the Council's general mailing list and to adjacent property owners as defined at OAR 345-020-0011(1)(f). In accordance with OAR 345-020-0040, the NOI was distributed to the SAG and reviewing agencies, along with a memorandum to reviewing agencies requesting comment on the NOI. The department published notice of the NOI on August 21, 2012 in the Coos Bay World, a newspaper of general circulation in the area. The public notice and newspaper notice contained an announcement of a public meeting, which the department held on September 11, 2012, in North Bend at the North Bend Public Library. The NOI comment deadline was September 21, 2012. Following the public information meeting, the department issued a supplemental public notice which extended the comment deadline to October 18, 2012. Pursuant to OAR 345-015-0140, the department provided the applicant with copies of each public comment for consideration in the development of the ASC.

On November 30, 2012, the applicant submitted an amended notice of intent, which included changes related to an increase in the nominal generating capacity of the facility from 380 megawatts to 420 megawatts. On December 4, 2012, the department issued public notice of the second amended NOI to the Council's general mailing list and to the adjacent property owners. The department published notice of the amended NOI and comment period in the Coos Bay World. The amended NOI was also distributed to the SAG and reviewing agencies. The comment deadline for the amended NOI was January 4, 2013. A copy of each comment received was provided to the applicant.

Pursuant to ORS 469.330(3) and OAR 345-015-0160(1) and (3), the department issued an amended project order on October 14, 2013, which specified the state statutes, administrative rules, and local, state and tribal permitting requirements applicable to the construction and operation of the facility.

III.B. Application for Site Certificate

The department received the preliminary application for site certificate (pASC) for the proposed South Dunes Power Plant on January 9, 2014. The department distributed the pASC to reviewing agencies and requested comments on the pASC no later than February 10, 2014. Additionally, the department posted an announcement on the department's website, notifying the public that the application had been submitted.

[24] Order Appointing Special Advisory Group, February 3, 2012.

Pursuant to OAR 345-015-0190(1), on March 10, 2014, the department determined the pASC to be incomplete and issued a Request for Additional Information (RAI-1). The applicant submitted responses to the department's RAI-1 throughout May and June of 2014. After reviewing the revised exhibits, the department determined the application remained incomplete and issued a second Request for Additional Information (RAI-2) on August 1, 2014. The department included a response deadline of October 3, 2014, which was extended to October 31, 2014 per the applicant's request and department approval. Following review of the revised exhibits, the department determined the application to be complete on December 23, 2014. Under OAR 345-015-0190(5), an application is complete when the department finds that the applicant has submitted information adequate for the Council to make findings or impose conditions on all applicable Council standards. The applicant submitted a complete application, which the department accepted as filed, on December 29, 2014.

Public notice of the complete application was issued on January 26, 2015, with notice posted in the Coos Bay World on that same day. The department held a public information meeting on the complete application on February 12, 2015 in Coos Bay, Oregon. Substantive issues raised during the public information meeting related to a Council standard are addressed in the applicable sections of this Order. Matters raised but outside the jurisdiction of the Council are not further addressed in this Order.

Pursuant to OAR 345-015-0200, the department distributed copies of the complete application to the reviewing agencies on December 31, 2014, which included an agency report deadline of February 13, 2015.[25] A copy of the complete ASC was also sent to the Coos Bay Public Library for public inspection. The department received agency reports from nine agencies.

On March 15, 2015, the Council appointed David Petersen as the hearing officer to conduct the public hearing on the ASC and DPO and to conduct the contested case proceeding.

III.C. Council Review Process

Following issuance of this DPO, the Council will open a comment period and the hearing officer will conduct a public hearing on the DPO and application in the geographic area of the proposed facility. In addition to accepting written comments during the comment period, the Council or its designated hearing officer will accept oral testimony at the public hearing.[26] Following the close of the record of the public hearing and Council review of the DPO at a subsequent Council meeting, the department will issue a Proposed Order, taking into consideration the Council comments, any comments received "on the record of the public

[25] Pursuant to OAR 345015-0200(4), the agency report is to contain the agency's recommendations regarding any applications for permits administered by the agency, issues significant to the agency, conclusions concerning the proposed facility's compliance with state statutes, administrative rules or ordinances administered by the agency, a list of site certificate conditions recommended by the agency, and any other information the reviewing agency believes will be useful to the Council in reviewing the application. The SAG is also to include whether the proposed facility complies with the applicable substantive criteria.

[26] ORS 469.370(2) and OAR 345-015-0220 (authorizing the hearing officer to conduct the hearing).

hearing" (i.e. oral testimony provided at the public hearing and any written comments received before the close of the public hearing) and agency consultation. Concurrent with the issuance of the Proposed Order, the department will issue a contested case notice and public notice of the Proposed Order.[27] Only those persons who commented in person or in writing on the record of the public hearing may request to participate as a party or limited party in the contested case proceeding. Additionally, to raise an issue in a contested case, the issue must be within Council jurisdiction, and the person must have raised the issue on the record of the public hearing with "sufficient specificity to afford the Council, the Department, and the applicant an adequate opportunity to respond."[28] At the conclusion of the contested case hearing, the hearing officer must issue a proposed contested case order stating the hearing officer's findings of fact, conclusions of law and recommended site certificate conditions on the issues in the contested case.[29] The Council may adopt, modify or reject the hearing officer's proposed contested case order.

Following the contested case proceeding, the Council must issue a final order either approving or denying the application based upon the standards adopted under ORS 469.501, and any additional state statutes, rules, or local government ordinances determined to be applicable to the proposed facility.[30] The Council's final order is subject to judicial review by the Oregon Supreme Court. Only a party to the contested case proceeding may request judicial review and the issues on appeal are limited to those raised by the parties to the contested case proceeding. A petition for judicial review must be filed with the Supreme Court within 60 days after the date of service of the Council's final order or within 30 days after the date the petition for rehearing is denied or deemed denied.[31]

IV. EVALUATION OF COMPLIANCE WITH COUNCIL STANDARDS

As discussed above, ORS 469.320 requires a site certificate from the Council before construction of a "facility." ORS 469.300(14) defines "facility" as an "energy facility together with any related or supporting facilities." The proposed SDP qualifies as an "energy facility" under the definition in ORS 469.300(11)(a)(A).

To issue a site certificate for a proposed facility, the Council must determine that "the facility complies with the applicable standards adopted by the Council pursuant to ORS 469.501 or the overall public benefits of the facility outweigh any adverse effects on a resource or interest protected by the applicable standards that the facility does not meet."[32] The Council must also decide whether the proposed facility complies with all other applicable Oregon statutes and administrative rules, as identified in the project order, excluding requirements governing design

[27] See ORS 469.370(4), OAR 345-015-0014, OAR 345-015-0230(2) and (3).
[28] ORS 469.370(3).
[29] OAR 345-015-0085(3).
[30] ORS 469.370(7).
[31] ORS 469.403.
[32] ORS 469.503(1).

or operational issues that do not relate to siting[33] and excluding compliance with requirements of federally-delegated programs.[34] Nevertheless, the Council may consider these programs in the context of its own standards to ensure public health and safety and the protection of the environment.[35]

Under ORS 469.310, the Council is charged with ensuring that the "siting, construction and operation of energy facilities shall be accomplished in a manner consistent with protection of the public health and safety." ORS 469.401(2) further provides that the Council must include in the site certificate conditions to ensure "the protection of the public health and safety," the deadline for completion of construction, and compliance with the standards, statutes and rules described in ORS 469.501 and ORS 469.503."[36] The Council implements this statutory framework and ensures the protection of public health and safety by adopting findings of fact, conclusions of law and conditions of approval concerning the proposed facility's compliance with the Council's Standards for Siting Facilities at OAR 345, Divisions 22, 24, 26, and 27.

This Draft Proposed Order includes the department's analysis of whether the proposed facility meets each applicable Council standard (with mitigation and subject to compliance with recommended conditions, as applicable), based on the information in the ASC.

IV.A. General Standard of Review [OAR 345-022-0000]

(1) To issue a site certificate for a proposed facility or to amend a site certificate, the Council shall determine that the preponderance of evidence on the record supports the following conclusions:

(a) The facility complies with the requirements of the Oregon Energy Facility Siting statutes, ORS 469.300 to ORS 469.570 and 469.590 to 469.619, and the standards adopted by the Council pursuant to ORS 469.501 or the overall public benefits of the facility outweigh the damage to the resources protected by the standards the facility does not meet as described in section (2);

(b) Except as provided in OAR 345-022-0030 for land use compliance and except for those statutes and rules for which the decision on compliance has been delegated by the federal government to a state agency other than the Council, the facility complies with all other Oregon statutes and administrative rules identified in the

[33] As stated above, pursuant to ORS 469.401(4), such matters include design-specific construction or operation standards and practices that do not relate to siting, as well as matters relating to employee health and safety, building code compliance, wage and hour or other labor regulations, or local government fees and charges

[34] ORS 469.503(3).

[35] The Council does not have jurisdiction over matters that are not included in and governed by the site certificate or amended site certificate. However, the Council may rely on the determinations of compliance and the conditions in the permits issued by these state agencies and local governments in deciding whether the facility meets other standards and requirements under its jurisdiction

[36] ORS 469.401(2).

project order, as amended, as applicable to the issuance of a site certificate for the proposed facility. If the Council finds that applicable Oregon statutes and rules, other than those involving federally delegated programs, would impose conflicting requirements, the Council shall resolve the conflict consistent with the public interest. In resolving the conflict, the Council cannot waive any applicable state statute.
** * **

(4) In making determinations regarding compliance with statutes, rules and ordinances normally administered by other agencies or compliance with requirement of the Council statutes if other agencies have special expertise, the Department of Energy shall consult such other agencies during the notice of intent, site certificate application and site certificate amendment processes. Nothing in these rules is intended to interfere with the state's implementation of programs delegated to it by the federal government.

IV.A.1. General Standard

OAR 345-022-0000 provides the Council's General Standard of Review and requires the Council to find that a preponderance of evidence on the record supports the conclusion that the facility complies with the requirements of the Oregon Energy Facility Siting statutes, the siting standards adopted by the Council and with all other Oregon Statues and administrative rules identified in the project order, as amended, and as applicable to the issuance of a site certificate for the proposed facility.

In this DPO, the department recommends draft proposed findings of fact and conclusions of law based on staff's evaluation of the proposed facility's compliance with all statutes, administrative rules and ordinances applicable to the issuance of this site certificate. As discussed above, the department consulted with other agencies during the notice of intent and site certificate application processes to aid in the evaluation of the proposed facility's compliance with statutes, rules and ordinances otherwise administered by those agencies. Additionally, the department relied upon the reviewing agencies' special expertise in evaluating the facility's compliance with the requirements of the Council's standards.

When an applicant has shown that the proposed facility cannot meet a Council standard or has demonstrated that there is no reasonable way for the facility to comply with the Council standards through mitigation or avoidance of the damage to protected resources, OAR 345-022-0000(2) and (3) establish criteria the Council may use to make a balancing determination. In this instance, the applicant does not assert that the proposed facility cannot meet an applicable Council standard, nor has there been a demonstration of non-compliance. Therefore, OAR 345-022-0000(2) and (3) do not apply to this review.[37]

[37] OAR 345-022-0000 implements ORS 469.501. ORS 469.501(3) was amended during the 2013 legislative session. At the time of this DPO, the Council's administrative rules have not been updated to reflect those amendments. As a result, OAR 345-022-0000(2) and (3) , as well as the language in OAR 345-022-0000(1)(a) related to the Council's

A. Certificate Expiration [OAR 345-027-0000]

Under OAR 345-015-0085(9), the site certificate is effective upon execution by the Council Chair and the applicant. ORS 469.370(12) requires the Council to "specify in the site certificate the date by which construction of the facility must begin." ORS 469.401(2) requires that the site certificate contain a condition "for the time for completion of construction." Under OAR 345-027-0000, the certificate holder must begin construction on the facility no later than the construction beginning date specified by Council in the site certificate, unless an amendment is requested and granted. "Construction" is defined in ORS 469.300(6) to mean "work performed on a site, excluding surveying, exploration or other activities to define or characterize the site, the cost of which exceeds $250,000." OAR 345-001-0010(12) adopts the statutory definition.

As provided in the ASC, the applicant requests a construction start deadline three years from the effective date of the site certificate and a construction completion deadline five years from the beginning of construction, or eight years after the effective date of the site certificate.[38] The applicant requests these deadlines because of the complexity of the project and the reliance upon other facilities that are currently being permitted and will need to be constructed in order to operate the SDP.[39] As provided in the ASC, the operation of the SDP requires the delivery of gas from the Pacific Connector Gas Pipeline and the use of gas that has been processed through the gas conditioning facility, which, as noted above, is part of the larger LNG terminal facility under FERC jurisdiction. Pacific Connector and Jordan Cove Energy Project, LP have both submitted applications to FERC (applications were submitted in 2013); however, at this time, neither application has been approved. However, even if both are approved, both proposals would still need to be fully entitled prior to construction, which also requires FERC review. Therefore, for these reasons, as well as potential unanticipated weather-related delays, construction delays and component delivery, the applicant requests three years from the effective date of the site certificate to begin construction and eight years from the effective date of the site certificate to complete construction.

An applicant's need for flexibility in construction deadlines must be balanced against the requirement that the Council apply current rules and regulations in its evaluation of an application for a site certificate. The Council's findings on whether the proposed facility can meet any given Council standard (or the requirements of any other agency approval under Council jurisdiction) are based on its findings of facts and conclusions of law at the time of the

authority to balance competing interests in instances where the proposed facility does not meet one or more Council standard, are not consistent with the statute. If the Council's authority to make a balancing determination was at issue, the statute, rather than the rule, would directly apply to this application.

[38] Note that there are general site developments that will occur on the property over which the Energy Facility Siting Council's site boundary is laid. These improvements are not being made in connection with the construction or siting of the South Dunes Power Plant; rather these improvements are required in order to prepare the site for any industrial development, independent of the proposed facility. These improvements are being undertaken consistent with all necessary authorizations, including a Solid Waste Disposal Site Closure Permit for landfills and a National Pollution Discharge Elimination System Stormwater 1200-C permit. See ASC, Exhibit B, B-14.

[39] ASC, Exhibit B, B-15.

site certificate decision. Local and state regulations applicable to a facility, and the situation within the analysis area for a facility, can change over time. The probability of a change in law or circumstance within the analysis area increases the further the construction date is set from the date the site certificate is executed. Since the year 2000, the Council has approved three site certificates for natural gas generation facilities: Port Westward Generating Project in 2002, Klamath Generation Facility in 2005, and Carty Generating Station in 2012.[40] The original deadlines for beginning and completing construction for each facility are shown in Table 1 below:

Table 1: Deadlines for Beginning and Completing Construction

Facility (Year)	**Deadline to begin construction**	**Deadline to complete construction**
Port Westward Generating Project (2002)	2 years from effective date of site certificate	5 years from effective date of site certificate
Klamath Generation Facility (2005)	2 years from effective date of site certificate	5 years from effective date of site certificate
Carty Generating Station (2012)	3 years from effective date of site certificate (Block 1)	3 years from beginning of construction (Block 1)

In the event that a certificate holder is not able to begin and/or complete construction by the specified deadlines, OAR 345-027-0030 allows a certificate holder to apply for an amendment to extend the deadlines for beginning or completing construction. In evaluating such an amendment request, the Council must consider, pursuant to OAR 345-027-0070(10)(b) whether the Council has previously granted an extension, whether there has been any change of circumstance that affects a previous Council finding and whether the facility complies with all Council standards.

As noted in Table 1, for the most recent natural gas facilities issued a site certificate, for Port Westward the original site certificate imposed a two year construction beginning deadline. However, in 2004, the Council approved an amendment to extend both the construction beginning deadline and completion deadline by two years. Therefore, construction on the Port Westward facility was required to begin no later than 2006 and be completed no later than 2009. However, in 2009, the Council again extended the construction completion deadlines an additional two years. Therefore, through the amendment process, Port Westward began construction of Unit 1 four years after the initial site certificate was issued and did not complete construction until nine years after the execution of the original site certificate. Further, Port Westward also received an approval, through an amendment, to construct the facility in two distinct units and phases, with the certificate holder requesting additional construction

[40] Two proposed natural-gas facilities are currently in the midst of the energy facility siting process. See the department's website for additional information regarding the department's recommendations to Council on beginning and completing construction deadlines.

deadline extensions for Unit 2. Specifically, Unit 2 has a construction completion deadline of 2015, which is 8 years from the effective date of Port Westwards' site certificate.

For the Klamath Generation Facility, the Council imposed a beginning construction deadline of 2 years from site certificate execution and 5 years from site certificate execution to complete construction. Klamath Generation Facility submitted three amendment requests for this facility, all of which requested extensions in the construction deadlines. The first two requests were approved by Council, while the third request was submitted but never reviewed by Council due to the applicant's withdrawal of the request. Upon withdrawal of the request, the site certificate also expired and was terminated by the Council because the site certificate holder did not begin construction by the deadline provided for in the second amended site certificate.[41]

Of the three natural gas facilities approved by the Council since 2000, Carty Generating Facility is the only facility that began construction in compliance with the deadline imposed in the site certificate, which allowed for three years from the date of site certificate execution, as opposed to the two years for Klamath and Port Westward. However, it has yet to be seen whether construction can be completed within the deadline, without requiring an amendment request for an extension.

The Council's imposition of the initial deadlines in the site certificate should reflect a balance between the Council's concern regarding potential circumstantial changes and the individual circumstances of the facility being proposed. As discussed above, the operation of the SDP is dependent upon delivery of gas from the Pacific Connector Gas Pipeline and the use of processed gas that has been processed through the gas conditioning facility, which are both part of the larger LNG terminal under FERC jurisdiction. Therefore, staff believes allowing three years to begin construction and an additional five years to complete construction is conservative in light of the additional non-jurisdictional permits necessary to complete and operate the SDP. Additionally, the proposed timeline includes a three year construction beginning deadline, which is consistent with past Council requirements. Therefore, concerns regarding potential changes on the ground prior to beginning construction are significantly minimized.

Based upon the foregoing, the department recommends the Council establish a three year deadline from site certification to begin construction, and a five-year deadline from the beginning of construction to complete construction. Accordingly, and in compliance with OAR 345-027-0000 and OAR 345-027-0020(4), the department recommends that the Council adopt the following conditions:

> **Condition A.1:** The certificate holder shall begin construction of the facility within three years after the effective date of the site certificate. Under OAR 345-015-0085(8), the site certificate is effective upon execution by the Council chair and the applicant.

[41] OAR 345-027-0000

Condition A.2: The certificate holder shall complete construction of the facility within eight years of the effective date of the site certificate.

B. Mandatory Conditions in Site Certificates [OAR 345-027-0020]

OAR 345-027-0020 lists certain conditions the Council must adopt in every site certificate. Some mandatory conditions directly implement a Council standard, and are therefore applied in this DPO within the discussion of the relevant standard. However, mandatory conditions that are not otherwise addressed in the evaluation of compliance with specific standards are discussed below, in the context of the Council's General Standard of Review. In addition, pursuant to OAR 345-027-0020(10), the Council must include as conditions in the site certificate all representations in the application and supporting record that the Council deems to be binding commitments made by the applicant. As provided in OAR 345-027-0020(1), "the Council shall not change the conditions of the site certificate except as provided for in OAR Chapter 345, Division 27."

The following are mandatory conditions required pursuant to OAR 345-027-0020:

Condition A.3 [OAR 345-027-0020(2)]: The certificate holder shall submit a legal description of the site to the Department of Energy within 90 days after beginning operation of the facility. The legal description required by this rule means a description of metes and bounds or a description of the site by reference to a map and geographic data that clearly and specifically identify the outer boundaries that contain all parts of the facility.

Condition A.4 [OAR 345-027-0020(3)]: The certificate holder shall design, construct, operate, and retire the facility:

(a) Substantially as described in the site certificate;

(b) In compliance with the requirements of ORS Chapter 469, applicable Council rules, and applicable state and local laws, rules and ordinances in effect at the time the site certificate is issued; and

(c) In compliance with all applicable permit requirements of other state agencies.

Condition A.5 [OAR 345-027-0020(4)]: The certificate holder shall begin and complete construction of the facility by the dates specified in the site certificate. (See conditions A.1 and A.2 above).

Condition A.6 [OAR 345-027-0020(5)]: Except as necessary for the initial survey or as otherwise allowed for wind energy facilities, transmission lines or pipelines under this section, the certificate holder shall not begin construction, as defined in OAR 345-001-0010,

or create a clearing on any part of the site until the certificate holder has construction rights on all parts of the site. For the purpose of this rule, "construction rights" means the legal right to engage in construction activities. ***

Condition A.7 [OAR 345-027-0020(6)]: If the certificate holder becomes aware of a significant environmental change or impact attributable to the facility, the certificate holder shall, as soon as possible, submit a written report to the Department describing the impact on the facility and any affected site certificate conditions.

Condition A.8 [OAR 345-027-0020(11)]: Upon completion of construction, the certificate holder shall restore vegetation to the extent practicable and shall landscape all areas disturbed by construction in a manner compatible with the surrounding and proposed use. Upon completion of construction, the certificate holder shall remove all temporary structures not required for facility operation and dispose of all timber, brush, refuse and flammable or combustible material resulting from clearing of land and construction of the facility.

Condition A.9 [OAR 345-027-0020(15)]: Before any transfer of ownership of the facility or ownership of the site certificate holder, the certificate holder shall inform the department of the proposed new owners. The requirements of OAR 345-027-0100 apply to any transfer of ownership that requires a transfer of the site certificate.

C. Site Specific Conditions [OAR 345-027-0023]

In addition to mandatory conditions imposed on all facilities, the Council rules also include "site specific" conditions at OAR 345-027-0023 that the Council may include in the site certificate to address issues specific to certain facility types or proposed features of facilities. Because the facility includes the boil-off gas line as a related and supporting facility, the department recommends the Council adopt the following site specific condition: [42]

Condition A.10 [OAR 345-027-0023(2)]: The certificate holder shall submit to the Department copies of all incident reports involving the pipeline required under 49 CFR § 191.15.

Additionally, the department recommends the Council adopt the following condition regarding the construction and operation of the proposed boil-off gas pipeline

Condition A.11: The certificate holder shall design, construct and operate the boil off gas pipeline in accordance with the requirements of the applicable sections of the American Society of Mechanical Engineers (ASME) B31.

D. Construction and Operation Rules for Facilities [OAR Chapter 345, Division 26]

[42] Site specific conditions addressing the proposed transmission lines are discussed in Section IV.P, below.

The Council has also adopted rules at OAR Chapter 345, Division 26 to ensure that construction, operation, and retirement of facilities are accomplished in a manner consistent with the protection of the public health, safety, and welfare and protection of the environment. These rules include requirements for compliance plans, inspections, reporting and notification of incidents. The certificate holder must construct the facility substantially as described in the site certificate and the certificate holder must construct, operate, and retire the facility in accordance with all applicable rules adopted by the Council in OAR Chapter 345, Division 26.

IV.B. Organizational Expertise [OAR 345-022-0010]

(1) To issue a site certificate, the Council must find that the applicant has the organizational expertise to construct, operate and retire the proposed facility in compliance with Council standards and conditions of the site certificate. To conclude that the applicant has this expertise, the Council must find that the applicant has demonstrated the ability to design, construct and operate the proposed facility in compliance with site certificate conditions and in a manner that protects public health and safety and has demonstrated the ability to restore the site to a useful, non-hazardous condition. The Council may consider the applicant's experience, the applicant's access to technical expertise and the applicant's past performance in constructing, operating and retiring other facilities, including, but not limited to, the number and severity of regulatory citations issued to the applicant.

(2) The Council may base its findings under section (1) on a rebuttable presumption that an applicant has organizational, managerial and technical expertise, if the applicant has an ISO 9000 or ISO 14000 certified program and proposes to design, construct and operate the facility according to that program.

(3) If the applicant does not itself obtain a state or local government permit or approval for which the Council would ordinarily determine compliance but instead relies on a permit or approval issued to a third party, the Council, to issue a site certificate, must find that the third party has, or has a reasonable likelihood of obtaining, the necessary permit or approval, and that the applicant has, or has a reasonable likelihood of entering into, a contractual or other arrangement with the third party for access to the resource or service secured by that permit or approval.

(4) If the applicant relies on a permit or approval issued to a third party and the third party does not have the necessary permit or approval at the time the Council issues the site certificate, the Council may issue the site certificate subject to the condition that the certificate holder shall not commence construction or operation as appropriate until the third party has obtained the necessary permit or approval and the applicant has a contract or other arrangement for access to the resource or service secured by that permit or approval.

IV.B.1. Organizational Expertise: Findings of Fact

To demonstrate compliance with the Council's Organizational Expertise Standard, the applicant provided evidence in the following exhibits: Exhibit A, Application Information; Exhibit D, Applicant's Organizational, Managerial, and Technical Expertise; Exhibit E, Permits Needed for Construction and Operation; Exhibit M, Financial Analysis; and Exhibit W, Site Restoration.

A. Organizational Expertise to Construct, Operate and Retire the Proposed Facility

The applicant, Jordan Cove Energy Project, LP, is a Delaware limited partnership. As of the date of this Order, the applicant is owned by one limited partner and one general partner. The limited partner is Jordan Cove LNG L.P, and the general partner is Jordan Cove Energy Project L.L.C. Both Jordan Cove Energy Project L.L.C. and Jordan Cove LNG LP are owned by Veresen, Inc. Thus, the applicant is a wholly-owned subsidiary of Veresen, Inc.[43] Veresen currently controls the applicant through the general partner, Jordan Cove Energy Project L.L.C.[44] Veresen is an energy company based in Calgary, Alberta, Canada. As discussed in the ASC, Veresen has completed fourteen energy generation facilities in four energy markets including: gas-fired generation, renewable energy, district energy, and waste heat. Within these markets, Veresen has over 955 megawatts (MW) of capacity operating in North America.[45] Most recently, according to the ASC, Veresen managed the development, design, construction, startup and operation of the York Energy Centre, which is a 400 MW natural gas-fired peaking facility in Ontario, Canada. The York Energy Centre met its scheduled startup in May 2012 and is in compliance with all environmental permits and regulations.[46] According to the ASC, Veresen's senior management and facility staff have over 100 years of combined experience in operating gas turbine facilities for both peaking and baseload. Veresen's senior management[47] is currently, and would continue to be engaged in the design, construction and operation of the SDP facility.[48]

Regarding Veresen's past performance, of the six similar natural-gas fired generation facilities currently owned by Veresen, the applicant cites two environmental releases, both of which were ammonia releases. According to the ASC, the first release occurred during maintenance and was due to human error combined with mechanical failure. The second release occurred when a tube ruptured due to mechanical failure. As described in the ASC, both incidences were reported as required and neither instance resulted in environmental impacts or human-health related issues. Incident investigations were completed for each occurrence to identify the cause of the incident and implement mitigation. According to the ASC, subsequent mitigation

[43] SDPAPPDoc276
[44] ASC, Exhibit D, D-3.
[45] ASC, Exhibit D, D-4.
[46] ASC, Exhibit D, D-3—D-5.
[47] Please refer to the application for details regarding key senior management involved with the South Dunes facility. ASC, Exhibit D, D-5—D-6.
[48] ASC, Exhibit D, D-7.

included additional safety training for personnel and the improvement of engineering and maintenance controls to prevent reoccurrence of the incident.[49]

The applicant also identified four events of noncompliance involving permit limit exceedances and an instance of a warning notice from a regulator detailing its intent to issue a notice of violation due to the late submission of daily emission reports. As explained in the ASC, the permit exceedances occurred because of equipment failures and resulted in no associated injuries or significant environmental impacts. Moreover, as a result of the failure, the pollution equipment was inspected and repaired to meet compliance standards. To remedy the late reporting, Veresen provided additional training and management oversight which mitigated the error.[50] In addition to the aforementioned incident specific remediation efforts, Veresen has also implemented facility-specific Environmental Health and Safety ("EH&S") Management Plans as well as provides oversight on all environmental health and safety matters. As explained the ASC, the applicant's EH&S control framework was established on the principal of no harm to people and no damage to the environment. Appendix D-1 of the ASC includes Veresen's EH&S policy, which according the applicant, anchors the applicant's EH&S policy.[51] Based upon the foregoing, while Veresen's experience has not been without incident, Veresen has reported and effectively responded to each incident, contained each incident to avoid impacts to human safety and the environment and acted to remedy instances of non-compliance in a manner which protects against future violations.

The applicant has selected the following contractors to assist in the design, preconstruction and construction of the SDP: Black & Veatch, Inc., Kiewit Corporation, David Evans and Associates, Inc. (DEA), Geotechnical Resources, Inc., SHN Consulting Engineers & Geologists, Inc., and POWER Engineers, Inc.[52] According to the ASC, Black & Veatch, Inc. would be the principal designer, with a consortium of Black & Veatch, Inc. and Kiewit Corporation selected to construct the facility. Black & Veatch, Inc. has executed 156,000 MW of energy facilities.[53] Additionally, the applicant has selected DEA to be the primary lead for mitigation efforts. Because the applicant relies on upland and wetland mitigation to meet Council standards, the applicant included examples of successful wetland and habitat restoration projects completed by DEA, as well as SHN Consulting Engineers & Geologists, Inc. (SHN) in the application. As explained in the ASC, DEA previously implemented a fish-friendly tide gate in Kentuck Slough to replace the Kentuck Slough Bridge. The tide gate allows upstream fish migration while limiting

[49] ASC, Exhibit D, D-10.
[50] ASC, Exhibit D, D-10 –D-11.
[51] ASC, Exhibit D, D-13.
[52] ASC, Exhibit D, D-7.
[53] Kiewit Corporation has been involved in the gas power generation market since the early 1990's and has since installed more than 8,500 MW of simple and combined-cycle projects across North America. David Evans and Associates, Inc. is a multidisciplinary consulting firm headquartered in Portland, Oregon with over 700 professionals and provides comprehensive ecological restoration services. Geotechnical Resources, Inc. provides specialized geotechnical engineers and engineering geologists from offices in the Pacific Northwest. SHN Consulting Engineers & Geologists, Inc. provides professional engineers, surveyors, and geologists and has a local office in Coos Bay, Oregon. POWER Engineers, Inc. is a global consulting and engineering firm with over 160,000 MW of installed power plant capacity on more than 300 generating units. ASC, Exhibit D, D-7 – D-9.

tidal influence from Coos Bay into adjacent private properties along the slough. DEA designed the bridge, prepared the compensatory wetland mitigation plans to offset impacts to high and low marsh estuarine wetlands and conducted the post-construction monitoring which documented successful establishment of salt marsh habitats. As another example, SHN conducted a mitigation project at Humbolt State University's Aquatic Center Floating Dock which resulted in substantial increases in available eelgrass habitat.[54] For additional examples of successful wetland and riparian mitigation projects that are similar in nature to the mitigation proposed by the applicant for South Dunes and completed by the applicant's selected contractors please refer to Exhibit B of the ASC.

Based upon the applicant's access to technical expertise and Veresen's past performance, the department recommends that the Council find that the applicant has the organizational expertise to construct, operate and retire the proposed facility in compliance with Council standards. However, because the applicant would be relying on contractors and subcontractors, the department recommends the Council adopt the following conditions to ensure that all contractors and subcontractors operate in compliance with the site certificate:

Condition B.1: The certificate holder shall obtain all necessary federal, state and local permits or approvals required for construction, operation and retirement of the facility or ensure that its contractors obtain the necessary federal, state and local permits or approvals.

Condition B.2: The certificate holder shall contractually require all contractors and subcontractors involved in the construction of the facility to comply with all applicable laws and regulations and with the terms and conditions of the site certificate. Such contractual provisions shall not operate to relieve the certificate holder of responsibility under the site certificate.

The applicant provided information regarding its ability to retire the facility to a useful, nonhazardous condition in Exhibit W of the ASC. The applicant's compliance with the Council's Retirement and Financial Assurance Standard is discussed below.[55] To ensure that the applicant restores the site to a useful, non-hazardous condition, OAR 345-027-0020(7) requires the Council adopt the following mandatory condition:

Condition B.3 [OAR 345-027-0020(7)]: The certificate holder shall prevent the development of any conditions on the site that would preclude restoration of the site to a useful, non-hazardous condition to the extent that prevention of such site conditions is within the control of the certificate holder.

[54] ASC, Exhibit D, D-15, D-17.

[55] The department recommends the Council find that the applicant complies with the Retirement and Financial Assurance Standard.

Based upon the information provided by the applicant and subject to compliance with the recommended and mandatory conditions, the department finds that the applicant has the organizational expertise to construct, operate and retire the proposed facility.

B. ISO 900 or ISO 14000 Certified Program

OAR 345-022-0010(2) allows the Council to base its findings under subsection (1) on a rebuttable presumption that an applicant has the organizational, managerial and technical expertise, if the applicant has an ISO 9000 or ISO 14000 certified program. Although the applicant does not have an ISO 9000 or ISO 14000 certified program, Veresen's Environmental Health and Safety Management Systems have been designed based on the ISO 14000 program, according to the ASC.[56] Further, as mentioned above, Veresen provides corporate oversight on all EH&S matters and has facility-specific EH&S Management Plans.[57]

C. Third-Party Permits

OAR 345-022-0010(3) addresses the requirements for third-party contractors. The applicant does not propose to rely on any federally-issued third-party permits for construction or operation of the SDP.[58] With respect to local permits, as explained in Exhibit E of the ASC, the facility would rely upon the Coos Bay North Bend Water Board (CBNBWB) and its water right to satisfy the applicant's raw and potable water needs.[59] The CBNBWB currently holds the requisite water rights, currently provides service to the applicant and has the capacity to meet the applicant's future water demands.[60] [61] The applicant has demonstrated that the third-party has the necessary permits and that the applicant and third-party have reached an agreement for access to the resource secured by the CBNBWB. Because the applicant is relying upon a permit issued to a third-party and the third-party already holds the permit OAR 345-022-0010(4) is not applicable.

In addition to mandatory Condition A.9, the department recommends that the Council adopt the following conditions to ensure all required permits are obtained prior to construction:

> **Condition B.4:** Before beginning construction, the certificate holder shall provide confirmation in writing to the department that the third-party, the CBNBWB, has all necessary water rights and shall provide to the department proof of agreements between the certificate holder and the third-party regarding access to the resources or services secured by the permits or approvals.

[56] ASC, Section D.7,D-13.
[57] ASC, Exhibit D, D-13.
[58] ASC, Exhibit E, E-15.
[59] ASC, Section E.5, p E-14.
[60] ASC, Exhibit O, Appendix O-2.
[61] ASC, Exhibit O, Appendix O-1.

Based upon evidence in the record and as discussed above, the department recommends that the Council find that the applicant has experienced personnel with the organizational expertise to construct, operate and retire the facility, as well as access to and agreements with technical experts to aid in the design, construction, operation and retirement of the facility. Further, in consideration of the applicant's past performance and the mitigation implemented thereafter, the department recommends that the Council find that the applicant has the ability to design, construct and operate the proposed facility in a manner that protects public health and safety and has demonstrated the ability to restore the site to a useful, non-hazardous condition.

IV.B.2.Organizational Expertise: Conclusions of Law

Based on the foregoing findings of fact and conclusions, and subject to compliance with the recommended site certificate conditions, the department recommends that the Council find that the proposed facility complies with the Council's Organizational Expertise Standard.

IV.C. Structural Standard [OAR 345-022-0020]

(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that:

(a) The applicant, through appropriate site-specific study, has adequately characterized the site as to the Maximum Considered Earthquake Ground Motion as shown for the site in the 2009 International Building Code and maximum probable ground motion, taking into account ground failure and amplification for the site specific soil profile under the maximum credible and maximum probable seismic events; and

(b) The applicant can design, engineer, and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from maximum probable ground motion events. As used in this rule "seismic hazard" includes ground shaking, ground failure, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement, and subsidence;

(c) The applicant, through appropriate site-specific study, has adequately characterized the potential geological and soils hazards of the site and its vicinity that could, in the absence of a seismic event, adversely affect, or be aggravated by, the construction and operation of the proposed facility; and

(d) The applicant can design, engineer and construct the facility to avoid dangers to human safety presented by the hazards identified in subsection (c).

(2) The Council may issue a site certificate for a facility that would produce power from wind, solar or geothermal energy without making the findings described in section (1).

However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.
** * **

IV.C.1. Structural Standard: Findings of Fact

OAR 345-022-0020 requires the Council to find that the applicant has adequately characterized the potential seismic, geological and soil hazards of the site, and that the applicant can design, engineer and construct the facility to avoid dangers to human safety from these hazards. The Council does not preempt the jurisdiction of any state or local government over matters related to building code compliance. In addition, the Council has adopted mandatory site certificate conditions that require a certificate holder to satisfactorily implement the design, engineering and construction practices proposed in the application in order to satisfy the Structural Standard. These mandatory conditions are discussed in more detail below. To be clear, as provided in the quoted reference above, the Council's Structural Standard requires the applicant to comply with the 2009 International Building Code (IBC) and OAR 345-021-0010(1)(h)(F)(iv)[62] requires use of the 2010 Oregon Structure Specialty Code (OSSC) for seismic design procedures.[63] The 2010 OSSC is based on the 2009 IBC and the 2002 USGS probabilistic seismic hazard analysis (PSHA).[64]

OAR 345-022-0020(2) and (3) do not apply to this application because the proposed facility would not produce power from wind, solar or geothermal energy and the facility is not a special criteria facility as defined in OAR 345-015-0310. Therefore, only the standards in OAR 345-022-0020(1)(a) through (d) apply to the proposed facility.

As established in the project order, the analysis area for the Structural Standard is the area within the site boundary. As provided above, the site boundary, as defined by OAR 345-001-0010(53), is the area within the perimeter of the proposed energy facility, its related or supporting facilities, all temporary laydown and staging areas, and all micrositing corridors proposed by the applicant. The applicant provided information regarding the seismic characteristics of the site and possible seismic and geological hazards in Exhibit H of the ASC.[65]

[62] OAR Chapter 345, Division 21 details the requirements for an application for a site certificate. OAR Chapter 345, Division 22 includes the Standards for Siting Facilities.

[63] In review of an application for site certificate, the Council must review the applicant's compliance with the Structural Standard currently in effect. Consequently, the Council must rely upon the code references contained within that current standard as well. Therefore, as the Structural Standard currently requires the applicant to demonstrate compliance with the 2009 IBC, the applicant must demonstrate compliance with the 2009 IBC and not another code or an updated code. The applicant also submitted a letter from the Oregon Buildings Code Division that stated it would recognize and review construction documents to the 2010 editions of the OSSC. *See* SDPAPPDoc284.

[64] The 2010 OSSC incorporates the majority of the relevant seismic requirements provided in ASCE 7-05.

[65] To assist in the review of the applicant's information provided in Exhibit H, the department engaged Cornforth Consultants, Inc., a specialized Portland, Oregon based geotechnical firm.

A. Characterization of Seismic Hazards: OAR 345-022-0020(1)(a)

The applicant, through appropriate site-specific study, has adequately characterized the site as to the Maximum Considered Earthquake Ground Motion as shown for the site in the 2009 International Building Code and maximum probable ground motion, taking into account ground failure and amplification for the site specific soil profile under the maximum credible and maximum probable seismic events

OAR 345-022-0020(1)(a) requires the applicant to adequately characterize the probability and severity of seismic events and ground failure at the site. The proposed SDP site is located north of Coos Bay on the North Spit. As explained in the ASC, the North Spit is mainly composed of north-south trending sand dune ridges separated by deflation plains, with beach sand located along the western margin of the spit.[66] The interior of the North Spit is characterized by stabilized and active sand dunes, fresh-water lakes, and wetlands, with upland areas of conifer vegetation and grasses.[67] According to the ASC, the available topographic information indicates that the central portion of the site is relatively flat at an elevation of about 15 feet. However, the applicant proposes to raise the site grade by approximately 30 feet in elevation via the placement of structural fill. As discussed in more detail under the Council's Soils Standard, the fill material to be used to raise the site will be predominantly sand dredged from Coos Bay.[68]

To facilitate the Council's evaluation of compliance with the Structural Standard, OAR 345-021-0010(1)(h)(A), requires that the applicant provide a geologic report meeting the guidance in the Oregon Department of Geology and Mineral Industries (DOGAMI) Open File Report 00-004 "Guidelines for Engineering Geologic Reports and Site-Specific Seismic Hazard Reports." The Guidance outlines four major areas that include: (1) general geologic and geographic information of the site and surrounding areas; (2) geologic map of the area within the site boundary and on-site investigations; (3) geologic descriptions of the soils and rock formations occurring in and around the site; and (4) an assessment of the factors influencing potential geologic hazards. In response to the above requirement, in addition to the information provided with Exhibit H, the applicant also provided the *Site-Specific Seismic Hazard Study, South Dunes Site, Jordan Cove Liquefied Natural Gas Project, Coos County, Oregon, February 28, 2014 (Revised April 30, 2014),* which was prepared by the applicant's consultant, Geotechnical Resources Inc. This report meets the Guidance requirements.[69]

[66] ASC, Exhibit H, H-5.

[67] ASC, Exhibit H, H-5.

[68] ASC, Exhibit H, H-5.

[69] In addition to above listed report, the applicant conducted additional geotechnical and geologic work on and near the SDP site to demonstrate compliance with the Structural Standard. This work is provided and analyzed in the following reports: Geotechnical Resources, Inc., Mill Site Geotechnical Data Report, Jordan Cove LNG Facility, North Bend, Oregon, November 29, 2012; Black & Veatch, Geotechnical Report, Jordan Cove LNG Project, Coos County, Oregon, May 02, 2014; Black & Veatch, Soil Liquefaction Report, Jordan Cove LNG Project, Coos County, Oregon, May 02, 2014; Black & Veatch, Supplemental Geotechnical Report, Jordan Cove LNG Project, Coos County, Oregon, June 10, 2014; Black & Veatch, Supplemental Soil Liquefaction Report, Jordan Cove LNG Project, Coos County, Oregon, June 10, 2014. *See* Exhibit H, Appendix H-1. It should be noted the applicant submitted supplemental studies, which include: Black & Veatch, Geotechnical Data Report, Jordan Cove Energy Project, Coos

As explained in the ASC, the facility is located in the Cascadia Subduction Zone (CSZ), an active convergent plate boundary between the subducting Explorer, Juan de Fuca, and Gorda Plates and the overriding North America Plate (the CSZ results from the Juan de Fuca tectonic plate sliding beneath the North American continental tectonic plate).[70] As provided in the ASC, the site is located at the western edge of the coastal headlands of the Central Coast Range, on the North Spit of Coos Bay, which marks the southern edge of the Holocene-age Coos Bay dune sheet.[71] Late-Pleistocence dune deposits are also exposed northeast of the site.[72] According to the ASC, based upon review of aerial photographs, the area north and west of the site has been heavily vegetated and forested since 1939, which indicates that these dunes are stabilized and mature.[73] Geotechnical information for the site indicates that the surficial geologic unit at the site is a relatively clean, fine-grained sand. Based on historical records and aerial photographs, the applicant determined that the surficial unit over large areas of the project site is typically a sand fill to depths of about 10 to 20 feet, with the sand fill ranging from loose to very dense and typically underlain by natural deposits of dense to very dense sand.[74]

Earthquake Sources

According to the ASC, the two principal types of earthquake sources that are capable of generating ground motions greater than 0.05g (force of gravity)[75] at the site are the CSZ and local crustal faults. The applicant considered all Quaternary faults (less than 1.6 million years old) identified by the USGS within 93 miles of the site as sources capable of generating a peak bedrock acceleration of 0.05g at the site.[76] Table C.1, below, provides each fault identified by the applicant, as well as the distance of the fault from the proposed facility site.[77]

County, Oregon, February 14, 2014 (revised March 05, 2014); Black & Veatch, Report on Electrical Resistivity Test, Jordan Cove, North Bend, Oregon, October 24, 2013; Black & Veatch, Report of In Situ Pressuremeter, Jordan Cove Project, Coos Bay, Oregon, October 2013; Black & Veatch, Final Report, P-S suspension Veolcities, Borings BVB-136A, BVB-143C, BVB-148 & BVB-148B and Crosshole Seismic Measurements Borings BVB-148 & BVB-148A, Jordan Cove, Oregon, December 31, 2013; Black & Veatch, Pump Test Data Report, Jordan Cove Energy Project, Coos County, Oregon, March 14, 2014; Black & Veatch, Site specific Seismic Hazard Study LNG Terminal Site, Jordan Cove Liquefied Natural Gas Project, Coos County, Oregon, April 18, 2014; KBV, Ground Improvement for Liquefaction Mitigation, Jordan Cove LNG Project, December 18, 2014.

[70] ASC, Exhibit H, H-5.

[71] ASC, Exhibit H, H-6.

[72] ASC, Exhibit H, H-6.

[73] ASC, Exhibit H, H-6. Due to the thickness of the dune sands at the site (over 100 feet) identification of bedrock structure is limited.

[74] ASC, Exhibit H, H-7.

[75] ASC, Exhibit H, Appendix H-16.

[76] ASC, Exhibit H, H-16.

[77] *See* also, Site Specific Seismic Hazard Study LNG Terminal Site, July 07, 2007 (revised April 18, 2014), which describes the literature review, communications with DOGAMI, investigation, and analysis of local fault sources. Investigations included geophysical seismic reflection survey to explore the possible existence of active faults across the east-west aligned portion of Coos Bay. ASC, Exhibit H, Appendix H-16.The applicant as well and DOGMI both reviewed the results of the survey and agreed that the profile did not indicate the presence of a fault either across Pony Slough or across the bay immediately south of the site location. Additionally, the applicant's geotechnical consultant met with DOGAMI in October 2013 to discuss the requirements of Exhibit H specifically. A summary of their consultation is provided in Exhibit H, Appendix H-2.

Table C.1 Faults Within 150 Kilometers (93 miles) of the Project Site

Fault Name	Fault Type	Mmax, Mw	Distance From Site (km)	Distance From Site (miles)
Cascadia Subduction Zone	Megathrust	8.3-9.2	1	8
South Slough	Thrus	6.5	1	10
Coquille Anticline	Revers	6.8	3	19
Battle Rock	Norma	6.8-7.4	6	37
Beaver Creek	Norma	6.5-6.9	6	39
Cape Blanco	Thrus	6.8-7.4	6	42
Whaleshead	Right lateral strike-	6.8-7.4	1	63
Waldport	Revers	6.3-6.8	1	64
Alvin Canyon	Left lateral strike-slip	7.0-7.6	1	70
Daisy Bank	Left lateral strike-slip	7.1-7.7	1	82
Yaquina	Oblique reverse	6.1-6.5	1	83
Mmax - Maximum magnitude Mw - Moment magnitude				

As stated in the ASC, there is a limited database of historic earthquakes for Oregon due to a relatively short period of written records and a regional rate of seismicity that is lower than that of neighboring states.[78] Further, the Coos Bay area is located in a zone of low historical seismicity, and records of earthquakes felt in the vicinity of the SDP site are limited.[79] According to the ASC, there are no historical records of earthquakes in the Advanced National Seismic System (ANSS) database of magnitudes greater than Mw 4 within a 50-mile (81 km) radius of the site. However, to supplement the limited historical data, the applicant reviewed the USGS "Did you Feel it Database" and found that the June 14, 2005 Mw 7 earthquake off the coast of Crescent City, California was felt in the vicinity of the site and described as II to III using the Modified Mercalli III (Mercalli) scale.[80] In addition, the July 12, 2004, Mw 4.9 earthquake off the coast of Newport, Oregon was also felt in the vicinity of the site and described as III using the Mercalli scale.[81]

Maximum Considered Earthquake Ground Motion

The probability of an earthquake of a specific magnitude occurring at a given location is commonly expressed by its return period, i.e., the average length of time between successive occurrences of an earthquake of that size or larger at that location. The return period of a design earthquake is calculated once a project design life and some measure of the acceptable risk that the design earthquake might occur or be exceeded are specified. Historically, building

[78] ASC, Exhibit H, H-17.
[79] ASC, Exhibit H, H-17.
[80] ASC, Exhibit H, H-17.
[81] ASC, Exhibit H, H-17.

codes have adopted an acceptable risk level by identifying ground acceleration values that meet or exceed a 10 percent probability of exceedance in 50 years, which corresponds to an earthquake with an expected recurrence interval of 475 years.[82] However, the IBC developed a design spectrum by using two-thirds of the Maximum Considered Earthquake (MCE) ground motion. The MCE is generally defined as a probabilistic earthquake with a 2 percent probability of exceedance in 50 years (return period of about 2,500 years).[83]

As explained in the ASC, the bedrock level parameters are provided for Site Class B conditions or materials with an average shear wave velocity of about 2,500 feet per second (ft/sec) (i.e. bedrock conditions).[84] The applicant conducted site specific shear wave velocity testing and based upon the results of that testing, the applicant determined that the sandy soil conditions encountered in the upper 100 feet of the profile at the site are best represented by Site Class D conditions, or materials with an average shear wave velocity between 600 and 1,200 ft/sec.[85] The MCE- and design level spectral ordinates as provided in the application are reproduced below.[86]

Table C-2 MCE- and Design-Level spectral Ordinates for Site Class B and D Conditions

	Site Class B Conditions			**Site Class D Conditions**				
	MCE-Level			**Design-Level**				
	S_S	**S_1**		**F_a**	**F_v**	**PGA**	**S_{DS}**	**S_{D1}**
2009 IBC	1.5	0.72		1.0	1.5	0.4	1.0	0.72

The maximum probable earthquake (MPE) is defined as the "maximum earthquake that could occur under the known tectonic framework with a 10 percent chance of being exceeded in a 50-year period."[87] Table C-3 below provides the maximum probable earthquake spectral ordinates.

Table C-3 Maximum Probable Earthquake Spectral Ordinates

[82] ASC, Exhibit H, H-14.

[83] The change to an MCE was an effort to reduce the risk of building collapse in portions of the country where a 2,500 year recurrence interval earthquake is significantly larger than the previous code recurrence interval of 475 years. The IBC design response spectrum is two-thirds of the MCE ground motion, which adjusts the design spectrum to a more traditional "life safety" level. ASC, Exhibit H, H-14.

[84] ASC, Exhibit H, H-18.

[85] ASC, Exhibit H, H-18.

[86] According to the ASC, the IBC and OSSC design methodologies use two spectral response coefficients, S_s and S_1, corresponding to periods of 0.2 and 1.0 second, respectively, to develop the design-level earthquake from the MCE-level spectral ordinates (see Table H-4 of ASC). These MCE-level bedrock spectral ordinates are adjusted for Site Class with the short-and long period coefficients, F_a and F_v, based on the soil profile in the upper 100 feet in accordance with the IBC. The design-level spectrum is then calculated by multiplying the site class-adjusted MCE level spectrum by two-thirds. ASC, Exhibit H, H-18.

[87] ASC, Exhibit H, H-16.

	Site Class B Spectrum, g				Site Class D Spectrum, g		
	PGA	**Ss**	**S_1**		**PGA**	**Ss**	**S_1**
2002 USGS	0.30	0.70	0.28		0.37	0.87	0.52

As provided by Table C-3, the tabulated values indicate that the MPE values adjusted for site class do not exceed the IBC design level earthquakes for Site Class D conditions. According to the ASC, there are no obvious topographic or subsurface conditions that are anticipated to result in ground motions significantly greater than the design level ground motions.[88]

Based upon the analysis presented by the applicant, the applicant's literature review as well as the geotechnical and geological site reconnaissance, the department recommends the Council find that the applicant has adequately characterized the site as to the MCE and maximum probable ground motion, taking to account ground failure and amplification for the site specific soil profile under the maximum credible and maximum probable seismic event. However, as the final project design is not yet complete, the department recommends the Council adopt the following condition:

Condition C.1: Prior to beginning construction, the certificate holder shall provide to the department the final design reports, including but not limited to soil structure interaction numerical modeling, foundation designs, and grading recommendations.

B. OAR 345-022-0020(1)(b)

(b) The applicant can design, engineer, and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from maximum probable ground motion events. As used in this rule "seismic hazard" includes ground shaking, ground failure, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement, and subsidence;

OAR 345-022-0020(1)(b) requires the Council to evaluate whether the applicant can design and construct the proposed facility to avoid dangers to human safety presented by the seismic hazards at the site.

Ground Shaking

As explained in the ASC, ground shaking at the site is estimated primarily as a result of CSZ earthquake. The intensity of ground shaking for a design level subduction zone earthquake even could reach or exceed the Mercalli scale of IX.[89] As discussed in the ASC, unlike crustal

[88] ASC, Exhibit H, H-19. *see* also, Site Specific Seismic Hazard Stud, South Dunes Site, Jordan Cove Liquefied Natural Gas Project, Coos County, Oregon, Section 4.0 Bedrock Spectra Development at pg. 6 and Section 5.0 Site Response modeling and Recommended Ground Surface Spectra at pg. 12.ASC, Exhibit H, Appendix H-16.

[89] Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb, damage great in substantial buildings, with partial collapse, buildings shifted off foundations. ASC, Exhibit H, H-19.

earthquakes, during a subduction zone earthquake strong ground shaking can occur for several minutes.[90] Because ground shaking is a potential seismic hazard at the site, the applicant proposes to mitigate the hazard throughout the seismic design process for the facility.[91] The site-specific response modeling completed for the site has been used to design the structures for the anticipated loading in accordance with the appropriate IBC.[92] Based upon these considerations, the department recommends the Council adopt the following condition:

> **Condition C.2**: The certificate holder shall design the facility to resist ground shaking from an event with a 2,475 year recurrence level. All structures shall be designed in accordance with the Oregon Structural Specialty Code (2010) and the 2009 International Building Code.

Ground Failure (Surface Fault Rupture/Displacement)

According to the ASC, geologic mapping of faults completed in the vicinity of the project site by DOGAMI has not identified evidence of historical or geological surface rupture crossing the site.[93] Therefore, based on the current geologic mapping of known fault structures, no risk for earthquake-induced fault displacement and ground rupture is identified.[94] Consequently, ground failure is an identified seismic hazard likely to affect the site.

Landslide

According to the ASC, the applicant evaluated the type and occurrence of landslides in the vicinity of the SDP using information gathered through review of geologic maps and literature, aerial photographs, light direction and ranging imagery, and the Statewide Landslide Information Database for Oregon (SLIDO) Release 2. Landslides were not identified on the SDP site.[95] Therefore, landslides are not an identified seismic hazard likely to affect the site.

Liquefaction

As explained in the ASC, liquefaction during earthquakes can result in a significant loss of soil strength and can cause sand boils at the ground surface, settlement, and the potential for lateral spreading and damage to structures.[96] The majority of the saturated sandy soils encountered on the SDP site are too dense to liquefy during a design-level earthquake. However, the applicant did identify some liquefiable soils across portions of the site near the groundwater table at elevations of about 10 feet to 25 feet.[97] Therefore, the applicant proposes

[90] ASC, Exhibit H, H-19.
[91] ASC, Exhibit H, H-25.
[92] ASC, Exhibit H, H-25.
[93] ASC, Exhibit H, H-19, H-20.
[94] ASC, Exhibit H, H-20. *See* also applicant supplemental report, Site Specific Seismic Hazard Study LNG Terminal Site, July 07, 2007 (Revised April 18, 2014), which describes the literature review, communications with DOGAMI, investigation, and analysis of local fault sources. Investigations included geophysical seismic reflection survey to explore the possible existence of active faults across the east-west aligned portion of Coos Bay. The applicant and DOGAMI reviewed the results of the survey and agreed that the profile did not indicate the presence of a fault either across Pony Slough or across the bay immediately south of the site location.
[95] ASC, Exhibit H, H-20
[96] ASC, Exhibit H, H-20.
[97] ASC, Exhibit H, H-20. Note, the proposed fill materials are not liquefiable.

to implement ground improvements to mitigate the hazard. According to the ASC, ground improvements to reduce or eliminate liquefaction include excavation and replacement of seismically sensitive soils, vibro-compaction, and/or vibro-replacement.[98] In consideration of the applicant's plans to conduct additional evaluations during the final design stages to determine the most appropriate mitigation measures based upon final facility design, the department recommends the Council adopt the following condition:

> **Condition C.3:** Prior to construction, the site certificate holder shall provide to the department maps identifying the final areas requiring ground improvements as well as the final proposed mitigation measures and structures based upon the final site design evaluations. In its submission, the certificate holder shall address the methodology for determining mitigation areas as well as the anticipated performance of unmitigated materials.

Lateral Spreading

As explained in the ASC, lateral spreading involves lateral displacement of large, surficial blocks of soil as a result of liquefaction of a saturated subsurface layer. Displacement occurs in response to the combination of gravitational forces and inertial forces generated by an earthquake. Lateral spreading could develop in gentle slopes and move toward a free face, such as a riverbank or channel.[99] Further, lateral displacement may range from a few inches to several feet, depending on the soil conditions, geometry of adjacent slopes, and the magnitude and duration of seismic loading at the site.[100] At the proposed site, the lateral spreading hazard is highest along the length of the Coos Bay shoreline and adjacent to the wetlands.[101] Further, without mitigation, the existing ground and proposed fill could move toward these bodies of water during a design-level earthquake.[102] Therefore, the applicant proposes to mitigate lateral spreading by implementing ground improvement techniques including vibroflotation, stone columns, and deep dynamic compaction. Based upon this analysis and proposed mitigation, the department recommends the Council adopt Condition C.3 above.

Tsunami Inundation

As explained in the ASC, the west coast of the United States has been subject to inundation from tsunamis generated by distant earthquakes.[103] DOGAMI produced tsunami inundation hazard maps for a tsunami generated by a megathrust earthquake on the CSZ, which, according

[98] ASC, Exhibit H, H-25. The applicant submitted a supplemental report titled Ground Improvement for Liquefaction Mitigation, Jordan Cove LNG Project, December 18, 2014, which summarized a testing program completed by the applicant. The report documented various ground improvement methods to mitigate foundation liquefaction and demonstrated that the proposed improvements and mitigation measures would result in a satisfactory performance.

[99] ASC, Exhibit H, H-20.

[100] ASc, Exhibit H, H-20.

[101] ASC, Exhibit H, H-21.

[102] The site specific geotechnical lateral spreading susceptibility and hazard evaluation is presented in detail in the *Black & Veatch, Supplemental Geotechnical Report Jordan Cove LNG Project, June 10, 2014.* ASC, Exhibit H, Appendix H-1f.

[103] ASC, Exhibit H H-21.

to the ASC, would present the greatest tsunami inundation risk at the site. All DOGAMI studies include run-up scenarios that vary wave height and coseismic subsidence.[104] The applicant conducted a site specific analysis of tsunami inundation in a report included in the ASC: *Coast and Harbor Engineering, Technical Memorandum, Jordan Cove LNG Facility Hydrodyanmic Modeling, September 26, 2013*.[105] As explained in the ASC, the applicant's consultant completed a site-specific tsunami study for the site and the modeling was completed for an L1 scenario, which was identified by DOGAMI as best representing a 2,475 year hazard level event.[106] Based on the results of the study, the site elevation in the proposed site design would be significantly above the estimated tsunami run-up elevation for this tsunami as the site would be filled above elevation 40 feet and the estimated maximum run-up elevation on the site was less than 23 feet.[107] Therefore, the applicant has proposed appropriate and adequate mitigation in response to a tsunami inundation hazard.

Subsidence

As explained in the ASC, the modeling of megathrust earthquake ruptures on the CSZ indicates sequences of interseismic uplift and coseismic coastal subsidence.[108] According to the ASC, subsidence estimates for the area have been updated as part of the recent updated tsunami modeling and site-specific modeling completed for the project, which indicates the maximum subsidence for the most likely scenario considered is on the order of two meters.[109] As with tsunami inundation, subsidence at the site has been appropriately mitigated via the site grade adjustments to an elevation of at least 40 feet.

The following mandatory condition will further ensure that the facility is designed to minimize and mitigate for maximum probably subsidence events:

> **Condition C.4 [OAR 345-027-0020(12)]:** The certificate holder shall design, engineer and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from all maximum probable events. As used in this rule, "seismic hazard" includes ground shaking, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement, and subsidence.

Based on the evidence in the record, and subject to compliance with the above recommended and mandatory conditions, the department recommends the Council find that the applicant can design, engineer and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from maximum probable ground motion events.

C. OAR 345-022-0020(1)(c) and (d)

[104] ASC, Exhibit H, H-21.
[105] ASC, Exhibit H, H-22. See also, ASC, Exhibit H, Appendix H-3.
[106] ASC, Exhibit H, H-22.
[107] ASC, Exhibit H, H-22.
[108] ASC, Exhibit H, H-22.
[109] ASC, Exhibit H, H-22.

(c)The applicant, through appropriate site-specific study, has adequately characterized the potential geological and soils hazards of the site and its vicinity that could, in the absence of a seismic event, adversely affect, or be aggravated by, the construction and operation of the proposed facility; and

(d) The applicant can design, engineer and construct the facility to avoid dangers to human safety presented by the hazards identified in subsection (c).

OAR 345-022-0020(1)(c) requires the applicant to adequately characterize potential geologic and soil hazards at the site that could adversely affect or be aggravated by construction and operation of the facility. Subsection (d) requires the Council to evaluate whether the applicant can construct the facility to avoid dangers to human safety presented by non-seismic hazards identified at the site under (c).

Landslides

According to the ASC, the type and occurrence of landslides in the vicinity of the site were evaluated using information gathered through review of geologic maps and literature, aerial photographs, lidar imagery, and SLIDO-2. The applicant did not identify any landslide hazards in the North Spit area or near the SDP site. Consequently, landslides are not an identified hazard likely to affect the site.[110]

Flooding/Channel Migration

As explained in the ASC, the 100-year floodplain is a flood zone developed by statistical analysis of stream discharge data to define the 1-percent annual chance flood event.[111] The Federal Emergency Management Agency (FEMA) flood map shows that the SDP site is currently at an elevation that is above the 1 percent annual chance hazard.[112] According to the ASC, the 100-year flood areas occur immediately along the Jordan Cove shoreline; however, the SDP site boundary is outside of the special flood hazard areas.[113] Further, as discussed above, fill is to be placed on the site, which would further elevate the site above the 100-year floodplain boundaries.

Channel migration is defined as the lateral migration, avulsion, channel widening, or channel narrowing of a river system. Based upon a review of historical aerial photographs and recent lidar imagery of the SDP site, there are no indications of historical channel migration. Based upon the above, as well as the U.S. Army Corps of Engineers active management of the Coos Bay channel, the applicant states that flooding and channel migration will not be adversely

[110] ASC, Exhibit H, H-23.

[111] ASC, Exhibit H, H-23.

[112] ASC, Exhibit H, H-23. As explained in a letter from Steve Donovan to Mark Whitlow, dated March 20, 2015, the 2009 FEMA FIRM maps were used because at this time, Coos County has not adopted the 2014 FIRM maps; however, the applicant's consultant did review the draft 2014 maps and confirmed that both the 2014 and 2009 maps indicate the same relevant data relating to the base flood elevation, therefore, the analysis and conclusions reached would remain the same. SDPAPPDoc272.

[113] ASC, Exhibit H, H-23.

affected or aggravated by the construction and operation of the facility.[114] Consequently, channel migration is not an identified hazard likely to affect the site

Erosion

As stated in the ASC, erosion potential at the site could be severe unless soils are properly stabilized by erosion control best management practices.[115] However, as required by the Council's Soils Standard, the applicant has proposed best management practices to appropriately reduce erosion including temporary ditches, sediment fences, and silt traps. Further, the applicant proposes that areas disturbed by construction activities would be revegetated using a seed mixture specified by the Natural Resource Conservation Service as being capable of surviving in highly permeable, xeric regimes, binding loose sand, and withstanding burial and deflation from wind erosion. The applicant also proposes permanent erosion control measures, such as vegetated swales and infiltration or settling basins.[116] Recommended conditions D.1—D-3, related to compliance with the Soils Standard, will also ensure compliance with erosion control measures. Based upon the proposed and erosion recommended control measures, on site hazards associated with erosion have been properly mitigated.

Based upon the evidence provided above, and subject to compliance with the recommended and mandatory site certificate conditions, the department recommends the Council find that the applicant has adequately characterized the potential geological and soil hazards of the site and its vicinity and further that the applicant can design, engineer and construct the facility to avoid dangers to human safety presented by the non-seismic hazards identified.

In addition, the following mandatory conditions will further ensure dangers to human safety from non-seismic hazards are avoided:

> **Condition C.5 [OAR 345-027-0020(13)]**: The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if site investigations or trenching reveal that conditions in the foundation rocks differ significantly from those described in the application for a site certificate. After the Department receives the notice, the Council may require the certificate holder to consult with the Department of Geology and Mineral Industries and the Building Codes Division and to propose mitigation actions.

[114] ASC, Exhibit H, H-23*, see* also Letter from Steven Donovan to Mark Whitlow, dated March 20, 2015 re: LNG Facility Project Development: Analysis and Certification of Impacts of Fill on the Flood Hazard of Coos Bay at River Mile 8.0 to River Mile 9.2 As provided in the letter, the placement of fill along the fringes of Coos Bay would have no effect on the Base Flood Elevation nor would the fill cause an increase in the velocity of water or increase flood hazards. Therefore, the applicant concluded that the fill would not result in any increase in flood levels during occurrence of the base flood discharge or result in a cumulative increase of more than one foot during the occurrence of the base flood discharge. SDPAPPDoc272.

[115] ASC, Exhibit H, H-27.

[116] ASC, Exhibit H, H-27.

Condition C.6 [OAR 345-027-0020(14)]: The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if shear zones, artesian aquifers, deformations or clastic dikes are found at or in the vicinity of the site.

Condition C.7: The certificate holder shall design, engineer and construct the facility to avoid dangers to human safety presented by non-seismic hazard. As used in this condition, "non-seismic hazards" include settlement, landslides, flooding and erosion.

IV.C.2. Structural Standard: Conclusions of Law

Based on the foregoing facts and conclusions, and subject to compliance with the mandatory and recommended site certificate conditions, the department recommends that the Council find that the proposed facility complies with the Council's Structural Standard.

IV.D. Soil Protection [OAR 345-022-0022]

To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are not likely to result in a significant adverse impact to soils including, but not limited to, erosion and chemical factors such as salt deposition from cooling towers, land application of liquid effluent, and chemical spills.

IV.D.1. Soil Protection: Findings of Fact

The soil protection standard requires the Council to find that, taking into account mitigation, construction and operation of the proposed facility are not likely to result in any significant adverse impact to soils. Construction and operation of a proposed facility could adversely affect soils by means of erosion, compaction and chemical spills. Adverse impacts to soils can affect crop production on adjacent agricultural lands, native vegetation, fish and wildlife habitat, and water quality. The applicant provided information regarding potential soil impacts in Exhibit I of the application. The analysis area for the soil protection standard is the area within the site boundary. The South Dunes site boundary, which includes related and supporting facilities, covers approximately 137.86 acres. According to Exhibit C of the ASC, there are approximately 94.59 acres of proposed permanent disturbance, 25.59 acres of proposed temporarily disturbance and 17.68 acres that are proposed to remain undisturbed within the site boundary.[117]

A. Existing Soil Conditions and Potential Impacts to Soil

[117] ASC, Exhibit C, C-3.

Utilizing the U.S. Department of Agriculture, Soil Conservation Service Coos County Soil Surveys, the applicant identified the native soils on site.[118] According to the application, the results of the surveys indicated that the native soils are predominately sand with the soil types including: Waldport-Heceta Fine Sand and Waldport Fine Sand in the vicinity of the energy facility; Waldport Fine Sand, Dune Land, and Heceta Fine Sand along the utility corridor; and both Dune Land and Waldport Fine Sand along the temporary haul road and at the barge berth area (see Figure I-1). Table I-1 within the application, and reproduced below, includes a summary of each of the major soil types found on site.

Table I-1 Summary of Major Soil Types Found on the South Dunes Site

Soil Mapping Unit	Land Area (acres)	Percent of Area	Drainage Class	Hydric Soils	Prime Farmland	Water Erosion Potential	Wind Erodibility Group[(1)]
SDPP SITE							
Beaches	0.08	0.1					
Dune Land (16)	21.66	15.7	Well drained	Partially	No	No	1
Heceta Fine Sand (28)	2.35	1.7	Poorly drained	All	No	Yes	1
Waldport Fine Sand, 0 to 30 percent slopes (59D)	4.63	3.4	Excessively drained	Partially	No	Moderate	1
Waldport Fine Sand, 30 to 70 percent slopes (59E)	11.63	8.4	Excessively drained	Partially	No	Yes	1
Waldport-Heceta Fine Sand, 0 to 30 percent slopes (61D)	92.34	67.0	Excessively drained	Partially	No	Slight/ Severe	1
Water	5.16	3.8	NA	NA	NA	NA	NA
Approximate Total[2]	137.85	100					

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible.
Rounding of the exact acreages of individual soil areas causes this total to approximate the total acreage within the site boundary, which is 137.86 acres

As explained in the ASC, the native soils within the South Dunes site boundary have been disturbed due to previous industrial use on the site as well as the historical placement of fill material. Prior to the operation of the Weyerhaeuser North Bend Containerboard Mill on the site (the Mill site), the area was originally developed as a sulfite process pulp and paper mill by the Menasha Wooden Ware Corporation in 1961. Prior to construction of the paper mill, however, the area in the immediate vicinity of the site was covered with low brush and grass. In order to raise the elevation of the site above high tide and flood levels, the vegetation was

[118] ASC, Exhibit I, I-5. See Appendix I-2. The applicant also reviewed Custom Soil Resource Reports for Coos County from the Natural Resource Conservation Service Web Soil Survey.

stripped and the area was covered with several feet of dune sand. However, large amounts of driftwood and vegetation was left in place and covered with fill sand, south of the former site of the paper mill.[119] Subsequently, following cessation of operations at the former Weyerhaeuser Mill in 2003 and 2005, the Mill building and other structures were demolished and the demolition debris was placed in two of the three landfill cells onsite.[120] Figure I-2 of the ASC presents the extent of the previous fill, grading, paving and construction within the South Dunes site boundary as well as the landfill cells.

Based upon the past actions outlined above (landfills, fill and buried logs beneath the soil) and because of the weak strength and properties of the layer of peat and clay discovered on site,[121] general improvements must be made prior to industrial development on the site. As discussed in Exhibit B of the ASC, these site improvements are not required because of the construction of the proposed facility, nor are these activities being undertaken as part of the construction of the proposed facility. Rather, these site improvements are necessary to prepare the site for any future use or industrial development on stable ground and are being undertaken consistent with the required permits, outside of Council review and jurisdiction.[122] General site improvements will include excavation, soil storage, backfilling, compaction and final grading.[123] Following the general site improvements, the applicant proposes to raise the site to an elevation above the mapped tsunami inundation zone, through the placement of structural fill.[124] [125]

As explained in the ASC, the structural fill material to be used on site would be obtained through the excavation and dredging of the marine terminal and access channel, proposed in connection with the non-jurisdictional LNG terminal. As presented, the applicant conducted an analysis and sampling of the potential fill material via the advancement of eight borings in the

[119] The historical fill materials were predominately sand, with a small percentage of silt. ASC, Exhibit I, I-5.
[120] Cell 1 was constructed in 1971 and received waste from the Mill during mill operations, including paper, log deck cleanup, salt cake, wire, plastic and Styrofoam. Cell 1 was administratively closed and capped by the Oregon Department of Environmental Quality in 1988. Cell 2 and 3 were constructed in 1988 and 1997 respectively, with both receiving asbestos and materials from demolition of the Mill. Both cells are also capped. The applicant also anticipates closing Cells 2 and 3 under the Solid Waste Disposal Permit: Industrial Waste Landfill 1142 issued by the Department of Environmental Quality. ASC, Exhibit I, I-2 and I-5.
[121] As explained in the ASC, the applicant identified a layer of peat and clay soils at depths of approximately 10 to 13 feet below the current ground surface elevation. Because these soils are weak, the soils must be removed. ASC, Exhibit I, I-3.
[122] Required permits include a Solid Waste Disposal Site Closure Permit for the landfills and a NPDES Stormwater 1200-C permit. ASC, Exhibit B, B-14.
[123] ASC, Exhibit I, I-3.
[124] ASC, Exhibit I, I-3.
[125] The applicant has obtained county approval to place structural fill within the site boundary to an elevation of 46 feet; however, there are portions of the site for which fill has not been approved because the fill is proposed to be placed within jurisdictional wetlands under Council jurisdiction. Consequently, the fill material is discussed in this section solely for the Council's review as it informs the applicant's removal/fill permit application. Removal Fill is discussed further below, including the Department of State Lands comments on the complete application and recommended site conditions. ASC, Exhibit I, I-4, *See* Exhibit E for prior County approvals as well as Exhibit K for permit documents.

proposed dredged area.[126] According to the ASC, the results of the investigation indicated that the potential fill material consists primarily of fine to medium grained sand,[127] with the average percent of sand present in sediment samples approximately 99.85%. The sediments in the dredged area were described as homogenous native sands.[128] As stated in the report, the laboratory testing results determined that the fill material is suitable for unconfined aquatic disposal as the material is within the Dredged Material Evaluation Framework (DMEF) guidelines for unconfined aquatic disposal, grain size distribution and total volatile solids were within acceptable criteria for unconfined aquatic disposal, no screening levels were exceeded during sediment sample analysis, and there were no areas of contaminated sediment observed.[129]

B. Measures to Mitigate Adverse Impacts to Soil

As stated above, to issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are not likely to result in a significant adverse impact to soils, resulting from soil erosion and chemical factors, land application of liquid effluent, and chemical spills. Potential soil impacts are discussed in detail below.

(a) Potential Soil Impacts from Erosion

As explained in the ASC, because the proposed fill material within the site boundary, as well as the native soils and former fill material, is predominately sand, there is a moderate hazard for water erosion and a high hazard for wind erosion.[130] The applicant submitted a conceptual Erosion and Sediment Control Plan and a Stormwater Management Plan in Exhibit I of the ASC, both of which include best management practices.[131] Moreover, during construction, the applicant would be subject to a National Pollution Discharge Elimination System (NPDES) Stormwater Discharge Permit #1200-C. The 1200-C permit is a federally delegated permit that regulates stormwater management during construction and it is issued by the Oregon

[126] ASC, Exhibit I, I-3 and Appendix I-1. The applicant prepared a Sediment Sampling and Analysis Report to document the characterization of proposed dredging locations. The Sampling and Analysis Plan (SAP) was designed to obtain information to select a sediment disposal management option for material generated during planned dredging activities. The SAP was submitted to the U.S. Army Corps of Engineers and was developed according to the procedures set forth in the Dredged Material Evaluation Framework (DMEF), Lower Columbia River Management Area.

[127] ASC, Exhibit I, I-3, I-4 and Appendix I-1.

[128] ASC, Exhibit I, I-4.

[129] ASC, Exhibit I, Appendix I-1, pgs. 10-11. Concerns have been raised by members of the public regarding the fill material and potential contamination. However, as explained in in an email from the ODEQ, dated December 19, 2104, the site was tested and is safe for industrial uses. Additionally, ODEQ has placed conditions on the site to restrict non-industrial uses and to manage contaminated material discovered on site. In addition, the ODEQ and the applicant have resolved issues regarding the stockpiling of soils and have committed to working together if contamination is encountered during site activities, including prompt notification.

[130] ASC, Exhibit I, I-10.

[131] ASC, Exhibit I, Appendix I-4.

Department of Environmental Quality (ODEQ), outside of Council jurisdiction. NPDES 1200-C permits include and require the approval and implementation of Erosion and Sediment Control Plans (ESCP) that govern erosion control during construction activities and require the use of best management practices throughout construction activities. The applicant submitted its NPDES 1200-C permit application to the ODEQ on June 23, 2014. At the time of the issuance of this order, ODEQ had not yet issued the 1200-C permit.[132]

Generally, however, the applicant intends to minimize impacts to soils from erosion and stormwater through implementation of best management practices to be included in a site specific stormwater management plan and ESCP. As explained in the ASC, within the energy facility site area, stormwater would be captured via ditches and catch basins and conveyed to the stormwater infiltration basin. Stormwater within the barge berth area and utility corridor would be captured and treated via infiltration trenches. Any stormwater that has contacted equipment would be captured and managed as process water.[133] Regarding erosion specifically, best management practices included in the conceptual erosion and sediment control plan included, but were not limited to the following: preservation of existing vegetation by limiting the amount of disturbed areas and maintaining vegetation on areas not disturbed; wet weather precautions; dust control by using a combination of reduced vehicle speeds, irrigation, sand fences or peat layers; flagging to prevent construction traffic damage; and the use of erosion control blankets and geotextiles to protect slopes until re-vegetation is established.[134] Beyond structural controls for stormwater, the applicant also included non-structural best management practices (BMPs) in the conceptual stormwater management plan that would work to reduce negative impacts of stormwater on soils. These BMPs included but were not limited to, regularly inspecting the facility for potential pollutants, inspecting trucks and equipment for leaks and installation of drip pads, regular cleaning of oil/water separators, and regular inspections for accumulated fine sediment in infiltration trenches and basins.[135]

In addition to ODEQ, the Department of State Lands (DSL) also recommended erosion control methods in its agency report to the department, which included erosion control measures for use during and after construction related to the facility's removal/fill permit.[136] During operation, the facility would also be subject to a Section 401 permit for removal/fill activities, which includes a post-construction stormwater management plan to manage stormwater to meet best management practices.[137]

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[132] Pursuant to OAR 345-021-0000(7), the applicant must submit to the department one copy of each federally-delegated permit application. As explained by ODEQ in a letter dated September 16, 2014, and submitted to the department pursuant to OAR 345-021-0000(7), the application was deemed administratively incomplete because the application fee was not submitted, there was no signature on the application, there were no hard copies of drawings, erosion and sediment control plans, or site vicinity maps; and there was no erosion control inspector listed or land use computability statement.

[133] ASC, Exhibit I, Appendix I-4, Conceptual Stormwater Management Plan, pg. 4.

[134] ASC, Exhibit I, Appendix I-4, Conceptual Erosion and Sediment control Plan, pgs. 5-6.

[135] ASC, Exhibit I, Appendix I-4, Conceptual Stormwater Management Plan, pgs. 6-7.

[136] SDPAPPDoc242.

[137] ASC, Exhibit I, I-14.

In consideration of the BMPs included in the applicant's conceptual erosion and sediment control plan and stormwater management plan, the recommendations by the DSL and the requirement of the NPDES 1200-C permit, the department recommends that the Council find that implementation of these measures would minimize potential impacts to soils from stormwater and erosion. To ensure these measures are fully implemented and erosion minimized, the department further recommends the Council adopt the following conditions:

Condition D.1: The certificate holder shall conduct all construction work in compliance with an Erosion and Sediment Control Plan (ESCP) satisfactory to the Oregon Department of Environmental Quality and as required under the National Pollution Discharge Elimination Systems (NPDES) Construction Stormwater Discharge General Permit #1200-C. The certificate holder shall include in the ESCP any procedures necessary to meet local erosion and sediment control requirements or stormwater management requirements, including, but not limited to:

a. All exposed soils shall be stabilized during and after construction;
b. Filter bags, sediment fences, sediment traps or catch basins, leave strips or berms or other measures shall be used to prevent movement of soil into waterways and wetlands;
c. Compost berms, impervious materials or other equally effective methods, shall be used to protect soil stockpiled during rain events or when the stockpile site is not moved or reshaped for more than 48 hours;
d. Where vegetation is used for erosion control on slopes steeper than 2:1, a tackified seed mulch shall be used so that the seed does not wash away before germination and rooting;
e. Dredged or other excavated material shall be placed on upland areas having stable slopes and shall be prevented from eroding back into waterways and wetland;
f. Routinely inspect and maintain erosion control measures to ensure their continued effectiveness until soils become stabilized;
g. If soils are to remain exposed for more than seven days after completion of the construction, they shall be covered with erosion control pads, mats or similar erosion control devices until vegetative stabilization is installed and;
h. All erosion control structures shall be removed when the construction is complete and soils are stabilized and vegetated.

In addition to these recommended conditions, mandatory condition OAR 345-027-0020(11) (Condition A.8 above), requires that upon completion of construction, the site certificate holder must restore vegetation to the extent practicable and to landscape all areas disturbed by construction in a manner compatible with the surroundings and proposed use, which would further minimize the potential for continuous erosion.

Beyond erosion and stormwater concerns, the applicant also proposes the use of heavy equipment and haul trucks during construction, which could potentially cause soil compaction and other disturbances.[138] As discussed in the ASC, to mitigate these potential impacts, the applicant proposes to have stabilized construction entrances and to stabilize the temporary haul road with graded aggregate and gravel.[139] Therefore, the department recommends the Council adopt the following conditions:

Condition D.2: Unless part of the authorized fill, all construction access points through, and staging areas in, riparian and wetland areas shall use removable pads or mats to prevent soil compaction. The certificate holder shall install stabilized construction entrances where the entrances intersect public road rights-of-way or undisturbed property. The certificate holder shall stabilize the temporary haul road with graded aggregate and gravel.

Condition D.3: During construction, the certificate holder shall limit truck traffic to improved surfaces. Within 60 days of completing construction, the applicant shall mitigate any areas of soil compaction by measures to include scarification and reseeding.

Based upon the evidence in the record, and subject to compliance with the recommended conditions, the department recommends that the Council find that erosion resulting from the design, construction and operation of the facility is not likely to result in a significant adverse impact to soils.

(b) Potential Soil Impacts from Spills

Hazardous materials would be stored and used at the proposed facility during construction and operation. The facility is expected to be registered as either a conditionally exempt small-quantity generator (CESQG) or a small quantity generator (SQG) during both construction and operation. To qualify as a conditionally exempt small quantity generator, the site is allowed to generate 100 kilograms or less per month of hazardous waste or 1 kg or less of acutely hazardous waste per month. A small quantity generator must generate less than 1000 kilograms of hazardous waste per month.[140]

To minimize the chance of accidental releases into the environment and to prevent the contamination of soils from spills, the applicant proposes to submit a Material Safety Data sheet for all hazardous chemicals to be used or stored at the site.[141] In addition, as explained in Exhibit G of the ASC, the applicant proposes various procedures to manage hazardous wastes, which include, but are not limited to the following: job specific and annual refresher training for personnel involved with the management of hazardous wastes; storage of hazardous wastes with secondary containment, consistent with the storage requirements contained at 40 CFR

[138] ASC, Exhibit I, I-12.
[139] ASC, Exhibit I, I-12.
[140] ASC, Exhibit G, G-4.
[141] ASC, Exhibit I, I-12.

Part 264, Subpart I; and the retention of all hazardous waste manifests, including each manifest returned by the treatment, storage or disposal facility. In addition, the applicant proposes to include spill kits onsite, educate personnel as to the location of the spill kit on site and how to properly use a spill kit in the initial response, and implement internal reporting and response procedures. With regard to ammonia specifically, the applicant has proposed to utilize a concrete, secondary containment for the ammonia storage tanks, with the containment area including a capacity to contain 100 percent of the volume of one ammonia tank, plus the 100 year return frequency storm. Further, the applicant proposes an ammonia system equipped with an alarm system to minimize the risk of release and the risk of exposure. [142]

A permanent refueling station is also proposed to be located onsite. As explained in the ASC, the refueling station would include a double-walled steel 5,000 gallon aboveground storage tank for diesel fuel. Because the tank is proposed to be double-walled, it would have integrated secondary containment and would include spill containment capable of capturing incidental spills during refueling.[143] Beyond these measures, the applicant also states that in accordance with 40 CFR Part 112, a Spill Prevention, Control and Countermeasure (SPCC) Plan would be prepared for use when the project commences operation. The SPCC program is administered by the U.S. Environmental Protection Agency and requires facilities with over 1,320 gallons of aboveground oil storage capacity to develop and implement a SPCC plan. An SPCC plan includes operating procedures to prevent oil spills, control measures such as secondary containment to contain spills, and countermeasures to contain, clean-up and mitigate the effects of an oil spill. The SPCC plan is only required to address potential spills of oil products and does not apply to hazardous materials or other chemicals.

Based on the foregoing, the department finds that implementation of the above proposed spill prevention and response measures would minimize any potential impact of a spill on soils within the site boundary. Therefore, to ensure these measures are implemented, the department recommends the Council adopt the following conditions:

Condition D.4: The certificate holder shall develop and implement a hazardous materials management and monitoring plan, which shall include and maintain a materials safety data sheet for all hazardous chemicals stored onsite. The plan shall include best management practices and hazardous waste training for construction and operation personnel involved in the handling of hazardous waste. The certificate holder shall submit a copy of this plan to the department prior to commencing construction of the facility.

Condition D.5: Prior to operation, the certificate holder shall develop a Spill Prevention Control and Countermeasure Plan for implementation during the facility's operation. The certificate holder shall submit a copy of this plan to the department prior to commencement of operation of the facility.

[142] ASC, Exhibit G, G-7.
[143] ASC, Exhibit B, B-5.

Condition D.6: If a reportable release of hazardous material occurs during construction or operation of the facility, the certificate holder shall notify the department within 72 hours of the occurrence, clean up the release, and dispose of any contaminated soil or other materials according to applicable regulations. The certificate holder shall make spill control and containment kits readily available in areas containing fuel oil, lubricating oil, hydraulic oil, and chemicals, as well as chemical unloading areas. The spill kits shall be equipped with sorbent pads, diatomaceous earth, shovels and appropriate hand tools, curtain booms if working near open water, personal protection equipment, and temporary waste disposal containers.

Condition D.7: For the aboveground diesel fuel storage tank, the site certificate holder shall install a double-walled steel tank, not to exceed a maximum capacity of 5,000 gallons. The site certificate holder shall provide to the department a copy of the aboveground storage tank application and subsequent approval by the Office of the state Fire Marshall prior to operation.

Condition D.8: All vehicle refueling activities shall occur in dedicated areas equipped with spill containment with at least 5 gallons of capacity to capture and contain leaks, drips and spills. A fire extinguisher and a spill kit must be easily accessible near the proposed refueling station. Each vehicle shall be equipped with absorbent spill pads, shovels and buckets.

As discussed above, because the soils onsite have been disturbed by prior industrial activities as well as previously placed fill, the applicant states that should it discover contaminated soils during construction, it would abide by the requirements of an Unanticipated Hazardous Waste Discovery Plan, which was submitted as Appendix I-5 in the ASC. To ensure this plan is implemented prior to construction, the department recommends the Council adopt the following condition:

Condition D.9: Prior to construction, the certificate holder shall develop and implement an Unanticipated Hazardous Waste Discovery Plan in accordance with applicable regulations. The certificate holder shall provide a copy of the Plan to the department prior to construction. In the event of a discovery, the certificate holder shall notify the department within 48 hours of the discovery and include in the notification the certificate holder's response actions taken, consistent with the Plan.

Based on the evidence in the record, and subject to compliance with the recommended site certificate conditions, the department recommends that the Council find that spills resulting from the design, construction and operation of the facility are not likely to result in a significant adverse impact to soils.

(d) Potential Soil Impacts from Salt Deposition from Cooling Towers and Land Application of Liquid Effluent

As explained in the ASC, the applicant does not propose any land application of liquid effluent. Additionally, the South Dunes facility would be convection-cooled and would not utilize cooling towers for power generation. Therefore, salt deposition is also not a factor.

Based on the evidence in the record, the department recommends the Council find that the design, construction and operation of the facility is not likely to result in a significant adverse impact to soils from salt deposition from cooling towers or land application of liquid effluent.[144]

IV.D.2. Soil Protection: Conclusions of Law

Based on the foregoing findings of facts and conclusions, and subject to compliance with the recommended site certificate conditions, the department recommends the Council find that the proposed facility complies with the Council's Siting Standards for Soil Protection.

IV.E. Land Use [OAR 345-022-0030]

(1) To issue a site certificate, the Council must find that the proposed facility complies with the statewide planning goals adopted by the Land Conservation and Development Commission.

(2) The Council shall find that a proposed facility complies with section (1) if:
*****

(b) The Applicant elects to obtain a Council determination under ORS 469.504(1)(b) and the Council determines that:

(A) The proposed facility complies with applicable substantive criteria as described in section (3) and the facility complies with any Land Conservation and Development Commission administrative rules and goals and any land use statutes directly applicable to the facility under ORS 197.646(3);

(B) For a proposed facility that does not comply with one or more of the applicable substantive criteria as described in section (3), the facility otherwise complies with the statewide planning goals or an exception to any applicable statewide planning goal is justified under section (4); or

(C) For a proposed facility that the Council decides, under sections (3) or (6), to evaluate against the statewide planning goals, the proposed facility complies with the applicable statewide planning goals or that an exception to any applicable statewide planning goal is justified under section (4).

[144] ASC, Exhibit I, I-10.

(3) As used in this rule, the "applicable substantive criteria" are criteria from the affected local government's acknowledged comprehensive plan and land use ordinances that are required by the statewide planning goals and that are in effect on the date the Applicant submits the application. If the special advisory group recommends applicable substantive criteria, as described under OAR 345-021-0050, the Council shall apply them. If the special advisory group does not recommend applicable substantive criteria, the Council shall decide either to make its own determination of the applicable substantive criteria and apply them or to evaluate the proposed facility against the statewide planning goals.

(4) The Council may find goal compliance for a proposed facility that does not otherwise comply with one or more statewide planning goals by taking an exception to the applicable goal. Notwithstanding the requirements of ORS 197.732, the statewide planning goal pertaining to the exception process or any rules of the Land Conservation and Development Commission pertaining to the exception process, the Council may take an exception to a goal if the Council finds:

(a) The land subject to the exception is physically developed to the extent that the land is no longer available for uses allowed by the applicable goal;

(b) The land subject to the exception is irrevocably committed as described by the rules of the Land Conservation and Development Commission to uses not allowed by the applicable goal because existing adjacent uses and other relevant factors make uses allowed by the applicable goal impracticable; or

(c) The following standards are met:

(A) Reasons justify why the state policy embodied in the applicable goal should not apply;

(B) The significant environmental, economic, social and energy consequences anticipated as a result of the proposed facility have been identified and adverse impacts will be mitigated in accordance with rules of the Council applicable to the siting of the proposed facility; and

(C) The proposed facility is compatible with other adjacent uses or will be made compatible through measures designed to reduce adverse impacts.
** * **

IV.E.1. Land Use: Findings of Fact

The applicant provided information about compliance with the Council's Land Use Standard in Exhibit K of the ASC. Under OAR 345-021-0010(1)(k), an applicant must elect whether to

address the Council's land use standard by obtaining local land use approvals under ORS 469.504(1)(a) or by obtaining a Council determination under ORS 469.504(1)(b). The applicant elected to have the Council make the land use determination under ORS 469.504(1)(b) and OAR 345-022-0030(2)(b).

The Council must apply its land use standard in conformance with the requirements of ORS 469.504. Under ORS 469.504(1)(b)(A), the Council may find compliance with statewide planning goals if the Council finds that the proposed facility "complies with applicable substantive criteria from the affected local government's acknowledged comprehensive plan and land use regulations that are required by the statewide planning goals and in effect on the date the application is submitted." The applicant submitted a preliminary application for site certificate on January 9, 2014 and the affected local government is Coos County.[145] In accordance with ORS 469.401(3), after issuance of a site certificate, Coos County shall "upon submission by the applicant of the proper applications and the payment of proper fees, but without hearings or other proceedings" promptly issue the related permits and approvals, subject only to the conditions set forth in the site certificate.[146] The applicant is requesting the following approvals and permits:

Table E.1. Requested Land Use Approvals and Permits

Permit or Approval	Applicability
A.) Industrial (IND) Zone	
1 Administrative Conditional Use (ACU) Compliance Determinations with Applicable Provisions of LDO & CCCP	ACU compliance determinations to allow power plant use in IND zone in Area 1, Area 1-A & Area 1-B, as required by LDO Section 4.2.100 and the supplemental provisions of Chapter III (prior to issuance of a zoning verification letter under LDO Section 3.1.200, discussed below).
ACU to allow Development in Dune Areas with "Limited Development Suitability"	ACU to allow development of the transmission corridor and the accessory road and utility corridor in IND zone that have been identified as dune areas with "Limited Development Suitability."
ACU for Compliance Determination for Accessory Substation	ACU for compliance determination to allow the substation as an accessory use to primary use, the SDPP.

[145] *See* OAR 345-021-0050((6)(b)(A), ("For purposes of this rule, the application is submitted on the date that Department receives the preliminary application.").

[146] Each state or local government agency that issues a permit, license or certificate shall continue to exercise enforcement authority over the permit, license or certificate.

• Zoning Verification Letter	Coos County has no building official. Coos County issues a zoning compliance letter to the state building official following the compliance determinations described above, that relevant zoning has been complied with and that a building permit may be issued.

B.) Coos Bay Estuary Management Plan (CBEMP)	
1.) East of Jordan Cove Road	
Permit Approval	**Applicability**
• ACU to Allow Power Plant Use & Fill	ACU to allow power plant use in 7-D zoning areas east of Jordan Cove Road as Industrial & Port Facilities use; and to allow temporary fill in the 7-D zone in Area 1-B to allow construction of a bridge over wetlands.
• ACU to allow Development in Special Flood Hazard Areas	The LDO requires an ACU approval to allow development in "Special Flood Hazard Areas." The ACU requires review of Policy #27, which triggers review of LDO Section 4.6.230.
• ACU to allow Development in Dune Areas with "Limited Development	ACU to allow development in 7-D areas that have been identified as dune areas with "Limited Development Suitability."
• ACU for Land Transportation Facility in 8-WD	ACU to allow a public road connection to TransPacific Parkway.
2.) West of Jordan Cove Road	
• ACU for compliance determination for Accessory Road and Utility Corridor.	ACU for compliance determination for the accessory road and utility corridor. The applicable criteria are the accessory use criteria from the LDO Article 3.
• ACU to Allow New and Maintenance Dredging	ACU to allow new and maintenance dredging in Area 1-E in zoning district 6- DA to dredge the "access triangle" to provide access to the barge berth.
• ACU to Allow Construction, Fill and Shoreline Stabilization for the barge berth	ACU to allow construction, temporary and permanent fill, and shoreline stabilization in Area 1-E in zoning district 6-DA to construct the barge berth.
• ACU to Allow, Construction, Fill and Shoreline Stabilization for the barge berth	ACU to allow construction, temporary and permanent fill, and shoreline stabilization in zoning district 6-WD for the barge berth.

• Zoning Verification Letter	Coos County has no building official. Coos County issues a zoning compliance letter to the state building official following the compliance determinations described above, that relevant zoning has been complied with and that a building permit may be issued. Applies to all facilities in the CBEMP.

The land use analysis begins with the identification of the "applicable substantive criteria." Because Coos County is the affected local government, the Council appointed the governing body of Coos County, the Coos County Board of Commissioners, as the Special Advisory Group (SAG).[147] Pursuant to ORS 469.504(5), if the SAG recommends applicable substantive criteria for an energy facility or a related and supporting facility that does not pass through more than one local government jurisdiction or more than three zones in any one jurisdiction, the Council shall apply the criteria recommended by the SAG.[148] In this case, the SAG submitted "applicable substantive criteria" for the proposed facility on February 7, 2014 and July 17, 2014. Further, on February 03, 2015, the SAG submitted comments on the complete application and the proposed facility's compliance with the previously identified applicable substantive criteria.

IV.E.1.a. Coos County Applicable Substantive Criteria

Table E-1. Applicable Substantive Criteria

Relevant Criteria
LDO Chapter III (applies to all zoning) Section 3.1.200 Section 3.1.500 Section 3.2.150 Section 3.2.700 Section 3.3.400 Section 3.3.500 LDO Chapter IV Article 4.2, --Section 4.2.600, ---Table 4.2-e, --Section 4.2.100

[147] Order Appointing Special Advisory Group, February 3, 2012.

[148] If the SAG does not recommend applicable substantive criteria the Council may either determine and apply the applicable substantive criteria pursuant to subsection (1)(b) of ORS 469.504(1)(b)(A) or determine compliance with the statewide planning goals pursuant to ORS 469.504 (1)(b)(B) or (C).

Article 4.6
--Section 4.6.205
--Section 4.6.225
--Section 4.6.230
--Section 4.6.235
--Section 4.6.300
--Section 4.6.345

Article 4.7
--Section 4.7.105
--Section 4.7.115
---Table 4.7a (Table 4.7a(3); (4)(a); (7))
Article 4.4
---Table 4.4c (Chapter X, Sec. 10.1.300)

Section 4.5
--6-Water Dependent (6-WD)
--6 Development Aquatic (6-DA)
---Section 4.5.281(B)(2)(a) [applicable polices: 17, 18, 5, & 8]
---Section 4.5.281(B)(4) [applicable policies: 17, 18 and 9]
---Section 4.5.218 (B)(7) [applicable policies 5, 8, 9, 17, & 18]
--7-D
---Section 4.5.286 [applicable polies 14, 17, 18, 23, 27, and 30 and #5 under Special Conditions Activities]
--8-WD

Chapter VII
Sec. 7.1.550 (Sec. 6 and 13)

The proposed facility is evaluated for compliance with the administrative conditional use provision of the Coos County Zoning Land Development Ordinance (LDO).[149] The administrative

[149] Section 5.2.100-Conditional Uses: **(1) Hearings Body Conditional Uses (HBCU or C).** A Hearings Body conditional use is a use or activity which is basically similar to the uses permitted in a district but which may not be entirely compatible with the permitted uses. An application for a conditional use requires review by the Hearings Body to insure that the conditional use is or may be made compatible with the permitted uses in a district and consistent with the general and specific purposes of this Ordinance. **(2). Administrative Conditional Uses (ACU).** An administrative Conditional Use is a use or activity with similar compatibility or special conversation problems. An application for an administrative conditional use requires review by the Planning Director to insure compliance with approval criteria. As explained in the ASC, the SAG advised that the County uses its ACU procedures to make compliance determinations for uses designated as permitted but that require further compliance review. Further, because the applicant includes different review processes, they are decided under the higher administrative conditional use (ACU) review procedures.

conditional use criteria are different for uses in the "Balance of County"[150] than for uses of lands subject to the Coos Bay Estuary Management Plan (CBEMP). As explained in the ASC, the additional criteria in the Balance of County zones, including the IND, are established in Section 4.2.100 and the supplemental provisions of Chapter III. The additional criteria in the CBEMP zoning districts, including zoning districts 7-D, 6-DA, 6-WD and 8-WD, are established in each of the related site-specific zoning district matrices.[151] Compliance with the specific "applicable substantive criteria" as identified by the SAG, is discussed below.

Balance of County
Industrial Zoned Property (IND)—Energy Facility and Development in Dune Areas

SECTION 4.2.100. Use Matrices - General. *The uses and activities allowed within the individual zoning districts prescribed in Section 4.1.100, together with those uses that may be conditionally allowed or which are prohibited, are set forth in Tables 4.2a through 4.2g.*

These zoning use tables stipulate where and under what specific circumstances development may occur.

The following symbols denote whether or not the specific use or activity listed in the tables is permitted outright, may be permitted with conditions, may be allowed subject to an Administrative Conditional Use, may be allowed subject to a hearings Body Conditional Use, or prohibited in the specific zoning district:

P The use or activity is permitted outright.

P-# The use or activity may be allowed outright, but is specifically conditioned or limited by Section 4.2.900.

ACU-#This use or activity is subject to approval of an Administrative Conditional Use, subject to Section 4.2.900.
*****

SECTION 4.2.600. Commercial-Industrial Zoning Districts.
The uses and activities regulated by the commercial-industrial zoning districts are set forth below:

TABLE 4.2e

			ZONE DISTRICT		
COMMERCIAL-INDUSTRIAL USE			***IND***		
Utility Facility:					
Generation of Power for public sale			*P*		

[150] The Balance of County applies to all non-estuary zoning districts.
[151] ASC, Exhibit K, K-6.

In addition to any applicable special conditions or findings prescribed in Section 4.2.900, the following may also limit and regulate uses and activities in Tables 4.2a through 4.2g:

1. Article 4.6, "Overlay Zones"
2. Article 4.7, "Special Considerations"
3. Chapter V, "Administration" (Procedural requirements)[152]
4. Article 4.4, "General Development Standards"

Table 4.2-e, above, establishes that a "Utility Facility: Generation of power for public sale" is a permitted use in the IND zone and is not subject to any special development conditions under LDO Section 4.2.900. The proposed energy facility is a "Utility Facility: Generation of power for public sale" because the proposed facility is a "facility for the generation and distribution of public or private service including but not limited to electricity, telephone, natural gas, water, sewage service, and other services providing for energy."[153] The energy facility is the permitted primary use in the IND zone (i.e. the "Utility Facility: Generation of power for public sale") and the transmission corridor, utility corridor, barge berth, haul road, substation, parking areas, and related facilities are accessory uses to the primary SDP use.[154] Pursuant to LDO Chapter III, Section 3.2.150, the uses customarily accessory to the lawfully established principal use are allowed in all cases unless specifically prohibited[155] (compliance with Chapter III is discussed in greater detail below). However, while this use is "permitted," pursuant to LDO Section 4.2.100, the proposed utility facility must still be reviewed by for compliance with Article 4.6 Overlay Zones; Article 4.7 Special Considerations; Chapter V Administration; Article 4.4 General Development Standards.[156] Therefore, Section 4.2.100 imposes additional regulations on the "permitted" use, as applicable.

[152] Chapter V includes information regarding the application process for County review but does not contain any substantive criteria that is applicable for EFSC review. *See* SDPAPPDo247.

[153] LDO, Chapter II, Section 2.1.200.

[154] ASC, Exhibit K, K-10.

[155] **Section 3.2.150. Accessory Uses.** Uses customarily accessory to the lawfully established principal use shall be allowed in all cases unless specifically prohibited or restricted.

1. An accessory use may be located on the same lot, parcel or tract or on a contiguous lot, parcel or tract under the same ownership as the lot, parcel or tract that contains the principal use.
2. An accessory use may be located on a lot parcel or tract that is not contiguous to the lot, parcel, or tract that contains the principal use provided:
   a. The noncontiguous lot, parcel or tract (or portion thereof) is located not more than 100' from the lot parcel or tract on which the principal use is located;
   b. The use complies with the definition of "Accessory Structure or Use" pursuant to this Ordinance;
   c. The noncontiguous lot, parcel or tract is in the "same ownership" as the lot, parcel or tract on which the principal use is located;
   d. The accessory use shall only be allowed subject to an administrative conditional use and findings that establish that the use is compatible with surrounding uses or may be made compatible through the imposition of conditions.

   [OR 91-05-006PL 7/10/91]

[156] The February 03, 2015, SAG comment letter explains that the articles, sections and tables are to be addressed in the order listed by Section 4.2.100. SDPAPPDoc247.

Article 4.6—Overlay Zones

Section 4.6.100. Purpose. *Overlay zones may be super-imposed over the primary zoning district and will either add further requirements or replace certain requirements of the underlying zoning district. The requirements of an overlay zone are fully described in the text of the overlay zone designations.*

Floodplain(FP)

SECTION 4.6.205. Designation of Flood Areas.

a. The area of Coos County that is within a special flood hazard area identified by the Federal Insurance Administration in a scientific and engineering report entitled "The Flood Insurance Study for Coos County, Oregon and Incorporated Areas", dated September 25, 2009, with accompanying Flood Insurance Map (FIRM) is hereby adopted by reference and declared to be part of this ordinance. The Flood Insurance Study and the FIRM are on file at the Coos County Planning Department.

*****

SECTION 4.6.225.Flood Elevation Data. *For the purpose of determining applicable flood insurance risk premium rates Coos County shall:*

1. Obtain, or require the applicant to furnish the following:

a. the elevation (in relation to mean sea level) of the lowest habitable floor (including basement and below-grade crawl spaces) of all new or substantially improved structures, and whether or not such structures contain a basement. The Base Floodplain Elevation (BFE) determination must be based on information from the FIS study and the FEMA maps;

*****

SECTION 4.6.230.Procedural Requirements for Development within Special Flood Hazard Areas. *The following procedure and application requirements shall pertain to the following types of development:*

1. Structures. Prior to issuance of a zoning clearance letter (verification letter) pursuant to Section 3.1.200, a proposal for construction of a new structure or substantial improvement of an existing structure within a Special Flood Hazard Area shall be submitted with an "APPLICATION FOR DEVELOPMENT IN SPECIAL FLOOD HAZARD AREAS."

*****

SECTION 4.6.235.Sites within Special Flood Hazard Areas.

1. If a proposed building site is in a special flood hazard area, all new construction and substantial improvements (including placement of prefabricated buildings and mobile homes), otherwise permitted by this Ordinance, shall:

a. be designed (or modified) and adequately anchored to prevent flotation, collapse, or lateral movement and shall be installed using methods and practices that minimize flood damage. Anchoring methods may include, but are not limited to, use of over-the-top or

frame ties to ground anchors (Reference FEMA "Manufactured Home Installation in Flood Hazard Areas" guidebook for additional techniques);
*****

As explained in the ASC, no IND-zoned portions of the site are subject to the floodplain overlay zone because none of the IND-zoned land within the site boundary is within the special flood hazard area.[157] Therefore, the above criteria are not applicable to the proposed facility.

Airport Surface Floating Zone

Section 4.6.300 Purpose [Airport Surface (AS) Floating Zone]: *The purpose of the Airport Surface Floating zone is to protect public health, safety and welfare. It is recognized that obstructions to aviation have potential for endangering the lives and property of users of selected airports, and property of occupancy of land in the airport's vicinity; an obstruction may affect future instrument approach minimums; and obstructions may reduce the area available for the landing, take-off and maneuvering of aircraft, thus tending to destroy or impair the utility of the airport and the public investment therein.*

SECTION 4.6.345.Conformance Requirement. *All structures and uses within the Airport Operations District shall conform to the requirements of Federal Aviation Agency Regulation FAR-77 or its successor, and to other Federal and State laws as supplemented by Coos County Ordinances regulating structure height, steam or dust, and other hazards to flight, air navigation or public health, safety and welfare.*

As explained in the ASC, no IND-zoned portion of the site is within any of the Airport Surface Floating Zones.[158] Specifically, none of the IND-zoned land lies beneath approach surfaces, transitions surfaces, horizontal surfaces or conical surfaces as they apply to the designated "Bandon, Lakeside, and Powers Airport Approach and Clear Zone Inventory map."[159] Additionally, Section 4.6.345 applies only to Airport Operations districts and the proposed site is not located within the County's Airport Operations districts.[160] Therefore, these criteria do not apply to the proposed use.[161] Nonetheless, as discussed in more detail under the Council's Public Services Standard, below, the proposed facility will comply with all applicable FAA regulations.

[157] ASC, Exhibit K, K-33.
[158] ASC, Exhibit K, K-33; *See* also, Appendix O to this Order.
[159] ASC, Exhibit K, K-34.
[160] ASC, Exhibit K, K-38.
[161] Within Exhibit K of the ASC, the applicant addressed additional criteria, which were not identified by the SAG as "applicable substantive criteria", in order to explain why those criteria were not applicable. These sections include: Section 4.6.305, Section 4.6.310, 4.6.315, 4.6.320, 4.6.325, 4.6.330, 4.6.335, and 4.6.340. Because these criteria was not identified as "applicable substantive criteria" by the SAG, the criteria are not discussed further within this Order. *See* ORS 469.504(5).

Therefore, based upon the above, the Section 4.6-overlay zones, are not applicable and additional regulations are not required.

Section 4.7 Special Considerations

> ***SECTION 4.7.100.Purpose.****The purpose of this Article is to prescribe special regulations for the use and development of lands situated within resource or hazard areas identified on the Special Considerations Maps for Volume I (Balance of County), Volume II (Coos Bay Estuary Management Plan), and Volume III (Coquille River Estuary Management Plan) of the Comprehensive Plan.*
>
> ***SECTION 4.7.105.Prescribed Regulations.*** *Development in areas identified on the Special Considerations Map shall be limited by the regulations prescribed by the "Special Regulatory Considerations" set forth in Tables 4.7a, b, and c. Table 4.7a shall apply to the Balance of County. Table 4.7b shall apply to those lands within the Coquille River Coastal Shoreland Boundary. Table 4.7c shall apply to the Coos Bay Estuary Coastal Shoreland Boundary.*
>
> ***SECTION 4.7.115 Relation to Plan Inventory.*** *The Special Considerations Map is not a substitute for the detailed spatial information presented on the CCCP and CBEMP inventory maps. The Special Considerations Map is merely an index guide designed as a zoning counter implementation tool that indicates when special policy considerations apply in general area, thereby requiring inspection of the detailed plan inventory maps. The Special Criteria Map must and shall at all times accurately reflect the detail presented on the inventory maps (but at a more general scale).*

As noted, above, the IND zone is in the Balance of County. Therefore, pursuant to Section 4.7.105, the "the Special Regulatory Considerations" set forth in Table 4.7-a are applicable. However, as explained in the ASC, the SAG advised that the "Special Considerations Map" no longer exists.[162] Therefore, to demonstrate how the proposed facility complies with the areas of "special regulatory consideration," as applicable to the area zoned IND within the site boundary, the applicant used the County's Coos County Comprehensive Plan (CCCP) detailed plan inventory maps. The inventory maps were then used to determine which special regulatory considerations apply to the property.[163]

[162] ASC, Exhibit K, K-15.
[163] ASC, Exhibit K, K-15.

Historical/Archaeological Sites & Structures—Strategy Nos. 1, 2 & 3:

TABLE 4.7a[164]
Historical/Archaeological Sites and Structures

PHENOMENON	SPECIAL REGULATORY CONSIDERATIONS	Appendix I	
		Page	Strategy No.
3. Historical/ Archeological Sites & Structures	3.a Manage these for their original resource value	1-19	1
	b. Development proposals in identified archaeological areas must have a "sign-off" by qualified person(s).	1-20	3
	c. historical structures and sites can only be expanded, enlarged or modified if Coos County finds the proposal to be consistent with the original historical character of the structure or site	1-19	2

Plan Implementation Strategies

1. Coos County shall manage its historical, cultural and archaeological areas, sites, structures and objects so as to preserve their original resource value.

This strategy recognizes that preservation of significant historical, cultural and archaeological resources is necessary to sustain the County's cultural heritage

This strategy is not applicable as it is a directive to the County regarding implementation and not a provision applicable to the property.

[164] Within Exhibit K of the ASC, the applicant addressed the entirety of Table 4.7a in order to explain why certain phenomenon did not apply, however, in the "applicable substantive criteria" provided by the SAG, the SAG only identified the applicable criteria and phenomenon. Therefore, within this Order, only the applicable phenomenon are addressed, pursuant to ORS 469.504(5). Non-applicable phenomenon include: Phenomenon 1-Mineral & Aggregate, *see* ASC, Exhibit K, K-15—K-16 for additional details regarding inapplicability; Phenomenon 2-Water Resources, *see* Exhibit K, K-17—K-18 for additional details regarding inapplicability; Phenomenon 5-Non-Estuarine Shoreland Boundary, see Exhibit K, K-23—K-26 for additional details regarding inapplicability; Phenomenon 6-Signficant Wildlife Habitat I, see Exhibit K, K-26—29 for additional details regarding inapplicability; Phenomenon 8-Airport Surfaces, see Exhibit K, K-31 for additional details regarding inapplicability.

1. Coos County shall permit the expansion, enlargement or other modification of identified historical structures or sites provided that such expansion, enlargement or other modification is consistent with the original historical character of the structure or site;

This strategy shall be implemented by requiring Planning Director review of site and architectural plans to ensure that the proposed project is consistent with the original historical character of the site and structure.

This strategy recognizes that enlargement, expansion or modification of historical structures is not inconsistent with Coos County's historic preservation goal, provided the County finds that the proposed changes are consistent based on site and architectural standards. Further, this strategy recognizes (1) that the site and architectural modification may be necessary to preserve, protect or enhance the original historical character of the structure, and (2) that the historical value of many of the county's identified historical structures is often marginal and incidental to the structure's current use as private property.

As explained in the ASC, no expansions, enlargements or other modifications of identified historical structures or sites are proposed. Therefore, this strategy is not applicable.

2. Coos County shall continue to refrain from wide-spread dissemination site-specific inventory information concerning identified archaeological sites. Rather, Coos County shall manage development in these areas so as to preserve their value as archaeological resources.

This strategy shall be implemented by requiring development proposals to be accompanied by documentation that the proposed project would not adversely impact the historical and archaeological values of the project's site. "Sufficient documentation" shall be a letter from a qualified archaeologist/historian and/or a duly authorized representative of a local Indian tribe(s). The Coos County Planning Department shall develop and maintain a list of qualified archaeologists and historians. In cases where adverse impacts have been identified, then development shall only proceed if appropriate measures are taken to preserve the archaeological value of the site. "Appropriate measures" are deemed to be those, which do not compromise the integrity of remains, such as: (1) paving over the sites; (2) incorporating cluster-type housing design to avoid the sensitive areas; or (3) contracting with a qualified archaeologist to remove and re-inter the cultural remains or burial(s) at the developer's expense. If an archaeological site is encountered in the process of development, which previously had been unknown to exist, then, these three appropriate measures shall still apply. Land development activities found to violate the intent of this strategy shall be subject to penalties prescribed by ORS 97.745 (Source: Coos Bay Plan).

This strategy is based on the recognition that preservation of such archaeologically sensitive areas is not only a community's social responsibility but is also a legal responsibility pursuant to Goal #5 and ORS 97.745. It also recognizes that historical and archaeological sites are nonrenewable, cultural resources (Source: Coos Bay Plan).

As explained in the ASC, the IND-zoned area within the site boundary does not include any area of archeological concern.[165] However, the related inventory map for the Balance of County, which does not contain a site specific inventory, refers to the entire site boundary as an area of archaeological concern (an area of interest requiring notification of the local tribes).[166] Under the Council's Historic, Cultural and Archaeological Resources Standard, discussed in more detail below, the department's analysis concludes that the construction and operation of the proposed facility would not result in a significant adverse impact to historic, cultural, or archaeological resources that have been listed on or would likely be listed on the National Register of Historic places and would not result in a significant adverse impact to archaeological objects as defined in ORS 358.905(1)(a) or archaeological sites, as defined in ORS 358.905(1)(c). Additionally, potentially affected Tribes, as designated for the project by the Legislative Commission on Indian Services, were identified as reviewing agencies for purposes of review of the ASC, and the applicant has consulted with the Tribes and the State Historic Preservation Office throughout the development of the application.[167] However, because this strategy specifically aims to preserve the sites historical and archaeological values, the department recommends the Council adopt the following condition:

Condition E.1: Prior to beginning construction, the certificate holder shall provide to the department and the Coos County Planning department a letter from a qualified archaeologist/historian or a duly authorized representative of a local Indian tribe(s) confirming that the proposed project would not adversely impact the historical and archaeological values of the project's site. If adverse impacts are identified, the certificate holder must propose appropriate measures to avoid and preserve the archaeological value. The certificate holder must submit those proposed measures to the department for approval, prior to beginning construction.

In consideration of the above and subject to compliance with the recommended condition, the applicant has addressed and satisfied this strategy.

Beaches & Dunes—Strategy Nos. 2, 3 & 4:

TABLE 4.7a
Beaches and Dunes

[165] ASC, Exhibit K, K-19.
[166] ASC, Exhibit K K-19. SDPAPPDox247.*See* Appendix P to this Order, Historical/Archaeological Sites & Structures Inventory Map
[167] Designated Tribes: The Confederated Tribes of Siletz Indians, Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians, The Coquille Indian Tribe. *See* ASC, Exhibit S, S-2—S-3 for evidence of consultation.

PHENOMENON	SPECIAL REGULATORY CONSIDERATIONS	Appendix I	
		Page	Strategy No.
4. Beaches & Dunes	4a. Permit development within "limited development suitability" only upon establishment of findings. Requires Administrative Conditional Use.	1-23	2
	b. Prohibits residential, commercial, or industrial development within areas "unsuitable for development" Permit other developments only upon establishment of findings. Required Administrative Conditional Use	1-24	3
	c. Cooperation with agencies to regulation: destruction of vegetation, erosion shore structures and other developments, requires Administrative Conditional Use and agency comments.	1-25	4

<u>*Plan Implementation Strategies*</u>

1. Coos County shall permit development within areas designated as "Beach and Dune Areas with Limited Development Suitability" on the Special Considerations Map only upon the establishment of findings that consider at least:

a. the type of use proposed and the adverse effects it might have on the site and adjacent areas;
b. the need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation;
c. the need for methods for protecting the surrounding area from any adverse effects of the development; and
d. hazards to life, public and private property, and the natural environment which may be caused by the proposed use.

Further Coos County shall cooperate with affected local, state and federal agencies to protect the groundwater from drawdown, which would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of saltwater into water supplies.

Implementation shall occur through an Administrative Conditional Use process, which shall include submission of a site investigation report by the developer that addresses the five considerations above.

This policy recognizes that:

a. The Special Considerations Map Category of "Beach and Dune Areas with Limited Development Suitability" includes all dune forms except older stabilized dunes, active foredunes, conditionally stable foredunes that are subject to ocean undercutting or wave overtopping, and interdune areas (deflation plains) subject to ocean flooding.

b. The measures prescribed in this policy are specifically required by Statewide Planning Goal #18 for the above-referenced dune forms; and that this strategy recognizes that potential mitigation sites must be protected from pre-emptory uses.

As explained in the ASC, two areas within the IND-zoned area of the site are located within "Beach and Dune Areas with Limited Development Suitability:"[168] (1) the western end of the transmission corridor (Area 1-A) and (2) portions of the accessory road and utility corridor that extend across a Wet Deflation Plain (WDP) (Area 1-B).[169] As the ASC describes, the land form mapped as a Beaches and Dune Special Consideration Area, including the interdune areas (i.e. wet deflation plains) identified within the project boundary, are located above the base flood elevation and not subject to ocean flooding. Therefore, the area is an area with "Limited Development Suitability."[170]

The above strategy provides criteria for development in such interdune areas by "recognizing that development in sensitive beach and dune areas is compatible with or can be made compatible with the fragile and hazardous conditions common to beach and dune areas"[171] upon the establishment of findings that consider:

a. Type of use proposed and the adverse effects it might have on the site and adjacent areas:

As explained in the ASC, a transmission corridor west of the energy facility, in Area 1-A, extends from the IND zone across the 7-D zone (discussed in more detail below) where the corridor crosses a freshwater wetland before merging with the roadway and utility corridor (Area 1-B).[172] The affected area extends westward from the edge of a WDP identified as the boundary of the Beach and Dune Special Consideration Area. Industrial activities in Area 1-A would

[168] ASC, Exhibit K, K-21.
[169] ASC, Exhibit K, K-21. As explained in Appendix K-3, the eastern side of the utility corridor in IND zoning is not located in an area of Special Consideration for Beaches and Dunes with limited development suitability. ASC, Exhibit K, Appendix K-3, pg. 2.
[170] ASC, Exhibit K, K-21.
[171] ASC, Exhibit K, Appendix K-3, pg. 3.
[172] ASC, Exhibit K, Appendix K-3, pg. 4.

include installation and maintenance of overhead transmission lines. Power poles are proposed to be located in adjacent IND areas and in the roadway and utility corridor.[173] According to the ASC, impacts to vegetation, wetlands, or surrounding natural areas are not anticipated along the location of the corridor within or adjacent to the Area of Special Consideration.[174] Therefore, the applicant states that the proposed transmission corridor would have no lasting impacts beyond the spatial impact of reserving a corridor for overhead lines.[175]

The ASC states that Area 1-B impacts would be temporary and have no long-term effects on the Beaches and Dune Areas with Limited Development Suitability.[176] As explained in the ASC, fill would be temporarily placed in Wetland E (see additional discussion and analysis under the Removal-fill section, below) for the construction of a temporary roadway for haul vehicles and to provide a work area for construction of a permanent bridge crossing of Wetland E.[177] Therefore, while short term impacts would be associated with placing fill in Wetland E, the impacts would be mitigated, consistent with the state removal-fill law and, as stated in the ASC, the fill within Wetland E would be removed and the wetland restored.[178] The applicant proposes to construct the bridge to avoid impacts to adjacent Special Consideration Areas Unsuitable for Development.[179] Based upon this proposed development plan, the type of use and the potential adverse effects it may have on the site and adjacent areas have been adequately considered.

b. The need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation

As explained in the ASC, erosion related impacts during construction would be mitigated through the implementation of a comprehensive erosion control plan in accordance with a NPDES 1200-C permit to be issued by the Oregon Department of Environmental Quality.[180] Further, as provided in the ASC, fill slopes are anticipated to be a maximum of 2H:1V (horizontal:vertical), to incorporate appropriate slope stabilization and to be revegetated prior to project completion. Soils would be stabilized via vegetative stabilization, likely using native species suited for the unique site conditions. Additionally, as explained in the ASC, stabilization may be achieved using geotextile grids and cells or the development of hardscape.[181] Based upon the above, the need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation has been adequately considered.

[173] ASC, Exhibit K, Appendix K-3, pg. 4.
[174] ASC, Exhibit K, Appendix K-3, pg.4.
[175] ASC, Exhibit K, Appendix K-3, pg.5.
[176] ASC, Exhibit K, Appendix K-3, pg. 4.
[177] ASC, Exhibit K, Appendix K-3, pg.4.
[178] ASC, Exhibit K, Appendix K-3, pg. 5.
[179] ASC, Exhibit K, Appendix K-3, pg.5.
[180] *See* the Council's Soils Standard below for additional discussion and recommended conditions regarding erosion control measures.
[181] ASC, Exhibit K, Appendix K-3, pg. 6.

c. The need for methods for protecting the surrounding area from any adverse effects of the development and;

As provided in the ASC, once the proposed corridors are established, there would be minimal potential for the proposed facility to generate adverse effects on surrounding areas. According to the ASC, construction of the bridge is the primary means by which the applicant proposes to eliminate impacts to nearby sensitive Beach and Dune Areas. Further, the applicant proposes that impacts would be minimized via careful construction methods and use of native species compatible with the local plant populations.[182] Stormwater would be managed and erosion controlled through the NPDES permit. Based upon the above, methods for protecting the surrounding areas from any adverse effects of the proposed development have been adequately considered.

d. The hazards to life, public and private property, and the natural environment which may be caused by the proposed use.

As explained in the ASC, the proposed corridors would involve routine earthwork and would be constructed in a stable manner that would not pose hazards to life, public and private property, or the natural environment.

Based on the applicant's assessment summarized above, Strategy 2 is satisfied.

Under Table 4.7a(4)(b) and (c), the SAG did not identify Strategies 3 and 4 as applicable substantive criteria. Strategy 3 is not applicable because no use is proposed in the area designated as "Beaches and Dune Areas Unsuitable for Development" on the County's inventory map. Category 4 is not applicable because it is a directive to the County to cooperate with state and federal agencies in regulating actions in the beach and dune areas. Nevertheless, as addressed in the procedural history section above, the department has been working with state reviewing agencies throughout the EFSC process.

Based upon the findings above, the department recommends a conditional use approval be issued to the applicant to allow the development of the transmission corridor and the accessory road and utility corridor in the industrial zone that have been identified as dune areas with "Limited Development Suitability."

Natural Hazards—Strategy Nos. 1, 5 & 6

[182] ASC, Exhibit K, Appendix K-3, pg. 7.

TABLE 4.7a

SPECIAL REGULATORY CONSIDERATIONS PRESCRIBED BY THE COOS COUNTY COMPREHENSIVE PLAN

PHENOMENON	SPECIAL REGULATORY CONSIDERATIONS	Appendix I	
		Page	Strategy No.
7. Natural Hazards	7a. Comply with floodplain overlay zone set forth in this Ordinance.	1-29	1
	b. Support <u>structural</u> protection measures for bankline stabilization projects requiring state and federal permits when the applicant establishes that non-structure measures either are not feasible or inadequate to provide the necessary degree of protection.	1-29	5
	c. Issue zoning clearance letters in known areas potentially subjected to mass movement, including earth flow, slump topography, rockfall and debris flow pursuant to the provisions of natural hazards Strategy #6 in the Comp Plan.*	1-30	6

<u>*Plan Implementation Strategies*</u>

*1. Coos County shall regulate development in known areas potentially subject to natural disasters and hazards, so as to minimize possible risks to life and property. Coos County considers natural disasters and hazards to include stream and ocean flooding, wind hazards, wind erosion and deposition, *critical streambank erosion, mass movement (earthflow and slump topography), earthquakes and weak foundation soils.*

This strategy shall be implemented by enacting special protective measures through zoning and other implementing devices, designed to minimize risks to like and property.

This strategy recognizes that it is Coos County's responsibility: (1) to inform its citizens of potential risks associated with development in known hazard areas; and (2) to provide appropriate safeguards to minimize such potential risks.

Strategy 1 is a directive to Coos County to enact special protective measures consistent with this strategy and, therefore, does not impose specific considerations on the proposed use. As

* These hazards are addressed under policies for "Dunes and Ocean and Lake Shorelands."

explained in the ASC, and addressed above, the IND-zoned portion of the site is outside of the floodplain overlay zone (see Appendix B attached to this Order).[183]

> *5. Coos County shall promote protection of valued property from risks associated with critical streambank and ocean front erosion through necessary erosion-control stabilization measures, preferring nonstructural solutions where practical.*

Coos County shall implement this strategy by making "Consistency Statements" required for State and Federal permits (necessary for structural streambank protection measures) that support structural protection measures when the applicant establishes that non-structure measures either are not feasible or inadequate to provide the necessary degree of protection.

This strategy recognizes the risks and loss of property from unabated critical streambank erosion, and also, that state and federal agencies regulate structural solutions.

According to the ASC, the IND-zoned portion of the site is outside the estuary and the applicant proposes no bank stabilization requiring state or federal permits in the IND-zoned area.[184] Therefore, this strategy is inapplicable.

> *6. Coos County shall permit the construction of new dwellings in known areas potentially subject to mass movement (earth flow/slump topography/rock fall/debris flow) only:*
>
> *a. if dwellings are otherwise allowed by this comprehensive plan; and after the property owner or developer files with the Planning Department a report certified by a qualified geologist or civil engineer stipulating:*
>
> *i. his/her professional qualifications to perform foundation engineering and soils analysis; any*
> *ii. that a dwelling can or cannot be safely constructed at the proposed site, and whether any special structural or siting measures should be imposed to safeguard the proposed building from unreasonable risk of damage to life or property.*

This strategy recognizes the county is responsible for identifying potential hazard areas, informing its citizens of risks associated with development in known hazard areas, and establishing a process involving expert opinion so as to provide appropriate safeguards against loss of life or property.

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[183] According to the ASC, the County's inventory map of natural hazards indicates a "wind hazard" on or near a portion of the facility and this strategy requires the County to regulate development in known areas subject to natural hazards by enacting special protective measures through zoning and implementing devices. However, the County has not enacted any special protective measures regarding "wind hazards." ASC, Exhibit K, K-30.

[184] ASC, Exhibit K, K-30.

Implementation shall occur through an administrative conditional use process, which shall include submission of a site investigation report by the developer that addresses the considerations above.

As explained in the ASC, the proposed facility does not include the construction of any new dwellings. Therefore, this strategy is inapplicable.

In consideration of the above, the applicant has adequately considered Section 4.7, Special Considerations, as applicable. Therefore, this section is satisfied consistent with Section 4.2.100.

Article 4.4—General Development Standards

Section 4.4.600 General Standards for Commercial-Industrial Zoning Districts. *The general standards set forth in Tables 4.4-c shall apply to the zoning districts and uses addressed in Table 4.2-e*

TABLE 4.4-c
PROPERTY DEVELOPMENT STANDARDS
COMMERCIAL – INDUSTRIAL ZONES

Zone	IND
Minimum Lot Size	NR
Minimum Street Frontage	20’
Minimum Lot Width	20’
Minimum Lot Depth	NR
Front Set Back Side Set Back Rear Set Back	5’ required on any side or rear abutting a residential or controlled development zone only
Maximum Building Height	#3
Off-Street Parkin	#7

NR – No Requirement; #--Footnote

FOOTNOTES:

3. No requirement, except those sites abutting a residential or controlled development zone shall have a max height of 35 feet plus one (1) additional foot in height for each foot of setback exceeding 5 feet (I.e., if the setback is 10, the maximum building height would be 40 feet).
7. Offstreet parking and loading requirements per Chapter X apply.
9. All building or structures with the exception of fences shall be setback a minimum of thirty-five (35) feet from any road right-of-way centerline or five (5) feet from any right-of-way line, whichever is greater.
10. Riparian Vegetation Protection

i. Riparian vegetation within 50 feet of a estuarine wetland, stream, lake, or river, as identified on the Coastal Shoreland and Fish and Wildlife habitat inventory maps shall be maintained except that:

a. trees certified by the Coos Soil and Water Conservation District, a port district, or U.S. Soil Conservation Service posing an erosion or safety hazard may be removed to minimize said hazard; or

b. riparian vegetation may be removed to provide direct access for a water-dependent use; or

c. riparian vegetation may be removed in order to allow establishment of authorized structural shoreline stabilization measures; or

d. riparian vegetation may be removed to facilitate stream or streambank clearance projects under a port district, ODFW, BLM, Soil & Water Conservation District, or USFS stream enhancement plan; or

e. riparian vegetation may be removed in order to site or properly maintain public utilities and road right-of-ways, provided that the vegetation to be removed is the minimum necessary to accomplish the purpose; or

f. riparian vegetation may be removed in conjunction with existing agricultural operations (e.g., to site or maintain irrigation pumps, to limit encroaching brush, to allow harvesting farm crops customarily grown within riparian corridors, etc.) provided that such vegetation removal does not encroach further into the vegetation buffer except as needed to provide an access to the water for the minimum amount necessary to site or maintain irrigation pumps.

ii. The 50' riparian vegetation setback shall not apply in any instance where an existing structure was lawfully established and an addition or alteration to said structure is to be sited not closer to the estuarine wetland, stream, lake, or river than the existing structure and said addition or alteration represents not more than 100% of the size of the existing structure's "footprint". (ORD 92-05-009PL)

Table 4.4-c includes 'No Requirement' for minimum lot size and 'No Requirement' for minimum lot depth for areas zoned IND. Therefore, those development standards impose no requirements for the proposed development.

As explained in the ASC, the proposed facility site would have well over 20' of street frontage and the lot width would be well over 20';[185] therefore, the proposed portions of the project

[185] ASC, Exhibit K, K-12.

within the IND zone would comply with the street frontage and lot width standards set forth in Table 4.4.-c.

As provided in the ASC, the proposed facility site would not abut a residential or controlled development; therefore, the setback standards do not apply. Additionally, as provided in Footnote #3, because the site in the IND zone would not abut a residential or controlled development zone, building height standards do not apply to the proposed facility.[186]

Footnote #7 requires compliance with the off-street parking and loading requirements per Chapter X. Section 10.1.300 of Chapter X provides the site planning for parking and pedestrian facilities as follows:.

Chapter X: Section 10.1.300. Parking Area Design

1. Ingress and Egress. In any zoning district, driveways or access ways providing ingress and egress for private parking areas or garages, public parking areas or garages and parking spaces shall be permitted, together with any appropriate traffic control devices in any required yard or setback area.

As provided in the ASC, the parking and landscaping plan, (Appendix C of this Order), depicts the areas of ingress and egress to the public and private parking areas at the site, and it includes adequate traffic control devices in the form of striping and signage.[187] Therefore, the proposed facility would comply with this criterion.

2. Minimum Standards for Parking. All public or private parking areas and parking spaces shall be designed and laid out to conform to the minimum standards as specified in the Parking Table and Diagram. All parking lot designs shall be reviewed and approved by the County Roadmaster.

As described in the ASC, the industrial use category most similar to the proposed use includes "storage warehouse, manufacturing, establishments or trucking freight terminals," and requires one space per employee and one bicycle parking space. The applicant anticipates a total of 6 employees onsite per shift, plus 15 full time maintenance workers. Therefore, to satisfy the county's minimum standards for parking, the applicant is required to provide 21 parking spaces. The attached parking and landscaping plan proposes 291 parking spaces.[188] Therefore, the proposed facility complies with this requirement.

3. Service Drive. Groups of three or more parking spaces, except those in conjunction with single-family or two-family dwelling structures on a single lot, shall be served by a service

[186] ASC, Exhibit K, K-12.
[187] ASC, Exhibit K, K-13.
[188] ASC, Exhibit K, K-13. The proposed facility will share parking spaces with an adjacent use, which is not under Council jurisdiction.

drive so that no backward movement, or other maneuvering of a vehicle within a public right-of-way, other than an alley, will be required. Service drives shall be designed and constructed to facilitate the flow of traffic, provide maximum safety for ingress and egress and maximum safety of pedestrians.

The applicant states that each parking lot would be provided with a service drive to allow ingress and egress for vehicles and pedestrian walkways to authorized access locations.[189] Therefore, the proposed facility would comply with this requirement.

4. Lighting. Any lights provided to illuminate any public or private parking area shall be so arranged as to reflect the light away from any abutting or adjacent residential district or use.

Subsection (4) does not apply to the proposed facility because the site does not abut a residential district or use.

5 Landscaping. For every 10 require parking spaces, 16 square feet of landscaping will be required. Each 16 square foot area should include, on tree and three one-gallon shrubs or living ground cover

As described above, the applicant must provide 21 parking spaces to accommodate the anticipated 21 employees. Accordingly, under this requirement, the applicant must provide 32 square feet of landscaping. The parking and landscaping plan shows 446 square feet of proposed landscaping, to accommodate the 291 parking spaces proposed. Therefore, as provided in the ASC, the square footage of the proposed landscaping is in excess of the amount of landscaping required for the proposed facility. Additionally, John Rowe, the Coos County Roadmaster reviewed the parking and landscaping plan and confirmed to the department that the traffic and parking plan is in compliance with the road and parking requirements of the Coos County Zoning and Land Development Ordinance.[190] Therefore, the proposed facility would comply with the Chapter X Offstreet parking requirements.

Based upon the foregoing, the department finds that the proposed facility complies with the applicable general standards set forth in Table 4.4-c, under Article 4.4 (Development Standards). In addition, the department finds that the applicant has demonstrated compliance with all applicable criteria in the industrial zone. Therefore, the department recommends a compliance determination be issued to allow power plant use in the industrial zone. However, to ensure implementation and continued compliance with the above requirements, the department recommends the Council adopt the following condition:

Condition E.2: Prior to beginning construction, the certificate holder shall provide a final parking and landscaping plan to the department and Coos County Roadmaster for review

[189] ASC, Exhibit K, K-13.
[190] SDPAPPDoc256.

and approval. The final parking and landscaping plan shall be in substantial conformance with the plan included as Appendix C to this Order.

IND Zone—Substation

The applicant requests a compliance determination that the relocated substation is an accessory use to the primary use (energy facility) in the industrial zone. Criteria specific to accessory uses and structures in the industrial zone are LDO Sections 3.1.300(A),(B), (F), 3.2.150(1),(2). Substation compliance with the criteria addressing accessory uses and structures is addressed below. However, based upon the findings below, the department recommends that the Council find that the substation is an accessory use to the primary use in the industrial zone and that a compliance determination be issued.

Coos Bay Estuary Management Plan

Zone 7-D—Activity of Temporary Fill in Special Flood Hazard and Development in Dune Areas with "Limited Development Suitability"

The following section addresses the 7-D management objective and use and activities matrix for applicable review criteria for the activity of temporary fill in Area 1-B, for authorization to develop in special flood hazard areas and for approval to use the 7-D portions of the area east of Jordan Cove Road for the proposed energy facility (primary use) and the accessory components.[191] *See* Appendix D of this Order

Chapter IV, Section 4.5.285—Management Objective for 7-D

This shoreland district, which borders a natural aquatic area, shall be managed for industrial use. Continuation of and expansion of existing non-water-dependent/non-water-related industrial uses shall be allowed provided that this use does not adversely impact Natural Aquatic District #7. In addition, development shall not conflict with state and Federal requirements for the wetlands location in the northwest portion of this district.

Temporary fill is proposed to be used as a temporary bridge to construct a permanent bridge over the existing freshwater wetland. According to the ASC, temporary fill meets the 7-D management objective because it allows the accessory road and utility corridor to traverse the freshwater wetland without permanent impact in order to develop the primary power plant use, which is an Industrial & Port Facilities use.[192] The department agrees that the proposed use of the 7-D area east of Jordan Cove Road for Industrial & Port Facilities use is consistent with the management objective of zone 7-D because the management objective is to manage the

[191] ASC, Exhibit K, K-40. As explained in the ASC, most of the 7-D portions of the facility were previously approved by the County for fill. However, the applicant is now seeking approval to place temporary fill in Area 1-B not previously approved for fill as the fill will be placed in jurisdictional waters, and, therefore, also subject to the state's removal-fill program.

[192] In the 7-D zone, the SDP qualifies as an Industrial and Port facility because of the definition of Industrial (uses) and Port Facilities in LDO 2.1.200 includes "energy generating facilities." Exhibit K, K-40, LDO 2.1.200.

zoning district for industrial use and for the continued and expanded use of the area for non-water dependent/non-water related industrial uses.

> ***SECTION 4.5.286.Uses, Activities and Special Conditions.*** *Table 7-D sets forth the uses and activities which are permitted, which may be permitted as conditional uses, or which are prohibited in this zoning district. Table 7-D also sets forth special conditions which may restrict certain uses or activities, or modify the manner in which certain uses or activities may occur. Reference to "policy numbers" refers to Plan Policies set forth in the Coos Bay Estuary Management Plan.*

Pursuant to Section 4.5.286, the activity of fill is permitted within zone 7-D, subject to an administrative conditional use review, with the special and general conditions serving as the applicable review criteria.

> *GENERAL CONDITIONS (the following condition applies to all uses and activities):*
>
> *1. Uses in this district are only permitted as stated in Policy #14 "General Policy on Uses within Rural Coastal Shorelands". Except as permitted outright, or where findings are made in this Plan, uses are only allowed subject to the findings in this policy.*
> *2. Inventoried resources requiring mandatory protection in this unit district are subject to Policies #17 and #18.*
> *3. All permitted uses and activities shall be consistent with Policy #23 requiring protection of riparian vegetation.*
> *4. All permitted uses shall be consistent with the respective flood regulations of local governments as required in Policy #27.*
> *5. All permitted uses in dune areas shall be consistent with the requirements of Policy #30.*
> *6. In rural areas (outside of UGBs) utilities, public facilities, and services shall only be provided subject to Policies #49, #50, and #51.*

As provided above, the general conditions apply to all uses and activities in zone 7-D. Each condition is specifically addressed below.

> *Condition 1. Uses in this district are only permitted as stated in Policy #14 "General Policy on Uses within Rural Coastal Shorelands". Except as permitted outright, or where findings are made in this Plan, uses are only allowed subject to the findings in this policy.*

As noted above, it is the activity of fill that is under review, not a use. Therefore, policy #14 is not applicable.

> *Condition 2. Inventoried resources requiring mandatory protection in this unit district are subject to Policies #17 and #18.*

Policies 17 and 18 require the following:

Policy #17 Protection of "Major Marshes" and "Significant Wildlife Habitat" in Coastal Shorelands

> *Local governments shall protect from development, major marshes and significant wildlife habitat, coastal headlands, and exceptional aesthetic resources located within the Coos Bay Coastal Shorelands Boundary, except where exceptions allow otherwise.*
> *****

As explained in the ASC, the Shoreland Values Inventory Map indicates that there is a freshwater wetland (significant wildlife habitat) in the northwest corner of Area 1-B, and the proposed road and utility corridor (Area 1-B) would span over the wetland.[193] The proposed temporary fill is necessary to create a temporary bridge, which is in turn necessary for construction of the permanent private bridge structure, which ultimately is necessary to avoid permanent impacts to the freshwater wetland in the northwest corner in Area 1-B. Accordingly, because the proposed fill activity will protect significant wildlife habit, this policy is satisfied.

Policy #18 Protection of Historical, Cultural and Archaeological Sites

> *Local government shall provide protection to historical, cultural and archaeological sites and shall continue to refrain from widespread dissemination of site-specific information about identified archaeological sites.*

As provided in the ASC, the Shoreland Values Inventory Map identifies an archaeological site in the southeast corner of zone 7-D. The archaeological site would not be impacted by the activity of temporary fill in Area 1-B because the proposed bridge for which fill is proposed, is to be located west of the archaeological site.[194] Therefore, this policy is satisfied.

> *Condition 3. All permitted uses and activities shall be consistent with Policy #23 requiring protection of riparian vegetation.*

Policy #23 Riparian Vegetation and Streambank Protection

> *I. Local government shall strive to maintain riparian vegetation within the shorelands of the estuary, and when appropriate, restore or enhance it, as consistent with water-dependent uses. Local government shall also encourage use of tax incentives to encourage maintenance of riparian vegetation, pursuant to ORS 308.792 - 308.803.*

Appropriate provisions for riparian vegetation are set forth in the CCZLDO Section 4.5.180 (OR 92-05-009PL).

[193] ASC, Exhibit K, K-41.
[194] ASC, Exhibit K, K-42.

II. Local government shall encourage streambank stabilization for the purpose of controlling streambank erosion along the estuary, subject to other policies concerning structural and non-structural stabilization measures.

This strategy shall be implemented by Oregon Department of Transportation (ODOT) and local government where erosion threatens roads. Otherwise, individual landowners in cooperation with the Oregon International Port of Coos Bay, and Coos Soil and Water Conservation District, Watershed Councils, Division of State Lands and Oregon Department of Fish & Wildlife shall be responsible for bank protection.

This strategy recognizes that the banks of the estuary, particularly the Coos and Millicoma Rivers are susceptible to erosion and have threatened valuable farm land, roads and other structures.

As explained in the ASC, within the Coastal Shoreland and Fish & Wildlife habitat inventory maps, there are no estuarine wetlands, streams, lakes, or rivers identified within the site boundary.[195] There is one identified freshwater wetland; however, there are no identified estuarine wetlands.[196] Therefore, part I of policy #23 is not applicable. Additionally, part II of policy #23 is not applicable because there are no streambanks within the site boundary.

Condition 4. All permitted uses shall be consistent with the respective flood regulations of local governments, as required in Policy #27.

Policy #27 Floodplain Protection within Coastal Shorelands

The respective flood regulations of local government set forth requirements for uses and activities in identified flood areas; these shall be recognized as implementing ordinances of this Plan.

This strategy recognizes the potential for property damage that could result from flooding of the estuary.

As explained in the ASC, fill would be placed in the floodplain located in the southern area of the 7-D zoned portion of the site in order to establish the accessory road and corridor use in Area 1-B.[197] LDO Section 4.6.230 includes the County criteria for floodplain "other development" as follows:

[195] ASC, Exhibit K, K-42—K-43.

[196] ASC, Exhibit K, K-43. As explained in the ASC, the Coastal Shoreland Boundary Inventory Map was revised based upon an administrative boundary interpretation and it clarified where the coastal shoreland boundary is and the distinction between the industrial and estuary zoning. (County File No. ABI-12-01). Further, there are two Fish and Wildlife habitat inventory maps, neither of which depict inventoried estuarine wetlands.

[197] ASC, Exhibit K, K-43.

Section 4.6.230 Procedural Requirements for Development within Special Flood Hazard Areas. The following procedure and application requirements shall pertain to the following types of development

> *4. Other Development. "Other Development" includes, mining, dredging, filling, grading, paving, excavation or drilling operations located within the area of a special flood hazard, but does not include such uses as normal agricultural operations, fill less than 12 cubic yards, fences, road and driveway maintenance, landscaping, gardening, and similar uses which are excluded from definition because it is the County's determination that such uses are not of the type and magnitude to affect potential water surface elevations or increase the level of insurable damages.*

Review and authorization of a floodplain application must be obtained from the Coos County Planning department before "other development" may occur. Such authorization by the Planning Department shall not be issued unless it is established, based on a licensed engineer's certification that the "other development" shall not:

> *a. result in any increase in flood levels during the occurrence of the base flood discharge if the development will occur within a designated floodway; or,*
> *b. result in a cumulative increase of more than one foot during the occurrence of the base flood discharge if the development will occur within a designated flood plain outside of a designated floodway.*

The applicant has requested an approval of "application for development in special flood hazard areas." Policy #27 requires certification by a licensed engineer that the "other development" would not result in a cumulative increase of more than one foot during the occurrence of the base flood discharge if the development would occur within a designated floodplain. In Appendix K-2 of the ASC, the applicant provided a letter from a licensed engineer that the "other development" would not result in any increase in flood levels. That letter is attached to this Order as Appendix E. The fill would be placed in a floodplain and not a floodway, therefore subsection (b) above is applicable. However, the letter explains that the development would not result in a cumulative increase of more than one foot during the occurrence of the base flood discharge and, further, that there would be no measureable effect on the flood elevation because it would only raise the base flood less than 0.01 feet.[198] Therefore, the department recommends that the Council find that "other development" is authorized and that a conditional use approval be issued to the applicant to allow development in the "Special Flood Hazard Areas."

> *Condition 5. All permitted uses in the dune areas shall be consistent with the requirements of Policy #30.*

[198] ASC, Exhibit K, K-44.

Policy #30. Restricting Actions in Beach and Dune Areas with "Limited Development Suitability" and Special Consideration for Sensitive Beach and Dune Resources (moved from Policy #31)

I. Coos County shall permit development within areas designated as "Beach and Dune Areas with Limited Development Suitability" on the Coos Bay Estuary Special Considerations Map only upon the establishment of findings that shall include at least:

a. The type of use proposed and the adverse effects it might have on the site and adjacent areas;
b. Temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation;
c. Methods for protecting the surrounding area from any adverse effects of the development; and
d. Hazards to life, public and private property, and the natural environment which may be caused by the proposed use; and
e. Whether drawdown of groundwater would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of saltwater into water supplies.

Implementation shall occur through an administrative conditional use process which shall include submission of a site investigation report by the developer that addresses the five considerations above.

Policy #30 requires an investigative report by the applicant to address each of the five considerations. The applicant provided a report from an engineer to address the criteria, which is attached to this Order as Appendix F. Each consideration is addressed below.

a. Type of use proposed and the adverse effects it might have on the site and adjacent areas:

As explained in the ASC, a transmission corridor west of the energy facility (Area 1-A), extends from the IND zone across the 7-D zone where the corridor crosses a freshwater wetland before merging with the roadway and utility corridor (Area 1-B). The area extends westward from the edge of a WDP identified as the boundary of the Beach and Dune Special Consideration Area. Industrial activities in Area 1-A would include installation and maintenance of overhead transmission lines. Power poles are proposed to be located in IND-zoned areas, adjacent to Area 1-A, and in the roadway and utility corridor. According to the ASC, impacts to vegetation, wetlands, or surrounding natural areas are not anticipated along the corridor within or adjacent to the Area of Special Consideration.[199] Therefore, the department finds that the proposed transmission corridor would have no lasting impacts beyond the spatial impact of reserving a corridor for overhead lines.

[199] ASC, Appendix K-3, pgs.1-5

According to the ASC, impacts to Area 1-B would be temporary and have no long-term effects on the Beaches and Dune Areas with Limited Development Suitability. Fill would be placed in Wetland E (see additional discussion and analysis under Removal-fill, below) for the construction of a temporary roadway for haul vehicles and to provide a work area for construction of a permanent bridge crossing of Wetland E. Therefore, short term impacts would be associated with fill in Wetland E; however, they would be mitigated, in accordance with the state removal-fill program, and, as stated in the ASC, the fill within Wetland E would be removed and the wetland restored. Further, the bridge would be constructed to avoid impacts to adjacent Special Consideration Areas Unsuitable for Development.[200] Based upon the applicant's evaluation as explained above, the applicant has considered the potential adverse effects of the proposed use and has proposed appropriate mitigation.

a. The need for temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation

As explained in the ASC, erosion related impacts during construction would be mitigated through the implementation of a comprehensive erosion control plan in accordance with a NPDES 1200-C permit to be issued by the Oregon Department of Environmental Quality. Further, as provided in the ASC, fill slopes are anticipated to be a maximum of 2H:1V (horizontal:vertical), incorporate appropriate slope stabilization and be revegetated prior to project completion. Soils would be stabilized via vegetative stabilization, likely using native species suited for the unique site conditions and a revegetation plan would be prepared. Additionally, stabilization may be achieved using geotextile grids and cells or the development of hardscape.[201] Based on the applicant's evaluation above, the applicant has adequately considered the need for temporary and permanent stabilization programs and planned maintenance.

a. The need for methods for protecting the surrounding area from any adverse effects of the development and;

As provided in the ASC, once the proposed corridors are established, there would be minimal potential to generate adverse effects on surrounding areas. According to the ASC, construction of the bridge, discussed above, is the primary means to eliminate impacts to nearby sensitive Beach and Dune Areas. Further, the applicant proposes that impacts would be minimized via careful construction methods and use of native species compatible with the local plant populations.[202] Stormwater would be managed and erosion controlled through the NPDES permit. Based upon the above, the applicant has adequately considered the need for methods for protecting the surrounding areas from any adverse effects of the proposed development.

[200] ASC, Appendix K-3, pgs1-5.
[201] ASC, Appendix K-3, pg. 6.
[202] ASC, Appendix K-3, pg.7.

a. The hazards to life, public and private property, and the natural environment which may be caused by the proposed use.

As explained in the ASC, the proposed corridors would involve routine earthwork and would be constructed in a stable manner that would not pose hazards to life, public and private property or the natural environment.

b. Whether drawdown of groundwater would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of saltwater into water supplies.

As explained in the ASC, the industrial use would not draw the groundwater table down and would not increase the potential for saltwater intrusion.[203]

Based upon the above and the letter provided in Appendix F, the proposed fill is consistent with Policy 30 and, therefore, Condition 5. Further, the department recommends that a conditional use approval be issued authorizing development in 7-D zone areas that have been identified as dune areas with "Limited Development Suitability."

Condition 6. In rural areas (outside UGBs) utilities, public facilities and services shall only be provided subject Policies #49, #50 and #51.

Policy #49 Rural Residential Public Services

There are no rural residential uses proposed, therefore, this policy is not applicable.

Policy #50 Rural Public Services

There are no rural public service uses proposed, therefore, this policy is not applicable.

Policy #51 Public Services Extension

There are no public service extensions proposed, therefore, this policy is not applicable.

SPECIAL CONDITIONS

Uses:

Activities:

*****

[203] ASC, Exhibit K, Appendix K-3, pg. 7.

5. The wetland in the southeast portion of this district can be filled for a development project contingent upon satisfaction of the prescribed mitigation described in Shoreland District #5.

As explained in the ASC, the proposed temporary fill activity in Area 1-B would not impact the wetland in the southeast portion of the district. Therefore, this condition is not applicable.

Based upon the above, the proposed temporary fill activity, development in special flood hazard areas, and development of dunes with limited development suitability in zone 7-D satisfies the applicable management objective and conditions. Therefore, the department recommends that a conditional use approval be issued to allow the applicant to place temporary fill in Area 1-B, for authorization for development in Special Flood Hazard Areas, and for the development in dune areas with "Limited Development Suitability" in zone 7-D.

Zone 7-D—Power Plant

As discussed above, the applicant is requesting approval for use of a power plant, and the accessory corridors to the power plant in zone 7-D.

SECTION 4.5.286.Uses, Activities and Special Conditions*. Table 7-D sets forth the uses and activities which are permitted, which may be permitted as conditional uses, or which are prohibited in this zoning district. Table 7-D also sets forth special conditions which may restrict certain uses or activities, or modify the manner in which certain uses or activities may occur. Reference to "policy numbers" refers to Plan Policies set forth in the Coos Bay Estuary Management Plan.*

Pursuant to Section 4.5.286, the Industrial & Port Facilities use is permitted in zoning district 7-D, subject only to general conditions.

GENERAL CONDITIONS (the following condition applies to all uses and activities):

1. Uses in this district are only permitted as stated in Policy #14 "General Policy on Uses within Rural Coastal Shorelands". Except as permitted outright, or where findings are made in this Plan, uses are only allowed subject to the findings in this policy.
2. Inventoried resources requiring mandatory protection in this unit district are subject to Policies #17 and #18.
3. All permitted uses and activities shall be consistent with Policy #23 requiring protection of riparian vegetation.
4. All permitted uses shall be consistent with the respective flood regulations of local governments as required in Policy #27.
5. All permitted uses in dune areas shall be consistent with the requirements of Policy #30.

6. In rural areas (outside of UGBs) utilities, public facilities, and services shall only be provided subject to Policies #49, #50, and #51.

The above general conditions are addressed as follows:

Condition. 1. Uses in this district are only permitted as stated in Policy #14 "General Policy on Uses within Rural Coastal Shorelands". Except as permitted outright, or where findings are made in this Plan, uses are only allowed subject to the findings in this policy.

According to the ASC, the proposed primary and accessory uses are consistent with Policy #14 as demonstrated below.

Policy #14: General Policy Uses within Rural Coastal Shorelands

I. Coos County shall manage its rural areas within the "Coos Bay Coastal Shorelands Boundary" by allowing only the following uses in rural shoreland areas, as prescribed in the management units of this Plan, except for areas where mandatory protection is prescribed by LCDC Goal #17 and CBEMP Policies #17 and #18:

a. Farm uses as provided in ORS 215.203;

b. Propagation and harvesting of forest products;

c. Private and public water-dependent recreation developments;

d. Aquaculture;

e. Water-dependent commercial and industrial uses, water-related uses, and other uses only upon a finding by the Board of Commissioners or its designee that such uses satisfy a need which cannot be accommodated on uplands or shorelands in urban and urbanizable areas or in rural areas built upon or irrevocably committed to non-resource use.

f. Single-family residences on lots, parcels, or units of land existing on January 1, 1977, when it is established that:

1. The dwelling is in conjunction with a permitted farm or forest use, or

2. The dwelling is in a documented "committed" area, or

3. The dwelling has been justified through a goal exception; and

4. Such uses do not conflict with the resource preservation and protection policies established elsewhere in this Plan;

g. Any other uses, including non-farm uses and non-forest uses, provided that the Board of Commissioners or its designee determines that such uses satisfy a need which cannot be accommodated at other upland locations or in urban or urbanizable areas. In addition, the above uses shall only be permitted upon a finding that such uses do not otherwise conflict with the resource preservation and protection policies established elsewhere in this Plan.

This strategy recognizes (1) that Coos County's rural shorelands are a valuable resource and accordingly merit special consideration, and (2) that LCDC Goal #17 places strict limitations on land divisions within coastal shorelands. This strategy further recognizes that rural uses

"a through "g" above, are allowed because of need and consistency findings documented in the "factual base" that supports this Plan.

As explained in the ASC, the proposed power plant use would be characterized as "other uses" under the language of subsection "e" in Policy #14, above, because the proposed plant is not one of the uses listed in "a—d." As provided in the ASC, the proposed facility satisfies a need that cannot be accommodated on uplands or shorelands in urban and urbanizable (within the Urban Growth Boundary) or in rural areas built upon or irrevocably committed to non-resource use because the proposed facility will primarily serve a locationally dependent non-jurisdictional LNG terminal. That terminal cannot be accommodated within the UGB because it must be located on the North Spit due to the need to accommodate shipping vessels.[204] [205] Further, construction of the power plant in the proposed location eliminates installation of a longer transmission line and promotes sharing of resources as well as safety and operations staff.[206] Additionally, the only location available for the accessory corridors for the proposed facility is the area adjacent to the proposed power plant because the accessory corridors contain components that must connect to SDP.[207] Based upon this analysis, the proposed facility satisfies a need which cannot be accommodated within the UGB and is in a rural area irrevocably committed to non-resource use.

Condition 2 Inventoried resources requiring mandatory protection in this unit are subject to Policies #17 and #18.

Policy #17 Protection of "Major Marshes" and "Significant Wildlife Habitat" in Coastal Shorelands

Local governments shall protect from development, major marshes and significant wildlife habitat, coastal headlands, and exceptional aesthetic resources located within the Coos Bay Coastal Shorelands Boundary, except where exceptions allow otherwise.

I. Local government shall protect:

a. "Major marshes" to include areas identified in the Goal #17, "Linkage Matrix", and the Shoreland Values Inventory map; and

[204] ASC, Exhibit K, K-47.

[205] Additionally, as explained in the ASC, the final sentence of Policy #14 states that "This strategy further recognizes that rural uses "a through g" above, are allowed because of need and consistency findings documented in the "factual base" that supports this Plan." The inventories and factual base portions of the Coos County Comprehensive Plant at Volume II, Part 2, Section 5.8.2 and Section 5.8.3 generally concluded that large vacant acreages of industrial lands with deep-draft channel frontages are in short supply. The background report and findings further conclude that the North Spit is the only site available with sufficient size and necessary water-dependent characteristics suitable for future land needs for import and transshipment, with related processing facilities for energy resources. ASC, Exhibit K, K-49.

[206] ASC, Exhibit K, K-48.

[207] ASC, Exhibit K, K-49.

b. "Significant wildlife habitats" to include those areas identified on the "Shoreland Values Inventory" map; and
c. "Coastal headlands"; and
d. "Exceptional aesthetic resources" where the quality is primarily derived from or related to the association with coastal water areas.
*****

According to the ASC, the Shorelands Values Inventory Map indicates that there is a freshwater wetland in Area 1-A (accessory). The proposed transmission line corridor would span and avoid impacting this freshwater wetland as would the proposed road and utility corridor which would utilize a private bridge to avoid impacts. (See fill discussion above) Therefore, the proposed use is consistent with the above policy.

Policy #18 Protection of Historical, Cultural and Archaeological Sites

Local government shall provide protection to historical, cultural and archaeological sites and shall continue to refrain from widespread dissemination of site-specific information about identified archaeological sites.
*****

As explained in the ASC, the shoreland values map identifies an archaeological site in the southeast corner of zone 7-D. However, this site would not be impacted by the primary uses or the accessory uses.[208] Therefore,t he proposed use is consistent with the above policy.

Condition 3. All permitted uses and activities shall be consistent with Policy #23 requiring protection of riparian vegetation

Policy #23 Riparian Vegetation and Streambank Protection

I. Local government shall strive to maintain riparian vegetation within the shorelands of the estuary, and when appropriate, restore or enhance it, as consistent with water-dependent uses. Local government shall also encourage use of tax incentives to encourage maintenance of riparian vegetation, pursuant to ORS 308.792 - 308.803.

Appropriate provisions for riparian vegetation are set forth in the CCZLDO Section 4.5.180 (OR 92-05-009PL).

II. Local government shall encourage streambank stabilization for the purpose of controlling streambank erosion along the estuary, subject to other policies concerning structural and non-structural stabilization measures.

According to the ASC, the proposed facility would have no impacts to riparian vegetation because there are no estuarine wetlands, streams, lakes or rivers identified on the Coastal

[208] ASC, Exhibit K, K-50.

Shoreland and Fish & Wildlife habitat inventory maps within the site boundary.[209] Therefore, this policy is not applicable.

Condition 4. All permitted uses shall be consistent with the respective flood regulations of local governments, as required in Policy #27.

Policy #27 Floodplain Protection within Coastal Shorelands

The respective flood regulations of local government set forth requirements for uses and activities in identified flood areas; these shall be recognized as implementing ordinances of this Plan.

This strategy recognizes the potential for property damage that could result from flooding of the estuary.

As explained in the ASC, the southeast area of the site lies within the identified flood areas and is subject to the requirements of Policy #27. As established above with regard to the placement of fill (to establish the accessory road and corridor use in Area 1-B and the power plant in Area1), the applicant would comply with all applicable flood regulations. In Appendix K-2 of the ASC, the applicant provided a letter from a licensed engineer, which established that the development would not result in a cumulative increase of more than one foot during the occurrence of the base flood discharge and, further, that there would be no measureable effect on the flood elevation because it would only raise the base flood less than 0.01 feet. Therefore, the department finds the use is consistent with Policy #27.

Condition 5. All permitted uses in dune areas shall be consistent with the requirements of Policy #30

Policy #30 Restricting Actions in Beach and Dune Areas with "Limited Development Suitability" and Special Consideration for Sensitive Beach and Dune Resources (moved from Policy #31)

I. Coos County shall permit development within areas designated as "Beach and Dune Areas with Limited Development Suitability" on the Coos Bay Estuary Special Considerations Map only upon the establishment of findings that shall include at least:

a. The type of use proposed and the adverse effects it might have on the site and adjacent areas;

b. Temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation;

c. Methods for protecting the surrounding area from any adverse effects of the development; and

d. Hazards to life, public and private property, and the natural environment which may be caused by the proposed use; and

[209] ASC, Exhibit K, K-50—K-51.

e. Whether drawdown of groundwater would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of saltwater into water supplies.

Implementation shall occur through an administrative conditional use process which shall include submission of a site investigation report by the developer that addresses the five considerations above.

As explained in the ASC, the power plant is outside of an area of dune formations and accordingly is consistent with Policy #30.[210] As discussed above, the dune forms in Area 1-A and Area 1-B are of limited suitability for development and the proposed use of the areas for accessory uses to the energy facility satisfies Policy #30. See also, Appendix F.

Condition 6. In rural areas (outside UGBs) utilities, public facilities and services shall only be provided subject to Policies #49, #50 and #51

The above policies are not applicable because there are no rural residential uses proposed, no rural public services proposed and no public service extensions proposed.

Based upon the foregoing, the proposed power plant use in zone 7-D satisfies the applicable management objective and general conditions. Therefore, the department recommends that a conditional use approval be issued for use of the SDP and for accessory components of the SDP, including the transmission corridor and the road and utility corridor, in zone 7-D.

8-WD—Land Transportation System

As explained in the ASC, the applicant seeks an administrative conditional use approval to authorize a land transportation use in zoning district 8-WD, to rebuild and realign an existing public road connection to Transpacific Parkway.[211] Land transportation facilities are defined in the LDO as "bridges and associated structures, highways, and railroads."

Chapter IV, Section 4.5.370—Management Objective for 8-WD

This shoreland district shall be managed to allow the continuation of and expansion of aquaculture, along with development of a boat ramp and limited tie-up facilities, to permit public access to the Estuary

The proposed realignment of a public street intersection is consistent with the above management objective as it includes only the realignment of an existing intersection already established in the area.

Section 4.5.372—Uses, activities and Special Conditions

Uses, Activities and Special Conditions. Table 8-WD sets forth the uses and activities which are permitted, which may be permitted as conditional uses, or which are prohibited in this zoning

[210] ASC, Exhibit K, K-52.
[211] ASC, Exhibit K, K-52.

district. Table 8-WD also sets forth special conditions which may restrict certain uses or activities, or modify the manner in which certain uses or activities may occur. Reference to "policy numbers" refers to Plan Policies set forth in the Coos Bay Estuary Management Plan.

Pursuant to Section 4.5.372, the proposed land transportation facility use is allowed in zoning district 8-WD subject only to the general conditions and no special conditions. Each general condition is addressed below.

Condition 1 Inventoried resources requiring mandatory protection in this unit are subject to Policies #17 and #18.

Policy #17 Protection of "Major Marshes" and "Significant Wildlife Habitat" in Coastal Shorelands

Local governments shall protect from development, major marshes and significant wildlife habitat, coastal headlands, and exceptional aesthetic resources located within the Coos Bay Coastal Shorelands Boundary, except where exceptions allow otherwise.

I. Local government shall protect:
a. "Major marshes" to include areas identified in the Goal #17, "Linkage Matrix", and the Shoreland Values Inventory map; and
b. "Significant wildlife habitats" to include those areas identified on the "Shoreland Values Inventory" map; and
c. "Coastal headlands"; and
d. "Exceptional aesthetic resources" where the quality is primarily derived from or related to the association with coastal water areas.
*****

There are no identified major marshes or significant wildlife habitat inventoried or identified for protection by the comprehensive plan maps.[212] This policy is satisfied.

Policy #18 Protection of Historical, Cultural and Archaeological Sites

Local government shall provide protection to historical, cultural and archaeological sites and shall continue to refrain from widespread dissemination of site-specific information about identified archaeological sites.
*****
Archaeological sites would not be impacted by the proposed realignment. Further, the potentially Tribes affected have been included as reviewing agencies in the review of this application and the applicant has coordinated with the Tribes in preparation of their application. Therefore, this policy is satisfied.

[212] ASC, Exhibit K, K-54.

Condition 2. All permitted uses and activities shall be consistent with Policy #23 requiring protection of riparian vegetation

Policy #23 Riparian Vegetation and Streambank Protection

I. Local government shall strive to maintain riparian vegetation within the shorelands of the estuary, and when appropriate, restore or enhance it, as consistent with water-dependent uses. Local government shall also encourage use of tax incentives to encourage maintenance of riparian vegetation, pursuant to ORS 308.792 - 308.803.

Appropriate provisions for riparian vegetation are set forth in the CCZLDO Section 4.5.180 (OR 92-05-009PL).

II. Local government shall encourage streambank stabilization for the purpose of controlling streambank erosion along the estuary, subject to other policies concerning structural and non-structural stabilization measures.

According to the ASC, there would be no impacts to riparian vegetation because there are no estuarine wetlands, streams, lakes or rivers identified on the Coastal Shoreland and Fish & Wildlife habitat inventory maps within the site boundary, including the area of zoning district 8-WD. Therefore, this policy does not apply.

Condition 3. All permitted uses shall be consistent with the respective flood regulations of local governments, as required in Policy #27.

Policy #27 Floodplain Protection within Coastal Shorelands

The respective flood regulations of local government set forth requirements for uses and activities in identified flood areas; these shall be recognized as implementing ordinances of this Plan.

This strategy recognizes the potential for property damage that could result from flooding of the estuary.

As explained in the ASC, the proposed realignment is outside the Coastal Shoreland. Therefore, this policy does not apply.

Condition. 4. Uses in this district are only permitted as stated in Policy #14 "General Policy on Uses within Rural Coastal Shorelands". Except as permitted outright, or where findings are made in this Plan, uses are only allowed subject to the findings in this policy.

Policy #14: General Policy Uses within Rural Coastal Shorelands

l. Coos County shall manage its rural areas within the "Coos Bay Coastal Shorelands Boundary" by allowing only the following uses in rural shoreland areas, as prescribed in the management units of this Plan, except for areas where mandatory protection is prescribed by LCDC Goal #17 and CBEMP Policies #17 and #18:

a. Farm uses as provided in ORS 215.203;

b. Propagation and harvesting of forest products;

c. Private and public water-dependent recreation developments;

d. Aquaculture;

e. Water-dependent commercial and industrial uses, water-related uses, and other uses only upon a finding by the Board of Commissioners or its designee that such uses satisfy a need which cannot be accommodated on uplands or shorelands in urban and urbanizable areas or in rural areas built upon or irrevocably committed to non-resource use.

f. Single-family residences on lots, parcels, or units of land existing on January 1, 1977, when it is established that:

1. The dwelling is in conjunction with a permitted farm or forest use, or

2. The dwelling is in a documented "committed" area, or

3. The dwelling has been justified through a goal exception; and

4. Such uses do not conflict with the resource preservation and protection policies established elsewhere in this Plan;

g. Any other uses, including non-farm uses and non-forest uses, provided that the Board of Commissioners or its designee determines that such uses satisfy a need which cannot be accommodated at other upland locations or in urban or urbanizable areas. In addition, the above uses shall only be permitted upon a finding that such uses do not otherwise conflict with the resource preservation and protection policies established elsewhere in this Plan.

This strategy recognizes (1) that Coos County's rural shorelands are a valuable resource and accordingly merit special consideration, and (2) that LCDC Goal #17 places strict limitations on land divisions within coastal shorelands. This strategy further recognizes that rural uses "a through "g" above, are allowed because of need and consistency findings documented in the "factual base" that supports this Plan.

As explained above and in the ASC, the proposed power plant is location-dependent and cannot be accommodated in the UGB or on irrevocably committed land as identified in the CCCP.[213] According to the ASC, the land transportation facility use would provide necessary vehicular access to the SDP, which, is also location dependent.[214] Therefore, the proposed public transportation facility use satisfies a need that cannot be accommodated on uplands, shorelands in urban and urbanizable areas or in other rural areas built upon or irrevocably committed to non-resource use as identified in the CCCP. Further, as explained in the ASC, the majority of the area for the proposed land transportation facility use is already developed as a

[213] ASC, Exhibit K, K-56.

[214] ASC, Exhibit K, K-56.

public road and remains within the public right-of-way. Accordingly, the area is already committed to a land transportation facilities use and rebuilding and realigning the existing dedicated right-of-way dictates that this area is the only area available.[215] Therefore, this policy is satisfied.

Condition 5. In rural areas (outside UGBs) utilities, public facilities and services shall only be provided subject to Policies #49, #50 and #51

Policies 49, 50, and 51 are not applicable because the proposed use includes, no rural public services and no public service extensions.

Based upon the above findings, the department recommends that the Council direct the County to issue a conditional use approval for a land transportation facility in the 8-WD zone.

Zone 6-WD—Accessory Road and Utility Corridor (Area 1-C)[216]

The applicant requests approval of an accessory road and utility corridor (Area 1-C). As explained in the ASC, the road and utility corridor are accessory to the primary use energy facility The SDP is a Utility Facility: Generation of Power for public sale in the industrial zone and is permitted use in the industrial zone. Compliance with the accessory use criteria is addressed below.

Based upon compliance with the accessory use criteria, the department recommends the Council direct the County to issue a compliance determination be issued for the accessory road and utility corridor in the 6-WD zone.

Zone 6-WD—Industrial & Port Facilities Use, Fill, Shoreline Stabilization and Zoning Verification (Barge Berth)

The proposed use and activities for the construction of the barge berth include: Industrial & Port Facilities use and related Fill and Shoreline Stabilization activities. A portion of the proposed barge berth falls within the definition of "Industrial & Port Facilities" in the LDO because it includes the use of land and structures for port and industrial development which is consistent with that definition of Industrial and Port Facilities. The proposed barge berth is to be located within zoning district 6-WD and 6-DA. Industrial and Port Facilities are allowed as an administrative conditional use within zoning district 6-WD subject to General Conditions and Special Conditions. The applicant's request for administrative conditional use approval for the Industrial & Port Facilities Use also includes two related activities: (1) fill to make a level surface for loading and unloading components, and (2) shoreline stabilization to secure and anchor the

[215] ASC, Exhibit K, K-57.

[216] As provided in the ASC, the applicant states that the SAG advised that the private accessory haul road west of Jordan Cove Road in Area 1-D would not need any land use approvals as it is a private road used for temporary construction activities. ASC, Exhibit K, K-58.

barge berth. Fill is a permitted activity subject to General Conditions in 6-WD. Shoreline stabilization, including riprap and retaining walls, are allowed as an administrative conditional use subject to the same aforementioned General Conditions and Special Condition 6b and 6c.

Chapter 4, Section 4.5.276 - Uses, Activities and Special Conditions. Table *6-WD sets forth the uses and activities which are permitted, which may be permitted as conditional uses, or which are prohibited in this zoning district. Table 6-WD also sets forth special conditions which may restrict certain uses or activities, or modify the manner in which certain uses or activities may occur. Reference to "policy numbers" refers to Plan Policies set forth in the Coos Bay Estuary Management Plan*

GENERAL CONDITIONS. (The following General Conditions apply to all uses and activities in 6-WD):

> *Condition 1. Inventoried resources requiring mandatory protection in this district are subject to Policies #17 and #18.*

Policy #17 Protection of "Major Marshes" and "Significant Wildlife Habitat" in Coastal Shorelands

> *Local governments shall protect from development major marshes and significant wildlife habitat, coastal headlands, and exceptional aesthetic resources located within the Coos Bay Coastal Shorelands Boundary, except where exceptions allow otherwise.*

Coos County's Shoreland Values Inventory Map indicates there are no major marshes, significant wildlife habitat, or coastal headlands in the area of the proposed barge berth. In addition, the Coos County Comprehensive Plan Volume II, Part 2, Section 3.3-3 states "there are no areas of exceptional aesthetic or scenic quality within the Planning Area [See Section 4.3]."[217] Section 4.3 of the Comprehensive Plan further states "While many parts of the bay have attractive scenic features … none of them can be said to possess truly exceptional scenic qualities."

Because there are no major marshes, significant wildlife habitats, coastal headlands, or exceptional aesthetic resources in the area of the proposed barge berth, Policy 17 does not apply.

Policy #18 Protection of Historical, Cultural and Archaeological Sites

> *Local government shall provide protection to historical, cultural and archaeological sites and shall continue to refrain from widespread dissemination of site specific information about identified archaeological sites. […]*

[217] SDPAPPDoc271 at pg.9

Neither the policies 17 & 18 "Linkage" Matrix nor, the Shoreland Values Inventory Map identifies archeological sites within the area of the barge berth.[218] Because there are no archeological sites within the proposed barge berth area, Policy 18 does not applicable.

Condition 2. All permitted uses and activities shall be consistent with Policy #23 requiring protection of riparian vegetation.

Policy #23 Riparian Vegetation and Streambank Protection

I. Local government shall strive to maintain riparian vegetation within the shorelands of the estuary and, when appropriate, restore or enhance it, as consistent with water dependent uses. Local government shall also encourage use of tax incentives to encourage maintenance of riparian vegetation, pursuant to ORS 308.792 - 308.803.

Appropriate provisions for riparian vegetation are set forth in the CCZLDO Section 4.5.180 (OR 92 05009PL).

II. Local government shall encourage streambank stabilization for the purpose of controlling streambank erosion along the estuary, subject to other policies concerning structural and nonstructural stabilization measures.

This strategy shall be implemented by Oregon Department of Transportation (ODOT) and local government where erosion threatens roads. Otherwise, individual landowners in cooperation with the Oregon International Port of Coos Bay, and Coos Soil and Water Conservation District, Watershed Councils, Division of State Lands and Oregon Department of Fish & Wildlife shall be responsible for bank protection.

This strategy recognizes that the banks of the estuary, particularly the Coos and Millicoma Rivers are susceptible to erosion and have threatened valuable farm land, roads and other structures

There are no estuarine wetlands, streams, lakes or rivers identified on the Coastal Shoreland or Fish & Wildlife Habitat Maps I or II within the area of the barge berth. Therefore, Part I of Policy 23 does not apply.

Part II of Policy 23, also does not apply because there are no streambanks within the area of the proposed barge berth.[219]

Condition 3. Uses in this district are only permitted as stated in Policy #14 "General Policy on Uses within Rural Coastal Shorelands". Except as permitted outright, or where findings are made in this Plan, uses are only allowed subject to the findings in this policy.

[218] SDPAPPDoc 271 at pg.9.
[219] SDPAPPDoc271.

Policy #14 General Policy on Uses within Rural Coastal Shorelands

I. Coos County shall manage its rural areas within the "Coos Bay Coastal Shorelands Boundary" by allowing only the following uses in rural shoreland areas, as prescribed in the management units of this Plan, except for areas where mandatory protection is prescribed by LCDC Goal #17 and CBEMP Policies #17 and #18:

a. Farm uses as provided in ORS 215.203;

b. Propagation and harvesting of forest products;

c. Private and public water-dependent recreation developments;

d. Aquaculture;

e. Water-dependent commercial and industrial uses, water-related uses, and other uses only upon a finding by the Board of Commissioners or its designee that such uses satisfy a need which cannot be accommodated on uplands or shorelands in urban and urbanizable areas or in rural areas built upon or irrevocably committed to non-resource use.

f. Single-family residences on lots, parcels, or units of land existing on January 1, 1977, when it is established that:

1. The dwelling is in conjunction with a permitted farm or forest use, or

2. The dwelling is in a documented "committed" area, or

3. The dwelling has been justified through a goal exception; and

4. Such uses do not conflict with the resource preservation

g. Any other uses, including non-farm uses and non-forest uses, provided that the Board of Commissioners or its designee determines that such uses satisfy a need which cannot be accommodated at other upland locations or in urban or urbanizable areas. In addition, the above uses shall only be permitted upon a finding that such uses do not otherwise conflict with the resource preservation and protection policies established elsewhere in this Plan.

This strategy recognizes (1) that Coos County's rural shorelands are a valuable resource and accordingly merit special consideration, and (2) that LCDC Goal #17 places strict limitations on land divisions within coastal shorelands. This strategy further recognizes that rural uses "a through "g" above, are allowed because of need and consistency findings documented in the "factual base" that supports this Plan.

The proposed barge berth would be characterized as a "water-dependent commercial and industrial uses; water-related uses" under subsection "e" in Policy #14. The SDPP is not located in urban or urbanizable areas as it is outside the UGB and is not in a rural area built upon or irrevocably committed to non-resource use as identified in the Coos County Comprehensive Plan at Volume II - Coos Bay Estuary Management Plan, Part 3.3 - Statewide Goal Exceptions. The barge berth satisfies a need that cannot be accommodated on uplands or shorelands in urban and urbanizable areas or in rural areas built upon or irrevocably committed to non-resource use because the barge berth is an integral part of the proposed SDP and it cannot be

accommodated within the urbanizable areas. Specifically, the barge berth must be located at a shoreline with frontage to a deep-draft channel, downstream of the railroad bridge (allows ships to turnaround and enhances safety of all ship traffic), and adjacent to a dredged access channel connecting the deep-draft channel to the berth to provide barges enough depth to maneuver and pull up to the berth. The only location that provides all these characteristics is the proposed barge berth location.[220] The location of the barge berth at this site avoids the need to increase travel on public roads or railways (which would include large construction loads) and provides direct access to the construction sites of the SDPP.[221] [222] Additionally, the final sentence of Policy #14 states that: "This strategy further recognizes that rural uses "a through g" above, are allowed because of need and consistency findings documented in the "factual base" that supports this Plan. The inventories and factual base portions of the Coos County Comprehensive Plan (CCP) at Volume II, Part 2, Section 5.8.2 and Section 5.8.3 generally concluded that large vacant acreages of industrial lands with deep-draft channel frontages are in short supply. The background report and findings further concluded that the North Spit is the only site available with sufficient size and necessary water-dependent characteristics suitable for future land needs for import and transshipment.[223]

For these reasons and based upon evidence in the record, the proposed barge berth complies with Policy 14 because it satisfies a need that cannot be accommodated within the UGB and is in a rural area irrevocably committed to non-resource use.

Condition 4. All permitted uses shall be consistent with the respective flood regulations of local governments, as required in Policy #27.

Policy #27 Floodplain Protection within Coastal Shorelands

The respective flood regulations of local government set forth requirements for uses and activities in identified flood areas; these shall be recognized as implementing ordinances of this Plan.

This strategy recognizes the potential for property damage that could result from flooding of the estuary.

[220] SDPAPPDo271 at pg.11.
[221] SDPAPPDoc271 at pg. 12.
[222] According to the ASC, the barge berth location, immediately east of the Port's slip, supports the Port's mission to assist and encourage world maritime trade and develop new and expanded overseas markets. This need is codified in Oregon Revised Statute (ORS) 777.065, which states in part, "… development and improvement of port facilities suitable for use in world maritime trade … and the development of deepwater port facilities at Astoria, Coos Bay … is declared to be a state economic goal of high priority." It is necessary to locate the barge berth in this location because it is required not only for the proposed SDP, but also to deliver oversized components to the adjacent LNG Terminal, which will be the Port's primary tenant.
[223] SDPAPPDoc at pgs. 11-13.

No fill would be placed in the floodplain in conjunction with the proposed barge berth. There are no floodplains in zone 6-WD where the barge berth would be located.[224] Because there are no identified flood areas in the vicinity of the proposed barge berth, Policy 27 is not applicable.

Condition 5. All permitted uses in dune areas shall be consistent with the requirements of Policy #30.

Policy #30 Restricting Actions in Beach and Dune Areas with "Limited Development Suitability" and Special Consideration for Sensitive Beach and Dune Resources (moved from Policy #31)

I. Coos County shall permit development within areas designated as "Beach and Dune Areas with Limited Development Suitability" on the Coos Bay Estuary Special Considerations Map only upon the establishment of findings that shall include at least:

The applicant's analysis confirms that the dune form in the area of the barge berth is a "dune of limited suitability for development" and, further, that the proposed use of the areas for Port and Industrial Facility use (the barge berth) satisfies Policy 30. Policy 30 requires implementation through an administrative conditional use process, which includes submission of a site investigation report by the developer that addresses the five considerations listed in that policy. The applicant has provided the site investigation report (Appendix G to this Order), which addresses each of the five considerations. The report concludes that the proposed barge berth would not have impacts to "Beach and Dune Areas with Limited Suitability." As explained in the report, the work area would be enclosed by a sheet pile wall. The fill placed within the sheet pile wall would replace sand excavated from the area, resulting in only minor elevation change to the landscape. North of the barge berth, the remaining dune features would be restored and revegetated to replicate the dune setting.[225] The area would be staked and lined with silt fencing, and sensitive areas flagged to minimize encroachment outside the project area. Further, the slopes on any disturbed vegetated areas would be graded to match surrounding dune forms and planted with native dune species. Stabilization would be achieved through a variety of methods that will be defined by the project engineer, in conjunction with the NPDES permit.[226] Construction would include best management practices for controlling stormwater and erosion. Further, construction of the berth would not impact the groundwater table, nor increase the potential for saltwater intrusion.

Based upon the assessment in the report, proposed barge berth would be suitable for the "Limited Development Suitability" dune areas. Therefore, the department recommends that a conditional use approval be issued authorizing construction of the barge berth in the "Limited Development Suitability" dune areas in zone 6-WD.

[224] SDPAPPDoc271 at pg. 13.
[225] SDPAPPDoc271 at pg. 28.
[226] SDPAPPDoc271 at pg. 29.

Condition 6. In rural areas (outside of UGBs) utilities, public facilities and services shall only be provided subject to Policies #49, #50, and #51.

Policy #49 Rural Residential Public Services

Coos County shall provide opportunities to its citizens for a rural residential living experience […]

No rural residential uses are requested; therefore, this policy does not apply.

Policy #50 Rural Public Services

Coos County shall consider on-site wells and springs [..]: fire districts, school districts, road districts, telephone lines, electrical and gas lines, and similar, low-intensity facilities and services traditionally enjoyed by rural property owners.

The proposed barge berth would require rural public facilities and services. However, as discussed in more detail below, the applicant has demonstrated compliance with the Council's public service standard. The development of the proposed barge berth is consistent with the rural public services policy.

Policy #51 Public Services Extension

I. Coos County shall permit the extension of existing public sewer and water systems to areas outside urban growth boundaries (UGBs) where such service provision is solely for:
a. development of designated industrial sites; […]

Although it is unlikely the barge berth would require potable water, potable water would be supplied to the entire proposed facility by the Coos Bay North Bend Water Board (CBNBWB) through the construction of interconnecting facilities. All costs associated with the construction of the water tap and interconnecting water lines would be borne solely by the applicant. No sanitary sewer services are required as the proposed barge berth would make use of an on-site vault that would be pumped out as needed. Therefore, the barge berth is consistent with the public services extension policy, to the extent it is applicable.

SPECIAL CONDITIONS (ACTIVITIES).

4., 6., 16., 17. These uses are subject to review and approval when consistent with Policy #16

Policy #16.Protection of Sites Suitable for Water-Dependent Uses and Special Allowance for new Non-Water-Dependent Uses in "Urban Water-Dependent (UW) Units

Local government shall protect shorelands in the following areas that are suitable for water dependent uses, for water-dependent commercial, recreational and industrial uses.

a. Urban or urbanizable areas;

b. Rural areas built upon or irrevocably committed to non-resource use; and

c. Any unincorporated community subject to OAR Chapter 660, Division 022 (Unincorporated Communities).

This strategy is implemented through the Estuary Plan, which provides for water-dependent uses within areas that are designated as Urban Water-Dependent (UW) management units. […]

As previously noted, the barge berth is water-dependent because: (1) waterborne transportation of oversized components for the SDP is the sole means of transportation due to the limited size of rail and roadways, (2) the water-borne transportation requires a berth and adjacent platform upon which to unload and load, and (3) the water-borne transportation and unloading could only be accomplished on, in, and adjacent to water. Therefore, siting the barge berth in water-dependent shorelands is consistent with Policy 16.

Conditions 6b., 6c. These activities are permitted subject to the general findings required by Policy #9 "Solutions to Erosion and Flooding Problems".

In zone 6-WD the only activity proposed by the applicant that requires compliance with Policy 9 is shoreline stabilization.

As explained in the ASC, shoreline stabilization, including riprap and retaining walls, are necessary for erosion control to protect public facilities for two reasons:. First, shoreline stabilization would protect Coos Bay, a public facility, by preventing ships' propeller wash from eroding the shoreline and increasing deposits into the bay.[227] Second, shoreline stabilization would protect public roads by allowing for development of the proposed barge berth, which would receive and ship oversized components via barge to the SDP, thereby reducing the number of oversized vehicles on the public roads. According to the ASC, the shoreline stabilization is strategically limited to the locations that are most susceptible to propeller wash from tugboats and barges, including: the east side of the barge berth up to the point of Roseburg Lumber's existing riprap, across the face of the barge berth and to the west end of the barge berth.[228]

<u>*Policy #9 Solutions to Erosion and Flooding Problems*</u>

Local government shall prefer nonstructural solutions to problems of erosion and flooding to structural solutions. Where shown to be necessary, water and erosion control structures such as jetties, bulkheads, seawalls and similar protective structures and fill whether located

[227] SDPAPPDo271 at 16.

[228] SDPAPPDoc271 at 16.

in the waterways or on shorelands above ordinary high water mark shall be designed to minimize adverse impacts on water currents, erosion and accretion patterns.

Shoreline stabilization is necessary to prevent natural forces from degrading the barge berth. Further, as explained in the ASC, the applicant has designed the proposed shoreline stabilization to minimize adverse impacts on water currents, erosion and accretion patterns by avoiding the need for a construction platform eliminating acoustic disturbance and utilizing a turbidity curtain to contain any sediment. Additionally, the design of the barge berth itself minimizes the extent of required shoreline stabilization because the berth is the smallest practicable size.[229]

I. Further, where listed as an "allowable" activity within the respective management units, riprap may be allowed in Development Management Units upon findings that:

a. Land use management practices and nonstructural solutions are inadequate; and

b. Adverse impacts on water currents, erosion and accretion patterns are minimized; and

c. It is consistent with the Development management unit requirements of the Estuarine Resources Goal.

According to the ASC, land use management practices and nonstructural solutions are inadequate to stabilize the barge berth. As explained in the ASC, the construction must stabilize the filled material that comprises the barge berth and provide a secure place for barges to moor while loading and unloading. Adverse impacts have been minimized by designing the smallest barge berth practicable and using riprap and retaining walls only where necessary. As stated above, riprap and retaining walls are consistent with the development management unit requirements of the Estuarine Resources Goal and is listed as an "administrative conditional use" within the 6-WD zone; therefore, the proposed riprap and retaining walls are consistent with the above policy.

II. Further, where listed as an "allowable" activity within respective management units, riprap shall only be allowed in Conservation Aquatic (CA) units upon findings that:

a. Land use management practices and nonstructural solutions are inadequate; and

b. Adverse impacts on water currents, erosion and accretion patterns are minimized; and

c. Riprap is consistent with the resource capabilities of the area and the purposes of maintaining Conservation management units.

This section is not applicable because the applicant is requesting shoreline stabilization in a Water-Dependent Development Shorelands Unit, not a Conservation Aquatic unit.

III. Further, where listed as an "allowable" activity within respective management units, riprap shall only be allowed in Natural Aquatic (NA) units upon findings that:

[229] SDPAPPDoc271 at 16.

a. There is a need to protect from erosion: uses existing as of October 7, 1977, unique natural resources and historic archaeological values, or public facilities;
b. Land use management practices and nonstructural solutions are inadequate;
c. It is consistent with the natural management unit as set forth in this Plan and required by Goal #16; and
d. Adverse impacts on water currents, erosion and accretion patterns and estuarine organisms and their habitat are minimized.

This section is not applicable because the applicant is requesting shoreline stabilization in a Water-Dependent Development Shorelands Unit and not a Natural Aquatic unit.

Implementation of this strategy shall occur through local review of and comment on state and federal permit applications for such projects. This strategy is based on the recognition that nonstructural solutions are often more cost effective as corrective measures, but that carefully designed structural solutions are occasionally necessary. The strategy also recognizes LCDC Goal #16 and #17 requirements and the Oregon Administrative Rule classifying Oregon estuaries (OAR 660-17-000 as amended June, 1981).

Implementation of this strategy is occurring through review by the Council. As provided above, the riprap and retaining walls have been determined to be necessary in order to stabilize the barge berth. Furthermore, as described above, construction of the riprap and retaining walls have been carefully designed to minimize adverse impacts. Therefore, the proposal is consistent with Policy #9.

Based on the analysis above, the applicant has demonstrated compliance with applicable criteria for: Industrial & Port Facilities Use, fill, and shoreline stabilization in the 6-WD zone for the construction of the proposed barge berth. Therefore, the department recommends that a conditional use approval be issued for these uses and activities in the 6-WD zone.

Section 3.1.200. Verification Letter Required for Building Permit. *To obtain a building permit, the applicant shall first request and receive a zoning verification letter from the Coos County Planning Department. This verification letter is valid for one year from the date it is issued. [OR 96-06-007PL 9/4/96]*

Based upon the above discussion, the department recommends a zoning verification letter be issued for construction of the proposed barge berth in the 6-WD zone.

Zone 6-DA—Dredging and Industrial & Port Facilities use for Access Triangle
Dredging

As explained in the ASC, the proposed activity is "new and maintenance dredging" and the proposed use is the construction of a barge berth as an "Industrial & Port Facility" use. The applicant is, therefore, requesting an administrative conditional use approval to construct and

to dredge 1.36 acres for the "Access Triangle," which would provide access to the barge berth. According to the ASC, the barge berth is necessary because no other alternative exists via road or rail facilities to deliver components to the facility.[230]

Section 4.5.280—Management Objective

The aquatic district shall be managed to provide water access for the industrial uses in the adjacent uplands.

The Access Triangle implements the management objective for the 6-DA district, which is to provide water access for the industrial uses in the adjacent uplands. The Access Triangle would provide access to the barge berth, which allows barges to deliver equipment to construct the proposed power plant, which is an industrial use in the adjacent upland. Therefore, approval of the Access Triangle is consistent with the management objective.

SECTION 4.5.281. Uses, Activities and Special Conditions. *Table 6-DA sets forth the uses and activities which are permitted, which may be permitted as conditional uses, or which are prohibited in this zoning district. Table 6-DA also sets forth special conditions which may restrict certain uses or activities, or modify the manner in which certain uses or activities may occur. Reference to "policy numbers" refers to Plan Policies set forth in the Coos Bay Estuary Management Plan*

A. Uses
4. Industrial & Port Facilities ACU-S,G
B. Activities
2. Dredging
a. New ACU-S, G
b. Maintenance dredging of existing facilities ACU-S, G

Based upon the above, both new and maintenance dredging as well as the Industrial & Port facilities are allowed in zoning district 6-DA as an administrative conditional use, subject to special and general uses.

GENERAL CONDITION (the following condition applies to all uses and activities):

1. Inventoried resources requiring mandatory protection in this unit are subject to Policies #17 and #18.

Policy #17 Protection of "Major Marshes" and "Significant Wildlife Habitat" in Coastal Shorelands

Local governments shall protect from development, major marshes and significant wildlife

[230] ASC, Exhibit K, K-58.

habitat, coastal headlands, and exceptional aesthetic resources located within the Coos Bay Coastal Shorelands Boundary, except where exceptions allow otherwise.

According to the ASC, there are no identified major marshes, significant wildlife habitats, coastal headlands or exceptional aesthetic resources in the proposed Access Triangle; therefore, this policy does not apply.[231]

Policy #18 Protection of Historical, Cultural and Archaeological Sites

Local government shall provide protection to historical, cultural and archaeological sites and shall continue to refrain from widespread dissemination of site-specific information about identified archaeological sites.

As explained above, the applicant has been working in consultation with the potentially affected Tribes, and the department has included the tribes as a reviewing agency throughout this EFSC process. Therefore, this policy is satisfied.

SPECIAL CONDITIONS

Uses:

4. Water-dependent uses are allowed. If the use is water-related or non-dependent/non-related and does not require fill, findings must be made that the use is consistent with the resource capabilities and purposes of the management unit. Fill is not permitted for non-water-dependent uses.

As explained in the ASC, the barge berth is a water-dependent use because barges require water in order to operate. The barge berth must be adjacent to the water in order for barges to dock at the barge berth. Because the barge berth is a water-dependent use, the use is consistent with this condition.

Activities:

2a.,2b.,5b.,5d. These activities are only allowed subject to finding that adverse impacts have been minimized (see Policy #5); and to Policy #8 requiring mitigation.

Policy #5 Estuarine Fill and Removal

I. Local government shall support dredge and/or fill only if such activities are allowed in the respective management unit, and:

[231] According to the ASC, the Coos County Planning Director confirmed the above assessment after review of the Linkage Matix chart. ASC, Exhibit K, K-60.

As discussed above, the proposed activity of new and maintenance dredging is allowed as an administrative conditional use in the 6-DA management unit per CCZLDO Section 4.5.281. This policy is satisfied.

> *a. The activity is required for navigation or other water-dependent use that requires an estuarine location or, in the case of fill for non-water-dependent uses, is needed for a public use and would satisfy a public need that outweighs harm to navigation, fishing, and recreation, as per ORS 541.625(4) and an exception has been taken in this Plan to allow such fill.*

As explained in the ASC, the requested conditional use approval for dredging the Access Triangle is required for navigation from the existing Coos Bay Deep-Draft Navigation Channel (DDNC/DA) to fully access the barge berth without vessels running aground.[232] Based on the applicant's analysis, the dredging for the barge berth is needed to accommodate the barge berth as a water-dependent use that requires an estuarine location.

> *b. A need (i.e., a substantial public benefit) is demonstrated and the use or alteration does not unreasonably interfere with public trust rights;*

As discussed in the ASC, the purpose in dredging the Access Triangle is to allow full access to the barge berth. Components must be delivered via barge because they are too large to be transported via road or rail. As explained in the ASC, the public benefit to shipping via barge is reduced congestion and increased safety on the local roads and Highways 101, 126, 38, and 42.[233]

According to the ASC, dredging the Access Triangle would not unreasonably interfere with fishing, navigation or commerce (the traditional Public Trust rights) or environmental protection, aesthetics or recreation (additional rights presently considered under the Public Trust doctrine).[234] Dredging the Access Triangle would affect approximately 1.36 acres; however, as provided in the ASC, the area along the shoreline is short (approximately 140 feet) and is not generally used for fishing, navigation or commerce, nor does the private property above the shoreline provide public access where the barge berth is proposed.[235] Additionally, the applicant states that the public would benefit from dredging this area by: enhancing commerce through delivering components and creating jobs to construct a power plant, providing safe mooring access for barges and reducing land needed for construction of additional berths in Coos Bay; and by enhancing the safety and efficiency of local roads and highways; dredging allows barges (rather than oversized semi-trucks) to deliver large components.

[232] ASC, Exhibit K, K-61.
[233] ASC, Exhibit K, K-61.
[234] ASC, Exhibit K, K-62.
[235] ASC, Exhibit K, K-62.

Based upon the above, the department agrees that dredging and constructing a barge berth provides a public benefit, a need is demonstrated, and the dredging and constructing a barge berth does not unreasonably interfere with the public trust rights, in compliance with this policy.

c. No feasible alternative upland locations exist; and

The purpose of the Access Triangle is for barges and vessels to access the barge berth which is water-dependent and therefore requires a water location.[236] Therefore, no feasible alternative upland locations exist.

d. Adverse impacts are minimized.

According to the ASC, the Access Triangle footprint and excavation was designed to be the minimum size needed to accommodate the size of the barges and vessels.[237] Dredging the 1.36 acre Access Triangle would allow use of the Port's access waterway as a barge berth and avoid the need to build a separate barge berth.[238] Further, as stated in the ASC, adverse impacts have been minimized by timing dredging to avoid impacts to sensitive fish and invertebrate resources; timing dredging to occur at the same time as dredging as for the Port's 37712-RF permit to minimize total dredging time; using the same techniques, access, and staging as used for the Port's 37712-RF permit; and conducting dredging pursuant to conservative best management practices (BMP) to prevent water quality impacts.[239]

e. Effects may be mitigated by creation, restoration, or enhancement of another area to ensure that the integrity of the estuarine ecosystem is maintained.

As described in the response to CBEMP Policy #8, below, the mitigation proposed in association with the dredging would ensure that the integrity of the estuarine ecosystem is maintained.

f. The activity is consistent with the objectives of the Estuarine Resources Goal and with other requirements of state and federal law, specifically the conditions in ORS 541.61514 and Section 404 of the Federal Water Pollution Control Act (P.L. 92-500).

Because new and maintenance dredging is consistent with the acknowledged County Comprehensive Plan, including the CBEMP, it is also consistent with the Statewide Planning Goals, including Goal 16 Estuarine Resources. As addressed later in this Order under the Removal-Fill section, the activity is consistent with the requirements of state and federal law, including the state removal-fill law. Further, the applicant has submitted an application to the U.S. Army Corps of Engineers for a Section 404 Permit which includes dredging the Access

[236] ASC, Exhibit K, K-62.
[237] ASC, Exhibit K, K-62.
[238] ASC, Exhibit K, K-62.
[239] ASC, Exhibit K, K-62.

Triangle, and has been working toward a completeness determination from the Corps since May 2014.

Policy #8 Estuarine Mitigation Requirements

> *Local government recognizes that mitigation shall be required when estuarine dredge or fill activities are permitted in inter-tidal or tidal marsh areas. The effects shall be mitigated by creation, restoration, or enhancement of another area to ensure that the integrity of the estuarine ecosystem is maintained as required by ORS 196.830 (renumbered in 1989). However, mitigation shall not be required for projects which the Department of State Lands determined met the criteria of ORS 196.830(3). […]*
>
> *This strategy shall be implemented through procedures established by the Division of State Lands, and as consistent with ORS 196.830 and other mitigation/restoration policies set forth in this Plan.*
>
> *This strategy recognizes the authority of the Director of the Division of State Lands in administering the statutes regarding mitigation.*

As discussed in the under the removal-fill law below, the Compensatory Wetland Mitigation ("CWM") Plan satisfies the County estuarine mitigation requirements and the removal-fill mitigation requirements. As explained in the ASC, dredging the Access Triangle would adversely affect 0.08 acres of intertidal habitat, 0.22 acres of sand, mudflat and algal beds, 0.24 acres of shallow subtidal habitat, 0.63 acres of deep subtidal habitat, and about 0.18 acres of eelgrass beds. As explained in the ASC, these effects would be mitigated by the creation of the Kentuck and Eelgrass mitigation sites to ensure that the integrity of the estuarine ecosystem is maintained.[240] Mitigation for the impacts, with the exception of deep subtidal habitats, is part of the CWM Plan. Mitigation for deep subtidal habitat impacts are not proposed since construction of the slip and access channel would result in a net gain of deep subtidal habitat.

Impacts to the above habitats, excluding eelgrass and deep subtidal, will be mitigated at the Kentuck Mitigation Site at a 3:1 ratio. Mitigation at the Kentuck Site will consist of restoration of salt marsh and mudflat habitats. Impacts to eelgrass would also be mitigated at a 3:1 ratio (0.18 acres of impact = 0.54 acres of mitigation).[241] Compliance with DSL's administrative rules for estuarine mitigation pursuant to ORS 196.830 and other mitigation requirements imposed through the permits issued in response to the DSL Removal-Fill application and the Section 404 application would satisfy Policy #8. This policy is satisfied.

Based on the applicant's compliance with all applicable criteria in the 6-DA zone, the department recommends a conditional use permit be issued to allow new and maintenance dredging in the 6-DA zone.

[240] ASC, Exhibit K, K-65.
[241] ASC, Exhibit K, K-65.

6-DA Zone-Construction, Fill & Shoreline Stabilization

As explained in the ASC, the proposed activity is temporary and permanent fill using vegetation, bulkheads and riprap as shoreline stabilization to construct the accessory barge berth.[242] The applicant is also requesting approval for an administrative conditional use to fill approximately 1.69 acres in the 6-DA zone to construct a barge berth.

As discussed in the ASC, the barge berth would be used during construction of the proposed SDP facility to allow for docking of barges that are transporting large components and project materials via the heavy equipment haul road that cannot feasibly be transported via public roads or rail.[243]

Material used to backfill the area behind the Open Cell sheet pile and riprap would be obtained from an existing dune immediately north of the barge berth. Material would be pushed from the land towards the bay during the in-water work window. During the in-water work window, temporary fill material would be placed outside of the permanent barge berth structure. The material will provide the contractor an area from which to drive the Open Cell sheet pile and place the riprap and avoid the need to construct a work platform.[244]

Section 4.5.280—Management Objective

> *The aquatic district shall be managed to provide water access for the industrial uses in the adjacent uplands.*

Fill and stabilization for the proposed barge berth is consistent with the management objective because the barge berth allows barges to deliver equipment to construct the proposed power plant, which is an industrial use in the adjacent upland. Therefore, fill and stabilization are consistent with the management objective.

SECTION 4.5.281. Uses, Activities and Special Conditions. *Table 6-DA sets forth the uses and activities which are permitted, which may be permitted as conditional uses, or which are prohibited in this zoning district. Table 6-DA also sets forth special conditions which may restrict certain uses or activities, or modify the manner in which certain uses or activities may occur. Reference to "policy numbers" refers to Plan Policies set forth in the Coos Bay Estuary Management Plan*

[242] ASC, Exhibit K, K-65.
[243] ASC, Exhibit K, K-65.
[244] ASC, Exhibit K, K-65. As explained in the ASC, the temporary fill would act as a sound buffer to eliminate acoustic disturbance to fish species during pile driving, thus allowing for pile driving to occur outside of the in-water work window. A turbidity curtain would be placed around the temporary fill of the barge berth throughout the duration of pile driving. Based on the detailed turbidity analysis and the conclusions regarding the nature of the material that would be used as fill for the barge berth, the applicant has determined that a slope armoring around the additional temporary fill would not be required. Therefore, a turbidity curtain is the only containment measure that would be applied to the barge berth.

B. Activities

2. Dredging

a. New ACU-S, G

b. Maintenance dredging of existing facilities ACU-S, G

GENERAL CONDITION (the following condition applies to all uses and activities):

1. Inventoried resources requiring mandatory protection in this unit are subject to Policies #17 and #18.

Policy #17 Protection of "Major Marshes" and "Significant Wildlife Habitat" in Coastal Shorelands

Local governments shall protect from development, major marshes and significant wildlife habitat, coastal headlands, and exceptional aesthetic resources located within the Coos Bay Coastal Shorelands Boundary, except where exceptions allow otherwise.

According to the ASC, based on the applicant's review of the County's "Linkage Matrix" and consultation with County Planning Staff, the applicant determined that there are no identified major marshes, significant wildlife habitats, coastal headlands or exceptional aesthetic resources in the proposed fill area for the barge berth.[245] Therefore, this policy is not applicable.

Policy #18 Protection of Historical, Cultural and Archaeological Sites

Local government shall provide protection to historical, cultural and archaeological sites and shall continue to refrain from widespread dissemination of site specific information about identified archaeological sites.

As explained above, the applicant has been working in consultation with the potentially affected Tribes and the department has notified the tribes as a reviewing agency throughout this process. Therefore, this policy is satisfied.

SPECIAL CONDITIONS (Activities).

4. (Fill) Fill is permitted subject to the findings required by Policy #9, "Solutions to Erosion and Flooding Problems".

7b., 7c., (Shoreline Stabilization, Riprap & Bulkheads) These activities are permitted subject to the general findings required by Policy #9, "Solutions to Erosion and Flooding Problems",preferring non-structural to structural solutions, and to the specific findings for riprap. Riprap may be allowed to a very limited extent where necessary for erosion

[245] ASC, Exhibit K, K-67.

control to protect: (A) uses existing as of 10-7-77; (B) unique natural resource and historical and archeological values; or, (C) public facilities.

In addition, bulkheads are only allowed subject to finding that adverse impacts have been minimized (see Policy #5); and to Policy #8 requiring mitigation.

Policy 9 is discussed below. However, CBEMP policies #5 and #8 apply only to bulkheads pursuant to Special Condition 7c. Riprap is allowed where necessary for erosion control to protect public facilities. The LDO Section 2.1.200 defines "Public Facilities and Services" as: "Projects, activities and facilities determined to be necessary for the public health, safety and welfare." As explained in the ASC, riprap is necessary for erosion control to protect public facilities for two reasons: First, riprap would protect Coos Bay, by preventing ships' propeller wash from eroding the shoreline and increasing deposits into the Bay. Second, riprap will protect public roads by allowing for development of the berth, which will receive and ship oversized components via barge to the facility, thereby reducing the amount of oversized vehicles on the public roads.[246] Further, the applicant states that it has strategically limited riprap to the locations that are most susceptible to propeller wash from tugboats and barges.[247] Based on this analysis, and for the additional reasons detailed below, shoreline stabilization is consistent with Special Condition 4.

Policy #5 Estuarine Fill and Removal

I. Local government shall support dredge and/or fill only if such activities are allowed in the respective management unit, and:

The activities of fill and bulkhead shoreline stabilization are allowed as an administrative conditional use in the 6-DA management unit pursuant to LDO Section 4.5.281. This criterion is satisfied.

a. The activity is required for navigation or other water-dependent use that requires an estuarine location or, in the case of fill for non-water-dependent uses, is needed for a public use and would satisfy a public need that outweighs harm to navigation, fishing, and recreation, as per ORS 541.625(4) and an exception has been taken in this Plan to allow such fill.

The activities of fill and bulkhead shoreline stabilization are required to construct the barge berth, which is a water-dependent use that requires an estuarine location.[248] Because proposed fill and shoreline stabilization are required for a water-dependent use (the barge berth) that requires an estuarine location the proposed activities are compliant with this criterion.

[246] ASC, Exhibit K, K-68.
[247] ASC, Exhibit K, K-69.
[248] ASC, Exhibit K, K-69.

b. A need (i.e., a substantial public benefit) is demonstrated and the use or alteration does not unreasonably interfere with public trust rights;

Fill and shoreline stabilization are needed to facilitate development of the barge berth and to ensure that material used to construct the barge berth is stabilized and remains in place. As explained above, the barge berth would provide public benefits, including facilitating development and operation of the SDPP and removing project components from local and state roads, thus reducing congestion and increasing safety. Further, development of the barge berth would not unreasonably interfere with public trust rights because the area of the berth is small and not generally utilized for the activities included within the public trust rights. Additionally, the property above the barge berth does not currently provide public access to the water. Accordingly, the proposed development satisfies a need and the use does not unreasonably interfere with public trust rights, consistent with this policy.

c. No feasible alternative upland locations exist; and

The purpose of the fill and Open Cell sheet pile bulkheads is to stabilize the barge berth. The barge berth is water-dependent and therefore requires a water location.[249] No feasible alternative upland locations exist

d. Adverse impacts are minimized.

As stated in the ASC, engaging in fill and construction of the Open Cell sheet pile bulkheads is designed to minimize adverse impacts caused by construction. According to the ASC, the applicant has designed the fill and shoreline stabilization activities to minimize adverse impacts by (1) designing the footprint of the barge berth, and thus the amount of bulkhead needed, to occupy the smallest possible area; and (2) by pushing temporary fill beyond the edge of the Open Cell sheet pile bulkheads during construction.[250]

Further, as explained in the ASC, the temporary fill would act as a sound buffer thereby eliminating acoustic disturbance. The temporary fill also provides the contractor an area from which to drive the Open Cell sheet pile bulkheads, which avoids the need to construct a work platform. Also, a turbidity curtain would be used outside of the temporary fill which would contain silt and debris thereby minimizing adverse impacts to water quality.[251] These techniques indicate that the applicant has designed the shoreline stabilization to minimize adverse impacts. Therefore, based on the applicant's analysis, the shoreline stabilization has been designed to minimize adverse impacts consistent with this policy.

[249] ASC, Exhibit K, K-70.
[250] ASC, Exhibit K, K-70.
[251] ASC, Exhibit K, K-70.

e. Effects may be mitigated by creation, restoration, or enhancement of another area to ensure that the integrity of the estuarine ecosystem is maintained.

As described above, the mitigation proposed in association with the fill and shoreline stabilization would ensure that the integrity of the estuarine ecosystem is maintained.

f. The activity is consistent with the objectives of the Estuarine Resources Goal and with other requirements of state and federal law, specifically the conditions in ORS 541.61518 and Section 404 of the Federal Water Pollution Control Act (P.L. 92-500).

The County Comprehensive Plan has been acknowledged as being in compliance with the Statewide Planning Goals. Therefore, the proposed fill and shoreline stabilization are necessarily also consistent with the Statewide Planning Goals, including Goal 16 Estuarine Resources. Fill and shoreline stabilization are also consistent with the requirements of state and federal law, including the requirements of the state removal-fill program and the U.S. Army Corps of Engineers regulatory programs, which include Section 404 of the Federal Water Pollution Control Act, which is discussed in more detail below. Based on this analysis, the applicant has demonstrated compliance with CBEMP Policy 5.

Policy #8 Estuarine Mitigation Requirements

Local government recognizes that mitigation shall be required when estuarine dredge or fill activities are permitted in inter-tidal or tidal marsh areas. The effects shall be mitigated by creation, restoration, or enhancement of another area to ensure that the integrity of the estuarine ecosystem is maintained as required by ORS 196.830 (renumbered in 1989). However, mitigation shall not be required for projects which the Department of State Lands determined met the criteria of ORS 196.830(3). […]

This strategy shall be implemented through procedures established by the Division of State Lands, and as consistent with ORS 196.830 and other mitigation/restoration policies set forth in this Plan.

This strategy recognizes the authority of the Director of the Division of State Lands in administering the statutes regarding mitigation.

As discussed under the discussion of compliance with the removal-fill requirements below, the applicant's Compensatory Wetland Mitigation ("CWM") Plan satisfies the County estuarine mitigation requirements and the removal-fill mitigation requirements. As explained in the ASC, impacts to the aquatic resources include 1.17 acres of intertidal, 0.36 acres of algae, mudlfats and sand, 0.074 acres of shallow sub-tidal, and 0.09 acres below HMT.[252] These impacts would be mitigated by the creation of the Kentuck and Eelgrass mitigation sites to ensure that the

[252] ASC, Exhibit K, K-72.

integrity of the estuarine ecosystem is maintained.[253] Mitigation for the impacts, with the exception of deep subtidal habitats, is part of the CWM Plan. Mitigation for deep subtidal habitat impacts are not proposed since construction of the slip and access channel would result in a net gain of deep subtidal habitat.

Impacts to the above habitats, excluding eelgrass and deep subtidal, will be mitigated at the Kentuck Mitigation Site at a 3:1 ratio. Mitigation at the Kentuck Site will consist of restoration of salt marsh and mudflat habitats.

Based upon the above, the applicant would adequately mitigate the effects of fill and shoreline stabilization for the barge berth, in compliance with Policy 8.

Policy #9 Solutions to Erosion and Flooding Problems

> *Local government shall prefer nonstructural solutions to problems of erosion and flooding to structural solutions. Where shown to be necessary, water and erosion control structures such as jetties, bulkheads, seawalls and similar protective structures and fill whether located in the waterways or on shorelands above ordinary high water mark shall be designed to minimize adverse impacts on water currents, erosion and accretion patterns.*

As detailed above, shoreline stabilization is necessary so that natural forces do not degrade the barge berth. Further, the applicant has designed shoreline stabilization to minimize adverse impacts on water currents, erosion and accretion patterns by avoiding the need for a construction platform eliminating acoustic disturbance and utilizing a turbidity curtain to contain any sediment.[254] Additionally, the berth is the smallest practicable size in furtherance of this policy.[255]

> *I. Further, where listed as an "allowable" activity within the respective management units, riprap may be allowed in Development Management Units upon findings that:*
> *a. Land use management practices and nonstructural solutions are inadequate; and*
> *b. Adverse impacts on water currents, erosion and accretion patterns are minimized; and*
> *c. It is consistent with the Development management unit requirements of the Estuarine Resources Goal.*

As described in the ASC, land use management practices and nonstructural solutions are not adequate because of the need to stabilize the filled material which comprises the barge berth and to provide a secure place for barges to moor while loading and unloading. Adverse impacts have been minimized by designing the smallest barge berth possible and using riprap only

[253] ASC, Exhibit K, K-72.
[254] ASC, Exhibit K, K-73.
[255] ASC, Exhibit K, K-73.

where necessary.[256] As stated above, riprap is consistent with the development management unit requirements of the Estuarine Resources Goal and is listed as an "allowable" activity within the 6-DA zone. Therefore, the proposed riprap satisfies this policy.

> *II. Further, where listed as an "allowable" activity within respective management units, riprap shall only be allowed in Conservation Aquatic (CA) units upon findings that:*
> *a. Land use management practices and nonstructural solutions are inadequate; and*
> *b. Adverse impacts on water currents, erosion and accretion patterns are minimized; and*
> *c. It is consistent with the Development management unit requirements of the Estuarine Resources Goal.*

This section is not applicable because the Applicant is requesting riprap in a Water-Dependent Development Shorelands Unit, not a Conservation Aquatic unit.

> *III. Further, where listed as an "allowable" activity within respective management units, riprap shall only be allowed in Natural Aquatic (NA) units upon findings that:*
> *a. There is a need to protect from erosion: uses existing as of October 7, 1977, unique natural resources and historic archaeological values, or public facilities;*
> *b. Land use management practices and nonstructural solutions are inadequate;*
> *c. It is consistent with the natural management unit as set forth in this Plan and required by Goal #16; and*
> *d. Adverse impacts on water currents, erosion and accretion patterns and estuarine organisms and their habitat are minimized.*

This section is not applicable because the Applicant is requesting riprap in a Water- Dependent Development Shorelands Unit, not a Natural Aquatic unit.

> *Implementation of this strategy shall occur through local review of and comment on state and federal permit applications for such projects.*
>
> *This strategy is based on the recognition that nonstructural solutions are often more cost effective as corrective measures, but that carefully designed structural solutions are occasionally necessary. The strategy also recognizes LCDC Goal #16 and #17 requirements and the Oregon Administrative Rule classifying Oregon estuaries (OAR 660-17-000 as amended June, 1981).*

This strategy is implemented through review by the Council in coordination with the SAG. The Open Cell sheet pile bulkhead and riprap are necessary in order to stabilize the barge berth and protect it from natural forces.[257]

[256] ASC, Exhibit K, K-74.
[257] ASC, Exhibit K, K-75.

For the above reasons, the department recommends that the Council direct the County to issue a conditional use permit allowing construction, temporary and permanent fill, and shoreline stabilization in 6-DA for the construction of a barge berth.

Chapter III—Supplemental Provisions of LDO

The supplemental provisions of Chapter III apply to all uses in all zones.

i. Article 3.1 - Structures

Section 3.1.100 Purpose: *In order to provide adequate light, air, and privacy, and in order to promote the general safety and welfare, the following general conditions and development standards shall apply to all buildings and structures unless otherwise specified in this Ordinance.*

Approval of the proposed power plant, together with all accessory uses and structures, would be conditioned upon compliance with specified general conditions and development standards determined through this order to be relevant.

Section 3.1.150. Building Permit Issuance. *Coos County recognizes the State of Oregon Building Codes Agency as the official building permit issuing and enforcing authority, responsible for receiving applications and examining the plans and specifications for proposed construction. A building permit shall not be issued unless such plans and specifications comply with this Ordinance.*

The applicant would be required to comply with the relevant provisions of this Ordinance prior to requesting a building permit.

Section 3.1.200. Verification Letter Required for Building Permit. *To obtain a building permit, the applicant shall first request and receive a zoning verification letter from the Coos County Planning Department. This verification letter is valid for one year from the date it is issued. [OR 96-06-007PL 9/4/96*]

Based upon the applicant's demonstration of compliance with all applicable criteria of the LDO and the CCCP identified by the SAG, the department recommends that a zoning verification letter be issued for all facilities in the industrial and CBEMP zones including 8-WD, 7-D, 6-DA, and 6-WD, subject to subject to recommended conditions of approval.

Section 3.1.300. Accessory Structures. *Structures customarily accessory to a lawfully established principle use shall be allowed as set forth below:*

A. An accessory structure may be located on the same lot, parcel or tract under the same ownership as the lot, parcel or tract that contains the principle use.

All accessory structures would be located on tracts under the same ownership as the tracts that contain the principal use. Therefore, this criterion is satisfied.

B. Any attached or detached accessory structure shall maintain the same setbacks established by the zoning district for the principle use. [OR91-05-006PL 7/10/91]

The only setback standard in the IND zone is a 5-foot required setback on any side or rear abutting a residential or controlled development zone only. The site boundary does not abut a residential or controlled development zone. Therefore, there are no setback standards that apply.

C. Accessory Structures within Recreation, Exclusive Farm Use, Forest and other natural resource zoning districts.

The site boundary is not within a Recreation, Exclusive Farm Use or Forest or other natural resource zoning district. This criterion does not apply.

D. Accessory structures within Rural-residential and Rural-Center zoning districts.

The site boundary is not within a Rural-residential or Rural-Center zoning district. This criterion does not apply.

E. Accessory structures within Urban Residential and Airport Operations zoning districts.

The site boundary is not within the Urban Residential or any Airport Operations zoning district. This criterion does not apply.

F. Accessory structures within Industrial and Commercial and Controlled Development zoning districts.

1. Where the principle use of the land is not residential, then Garages, warehouses and other accessory structures shall be allowed on lots and parcels located within industrial, commercial and controlled development zoning districts, subject to any specific requirements of the zone in which they are to be established.

The principal use of the land is not residential; all accessory structures are located within the Industrial zoning district.

1. If the garage or other accessory structure is proposed for a lot or parcel located within a UGB, and the principle use of the land is residential, and said proposed structure exceeds 1,200 square feet in base floor area, then said structure may be permitted only if:

a. a dwelling exists on the subject property or is being established concurrently with the proposed accessory structure, and
b. an administrative conditional use application is approved after finding that the proposed structure meets the definition of "accessory structure" set forth at Section 2.1.200. [OR-96-04-007PL 9/4/96]

The site boundary is not located within a UGB. This criterion does not apply.

Section 3.1.500. Structure Height.

1. Buildings and structures shall not exceed the height limitations as specified for the zone in which they are located.
2. Spires, towers, domes, steeples, flag poles, antennae, chimneys, solar collectors, smokestacks, ventilators or other similar objects may be erected above the prescribed height limitations, provided no usable floor space above the height limits is thereby added. Such overheight object shall not be used for advertising of any kind.

According to Footnote 3 to LDO Table 4.4-c, the IND zone has no applicable maximum building height. The site boundary does not abut a residential or controlled development zone. This criterion does not apply.

ii. Article 3.2 - Uses.

Section 3.2.100. Special Temporary Uses.

No special temporary uses are proposed. This criterion does not apply.

Section 3.2.150. Accessory Uses*. Uses customarily accessory to the lawfully established principal use shall be allowed in all cases unless specifically prohibited or restricted.*

1. An accessory use may be located on the same lot, parcel or tract or on a contiguous lot, parcel or tract under the same ownership as the lot, parcel or tract that contains the principal use.
2. An accessory use may be located on a lot parcel or tract that is not contiguous to the lot, parcel, or tract that contains the principal use provided:
a. The noncontiguous lot, parcel or tract (or portion thereof) is located not more than 100' from the lot parcel or tract on which the principal use is located;
b. The use complies with the definition of "Accessory Structure or Use" pursuant to this Ordinance;
c. The noncontiguous lot, parcel or tract is in the "same ownership" as the lot, parcel or tract on which the principal use is located;
d. The accessory use shall only be allowed subject to an administrative conditional use and findings that establish that the use is compatible with surrounding uses or may be made compatible through the imposition of conditions. [OR 91-05-006PL 7/10/91]

As stated above, the proposed facility would have an accessory road and utility corridor, along which the accessory transmission corridor with power lines and poles would interconnect the proposed facility to the adjacent non-jurisdictional LNG terminal. All accessory uses and structures would be located on contiguous tracts of land under the same ownership. This criterion is satisfied.

Section 3.2.700. Process for Tribe(s) Review and Response of Proposed Development within Acknowledged Archaeological Sites*. Properties which have been determined to have an "archaeological site" location must comply with the following steps prior to issuance of a "Zoning compliance Letter" for building and/or septic permits.*

1. The County Planning Department shall make initial contact with the Tribe(s) for determination of an archaeological site(s). The following information shall be provided by the property owner/agent:

a. plot plan showing exact location of excavation, clearing, and development, and where the access to the property is located; and

b. township, range, section and tax lot(s) numbers; and

c. specific directions to the property.

2. The Planning Department will forward the above information including a request for response to the appropriate tribe(s).

3. The Tribe(s) will review the proposal and respond in writing within 30 days to the Planning Department with a copy to the property owner/agent.

4. It is the responsibility of the property owner/agent to contact the Planning Department in order to proceed in obtaining a "Zoning Compliance Letter" (ZCL) or to obtain further instruction on other issues pertaining to their request.[OR-00-05-014PL]

As discussed above, the potentially affected Tribes have been fully consulted during preparation of the application as well as during the EFSC review process as a reviewing agency. This criterion is satisfied.

iii. Article 3.3 - Lots/Yards

Section 3.3.100. Lot Standards. *Except as provided in (4) below no buildings or structures shall be located on a lot, parcel or tract unless the lot, parcel or tract conforms with the requirements of the district in which it is located.*

The proposed facility would conforms with all applicable lot standards identified in LDO Table 4.4-c. Table 4.4-c references the Footnotes which apply to each of the listed zoning districts in the Table.

FOOTNOTES:

3. No requirement, except those sites abutting a residential or controlled development zone shall have a max height of 35 feet plus one (1) additional foot in height for each foot of setback exceeding 5 feet (i.e., if the setback is 10, the maximum building height would be 40 feet).

The site boundary does not abut a residential or controlled development zone, so the maximum height standard does not apply.

7. Offstreet parking and loading requirements per Chapter X apply.

Demonstration of compliance with the offstreet parking and loading requirements required by Chapter X are addressed above in detail. In sum, the applicant has demonstrated compliance with the Ingress and Egress, the Minimum Standards for Parking, the Service Drive, the Lighting, and the Landscaping requirements of Chapter X. This criterion is satisfied.

Section 3.3.200. Yard Regulations. *All parcels of land shall provide yards as specifically required in each district.*

The site boundary is consistent with all applicable yard regulations identified on LDO Table 4.4-c. Specifically, the IND zone has no yard standards for the front, side or rear yards. Table 4.4-c requires 20 feet for minimum street frontage and minimum lot width. The site boundary has more than 20 feet of street frontage and more than 20 feet of lot width. This criterion is satisfied.

Section 3.3.300. Fences, Hedges, and Walls. *This section provides for the regulation of the height and location offences, hedges, and walls and safeguards the public welfare. Nothing in this section shall be deemed to set aside or reduce the requirements established for security fencing by either local, state, or federal law, or by safety requirements of any officially recognized public agency.*

All proposed fences, hedges and walls would conform to the applicable standards. This criterion is satisfied.

Section 3.3.400. Vision Clearance Triangle*. The following regulations shall apply to all intersections of streets and roads within all districts in order to provide adequate visibility for vehicular traffic. There shall be no visual obstructions over thirty-six (36) inches in height within the clear vision area established herein.*

The Roadmaster previously submitted comments to the department confirming compliance of applicant's proposed internal parking and circulation areas, as well as compliance with the proposed facility's access to the Transpacific Parkway, with the vision clearance triangle. This criterion is satisfied.

Section 3.3.500. Maintenance of Minimum Requirements.

2. Outside Urban Growth Boundary: No lot area, yard, offstreet parking and loading area or other open space which is required by this ordinance for one use shall be used as the required lot area, yard or other open space for another use. This does not include utility easements, private road access easements or septic drainfields; but does include all public road and street right-of-ways.

The site boundary is outside the County's urban growth boundary. The facility and site boundary would conform to applicable lot, yard, parking and loading requirements and the facility would not utilize any space required for those purposes for another use. This criterion is satisfied.

CHAPTER VII (ACCESS)

Section 7.1.550 Access Management

Section 1. Intent and Purpose. *The intent of this ordinance is to manage access to land development while preserving the flow of traffic in terms of safety, capacity, functional classification, and level of service.*

The Parking and Landscaping Plan, provided in the ASC satisfies the requirements of Section 7.1.550.

Section 2. Applicability. *This ordinance shall apply to all arterials and collectors within the county and to all properties that abut these roadways.*

Figure K-3, in the ASC, demonstrates compliance with the requirements of Chapter VII.

Section 6. Access Connection and Driveway Design. *Driveway approaches must be designed and located to provide an exiting vehicle with an unobstructed view. Construction of driveways along acceleration or deceleration lanes and tapers shall be avoided due to the potential for vehicular weaving conflicts.*

The SAG advised that the Coos County Roadmaster approved the facility access and circulation shown on Figure K-3.

Section 13. Review Procedures for Access Management

1. Applicants shall submit a preliminary parking/traffic plan for review by the planning department. At a minimum, the site plan shall show:

a. Location of existing and proposed access point(s) on both sides of the road where applicable;

b. Distances to neighboring constructed access points, median openings (where applicable), traffic signals (where applicable), intersections, and other transportation features on both sides of the property;
c. Number and direction of lanes to be constructed on the driveway plus striping plans;
d. All planned transportation features (such as sidewalks, bikeways, auxiliary lanes, signals, etc.);
e. Parking and internal circulation plans including walkways and bikeways, in UGBs and unincorporated communities;
f. A detailed description of any requested variance and the reason the variance is requested.

The SAG advised that the Coos County Roadmaster approved the Parking and Landscaping Plan submitted by the applicant.

Based upon the above, the department recommends that the Council find that the proposed facility complies with all applicable substantive criteria as identified by the SAG and that the Council direct the County to issue conditional use permits, compliance determinations, and zoning verification letters as requested in the ASC, subject to compliance with recommended conditions.

IV.E.2. Land Use: Conclusions of Law

Based on the foregoing, the department recommends the Council find that the proposed facility complies with all applicable substantive criteria, as provided by the SAG, and, therefore, complies with the Council's Land Use Standard.

IV.F. Protected Areas [OAR 345-022-0040]

(1) Except as provided in sections (2) and (3), the Council shall not issue a site certificate for a proposed facility located in the areas listed below. To issue a site certificate for a proposed facility located outside the areas listed below, the Council must find that, taking into account mitigation, the design, construction and operation of the facility are not likely to result in significant adverse impact to the areas listed below. References in this rule to protected areas designated under federal or state statutes or regulations are to the designations in effect as of May 11, 2007:

(a) National parks, including but not limited to Crater Lake National Park and Fort Clatsop National Memorial;

(b) National monuments, including but not limited to John Day Fossil Bed National Monument, Newberry National Volcanic Monument and Oregon Caves National Monument;

(c) Wilderness areas established pursuant to The Wilderness Act, 16 U.S.C. 1131 et seq. and areas recommended for designation as wilderness areas pursuant to 43 U.S.C. 1782;

(d) National and state wildlife refuges, including but not limited to Ankeny, Bandon Marsh, Baskett Slough, Bear Valley, Cape Meares, Cold Springs, Deer Flat, Hart Mountain, Julia Butler Hansen, Klamath Forest, Lewis and Clark, Lower Klamath, Malheur, McKay Creek, Oregon Islands, Sheldon, Three Arch Rocks, Umatilla, Upper Klamath, and William L. Finley;

(e) National coordination areas, including but not limited to Government Island, Ochoco and Summer Lake;

(f) National and state fish hatcheries, including but not limited to Eagle Creek and Warm Springs;

(g) National recreation and scenic areas, including but not limited to Oregon Dunes National Recreation Area, Hell's Canyon National Recreation Area, and the Oregon Cascades Recreation Area, and Columbia River Gorge National Scenic Area;

(h) State parks and waysides as listed by the Oregon Department of Parks and Recreation and the Willamette River Greenway;

(i) State natural heritage areas listed in the Oregon Register of Natural Heritage Areas pursuant to ORS 273.581;

(j) State estuarine sanctuaries, including but not limited to South Slough Estuarine Sanctuary, OAR Chapter 142;

(k) Scenic waterways designated pursuant to ORS 390.826, wild or scenic rivers designated pursuant to 16 U.S.C. 1271 et seq., and those waterways and rivers listed as potentials for designation;

(l) Experimental areas established by the Rangeland Resources Program, College of Agriculture, Oregon State University: the Prineville site, the Burns (Squaw Butte) site, the Starkey site and the Union site;

(m) Agricultural experimental stations established by the College of Agriculture, Oregon State University, including but not limited to:

Coastal Oregon Marine Experiment Station, Astoria
Mid-Columbia Agriculture Research and Extension Center, Hood River

Agriculture Research and Extension Center, Hermiston
Columbia Basin Agriculture Research Center, Pendleton
Columbia Basin Agriculture Research Center, Moro
North Willamette Research and Extension Center, Aurora
East Oregon Agriculture Research Center, Union
Malheur Experiment Station, Ontario
Eastern Oregon Agriculture Research Center, Burns
Eastern Oregon Agriculture Research Center, Squaw Butte
Central Oregon Experiment Station, Madras
Central Oregon Experiment Station, Powell Butte
Central Oregon Experiment Station, Redmond
Central Station, Corvallis
Coastal Oregon Marine Experiment Station, Newport
Southern Oregon Experiment Station, Medford
Klamath Experiment Station, Klamath Falls;

(n) Research forests established by the College of Forestry, Oregon State University, including but not limited to McDonald Forest, Paul M. Dunn Forest, the Blodgett Tract in Columbia County, the Spaulding Tract in the Mary's Peak area and the Marchel Tract;

(o) Bureau of Land Management areas of critical environmental concern, outstanding natural areas and research natural areas;

(p) State wildlife areas and management areas identified in OAR chapter 635, Division 8.
** * **

IV.F.1. Protected Areas: Findings of Fact

The Protected Areas standard requires the Council to find that, taking into account mitigation, the design, construction and operation of the facility are not likely to result in significant adverse impact to any protected area as defined by OAR 345-022-0040.[258] As established in the Project Order, the analysis area for protected areas is the area within the site boundary and twenty miles from the site boundary. OAR 345-022-0040(2) and (3) do not apply to the proposed facility as the applicant does not propose to locate a transmission line or natural gas pipeline in a protected area nor does the applicant propose to route a transmission line or natural gas pipeline within 500 feet of an existing utility right-of-way. Therefore, to demonstrate compliance with the protected areas standard, the applicant must address OAR 345-022-0040(1).

A. Protected Areas in the Analysis Area

[258] References in this rule to protected areas designated under federal or state statutes are to the designations in effect as of May 11, 2007.

In Exhibit L, the applicant identified 22 protected areas within the 20-mile analysis area. Table F-1, below, identifies each protected area based upon their classification under the rule, and the distance and direction from the proposed facility. Figures L-1 and L-2 in the ASC provide general location information for each protected area in relation to the proposed facility. There are no protected areas within the facility site boundary and no facility components would be located within any protected area.

Table F-1.
Protected Areas within Analysis Area and Approximate Minimum Distance from the SDPP

Protected Area *	**Distance and direction from SDPP (distances are approximate)**	**Treatment in this Exhibit**
OAR 345-022-0040(1)(d) National and State Wildlife Refuges		
Oregon Islands National Wildlife Refuge (NWR) (the closest part of the Oregon Islands NWR to the SDPP is Gregory Point Rocks)	7.5 miles southwest (Gregory Point Rocks)	Considered for this Exhibit
Bandon Marsh NWR	20 miles southwest	
OAR 345-022-0040(1)(f) National and State Fish Hatcheries		
Noble Creek Salmon-Trout Enhancement Program (STEP) Acclimation & Spawning Facility	11 miles southeast	Considered for this Exhibit
Morgan Creek STEP Acclimation & Spawning Facility	17 miles east	
OAR 345-022-0040(1)(g) National Recreation and Scenic Areas		
Oregon Dunes National Recreation Area	1 mile north	Discussed in this Exhibit
OAR 345-022-0040(1)(h) State Parks and Waysides		
Oregon Shore State Recreation Area	1.5 mile west	Discussed in this Exhibit
Conde B. McCullough State Recreation Site	1 mile northeast	Discussed in this Exhibit
Yoakam Point State Natural Area (State Park)	8 miles southwest	Considered for this Exhibit
Shore Acres State Park	10 miles southwest	
Sunset Bay State Park	10 miles southwest	
Tenmile Creek Research Natural Area (State Park)	10 miles northeast	
Cape Arago State Park	12 miles southwest	
William M. Tugman State Park	13 miles northeast	
Umpqua State Scenic Corridor	15 miles northeast	
Umpqua Lighthouse State Park	15 miles northeast	
Seven Devils State Recreation Site	15 miles southwest	
Bullards Beach State Park	18 miles southwest	
Golden and Silver Falls State Natural Areas (State Park)	20 miles northeast	Discussed in this Exhibit
OAR 345-022-0040(1)(j) State Estuarine Sanctuaries		
South Slough National Estuary Research Reserve	6 miles south	Considered for this Exhibit

Davis Slough State Natural Area	10 miles southeast	
OAR 345-022-0040(1)(o) Bureau of Land Management Areas of Critical Environmental Concern, Outstanding Natural Areas, and Research Natural Areas		
North Spit Area of Critical Environmental Concern (ACEC)	2.5 miles southwest	Considered for this Exhibit
North Fork, Coquille River ACEC	20 miles southeast	
Cape Arago Marine Research Reserve**	12 miles southwest	See note

** The Cape Arago Marine Research Reserve is under consideration for funding and study, but is not currently a designated research and marine reserve.

B. Potential Impacts to Protected Areas

In accordance with OAR 345-021-0010(1)(l)(C), the applicant addressed the potential impacts to protected areas that could result from noise, increased traffic, water use, wastewater disposal and visual impacts associated with the construction and operation of the facility. In this section, the department evaluates whether the construction and operation of the facility would result in a significant adverse impact to the identified protected areas based upon these considerations.

*a. Noi*se

In Exhibit X of the ASC, the applicant provided information about predicted noise levels resulting from construction and operation of the facility. While the DEQ noise regulations are not directly applicable to the protection of protected areas,[259] the evidence regarding the potential noise to be produced by the facility, as provided in Exhibit X, is relevant in considering the facility's potential impacts on the protected areas.

Construction noise was reviewed by the applicant in Exhibit X.[260] Generally, as provided in the ASC, noise resulting from construction would be intermittent and faintly audible, depending on the prevailing weather conditions and the location of the protected area.[261] Noise generated during construction would necessarily depend on the type of equipment in use, the number of each type of equipment being used simultaneously and the duration of the use. Therefore, the applicant addressed construction noise based upon 'phase' with each phase taking into consideration the type of equipment to be used throughout construction and the typical assumed sound levels. Specific construction equipment information and the estimated "average" construction sound levels can be found in Table X-1 and Table X-2 of the ASC, respectively. As explained in the ASC, the variable nature of the construction noise is represented by an "average" sound level, in accordance with methodologies outlined by the

[259] OAR 340-035-0005: "In the interest of public health and welfare, and in accordance with ORS 467.010, it is declared to be the public policy of the State of Oregon:(1) To provide a coordinated state-wide program of noise control to protect the health, safety, and welfare of Oregon citizens from the hazards and deterioration of the quality of life imposed by excessive noise emissions…"

[260] Pursuant to OAR 340-035-0035(5)(g), noise produced during construction is exempt from the ODEQ noise regulations.

[261] ASC, Exhibit X, X-4.

U.S. Environmental Protection Agency.[262] The "average" sound levels account for the type and quantity of equipment, the typical usage of each piece of equipment, and typical sound levels of the equipment used during each phase of construction. While the sound levels are "averages," the applicant proposes that the sound levels are in fact conservative representations because attenuation due to ground absorption, atmospheric absorption, and shielding from terrain were not factored in or otherwise included. Additionally, the "average" sound levels assume that all equipment for each phase of construction is operating simultaneously at similar distances.[263]

The two closest protected areas to the site are the Oregon Dunes National Recreation Area and the Conde B. McCullough State Recreation Site, both of which are approximately 1 mile (5,280 feet) from the facility.[264] Using the noise data from Table X-2 in Exhibit X as a reference and for context, at 5,600 feet, the average construction sound levels for any phase would not exceed 46 dBA, with the exception of instances of steam blow, which would be less than 59 dBA at 5,800 feet.[265] At 2,300 feet, the average construction sound levels for any construction phase would not exceed 56 dBA, with the exception of steam blow. However, to minimize the noise emitted during steam blows, the applicant proposes to install silencers. Therefore, based upon the information provided by the applicant, typical construction sound levels at the nearest protected areas (5280 feet) would not likely exceed 56 dBA as sound decreases proportional to the square distance.[266] Moreover, as discussed above, the construction sound levels provided in the application represent conservative estimates, as the estimates do not factor in any shielding from terrain and assume simultaneous operation of all equipment from similar distances.[267] As explained in the ASC, sand dunes stand between the construction site and the closest portion of the Oregon Dunes National Recreation Area. Additionally, Highway 101 is located in between the SDP site and the west end of the Conde B. McCullough State Recreation Site.[268] Therefore, construction sound levels at each protected area, including those closest to the proposed facility, would necessarily be attenuated from the predicted construction sound levels estimated in the application due to the distance from the facility site and the intervening topography and vegetative features. Consequently, based upon the sound levels provided and

[262] ASC, Exhibit X, X-4.
[263] ASC, Exhibit X, X-5.
[264] Oregon Dunes National Recreation Area offers many recreational opportunities including hiking, photography, fishing, canoeing, horseback riding and camping; however, the area is most famous for its off-highway vehicle use according to its website. http://www.fs.usda.gov/recarea/siuslaw/recarea/?recid=42465 (last accessed: May 04, 2015). The Conde B. McCullough State Recreation Site is a day use area offering viewpoints of the bridge over Coos Bay. Located between North Bay Road and the waters of Haynes Inlet, Conde B. McCullough recreation site provides a narrow strip of steep, vegetated bank and includes one picnic table approximately two miles from the South Dunes site. ASC, Exhibit L, L-7.
[265] ASC, Exhibit X, X-5 to X-6. As explained in the ASC, a maximum of six steam blows would be conducted over a two to three week period for each power block. The applicant states that it would make every effort to limit steam blows to daytime operations and each would generally last less than 15 minutes.
[266] ASC, Exhibit X, X-3. According to Table 8 of the DEQ noise rules, the L50 level of 55 dBA is an allowable noise level during daytime hours (7am—10pm).
[267] ASC, Exhibit X, Table X-5.
[268] ASC, Exhibit L, L-8.

the intermittent and limited duration of construction noise, noise emissions from facility construction would not amount to a significant adverse impact on any protected area.

To measure operational noise, the applicant developed an acoustical model of facility operation. Generally, operational noise from the energy facility would not exceed 40 dBA, beginning at a distance of about three miles from the site and would continue to decrease with distance, as explained above.[269] Again utilizing the two closest protected areas as points of reference, the applicant's modeling indicates that sound levels at the border of the Oregon Dunes National Recreation Area would be between 35 and 40 dBA. At the Conde B. McCullough State Recreation Site, sound levels are estimated to be 45 dBA.[270] According to the ASC, the modeled noise levels are comparable to rural residential areas,[271] and the estimated sound levels remain below the sound levels allowed under the DEQ noise rules for noise sensitive properties, including the most restrictive limit of 50 dBA at night at L50 level. Therefore, while operation of the facility may be audible, based upon the sound levels provided, noise emitted from facility operation would not be considered a significant adverse impact on the protected areas.

b. Traffic

The applicant provided a description of traffic resulting from construction and operation of the facility in Exhibit U of the ASC, which included a traffic impacts analysis. The South Dunes site would be accessed from the Transpacific Parkway via Oregon Coast Highway (US 101). The Transpacific Parkway provides access to protected areas within the analysis area, including, the BLM North Spit Area of Critical Environmental Concern, Horsfall Road at Oregon Dunes National Recreation Area and Conde B. McCullough State Recreation Site.

During construction, facility-related traffic would consist of construction material deliveries and on-site construction personnel. According to the ASC, construction is anticipated to last approximately 36 months with peak construction employing up to 500 workers, across multiple shifts. According to the ASC and the applicant's traffic impact analysis, during the AM peak period there would be approximately 18 deliveries inbound to the site, 24 bus trips (inbound and outbound) and 34 inbound personal vehicle trips. During the PM peak period there would be approximately 18 deliveries outbound to the site, 27 bus trips (inbound and outbound) and 50 outbound personal vehicle trips.[272] Due to the lack of available parking near the site, the applicant proposes to transport the majority of construction workers to the site via bus, which results in the lower number of personal vehicle trips noted above and further reduces the influx of construction traffic overall. According to the ASC, based upon the estimated peak construction trip generation data, all study area intersections would meet the Oregon Department of Transportation volume to capacity (v/c) mobility target during AM and PM

[269] ASC, Exhibit L, L-6.
[270] ASC, Exhibit L, L-7.
[271] ASC, Exhibit L, L-7.
[272] ASC, Exhibit U, Appendix U-4, pg. 10.

weekday peak hour conditions.[273] Therefore, peak construction traffic volumes would not have a significant operational impact on the surrounding intersections.

Even though facility construction would not cause an operational impact on the surrounding intersections, the applicant proposes an asymmetrical widening on the northern side of the intersection.[274] The parkway would be widened approximately 900 feet to provide a left-turn lane onto Highway 101. The applicant is proposing this improvement because an increase in vehicle trips heading eastbound along Transpacific parkway is expected to result in an increase in queue lengths approaching US 101, and an increase in queue lengths corresponds to an increase in vehicle delay. As explained in the ASC, an increase in vehicle delay can cause typical drivers to begin to accept smaller gaps in traffic, which could result in an increase in traffic accidents.[275] Therefore, although the intersections impacted by construction traffic would still satisfy ODOT targets, to mitigate any potential safety risks associated with possible vehicle delays approaching Highway 101, the applicant proposes to widen the Transpacific Parkway and Highway 101 intersection. With the proposed intersection widening, as discussed in the ASC, the protected areas accessed via Transpacific Parkway would experience a safer, more convenient transition as they head east on Transpacific Parkway and onto US 101, while not otherwise being significantly impacted. Additionally, those traveling to protected areas via the Transpacific Parkway would be unaffected by the lane widening as traffic flow would be maintained as it is currently.[276] Other identified protected areas would not be impacted by construction traffic flows near the US 101/Transpacific parkway because the protected areas are located at great distances from the facility site. Consequently, during construction, considering the efforts to minimize traffic via carpooling and the improvement proposed at the Transpacific Parkway, construction traffic associated with the facility would not result in a significant adverse impact to any protected areas.

Operation of the facility would require approximately 45 full-time employees daily.[277] As demonstrated by the above analysis, there is capacity to absorb these employees' trips into the transportation network with negligible associated impact. Therefore, increased traffic due to the operation of the facility would not result in a significant adverse impact to the identified protected areas.

[273] ASC, Exhibit U, Appendix U-4, pgs. 10-12. The study area include the following intersections: US 101 at Transpacific Parkway; US 101 at East Bay Drive; US 101 at Ferry Road; Transpacific Parkway at New Private Driveway (Entrance A); Transpacific Parkway at Jordan Coe Road (Entrance C) Transpacific Parkway at Horsfall Beach Road; Transpacific Parkway at Boxcar Hill (Entrance D)

[274] The applicant originally proposed to symmetrically widen Transpacific Parkway; however, after further review it was determined that this would require traffic lane closure during construction of each side of the widened roadway for a minimum of 5 months per side. This would have negatively impacted commercial operations at North Spit businesses because it would have constrained truck traffic as well as resulted in avoidable utility conflicts. Therefore, the applicant supplemented the ASC with the preferred alternative. SDPAPPDoc274.

[275] ASC, Exhibit L, L-9.

[276] ASC, Exhibit L, L-9—10.

[277] ASC, Exhibit L, L-10.

c. Water Use and Wastewater Disposal

The applicant provided information regarding the facility's proposed water use in Exhibit O of the ASC. As discussed within that exhibit, and in greater detail under the Ground Water Section, below, the applicant proposes to obtain all water necessary for construction and operation of the proposed facility from the CBNBWB under existing water rights. As provided in a letter from the CBNBWB, the Board has available capacity and can supply the water needs of the proposed facility.[278] Therefore, no new permits are required and no permits are required to be transferred or modified to supply the water needs of the proposed facility. Thus, because the facility would utilize an existing water right, which requires no modification, water use associated with construction and operation of the proposed facility would not have any significant adverse impact on any protected area and its water needs.

To assess the potential impacts to protected areas due to wastewater disposal, the applicant's proposed wastewater discharge and management must first be discussed. As explained in the ASC, portable toilets would be used during construction and the sanitary waste produced would be trucked to a sewage treatment plant by a licensed contractor for appropriate treatment and disposal.[279] For construction process waters, the applicant proposes to collect, treat (as necessary) and discharge to the industrial wastewater pipeline and the Port of Coos Bay's ocean outfall[280] Additionally, depending on the presence of contaminants, the applicant may truck construction process water off site for processing and disposal at an approved facility.[281] According to the ASC, non-contact stormwater (stormwater that has not contacted oil or other pollutants) would be infiltrated into the sand backfill, with any runoff directed to the infiltration basin, vegetated swales or biofilters,[282] and contact stormwater (stormwater that has potentially come into contact with equipment, lubrication oil, or any other potential industrial

[278] ASC, Exhibit O, Appendix O-1.

[279] According to the ASC, two local portable toilet vendors have expressed interest and capability in providing these services and one vendor has its own permitted treatment plant. Additionally, the City of North Bend has confirmed that they could accept this waste in a holding tank. The wastewater would be characterized and blended with the regular municipal water stream treated by the North Bend wastewater treatment plant. ASC, Exhibit V, V-13—V-14.

[280] The applicant maintains an NPDES waste discharge permit (permit number: 101499), which allows the current treatment system to discharge existing treated waste streams to the Pacific Ocean, covers seepage from the treatment ponds and places limits on the wastewater to protect water quality. As discussed previously, pursuant to ORS 469.503(3), NPDES permits are federally-delegated permits, issued by the ODEQ, outside of Council jurisdiction and not governed by the site certificate. The existing permit, currently being renewed by ODEQ, does not cover wastewater discharges from the proposed facility. Before ODEQ can issue a wastewater discharge permit for the wastewater discharges associated with this proposed facility, the applicant must submit a complete permit modification application to ODEQ listing all anticipated pollutants, their concentrations and mass loads. A permit modification application was submitted to ODEQ pursuant to OAR 345-021-0000(7); however, it was not complete. If a facility meets all legal requirements, ODEQ will issue the facility's NPDES Water Quality permit following EPA review. (*See* ASC, Exhibit E, Appendix E-4; SDPAPPDoc240; Oregon Department of Environmental Quality Public Notice, Proposed Renewal of NPDES Water Quality Permit for Fort Chicago (Jordan Cove LNG issued on April 30, 2015)

[281] ASC, Exhibit V, V-14.

[282] ASC, Exhibit V, V-14.

chemicals) would be directed to the industrial wastewater pipeline and ocean outfall after passing through an oil/water separator.[283] As discussed in the Soils Section above, the applicant would be subject to compliance with an NPDES #1200-C permit, which would require the implementation of an Erosion and Sediment Control Plan that must include best management practices for the reduction of runoff and minimization of any potential stormwater impacts.

Regarding operation, sanitary wastewaters would be treated at an onsite sanitary wastewater treatment plant and discharged to the industrial wastewater pipeline, or, alternatively, the sanitary wastewater would be treated onsite and held, then transported offsite. The applicant does not anticipate sanitary waste disposal to have any adverse impacts on surrounding or adjacent areas or groundwater quality.[284] For managing operational process wastewaters[285], the applicant proposes to treat, collect and discharge all waters to the industrial wastewater pipeline and the Port of Coos Bay's ocean outfall line.[286] As provided in the ASC, there would be no land application of wastewater or wastewater evaporation ponds on the proposed facility site.[287] Stormwater generated during operation would be managed consistently with construction management, sending any contact stormwater to the industrial wastewater pipeline for discharge after flowing through oil/water separators and non-contact stormwater to the stormwater infiltration pond.[288] Based upon the applicant's proposed wastewater management, wastewater would not be discharged to or come into contact with any protected area. Additionally, all wastewater discharges, including stormwater runoff, would be regulated under the Clean Water Act and subject to compliance with issued NPDES permits, preventing potential significant impacts to receiving waters. Therefore, based on the foregoing, facility water use and wastewater disposal will not result in a significant adverse impact to any protected areas during construction or operation of the proposed facility.

d. Visual Impacts from facility structures or plumes

To evaluate the potential visual impacts to identified protected areas due to the construction and operation of the proposed facility, the applicant created a computer based line of sight model using geographic information system (GIS). The zone of visual influence (ZVI) model combined a digital elevation model, a 3D model of proposed SDPP features (including the tallest features) and the boundaries of the identified protected areas. As explained in the application, the ZVI model produced conservative (worst case) results because the model determined line-of-sight under 'bare earth' conditions. Therefore, the model did not consider vegetation cover or structure which may block or screen views, and the model did not consider variable weather conditions, which may also limit viewing distances.[289]

[283] ASC, Exhibit V, V-14—V-15.
[284] ASC, Exhibit V, V-20.
[285] Table V-4 of the ASC provides estimated quality of wastewater discharges.
[286] ASC, Exhibit V, V-21.
[287] ASC, Exhibit V, V-3.
[288] ASC, Exhibit V, V-10.
[289] ASC, Exhibit L, L-13.

As provided in the ASC, the most prominent visible features of the proposed facility are the 165-foot heat recovery steam generator exhaust stacks, two 121-foot high air-cooled condensers and 163-foot tall transmission towers.[290] Based upon the applicant's modeling, the proposed facility would not be visible from the following protected areas: Umpqua State Scenic Corridor; Seven Devils State Recreation Site; Morgan Creek Salmon-Trout Enhancement Program (STEP) Acclimation & Spawning Facility; Noble Creek STEP Acclimation & Spawning Facility; Bullards Beach State Park; Bandon Marsh National Wildlife Refuge; Golden and Silver Falls State Natural Areas; and the North Fork Coquille River. Thus, because the proposed facility would not be visible from these areas, these areas are not further discussed in this section because the facility would not have a visual impact on the areas.

According to the model, however, portions of the facility could potentially be visible from the following protected areas: Oregon Dunes National Recreation Area; Oregon Islands National Wildlife Refuge, Gregory Point Rocks; Oregon Shore State Recreation Area; North Spit Area of Critical Enviornmental Concern; Davis Slough State Natural Area; Conde B. McCullough State Recreational Area; Shore Acres State Park; Tenmile Creek Research Natural Area; Sunset Bay State Park; Cape Arago State Park; William M. Tugman State Park; Umpqua Light House State Park. As discussed above, the applicant's model was based upon a 'bare earth' analysis; therefore, the model did not consider vegetative screens and/or structures which could limit the visual impact of the proposed facility site at the identified protected areas. To determine the actual likelihood of facility visibility from the protected areas listed above, the applicant conducted additional investigations including an aerial photo interpretation.
As explained in the ASC, the applicant established a line of sight between each protected area identified as potentially having views of the facility and made assessments as to the potential for the facility to be seen from the protected area, using best professional judgment and taking into consideration the density and maturity of impeding vegetation, the available opportunities for views, dominant viewing directions, and the distance between the viewing location and the proposed facility.[291] Based upon the line of sight assessment, the applicant determined that the proposed facility would not be prominently visible from eight of the identified facilities due to the distance between the protected area and the proposed facility as well as the presence of a conifer forest, which obstructs potential views from these areas.[292] Of the eight facilities, Yoakam Point State Natural Area represents the closest protected area at 8.7 miles from the facility. As explained in the ASC, objects of slender dimensions (like a transmission pole or exhaust stack) viewed from 8 to 10 miles or more would be so small in view that it would be absorbed into the overall vista and would not visually dominate or overwhelm the viewscape.[293]

[290] All figures are elevations above sea level. ASC, Exhibit L, L-13.
[291] ASC, Exhibit L, L-14.
[292] ASC, Exhibit L, L-14.ASC, Exhibit L, L-15.
[293] ASC, Exhibit L, L-15. Umpqua Lighthouse State Park, William M. Tugman State Park, Tenmile Creek RNA, Davis Slough State Natural Area, Cape Argo State Park, Shore Areas State Park, Sunset Bay State Park, and Yoakam Point State Natural Area.

Further, based upon additional field observations[294], the applicant determined that views of the facility would also be obstructed from Oregon Islands National Wildlife Refuge and Oregon Shore State Recreation Area due to dune formations and vegetation. Therefore, of the protected areas identified by the computer modeling analysis as potentially having views of the facility, through aerial photo interpretation and field observation the applicant determined that only three would in fact have potential views of the facility: Conde B. McCullough State Recreation Site, BLM Area of Critical Environmental Concern, and Oregon Dunes NRA/Siuslaw National Forest.[295]

As explained in the ASC, and discussed in more detail in the Scenic Resources section below, Conde B. McCullough State Recreation Site is not managed for visual quality and management of the BLM Lands on the North Spit allows for view modification. Moreover, however, as provided in the ASC, views of the facility would actually be blocked from many locations at the Conde B. McCullough State Recreation Site and the BLM Area of Critical Environmental Concern because of screening from foreground mixed vegetation along the shores of Coos Bay and covering much of the North Spit.[296] In addition, the applicant proposes that when the facility is visible it would be visually absorbed by the surrounding landscape as large sand dunes would be located behind the visible features when viewed from both the Conde B. McCullough State Recreation Site and the BLM Area of Critical Environmental Concern. According to the ASC, the sand dunes would provide greater absorption because the features would not be silhouetted against the sky and horizon, which makes objects more distinguishable and prominently visible.[297] In consideration of the management of the areas, the vegetative screening and the absorption offered by the surrounding landscape, the visual impacts of the proposed facility would be attenuated such that the visual impact of the proposed facility to the Conde B. McCullough State Recreation Site and the BLM Area of Critical Environmental Concern would not be significant.

As explained in the ASC, the computer modeling indicated that the proposed facility would be visible from high-point locations within the Oregon Dunes NRS/Siuslaw National Forest. However, field investigations conducted by the applicant revealed that the views of the facility would actually be often blocked by sand dunes and forest cover; while features of the facility may be visible, they would not overwhelm the view. [298] Therefore, based upon the applicant's field observations, views of the proposed facility would not result in significant adverse impact to the Oregon Dunes NRA/Siuslaw National Forest.

Beyond structures associated with the proposed facility, potential visual impacts from the facility's plume must also be analyzed. As discussed in the facility description above, the

[294] Field investigations included visiting the relevant sites, documenting existing viewing conditions in the direction of the facility, establishing vantage points from which the facility may be visible and collecting digital photos. ASC, Exhibit L, L-15.
[295] ASC, Exhibit L, L-15.
[296] ASC, Exhibit L, L-16.
[297] ASC, Exhibit L, L-15—L-16.
[298] ASC, Exhibit L, L-16.

applicant proposes to dispose of heat from each power block by using air-cooled condensers rather an evaporative cooling tower. This method of cooling does not produce the condensed water vapor plume that is generally associated with power plants.[299] However, as explained in the ASC, the proposed facility includes combustion turbines with heat recovery steam generators that produce water vapor as an unavoidable exhaust byproduct. In general, when hot, humid exhaust gas is vented to a cooler humid atmosphere, the combination may be at or above the saturation level and a visible plume forms. Therefore, as discussed in the ASC, under certain climatic conditions, the water vapor byproduct may appear as a wispy translucent plume.[300] According to the ASC, a plume is generally indicated to be "visible" if it occurs during conditions that would allow it to be viewed by the general public (with the definition usually excluding plumes formed at night and during periods of inclement weather that obscure visibility.)[301] Based on plume studies performed for similar combined cycle facilities, facility-produced vapor plumes could form as often as 25% of the hours during a year, with 10% occurring during the early morning, few occurring during the early evening, and the remaining 15% occurring during the night.[302] Therefore, for 75% of the hours during the year, no visible plume would form. Consequently, due to the limited time that plumes would occur and the wispy translucent nature of the vapor plume, the associated vapor plume would not result in a significant adverse impact on any protected area.

Based on the applicant's analysis, visual impacts associated with construction or operation of the proposed facility are not likely to result in a significant adverse impact to any identified protected area.

e. Air Emissions

As explained in the ASC, there are no Class I areas within 100 km from the proposed facility and the federal land manager for Class I areas confirmed that a Class I air quality related values analysis was not required.[303] Nonetheless, as stated in the ASC, the Initial Class I screening results were well below the Class I increments for all pollutants and averaging times. As described in the applicant's Prevention of Significant Deterioration (PSD) Air Permit Application,[304] Level 1 screening analysis was conducted by the applicant using the VISCREEN model to assess the project's potential air emissions impacts on regional visibility. The results of

[299] ASC, Exhibit L, L-11,
[300] ASC, Exhibit L, L-12.
[301] ASC, Exhibit L, L-12.
[302] ASC, Exhibit L, L-12.
[303] ASC, Exhibit L, L-16.
[304] ASC, Exhibit L, L-16. Pursuant to ORS 469.503(3), the PSD Air Permit falls outside of the jurisdiction of the Council as a federally-delegated permit. Authority under the federal Clean Air Act has been delegated to the ODEQ by the EPA. In Oregon, the PSD requirements are satisfied with an Air Containment Discharge Permit. The PSD and ACDP will regulate air emissions from the proposed facility. As provided in SDPAPPDoc240, the ODEQ comment period on the draft air permit closed on March 04, 2015.However, due to recently adopted rules changes to the particulate matter standards, the ODEQ reopened the public comment on the applicant's draft air permit. The applicant anticipates the permit to be issued in June of 2015.

that model indicated that the facility would not impact visibility in the surrounding area.[305] Based upon the information provided by the applicant, the visual impacts from air emissions related to the proposed facility are not likely to result in a significant adverse impact to any identified protected area.

IV.F.2. Protected Areas: Conclusions of Law

Based on these proposed findings and conclusions, the department recommends the Council conclude that, taking into account mitigation, the design, construction and operation of the facility are not likely to result in a significant adverse impact to any designated protected area, in compliance with the Protected Areas Standard.

IV.G. Retirement and Financial Assurance [OAR 345-022-0050]

To issue a site certificate, the Council must find that:

> *(1) The site, taking into account mitigation, can be restored adequately to a useful, non-hazardous condition following permanent cessation of construction or operation of the facility.*
>
> *(2) The Applicant has a reasonable likelihood of obtaining a bond or letter of credit in a form and amount satisfactory to the Council to restore the site to a useful, non-hazardous condition.*

IV.G.1. Retirement and Financial Assurance: Findings of Fact

The Retirement and Financial Assurance standard requires a finding that the facility site can be restored to a useful, non-hazardous condition at the end of the facility's useful life, should either the certificate holder stop construction or should the facility cease to operate.[306] In addition, it requires a finding that the applicant can obtain a bond or letter of credit to restore the site to a useful, non-hazardous condition.

A. Retirement

Condition B.3 (mandatory condition: OAR 345-027-0020(7)) requires the certificate holder to prevent the development of any conditions on the site that would preclude restoration of the site to a useful, non-hazardous condition to the extent that prevention of such site conditions is within the control of the certificate holder. In addition, the following mandatory conditions also relate to the Council's Retirement and Financial Assurance standard:

[305] ASC, Exhibit L, L-16.
[306] OAR 345-022-0050(1).

Condition G.1 [OAR 345-027-0020(9)]: The certificate holder shall retire the facility if the certificate holder permanently ceases construction or operation of the facility. The certificate holder shall retire the facility according to a final retirement plan approved by the Council, as described in OAR 345-027-0110. The certificate holder shall pay the actual cost to restore the site to a useful, non-hazardous condition at the time of retirement, notwithstanding the Council's approval in the site certificate of an estimated amount required to restore the site.

Condition G.2 [OAR 345-027-0020(16)]: If the Council finds that the certificate holder has permanently ceased construction or operation of the facility without retiring the facility according to a final retirement plan approved by the Council, as described in OAR 345-027-0110, the Council shall notify the certificate holder and request that the certificate holder submit a proposed final retirement plan to the Department within a reasonable time not to exceed 90 days. If the certificate holder does not submit a proposed final retirement plan by the specified date, the Council may direct the Department to prepare a proposed final retirement plan for the Council's approval. Upon the Council's approval of the final retirement plan, the Council may draw on the bond or letter of credit described in OAR 345-027-0020(8) (Condition G.4), to restore the site to a useful, non-hazardous condition according to the final retirement plan, in addition to any penalties the Council may impose under OAR Chapter 345, Division 29. If the amount of the bond or letter of credit is insufficient to pay the actual cost of retirement, the certificate holder shall pay any additional cost necessary to restore the site to a useful, non-hazardous condition. After completion of site restoration, the Council shall issue an order to terminate the site certificate if the Council finds that the facility has been retired according to the approved final retirement plan.

As explained in the ASC, the applicant proposes to operate the proposed facility for as long as the adjacent LNG terminal is operational or a power purchase agreement is in effect. However, for purposes of compliance with the Council's Retirement and Financial Assurance Standard, the applicant estimates that the useful life of the proposed facility is 30 years.[307] The proposed site is currently zoned industrial; therefore, the applicant must demonstrate that the site can be restored to a useful, non-hazardous condition suitable for industrial use.[308] As explained in the ASC, the applicant asserts that a useful, non-hazardous condition would be a condition consistent with the applicable local comprehensive land use plan and land-use regulations at the time of site closure. [309] Additionally, the applicant proposes that because the site is zoned 'industrial,' restoration of the site to a useful, non-hazardous condition could allow for some buildings, utilities and parking areas to remain on site, encouraging future development. [310] Nonetheless, consistent with the direction from the department, the applicant provided a retirement/decommissioning cost estimate in the ASC that accounts for the removal of all

[307] ASC, Exhibit W, W-2.
[308] ASC, Exhibit W, W-2.
[309] ASC, Exhibit W, W-4.
[310] ASC, Exhibit W, W-2.

structures, facilities and components.[311] Further, in accordance with recommended Condition G.2, above, the applicant provided an outline of a site restoration plan. The outline includes example tasks associated with pre-retirement, site closure and site restoration.

Site decommissioning and restoration would consist primarily of dismantling and removal of equipment, structures, scrap metals, concrete, insulation, and other components, followed by site stabilization, grading and re-seeding.[312] As explained in the ASC, operation of the facility would be designed to minimize the risk of hazardous waste contamination by having secondary containment areas and appropriately storing and disposing of hazardous wastes through an appropriate waste service provider.[313] While hazardous materials may be used onsite during facility operation, hazardous materials would be appropriately stored and contained in secure locations on-site, minimizing the likelihood of site contamination via releases or spills. Additionally, recommended condition D.4 requires the certificate holder to develop and implement a hazardous materials management plan that must include BMPs and hazardous waste training for construction and operation personnel. In addition, recommended condition D.6 requires the certificate holder to notify the department within 72 hours of a hazardous material release and to ensure spill control and containment kits are readily available in areas containing chemicals.[314]Moreover, as explained in the ASC, during site closure the certificate holder would remove any remaining chemicals and hazardous materials from the site and survey the site, which would include a site inspection as well as a historical records review.[315]

Based on the example site restoration plan and subject to compliance with the recommended and mandatory site certificate conditions, the department finds that the actions necessary to restore the site to a useful, non-hazardous condition are feasible and that the applicant is capable of restoring the site to a useful, non-hazardous condition.

B. Financial Assurance

The Retirement and Financial Assurance standard protects the State of Oregon and its citizens in the event that the certificate holder fails to perform its obligation to restore the site under any circumstances. Therefore, OAR 345-022-0050(2) requires that the Council find that the applicant has a reasonable likelihood of obtaining a bond or letter of credit in a form and amount necessary to restore the facility site to a useful, non-hazardous condition. The bond or letter of credit must remain in force until the certificate holder has fully restored the site. The following mandatory condition ensures compliance with this requirement:

Condition G.3 [OAR 345-027-0020(8)]: Before beginning construction of the facility, the certificate holder shall submit to the State of Oregon, through the Council, a bond or letter

[311] ASC, Exhibit W, W-4.
[312] ASC, Exhibit W, W-4—5.
[313] ASC, Exhibit W, W-13.
[314] See also recommended conditions D.5, D.7 and D.8, which further protect against site contamination.
[315] ASC, Exhibit W, Appendix W-1, pg. 1.

of credit in a form and amount satisfactory to the Council to restore the site to a useful, non-hazardous condition. The certificate holder shall maintain a bond or letter of credit in effect at all times until the facility has been retired. The Council may specify different amounts for the bond or letter of credit during construction and during operation of the facility.

The applicant provided a cost estimate in Exhibit W of the ASC. As detailed in that cost estimate, the applicant anticipates that site restoration would cost approximately $20.378 million in second quarter 2014 dollars. According to the ASC, the scope of the demolition was based on order-of-magnitude quantities, using historical data from similar facilities[316] where applicable, and the demolition and decommissioning experience of the applicant's contractor, Black & Veatch.[317] The following table summarizes the applicant's estimates:

[316] Table W-1 of the ASC provides additional details regarding the size and nature of the power plants used to produce the cost estimates. As explained, information from similar power plants was used as a scope of reference for similar items such as: concrete, steel and piping. ASC, Exhibit W, W-12.

[317] ASC, Exhibit W, W-7.

JCEP Restoration Estimate

COST ESTIMATE FOR FACILITY SITE RESTORATION r1

(2nd Quarter 2014 Dollars)

Adjustment Factor: 1.06917 **Current Quarter:** 2Q 2014

GDP Deflator 2010: 101.2

GDP Deflator 2014: 108.2

http://www.oregon.gov/DAS/OEA/economic.shtml

			rev 1 10/9/2014
General Costs			
A. PERMITS			$598
B. MOBILIZATION			$48,914
C. ENGINEERING			$43,800
D. PROJECT OVERHEAD			$352,497
E. HAZARDOUS MATERIALS INSPECTIONS/ SAMPLING			$98,500
F. PROTECTION			$19,380
G. UTILITY DISCONNECTS			$3,100
General Costs Subtotal			$566,789
Site Construction			
A. PRELIMINARY WORK			$263,496
B. SITE GRADING			$2,253,632
C. UNDERGROUND UTILITY REMOVAL			$367,809
Site Construction Subtotal			$2,884,937
Concrete Wrecking			
A. REINFORCED CONCRETE			$79,843
B. NON-REINFORCED CONCRETE			$116,378
Concrete Wrecking Subtotal			$196,221
Building Wrecking			$268,060
Steel Wrecking			$84,544
Timber Wrecking			$0
Thermal Protection/Liners Wrecking			$43,266
Equipment Wrecking			$6,102,371
Mechanical Wrecking			$365,363
Electrical Wrecking			$402,385
Load & Haul			$447,484
Costs Subtotal			$11,361,419
Overhead @	10%		$1,136,142
Profit @	10%		$1,249,756
Insurance @	3%		$412,419
Specialty Contracts (subcontracted work)			$0
Subtotal			$14,159,736
Subtotal Adjusted to Current Dollars	2Q 2014		$15,139,164
Performance Bond @	1%		$151,392
Gross Cost (Adjusted)			$15,290,556
Administration and Project Management @		10%	$1,529,056
Future Developments Contingency @		20%	$3,058,111
Hazardous Materials Management Contingency			$500,000
Total Site Restoration Cost (current dollars)			$20,377,723
Total Site Restoration Cost (rounded to nearest $1,000)			$20,378,000

In support of the estimate, the applicant provided general assumptions, direct cost assumptions and a detailed narrative of its estimating process in Appendix W-2.[318] The department has reviewed the applicant's assumptions, as well as the scope and details of the estimate, and confirms that the tasks, unit quantities and costs assume a conservative site restoration estimate based on the facility features as presented in the ASC. The department recognizes that the applicant may need to make minor adjustments to the facility design prior to construction of the facility, and that these changes may result in changes to the estimated cost of restoring the facility site. Nevertheless, the department recommends that the Council find that the

[318] ASC, Exhibit W, Appendix W-2.

applicant's estimated cost is a reasonable estimate of an amount satisfactory to restore the site to a useful, non-hazardous condition based upon the ASC.

Beyond confirming the estimate for restoration, to issue the site certificate the Council must also find that the applicant has a reasonable likelihood of obtaining a bond or letter of credit in a form and amount satisfactory to the Council to restore the site to a useful, non-hazardous condition. The applicant provided information about its financial capability in Exhibit M of the ASC. As explained in Exhibit M, the applicant proposes to provide a financial assurance bond or letter of credit in a form approved by the Council before beginning construction.[319] In addition, however, the applicant provided a letter from the MUFG Union Bank, N.A., dated November 21, 2014, which explains that Union Bank has an existing credit relationship with the applicant and would be willing to issue additional letters of credit, subject to any required approvals within Union Bank as well as a review by Union Bank of the required form of letter of credit, underlying decommissioning agreement and other standard information at the time the letter of credit is requested.[320] While the Union Bank letter does not constitute a firm commitment to issue the letter of credit, it is evidence of a reasonable likelihood that the applicant could obtain the necessary financial assurance. Therefore, based upon the evidence provided, the department recommends that the Council find that the applicant has demonstrated a reasonable likelihood of obtaining a bond or letter of credit in a form and amount that is satisfactory to the Council. In addition, the department recommends the Council adopt the following conditions to ensure a bond or letter of credit in a form and amount satisfactory to restore the site is submitted:

Condition G.4: Before beginning construction of the facility, the certificate holder shall submit to the State of Oregon, through the Council a bond or letter of credit naming the State of Oregon, acting by and through the Council, as beneficiary or payee. The initial bond or letter of credit amount for the facility is $20,378,000.00, to be adjusted to the date of issuance, and adjusted on an annual basis thereafter, as described in sub-paragraph (b) of this condition:

a) The certificate holder may adjust the amount of the initial bond or letter of credit based on the final design configuration of the facility. Any revision to the restoration costs should be adjusted to the date of issuance as described in (b) and subject to review and approval by the department.
b) The certificate holder shall adjust the amount of the bond or letter of credit using the following calculation:

A. Adjust the amount of the bond or letter of credit to present value, using the U.S. Gross Domestic Product Implicit Price Deflator, Chain-Weight, as published in the Oregon Department of Administrative Services' "Oregon Economic and Revenue Forecast" or by any successor agency and using the second quarter 2014 index value

[319] ASC, Exhibit M, M-4.
[320] ASC, Exhibit M, Appendix M-2.

and the quarterly index value for the date of issuance of the new bond or letter of credit. If at any time the index is no longer published, the Council shall select a comparable calculation to adjust second quarter 2014 dollars to present value.
B. Round the result to the nearest $1,000 to determine the financial assurance amount

a). The certificate holder shall use an issuer of the bond or letter of credit approved by the Council

b). The certificate holder shall use a form of bond or letter of credit approved by the Council. The certificate holder shall describe the status of the bond or letter of credit in the annual report submitted to the Council under OAR 345-026-0080. The bond or letter of credit shall not be subject to revocation or reduction before retirement of the facility site.

IV.G.2. Retirement and Financial Assurance: Conclusions of Law

Based on the foregoing findings of fact and conclusions, and subject to compliance with the mandatory and recommended site certificate conditions, the department recommends that the Council find that the proposed facility complies with the Council's Siting Standards for Retirement and Financial Assurance.

IV.H. Fish and Wildlife Habitat [OAR 345-022-0060]

To issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account mitigation, are consistent with the fish and wildlife habitat mitigation goals and standards of OAR 635-415-0025 in effect as of September 1, 2000.

IV.H.1. Fish and Wildlife Habitat: Findings of Fact

The Fish and Wildlife Habitat Standard requires the Council to find that throughout the construction and operation of the facility, the certificate holder's activities will be consistent with the Oregon Department of Fish and Wildlife's (ODFW) habitat mitigation goals and standards, in effect as of September 1, 2000.

OAR 635-415-0025 defines six habitat categories in order of value to wildlife. The rule establishes mitigation goals and corresponding implementation standards for each habitat category. Further, ODFW rules define habitat under two broad classifications: "essential" and "important." Essential habitat, under OAR 635-415-005, is any habitat condition or set of conditions which, if diminished in quality or quantity, would result in depletion of a fish or wildlife species. Important habitat, is any habitat recognized as a contributor to sustaining fish and wildlife populations on a physiographic province basis over time.

Habitat Category 1 is "irreplaceable, essential habitat for a fish and wildlife species, population or a unique assemblage of species and is limited on either a physiographic province or a site-specific basis, depending on the individual species, population or unique assemblage." The mitigation goal for Category 1 habitat is no loss of either habitat quantity or quality. This goal requires avoidance of impacts.

Habitat Category 2 is "essential habitat for a fish or wildlife species, population or unique assemblage of species and is limited either on physiographic province or site-specific basis depending on the individual species, population or unique assemblage." The mitigation goal, if impacts are unavoidable, is no net loss of either habitat quantity or quality and to provide a net benefit of habitat quantity or quality. [321] To achieve this goal, impacts must be avoided or those impacts that cannot be avoided must be mitigated through "reliable in-kind, in-proximity" habitat mitigation to achieve no net loss of either pre-development habitat quantity or quality.[322]

Habitat Category 3 is "essential habitat for fish and wildlife, or important habit for fish and wildlife that is limited either on a physiographic province or site-specific basis, depending on the individual species of population." The mitigation goal for Category 3 is no net loss of either habitat quantity or quality. This goal is achieved by avoidance of impacts or by mitigation of unavoidable impact through "reliable in-kind, in-proximity" habitat mitigation, to achieve no net loss in either pre-development habitat quantity or quality.

Habitat Category 4 is "important habitat for fish and wildlife species." The mitigation goal for Category 4 is no net loss in either existing habitat quantity or quality. This goal is achieved by "reliable in-kind or out-of-kind, in-proximity or off-proximity" habitat mitigation to achieve "no net loss in either pre-development habitat quantity or quality."

Habitat Category 5 is "habitat for fish and wildlife having high potential to become either essential or important habitat." The mitigation goal, if impacts are unavoidable, is to provide a net benefit in habitat quantity or quality. This goal is achieved through actions that contribute to essential or important habitat.

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[321] OAR 635-415-0005 defines "net loss" as a loss of habitat quantity and/or habitat quality resulting from a development action despite mitigation measures having been taken. "Net Benefit" means an increase in overall in-proximity habitat quality or quantity after a development action and any subsequent mitigation measures have been completed and monitored.

[322] OAR 635-415-0005 defines "in-kind habitat mitigation" as habitat mitigation measures that "recreate similar habitat structure and function to that existing prior to the development action." OAR 635-415-0005 defines "in-proximity habitat mitigation" as follows: "habitat mitigation measures undertaken within or in proximity to areas affected by a development action. For the purposes of this policy, 'in proximity to' means within the same home range, or watershed (depending on the species or population being considered) whichever will have the highest likelihood of benefiting fish and wildlife populations directly affected by the development." OAR 635-415-0005 defines "reliable method" as "a mitigation method that has been tested in areas with site factors similar to those affected by a development action and the area in which the mitigation action is being proposed and that has been found (e.g., through field trials, demonstration projects or scientific studies) to produce the habitat effects required to meet the mitigation goal for that action."

Habitat Category 6 is "habitat that has low potential to become essential or important habitat for fish and wildlife." The mitigation goal is to minimize impacts. The goal is achieved by actions that minimize direct habitat loss and avoid impacts to off-site habitat.

The project order identifies the analysis area for fish and wildlife habitat disturbance as the area within the site boundary and the area 0.5 mile from the site boundary. The applicant addressed the Council's Fish and Wildlife Standard in Exhibit P of the application.

A. Habitat Categories in the Analysis Area

To identify the habitat characteristics of the proposed site, the applicant first conducted a literature review. The applicant reviewed the U.S. Fish and Wildlife Service (USFWS) list of federal species of concern, the Oregon Department of Fish and Wildlife State Sensitive Species List, the Bureau of Land Management (BLM) Final North Spit Plan and the Oregon Biodiversity Information Center (ORBIC) species database for Coos County. Based upon the literature review, the applicant prepared a list of those species with a potential to occur within the analysis area. That list is provided as Table P.6 in the ASC. In addition to the literature review, the applicant conducted field surveys in 2005 and 2006 and again in 2012 and 2013.[323] During the 2012 and 2013 field surveys, the applicant identified and mapped habitat types.[324] As explained in the ASC, habitat types were categorized according to dominant vegetation, the overall condition of the vegetation community, and with consideration of surrounding land uses. Each habitat type identified was then assigned a specific habitat category in accordance with the ODFW Fish and Wildlife Mitigation Recommendations contained in OAR 635-415-0025.[325] The applicant digitized the habitat types into a GIS database using aerial photos and field collected data. The GIS database was then used to produce maps as well as the associated acreage estimates for each habitat type.[326] In October 2013, ODFW concurred with each of the identified habitat parcels associated with the SDP footprint.[327]

General Habitat Conditions

As explained in the ASC, the habitats within the analysis area include a variety of upland, wetland, and estuarine types typical of the Coast Range ecoregion, as well as large areas of previously developed habitat within the site boundary.[328] Detail regarding each habitat type within the analysis area is provided below.

[323] The applicant also conducted vegetation surveys, wetland surveys, raptor surveys and fisheries surveys. ASC, Exhibit P, P-8—P-9.
[324] ASC, Exhibit P, P-8.
[325] ASC, Exhibit P, P-8
[326] ASC, Exhibit P, P-8.
[327] ASC, Exhibit P, Appendix P-1.
[328] ASC, Exhibit P, P-10.

Analysis Area Habitat[329]

Category 6

Developed (upland)

As explained in the ASC, developed areas within the site boundary include portions of the site that have been significantly disturbed by development of other land use activities, including paved roads and parking lots, gravel roads and road fill, and buildings. Because these areas have limited potential to become important[330] or essential[331] habitat in the foreseeable future the applicant categorized these areas as habitat category 6.

There are 47.036 acres of category 6 'developed habitat' within the site boundary. The applicant anticipates 33.581 acres of permanent impacts and 13.455 acres of temporary impacts.[332]

Category 4

Herbaceous (upland)

As explained in the ASC, herbaceous habitat is found within the analysis area primarily on recently colonized dunes and historically leveled or excavated areas where pioneering species consist mainly of European beachgrass, tall fescue, sweet vernal grass, Queen Anne's lace, hedgehog dogtail grass, and other non-native species.[333] Some areas contain native species including American dunegrass, seashore lupine, small-head clover, and beach strawberry. As stated in the ASC, no species are known to depend upon herbaceous habitat exclusively for their survival and the loss of this habitat type would not likely result in the depletion of any species; therefore, this habitat is not essential. Further, as explained in the ASC, the habitat is not limited because similar habitats are found within the vicinity. However, the applicant did determine the habitat to be important, based upon consultations with ODFW, and, therefore, categorized this habitat as habitat category 4.[334]

There are 12.667 acres of category 4 herbaceous habitat within the site boundary. The applicant anticipates 10.047 acres of permanent impact and 2.619 acres of temporary impact to this habitat.[335]

Shrub (upland)

As explained in the ASC, shrub habitat is located on stabilized dunes and disturbed areas that have been colonized by shrubs and young trees, primarily Scotch broom and scattered young

[329] As stated above, ODFW has concurred with the habitat categorizations represented within this section.
[330] Any habitat recognized as a contributor to sustaining fish and wildlife populations on a physiographic province basis over time.
[331] Any habitat condition or set of habitat conditions which, if diminished in quality or quantity would result in depletion of a fish or wildlife species.
[332] ASC, Exhibit P, P-18.
[333] ASC, Exhibit P, P-13.
[334] ASC, Exhibit P, P-13.
[335] ASC, Exhibit P, P-18.

lodgepole pine.[336] Shrub cover is 20 percent or more in this type of habitat type. Within the analysis area, the herbaceous species include non-native species such as European beachgrass, sweet vernal grass, and colonial bentgrass.[337]

According to the ASC, the shrub habitat within the analysis is not essential because no species are known to depend upon it exclusively for their survival and the loss of the habitat would not likely result in the depletion of any species.[338] Further, the applicant asserts that this habitat is not limited because similar habitats are found in the vicinity of the site. However, based upon consultations with the ODFW, the applicant determined this habitat to be important, and, therefore, categorized it as category 4 habitat.[339]

There are 2.494 acres of category 4 shrub habitat within the site boundary. The applicant anticipates 0.918 acres of permanent impacts and 1.577 acres of temporary impacts.[340]

Herbaceous Shrub (upland)

The herbaceous shrub habitat is found within the analysis area on less-recently colonized dunes and historically leveled or excavated areas that have developed shrub cover, in addition to herbaceous cover. According to the ASC, this habitat has been invaded by shrubs, primarily Scotch broom and Himalayan blackberry, as well as some native shrub species such as shore pine and coyote brush, and trailing blackberry.[341] Overall shrub cover is 10 percent or less in this habitat type. Based upon consultation with ODFW, the applicant determined herbaceous shrub to be neither essential nor limited, but did determine it to be important to wildlife. Therefore, the applicant categorized herbaceous shrub as category 4 habitat.[342]

Category 4 herbaceous shrub accounts for 34.209 acres of habitat within the site boundary. The applicant anticipates 30.551 acres of permanent impacts and 3.658 acres of temporary impacts to this habitat.[343]

Category 3

Coastal Dune Forest Habitat (upland)

The coastal dune forest habitat consists of forested areas established on fully-stabilized sand dunes in the region. It is found throughout the analysis area in various successional stages.[344] As provided in the ASC, the dominant species include Douglas fir, shore pine and Port Orford cedar, with scattered Sitka spruce.[345] Dominant shrubs include evergreen huckleberry, salal,

[336] ASC, Exhibit P, P-14.
[337] ASC, Exhibit P, P-14.
[338] ASC, Exhibit P, P-14.
[339] ASC, Exhibit P, P-14.
[340] ASC, Exhibit P, P-18.
[341] ASC, Exhibit P, P-13.
[342] ASC, Exhibit P, P-13.
[343] ASC, Exhibit P, P-18.
[344] ASC, Exhibit P, P-12.
[345] ASC, Exhibit P, P-12.

bearberry, and Pacific rhododendron with scattered California wax myrtle and hairy Manzanita. As explained in the ASC, the understory is generally lacking herbaceous species due to dense canopy over, although portions of the forest are less dense than others. Based upon consultation with ODFW, the applicant categorized coastal dune forest habitat as category 3 because populations of species, such as Pacific marten, bats and some songbirds, depend on it for species survival, and it is therefore essential habitat.[346] Loss of this habitat could result in depletion of some of these species on a local scale.

As provided in the ASC, there are 9.979 acres of category 3 coastal dune forest habitat within the site boundary and the applicant anticipates 8.006 acres of permanent impacts and 1.973 acres of temporary impact.[347]

Riparian Forest Habitat (upland)

Riparian forest habitat in the analysis area consists of a small area of early to mid-seral forest along the northern shore of Jordan Cove, outside the site boundary and east of the SDP. As explained in the ASC, the proximity of the forest to Coos Bay, as well as the elevation of the highest measured tide, have influenced the plant composition as it is more mesic than the typical coastal dune forest, but not wetland.[348] According to the ASC, this habitat is distinct from, but interspersed with, forested wetlands.[349] The canopy is dominated by red alder and willow with scattered Sitka spruce and California wax myrtle. Understory vegetation is generally similar to coastal dune forest habitat, and Himalayan blackberry and English ivy are similarly common along the edges of the forest in some areas.[350] Based on consultation with the ODFW, the applicant categorized riparian forest habitat as category 3 because the habitat is essential to wildlife but not limited on a watershed basis, since the riparian forest in the project area is fragmented and fairly young in age.[351]

There are 1.435 acres of category 3 riparian forest habitat within the site boundary. The applicant anticipates 0.771 acres of permanent impacts and 0.664 acres of temporary impacts.[352]

Unvegetated Sand Habitat (upland)

The upland, unvegetated sand habitat type is found north of Jordan Lake and north of the proposed SDP site boundary. This habitat includes areas of moving sand that have not been colonized by vegetation, with the exception of very scattered herbaceous pioneer species such as European beachgrass and very scattered trees and shrub.[353] As explained in the ASC, unvegetated sand provides important habitat for a variety of wildlife, including songbirds that

[346] ASC, Exhibit P, P-12.
[347] ASC, Exhibit P, P-18.
[348] ASC, Exhibit P, P-12.
[349] ASC, Exhibit P, P-12.
[350] ASC, Exhibit P, P-12.
[351] ASC, Exhibit P, P-13.
[352] ASC, Exhibit P, P-18.
[353] ASC, Exhibit P, P-14.

forage on seeds blown into the area and raptors and small mammals that use the edges for foraging.[354] Based on consultation with ODFW, the applicant categorized this habitat as category 3 because it is limited on a local scale, and only present on a small strip of land on the North Spit between Highway 101 and the Pacific Ocean. The habitat type is not essential because species do not depend upon it for their survival.[355]

There are 3.507 acres of category 3 unvegetated sand within the site boundary. The applicant anticipates 3.081 acres of permanent impacts and 0.426 acres of temporary impacts.[356]

Category 2

Open Water Habitat (freshwater wetland)

Open water is present within the analysis area in steep-sided interdunal areas within deeper portions of wetland areas, where vegetation is primarily absent except for floating species such as yellow pond lily.[357] As explained in the ASC, the ponds provide areas of open water adjacent to the more heavily vegetated freshwater shrublands and thickets, and support a community of aquatic invertebrates, fish and amphibians. According to the ASC, many of the species inhabiting these ponds are important food sources for other animals. Open water is present in areas at the Oregon Dunes National Recreation Area, the Panhandle mitigation site, and in smaller areas such as the non-jurisdictional ponds at the SDP site.[358] The open water habitat type is limited to fresh water areas and does not include Coos Bay or other estuarine resources.[359]According to the ASC, the inland open water sites on the North Spit are not considered high quality nesting habitat for most species of waterfowl and they are used for foraging by a variety of migrating waterfowl during the spring, fall and winter.[360]

According to the ASC, most open water habitat within the analysis area is essential to wildlife and limited due to its location adjacent to native wetland assemblages.[361] Therefore, because this habitat can be replaced, it is classified as habitat category 2. However, there are isolated, open water non-jurisdictional artificial ponds at the Mill Site that are classified as category 3 habitat because they are not essential but limited on a local scale.[362]

Category 2 open water represents 0.175 acres within the site boundary and the applicant anticipates approximately 0.175 acres of permanent impacts and no temporary impacts.[363]

[354] ASC, Exhibit P, P-14.
[355] ASC, Exhibit P, P-14.
[356] ASC, Exhibit P, P-18.
[357] ASC, Exhibit P, P-14—P-15.
[358] ASC, Exhibit P, P-15.
[359] ASC, Exhibit P, P-15.
[360] ASC, Exhibit P, P-15.
[361] ASC, Exhibit P, P-15.
[362] ASC, Exhibit P, P-15.
[363] ASC, Exhibit P, P-18.

Emergent wetland habitat (freshwater wetland)
The herbaceous emergent wetland habitat type is located in low-lying areas throughout the analysis area. Vegetation is typically dominated by slough sedge, spreading rush, water parsley, Pacific silverweed and salt grass. Wetter portions of this habitat type consists of aquatic floating and emergent plants in relatively shallow seasonally or perennially inundated areas, including pond lily, water parsley cattail and small-fruited bulrush. Based on consultation with ODFW, the applicant categorized this habitat as category 2 because it is essential and limited on a local scale. The exception to the category 2 habitat categorization is the emergent wetland portion of the isolated, non-jurisdictional, artificial ponds at the SDP site, which are classified as category 3 because the ponds are not essential but are limited on a local scale.[364]

Category 2 emergent wetland represents 3.452 acres within the site boundary and the applicant is anticipating 1.642 acres of permanent impacts and 0.541 acres of temporary impacts.[365]

Scrub Shrub Wetland Habitat (freshwater wetland)
Scrub shrub wetland habitat is commonly dominated by Hooker willow with salmonberry and other common coastal wetland species such as slough sedge and skunk cabbage present.[366] Scrub shrub wetland habitat is categorized as category 2 habitat because it is essential and limited but can be replaced through mitigation.

There are 0.150 acres of category 2 scrub-shrub wetland habitat within the site boundary and the applicant anticipates permanently impacting the entire 0.150 acres.

Forested Wetland Habitat (freshwater wetland)
Forested wetland habitat type consists of wetlands that have remained undisturbed long enough to develop a consistent tree canopy. As explained in the ASC, it is dominated at the project site primarily by red alder, with some areas of tree-sized hooker willow and lodgepole pine. Mature Sitka spruce also occurs in places, typically at the wetland boundary or on upland hummocks within the wetlands.[367] Based on consultation with ODFW, the applicant determined forested wetland habitat to be habitat category 2 because it is essential and limited but could be replaced through mitigation.[368] Within the site boundary, forested wetland represents 0.378 acres of habitat.

The applicant anticipates 0.256 acres of permanent impact of category 2 forested wetland and 0.123 acres of temporary impact.[369]

Salt Marsh (estuarine)

[364] ASC, Exhibit P, P-15.
[365] ASC, Exhibit P, P-18.
[366] ASC, Exhibit P, P-15.
[367] ASC, Exhibit P, P-16.
[368] ASC, Exhibit P, P-16.
[369] ASC, Exhibit P, P-18.

As explained in the ASC, salt marsh habitat consists of salt-tolerant herbaceous species in a brackish water area connected to Coos Bay and subject to tidal influence.[370] The dominant plant species include saltgrass, pickleweed, silverweed, tufted hairgrass, gumweed, and fleshy jaumea.[371]

The applicant categorized salt marsh habitat as habitat category 2 habitat because it supports a unique assemblage of species and it is also limited due to the historic loss of salt marsh habitat in the region. However, the habitat can be replaced through proper mitigation.[372]

Category 2 salt marsh represents 0.125 acres within the site boundary. The applicant anticipates 0.088 acres of permanent impacts and 0.036 acres of temporary impact.[373]

Intertidal Unvegetated Sand (estuarine)

The intertidal unvegetated sand is located in the Coos Bay shoreline below the highest tide line. The sand is unconsolidated and shifts in response to tides and winds. As explained in the ASC, due to the location of the project site within the Coos Bay ecosystem, the slope of the shoreline is more sheltered and less steep than similar habitats nearby, which provides a limited habitat type for foraging species at higher tides. However, this habitat can be replaced through mitigation.[374] Based on consultation with ODFW, the applicant categorized intertidal unvegetated sand as habitat category 2 because it is both essential for wildlife and limited.

Category 2 intertidal unvegetated sand represents 1.378 acres within the site boundary. The applicant anticipates 1.253 acres of permanent impacts and 0.125 acres of temporary impacts.[375]

Algae, Mud, and Sand Habitat (estuarine)

As explained in the ASC, algae, mud and sand habitat is found in the areas of the Coos Bay shoreline below unvegetated sand habitat and above eelgrass habitat. Much of the area consists of unvegetated mud and sand, mixed with areas of various algae species. Algae, mud, and sand habitat is undated more frequently, and for a longer duration than intertidal unvegetated sand habitat; therefore, it is likely to support aquatic organisms.[376]Because the algae, mud and sand habitat is essential to wildlife and limited but replaceable through mitigation, the applicant categorized it as category 2 habitat.

Category 2 algae, mud and sand represent 1.073 acres within the site boundary. The applicant anticipates 0.700 acres of permanent impacts and 0.373 acres of temporary impacts.[377]

[370] ASC, Exhibit P, P-16.
[371] ASC, Exhibit P, P-16.
[372] ASC, Exhibit P, P-16.
[373] ASC, Exhibit P, P-16.
[374] ASC, Exhibit P, P-16.
[375] ASC, Exhibit P, P-18.
[376] ASC, Exhibit P, P-17.
[377] ASC, Exhibit P, P-18.

Eelgrass Habitat (estuarine)

Eelgrass habitat is found along the areas of the Coos Bay shoreline below unvegetated sand and algae, mud and sand habitats. According to the ASC, color infrared aerial photographs taken near the proposed barge berth revealed a narrow band of sparsely populated eelgrass near the low tide line and partially submerged along the beach, west of the Roseburg dock.[378] As explained in the ASC, eelgrass is an annual aquatic plant and production can vary widely from year to year. Generally, eelgrass habitat is highly productive and provides important ecological functions for estuarine ecosystems,[379] such as providing cover for small organisms, substrate for attachment by marine organisms, nutrient cycling processes, food web support, and sediment stabilization.[380] According to the ASC, most fish species within Coos Bay use the flats of the lower bay, where a majority of the eelgrass beds exist, at some time during the year.[381] The applicant categorized eelgrass habitat as habitat category 2 because it is essential for wildlife, supports a unique assemblage of species, and is also limited due to historic loss of eelgrass habitat in the region. However, the habitat can be replaced through mitigation.[382]

Category 2 eelgrass habitat represents 0.319 acres within the site boundary and the applicant anticipates 0.182 acres of permanent impacts and 0.319 acres of temporary impacts.[383]

Subtidal Habitat (estuarine)

Subtidal habitats within the analysis area are assumed to be a mix of sand and mud with predominantly coarser grain sizes. As explained in the ASC, initial mapping of the barge berth area included both shallow and deep subtidal areas, which were delineated by 15-feet of elevation, because bathymetry was available for those portions of the analysis area.[384] Because of the lack of baymetry within the remainder of the analysis area, the applicant merged shallow and deep subtidal habitats into one general subtidal category. Based on consultation with ODFW, the applicant categorized subtidal habitat as category 2 because it is essential and limited but can be replaced through mitigation.

Category 2 subtidal habitat represents 1.047 acres within the site boundary. The applicant anticipates 0.94 acres of permanent impacts and 0.107 acres of temporary impacts.[385]

Habitat mitigation is necessarily informed by the habitat categories present; therefore, it is important the habitat categorizations at the site remain up to date. Because habitat characteristics can and will change over time, the department recommends the Council adopt

[378] ASC, Exhibit P, P-17.
[379] ASC, Exhibit P, P-18.
[380] ASC, Exhibit P, P-17.
[381] ASC, Exhibit P, P-17.
[382] ASC, Exhibit P, P-17.
[383] ASC, Exhibit P, P-17.
[384] ASC, Exhibit P, P-17.
[385] ASC, Exhibit P, P-18.

the following condition, which ensures the habitat categories remain accurate at the time of construction:

> **Condition H.1:** Before beginning construction, the certificate holder shall provide the department and the Oregon Department of Fish and Wildlife (ODFW) a detailed map of the facility site, showing all project components, and a table detailing the acres of temporary habitat impacted by habitat category and subtype and the acres of permanent habitat impacted by habitat category and subtype. The maps of the facility site shall indicate the habitat categories of all areas that will be affected during construction. In classifying the affected habitat into habitat categories, the certificate holder shall consult with ODFW. The certificate holder shall not begin construction of the proposed facility until the habitat assessment has been approved by the department, in consultation with ODFW. The certificate holder shall not construct any facility components within areas of Category 1 habitat and shall avoid temporary disturbance of Category 1 habitat.

B. Potential Impacts and Proposed Avoidance or Mitigation

As explained in the ASC, permanent impacts to fish and wildlife habitat within the site boundary area likely to occur during construction and operation of the proposed facility. Based upon the above categorizations, those habitats likely to be impacted include habitat categories 2, 3, 4, and 6.[386] No Category 1 habitat will be impacted. The ODFW goals and standards, provided under OAR 635-415-0025, favor avoidance of impacts on habitat in Categories 1 through 5. Nonetheless, some impacts cannot be avoided and those impacts must be properly mitigated.

Following the discussion of general site-specific issues, specific impacts to each habitat type are discussed in more detail below, along with proposed mitigation measures.

Exotic and Invasive Species

As explained in the ASC, soil disturbance and vegetation removal at the site, combined with the installation of the SDP infrastructure, could lead to the invasion of non-native plant species. An increase of non-native plants further decreases habitat function for native species.[387] ODFW expressed concern that construction of the proposed facility could create nesting and perching opportunities for invasive and exotic bird species, in addition to an increase in corvid bird species, which prey upon the western snowy plover.[388] Recommended Conditions H.3, H.4, and H.5, below, are proposed to minimize the impacts of exotic and invasive species on site.

Habitat Fragmentation

ODFW considers the upland habitat on the North Spit site to be uniquely situated on a peninsula adjacent to both Coos Bay and the Pacific Ocean and expressed concern regarding habitat fragmentation as a result of the proposed facility. As explained in the ASC, the proposed

[386] ASC, Exhibit P, P-45.
[387] ASC, Exhibit P, P-36.
[388] ASC, Exhibit P, P-36

facility layout has been designed to minimize habitat fragmentation to the extent possible by ensuring usable wildlife habitat is not isolated and by minimizing the proposed road surfaces.[389]

Noise Impacts on Birds

ODFW recommended the applicant implement noise protection measures for great blue herons, osprey, peregrine falcons, bald eagles and golden eagles when conducting any loud, noise producing activities on-site. ODFW recommended the applicant follow the Oregon Forest Practices Act guidelines (attached to this Order as Appendix H), when implementing any protective measures.[390] Additional protections are discussed below; however, consistent with ODFW's recommendations, the department recommends the Council adopt the following condition to ensure appropriate noise protection measures are implemented:

> **Condition H.2:** If great blue herons, osprey, bald eagles, peregrine falcons or golden eagles are found to be active or nesting on-site following the pre-construction surveys required by Condition H.7, the applicant shall consult with the department and ODFW to determine if noise protection measures are necessary, prior to undertaking any construction activities. If it is determined that noise protection measures are necessary, the applicant shall implement measures consistent with the Oregon Forest Practices Act guidelines.

Habitat Impacts

Upland Habitat Impacts and Proposed Mitigation

As explained in the ASC, the majority of the upland habitat within the site boundary would be impacted by construction of the proposed facility. Impacts could include direct loss of habitat, potential direct mortality and long-term disturbances associated with the operation of the proposed facility. The applicant anticipates 33.581 acres of previously developed habitat, habitat category 6, to be permanently impacted, with 13.455 acres temporarily impacted.[391]The remainder of the upland habitat consists of categories 3 and 4 habitat, 53.374 acres of which would be permanently impacted by construction and operation, as explained in the ASC. Additionally, the applicant anticipates temporarily impacting 10.917 acres of upland habitat as a result of construction related activities.[392] For purposes of impact assessment, the applicant considered all impacts to Categories 4 and6 as permanent impacts.[393]

In order to reduce potential upland habitat degradation due to stormwater runoff, erosion and sedimentation, the applicant has proposed to undertake construction activities in compliance with an Erosion and Sediment Control Plan and Stormwater Management Plan, both of which would be developed under the applicant's NPDES #1200-C permit.[394] Recommended Condition D.1, above, requires the applicant to conduct all construction related activities in compliance with its NPDES #1200-C permit.

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[389] ASC, Exhibit P, P-37.
[390] ASC, Exhibit P, P-38.
[391] ASC, Exhibit P, P-42.
[392] ASC, exhibit P, P-42.
[393] ASC, Exhibit P, P-42—P-43.
[394] ASC, Exhibit P, P-53.

In addition to erosion control measures, the applicant also proposes to minimize habitat impacts by implementing exotic and invasive species control measures, consistent with noxious weed management BMP's outlined in the draft Habitat Mitigation Plan included in the ASC and attached to this Order as Appendix I (see recommended condition H.13). BMP's outlined in the draft Habitat Mitigation Plan include, but are not limited to, the following measures:

- Pre-construction surveys to identify noxious species listed by the ODA
- Pretreatment of weed infestations
- In areas where weed infestations occur stockpiling of cleared vegetation, salvaged topsoil and other materials in adjacent areas to minimize the transfer of noxious weed seeds, roots or rhizome to other parts of the site
- Ongoing weed control by mechanical or manual means
- Use of herbicides in combination with other weed control methods, but not within 100 feet of a wetland or waterbody, without agency approval. Treatment buffers would be applied to noxious weed infestations in sensitive areas to avoid impacts to non-target species.
- Restoration of treatment areas using a native seed mix

In consideration of the applicant's proposed measures, and in light of ODFW's concerns regarding invasive species, the department recommends the Council adopt the following conditions to ensure appropriate protective measures are undertaken:

Condition H.3: The certificate holder shall implement weed management practices consistent with the measures described in the Habitat Mitigation Plan, adopted under Condition H.13, and as amended. Weed management shall include an integrated management approach, using an appropriate combination of prevention and control methods. The certificate holder shall obtain ODFW and Coos County approval prior to the use of herbicides or pesticides.

Condition H.4: The certificate holder shall restore areas disturbed by facility construction but not occupied by permanent facility structures consistent with the re-vegetation measures contained in the Habitat Mitigation Plan adopted under Condition H.13, and as amended. The certificate holder shall provide temporary seeding to re-establish vegetative cover in previously disturbed areas to prevent erosion of exposed soils. Restoration of shall be conducted using a native seed mix.

In addition to the above mitigation measures, the applicant also proposes measures to avoid, limit or mitigate impacts to the wildlife species that occur in the upland habitat areas. The applicant proposes to construct the transmission lines as short as possible and include bird flight diverters to avoid collisions.[395] In addition, to prevent the electrocution of birds, raptors in

[395] ASC, Exhibit P, P-54.

particular, the applicant proposes to design the transmission structures so that the distance between conductors, and between conductors and grounded hardware, is greater than the wingspan of any raptor as raptors are electrocuted when they contact two energized conductors or an energized conductor and grounded hardware.[396] To ensure the minimization of impacts on bird species in the upland area consistent with the above proposed measures, the department recommends the Council adopt the following condition:

Condition H.5: The certificate holder shall construct the transmission structures to meet the Avian Protection Guidelines jointly adopted by the Aviation Power Line Interaction Committee of the Edison Electric Institute and the U.S. Fish and Wildlife Service.

Beyond design features, the applicant also proposes to make all efforts to conduct vegetation removal at the site outside of the breeding season to avoid impacts to breeding or nesting birds. As provided in the ASC, if construction activities must occur during the breeding season, the applicant proposes to conduct pre-construction surveys to determine whether active birds are present. In addition, the applicant does not anticipate direct impacts to terrestrial mammals because, according to the ASC, these animals are highly mobile and would likely move to adjacent suitable habitat during periods of disturbance.[397] Nonetheless, the department recommends the Council adopt the following conditions to ensure sensitive species are not on-site prior to construction and if these species are found on-site, appropriate mitigation is implemented:

Condition H.6: During all years in which construction occurs, if construction-related activities occur during the aviation breeding season (February 1 through August 31), the certificate holder must conduct pre-construction nesting surveys. If active nests are located, the certificate holder shall notify the department and the Oregon Department of Fish and Wildlife (ODFW) to identify appropriate avoidance or mitigation measures prior to beginning construction. A biologist shall monitor daily the status of the active nests during nearby active construction and document adverse interactions with the project. If adverse impacts are documented, the certificate holder must notify the department and consult with ODFW to determine appropriate mitigation measures. If there is any time lapse greater than one week between vegetation clearing and commencement of construction activities, the certificate holder shall re-conduct the nest surveys.

Condition H.7: Prior to beginning construction, the certificate holder shall conduct wildlife surveys("pre-construction surveys") within the site boundary for the American peregrine falcon, osprey, bald eagle, Pacific marten, northern red-legged frog, western pond turtle, clouded salamander, the great blue heron and golden eagle. The certificate holder shall submit a survey plan to the department and the Oregon Department of Fish and Wildlife prior to conducting the surveys. If any of the above species are observed within the site boundary during the pre-construction surveys, the certificate holder shall implement

[396] ASC, Exhibit P, P-55.
[397] ASC, Exhibit P, P-55.

avoidance and minimization measures, to be developed in consultation with the department and ODFW. If the northern red-legged frog and western pond turtle are documented, or any additional special status amphibians or reptile species, the certificate holder shall develop and implement a salvage plan in conformance with ODFW's Wildlife Capture, Holding, Transport, and Relocation Guidance.

Condition H.8: The certificate holder shall provide the department and ODFW with a written summary of all results of biological pre-construction surveys, including nest surveys, within 10 days of survey completion.

Condition H.9: The certificate holder shall implement the following measures to avoid or mitigate impacts to sensitive wildlife habitat during construction:

a. The certificate holder shall prepare maps to show exclusion areas that are off-limits to construction personnel, such as nesting or denning areas for sensitive wildlife species
b. The certificate holder shall limit construction work to approved and surveyed areas, including truck traffic

Condition H.10: The certificate holder shall use a qualified environmental professional to provide environmental training during construction and operation. Environmental training shall include information on the sensitive species present onsite, precautions to avoid injuring or destroying wildlife or sensitive wildlife habitat, exclusion areas, permit requirements and other environmental issues. The certificate holder shall instruct construction and operations personnel to report any injured or dead wildlife detected while on the site to the appropriate onsite environmental manager.

Operational noise emissions could also impact wildlife species located near the facility site. However, the applicant has proposed to minimize noise resulting from facility equipment by utilizing low-noise fans in the air cooled condenser, enclosing fuel gas compressors and steam turbine generators, and utilizing stack silencers.

Freshwater Wetlands Impacts and Proposed Mitigation[398]

Impacts to freshwater wetlands would result from construction, operation and retirement of the facility. An estimated 1.771 acres of emergent wetland, scrub shrub wetland and open water habitat would be permanently impacted by construction of the facility.

As discussed above with regard to upland habitats, all construction activities would be undertaken in compliance with the facility's NPDES #1200-C permit, which requires the implementation of an approved erosion and sediment control plan as well as a stormwater management plan. However, to further minimize impacts to wetland habitats, the applicant proposes the following mitigation measures:

[398] Only impacts to non-jurisdictional wetlands are discussed within this section and addressed within the Habitat Mitigation Plan. Mitigation of impacts to jurisdictional wetlands is discussed under the state removal-fill program, addressed below, and the Compensatory Wetland Mitigation Plan (included as Appendix M to this order).

- Identification, protection and preservation of critical riparian areas and associated vegetation
- Preservation of vegetative buffer zones between the project site and sensitive areas, including perimeter areas
- Covering all unpaved roads onsite with gravel to prevent sediment tracking on public and private roads
- Maintenance of wetland areas near the site to allow for detention and treatment of uncontaminated stormwater runoff that naturally flows from the site to these areas
- Non-stormwater pollution control measures for material and waste storage areas
- Construction of an infiltration pond to allow for the washout of concrete trucks and settlement of particles, while allowing water to infiltrate the soil
- Stream bank stabilization and runoff control measures to protect areas from concentrated flows
- Permanent erosion prevention measures including stabilization and landscaping at the conclusion of construction.

As stated in the ASC, mobile wetland species are anticipated to relocate to suitable habitat adjacent to the site boundary at the commencement of construction. For less mobile species, the applicant proposes to conduct wildlife salvage to minimize impacts to sensitive amphibian and reptile species to the maximum extent possible.[399] In addition to recommended Condition H.7, above, for salvage purposes the department recommends the Council adopt the following condition:

> **Condition H.11:** Prior to conducting preconstruction surveys in compliance with Condition H.7, the site certificate holder shall consult with the ODFW regarding nearby suitable habitat where salvaged species could be relocated. The certificate holder shall map these areas and receive ODFW concurrence prior to beginning construction.

Estuarine Habitat

Construction of the barge berth, access triangle and SDP facility would directly impact estuarine habitat. The applicant estimates 3.163 acres of category 2 estuarine habitat will be permanently converted to developed habitat and 0.778 acres will be temporarily impacted by construction of the proposed facility.[400] In addition to direct habitat loss, as explained in the ASC, impacts may include potential direct mortality, alteration of vegetation communities, and temporarily increased turbidity and sedimentation.[401] Mitigation for unavoidable impacts to estuarine habitats is addressed in the applicant's removal-fill application as well as the proposed Compensatory Wetland Mitigation Plan.

[399] ASC, Exhibit P, P-57.
[400] ASC, Exhibit P, P-44.
[401] ASC, Exhibit P, P-44.

However, as provided in the ASC, to prevent turbidity and sedimentation impacts, the applicant also proposes the following measures:

- Installation of Open Cell Sheet pile membrane walls during construction of barge berth to isolate construction activities, resulting in only localized turbidity impacts
- Installation of turbidity curtain to further reduce turbidity and sedimentation impacts to surrounding species and habitat
- Conducting dredging activities primarily with a cutter-head suction dredge to minimize turbidity and noise impacts
- Conducting water quality monitoring throughout

To ensure compliance with these mitigation measures, the department recommends the Council adopt the following condition:

> **Condition H.12**: The site certificate holder shall install sheet pile during construction of the barge berth and utilize a turbidity curtain to reduce turbidity and sedimentation impacts to surrounding habitat during in-water work. The site certificate holder shall conduct water quality monitoring throughout construction and provide the department the results of those test within 10 days of completion.

As discussed above, to reduce noise impacts on aquatic species, the applicant proposes to use a cutter-head suction during dredging of the access triangle. Additionally, the applicant proposes to temporarily fill the barge berth area with clean sand so that the pile driving may be conducted on dry land, which would also greatly reduce noise generation.

As explained in the ASC, onshore facilities would include a mixture of low-power fluorescent lighting and higher intensity security lighting.[402] The lighting placed along the barge berth would be effectively shielded from the water by the barge when in the berth; and when a barge is not in the berth, the applicant states that the lighting would be reduced to that required for security. In addition, the applicant asserts that illumination would not extend outside of the site boundary, which would reduce or eliminate any behavioral effects on sensitive fish and marine mammal species.[403] However, to ensure lighting is minimized and impacts reduced, the department recommends the Council adopt Condition J.2, below, which requires the applicant to implement a lighting plan as approved by the department.

a. Monitoring and Mitigation

Based upon the anticipated habitat impacts resulting from construction and operation of the proposed facility, 265.7 acres of mitigation is required, and the applicant has proposed 265.7 acres of mitigation.[404] Therefore, no net loss of habitat quantity or quality is achieved in

[402] ASC, Exhibit P, P-59.
[403] ASC, Exhibit P, P-59.
[404] Wildlife mitigation sites for the SDP are depicted on Figure P-7 of ASC.

conformance with the ODFW mitigation policy goals and standards. As mentioned above, the applicant provided a draft Habitat Mitigation Plan that addresses the permanent and temporary impacts of the proposed facility on wildlife habitat by measures that would achieve the ODFW goals. ODFW has reviewed and approved the proposed Habitat Mitigation Plan.

To ensure compliance, the department recommends that the Council adopt the following condition, which adopts the draft Habitat Mitigation Plan as provided in the ASC:

Condition H.13: Prior to commencement of construction and following compliance with Condition H.1, the certificate holder shall consult with the ODFW to determine the final habitat mitigation required. Mitigation shall be provided in accordance with the final acreage determinations provided in response to Condition H.1 and in substantial conformance with the Habitat Mitigation Plan included as Appendix I to this Order.

(a) The final Habitat Mitigation Plan and ODFW's concurrence of that plan shall be submitted to the department no less than 30 days prior to the beginning of construction.
(b) The final Habitat Mitigation Plan may be amended from time to time by agreement of the certificate holder and the Oregon Energy Facility Siting Council. Such amendments may be made without amendment of the site certificate. The Council authorizes the department to agree to amendments to this plan. The department shall notify the Council of the Final Habitat Mitigation Plan and all amendments to the plan. The Council retains the authority to review and approve, reject or modify any amendments of this plan agreed to by the department.

The Habitat Mitigation Plan includes monitoring components and reporting practices that the certificate holder must implement during construction and operation of the proposed facility. Adequate monitoring provides data necessary to evaluate the impacts of the facility operation on nearby wildlife habitat. Under the terms of the Habitat Mitigation Plan, additional monitoring or mitigation may be required if the monitoring results show significant adverse impacts or a loss of habitat quality. Therefore, the department recommends the Council adopt the following condition which would require the certificate holder to implement monitoring in accordance with the Habitat Mitigation Plan.

Condition H.14: The site certificate holder shall conduct monitoring as described in the Habitat Mitigation Plan, included as Appendix I to this Order, and as adopted under Condition H.13. Monitoring activities shall address erosion and sediment control measures, preventative measures to stop the spread of invasive and noxious weed species, water quality monitoring and mitigation site maintenance. The certificate holder shall receive department and ODFW approval of mitigation objectives and performance standards in order to assess the success of mitigation during monitoring activities. Should mitigation not meet the identified performance standard, contingency plans shall be developed.

Condition H.15: The site certificate holder shall endow a land manager to conduct long term monitoring and maintenance at the acquired mitigation sites throughout the life of the project. Monitoring shall begin upon the substantial completion of mitigation construction and implementation. In the first year of monitoring, the certificate holder shall conduct an as-built survey to document the appropriate contours, grading and plantings.

Based on the evidence in the record, the department recommends the Council find that the design, construction and operation of the facility, taking into account mitigation, are consistent with the fish and wildlife habitat mitigation goas and standards.

IV.H.2. Fish and Wildlife: Conclusions of Law

Based on the foregoing findings of facts and conclusions, and subject to compliance with the recommended site certificate conditions, the Department recommends that the Council find that the proposed facility complies with the Council's Siting Standards for Fish and Wildlife Habitat.

IV.I. Threatened and Endangered Species [OAR 345-022-0070]

To issue a site certificate, the Council, after consultation with appropriate state agencies, must find that:

(1) For plant species that the Oregon Department of Agriculture has listed as threatened or endangered under ORS 564.105(2), the design, construction and operation of the proposed facility, taking into account mitigation:

(a) Are consistent with the protection and conservation program, if any, that the Oregon Department of Agriculture has adopted under ORS 564.105(3); or

(b) If the Oregon Department of Agriculture has not adopted a protection and conservation program, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species; and

(2) For wildlife species that the Oregon Fish and Wildlife Commission has listed as threatened or endangered under ORS 496.172(2), the design, construction and operation of the proposed facility, taking into account mitigation, are not likely to cause a significant reduction in the likelihood of survival or recovery of the species.

IV.I.1. Threatened and Endangered Species: Findings of Fact

The Threatened and Endangered Species Standard requires the Council to , in consultation with appropriate state agencies, that the construction and operation of a facility is consistent with applicable protection plans for threatened or endangered plant and animal species. The Council must also determine that the facility's construction and operation are not likely to cause a

significant reduction in a species' recovery or survival. For purposes of this standard, threatened and endangered species are those identified as such by either the Oregon Department of Agriculture (ODA) or the Oregon Fish and Wildlife Commission.[405] Although the Council standard addresses only those species listed as threatened or endangered by the responsible agencies in Oregon,[406] and does not directly address federally listed threatened or endangered species, the certificate holder must still comply with all applicable federal laws, including laws protecting federally listed species. The applicant provided information about compliance with the Council's Threatened and Endangered Species Standard in Exhibit Q of the application. The Project Order identified the analysis area for threatened and endangered plant and wildlife species as the area within the site boundary and five miles from the site boundary.

To identify species potentially occurring in the analysis area, the applicant consulted with state agencies and conducted both a literature and field review. As explained in the ASC, at the state level the applicant consulted with ODA for state-listed plant species and the ODFW for fish and wildlife species.[407] The literature review and field studies were used to identify each species likely to occur within the analysis area and to determine the nature, extent, locations, and timing of potential occurrences in the analysis area.[408]

The applicant obtained current state and federal threatened and endangered species lists for Coos County and pulled an Oregon Biodiversity Information Center (ORBIC) list of rare, threatened and endangered plants and animals within five miles of the site boundary.[409] Additionally, the applicant reviewed the ORBIC list of Rare, Threatened, and Endangered Species of Oregon for species that occur within the coastal range or are known to occur in Coos County.[410] The applicant utilized the literature review to inform the field studies. According to the ASC, the surveys conducted were designed to identify potential threatened and endangered species and associated habitat that may be affected by the construction, operation and retirement of the proposed facility.[411] A stated in the ASC, twenty-three state listed species occur or have the potential to occur within the analysis area.[412] However, because the

[405] ORS 564.100 defines "endangered and "threatened" plant species as follows:
"Endangered Species" means:
(a) Any plant species determined by the department to be in danger of extinction throughout any significant portion of its range
(b) Any native plant species listed as an endangered species pursuant to the federal Endangered Species Act of 1973, as amended
"Threatened Species" means:
(a) Any native species the director determines by a finding of fact is likely to become an endangered species within the foreseeable future throughout any significant portion of its range.
(b) Any native plant species listed as a threatened species pursuant to the federal Endangered Species Act of 1973, as amended.

[406] These species are referred to as "state-listed" species.

[407] ASC, Exhibit Q, Q-12.

[408] ASC, Exhibit Q, Q-12.

[409] ASC, Exhibit Q, Q-12.

[410] ASC, Exhibit Q, Q-12.

[411] ASC, Exhibit Q, Q-13.

[412] ASC, Exhibit Q, Q-5.

proposed facility is a previously developed and extensively disturbed industrial site, there is a low potential for the occurrence of threatened and endangered plant and animal species within the site boundary.[413] Construction, operation and retirement of the proposed facility may potentially impact 18 state listed species and/or their designated critical habitat found within the analysis area; [414] however, the applicant does not anticipate any significant adverse impacts to any listed species.[415]Table Q-1 in the ASC, identifies each of the threatened and endangered species potentially present in the analysis area and each species potentially present in the analysis area is discussed in greater detail below.

Plants

Pink Sand Verbena (State Endangered)[416]

The pink sand verbena is the only pinkish-purple flowered coastal *Abronia* species in Oregon. The historic range of pink sand verbena occurs from California to British Columbia, Canada. Its present range is predominantly from Point Reyes National Seashore in Marin County, California to Cape Blanco in Curry County, Oregon.[417] As explained in the ASC, there is a successful population of pink sand verbena that was introduced to the North Spit within the western snowy plover habitat restoration area, approximately 2.6 miles from the site boundary.[418] The applicant does not anticipate the pink sand verbena to occur within the site boundary due to its distance from the coast (approximately 1.3 miles from the proposed site's westernmost point).[419] Botanical surveys conducted in 2006, 2012 and 2013 (the 2013 surveys focused on previously unsurveyed portions of the SDP site) did not result in the detection of any pink sand verbena.[420] Thus, because pink sand verbena was not found on-site, impacts to pink sand verbena are not anticipated due to the construction, operation or retirement of the proposed SDP.

Point Reyes Bird's Beak (State Endangered)[421]

Point Reyes Bird's Beak is an annual grey-green and purple-tinged herbaceous species with pinkish to purplish red flowers that grows 4 to 16 inches tall and has few branched stems. The species flowers from June to October. Generally, this species occurs in coastal salt marshes, typically within marshes that are periodically or frequently inundated by high tides.[422] Specifically, Point Reyes bird's beak habitat requires approximately 7.5 to 8.5 feet above mean lower low water, sandy soils with soil salinity of 34 to 55 parts per thousand, and less than 30 percent bare soil in summer.[423] In Oregon, the species is restricted to Netarts Bay, Yaquina Bay,

[413] ASC, Exhibit Q, Q-15.
[414] ASC, Exhibit Q, Q-5.
[415] ASC, Exhibit Q, Q-5.
[416] Federal Species of Concern. ASC, Exhibit Q, Q-15.
[417] ASC, Exhibit Q, Q-15.
[418] ASC, Exhibit Q, Q-15.
[419] ASC, Exhibit Q, Q-15.
[420] ASC, Exhibit Q, Q-15.
[421] Federal Species of Concern. ASC, Exhibit Q, Q-16.
[422] ASC, Exhibit Q, Q-16.
[423] ASC, Exhibit Q, Q-16.

and Coos Bay, with the majority of known occurrences located in Coos Bay.[424] According to the ASC, occurrences documented by ORBIC include multiple sites along the Coos Bay shoreline within the analysis area. These sites include each side of the bay closer to the harbor entrance, along the western and eastern shore of Jordan Cove; north and south of the Transpacific Parkway causeway bridge on the western side of Haynes Inlet, up to the west side of U.S. highway 101 along Haynes Inlet, in the marsh on the east side of the airport, at multiple locations along Pony Slough across the bay, and on a dredge spoil island east of the Coquille Indian Tribe casino in Coos Bay.[425]

As stated in the ASC, the primary threat to Point Reyes bird's beak is habitat loss due to development. However, the species is also threatened by off-road vehicle use, water pollution, and habitat alteration due to invasion by non-native dense-flowered cordgrass (which has not been observed along the SDP shoreline).[426] The applicant does not anticipate impacts to populations of Point Reyes bird's beak outside of the site boundary; however, within the site boundary, construction of the power plant facility and associated infrastructure could potentially impact the species through erosion and sedimentation, and encroachment on suitable habitat.[427] However, the applicant proposes that those impacts could be mitigated through the implementation of erosion and sediment control best management practices. Recommended Condition D.1, above, requires the applicant to conduct all construction work in compliance with an Erosion and Sediment Control Plan satisfactory to the Oregon Department of Environmental Quality, and required under the National Pollution Discharge Elimination System Construction Stormwater Discharge General Permit #1200-C. Additional mitigation addressing impacts to the Point Reyes bird's beak, is discussed below.

Silvery Phacelia (State Threatened)[428]

Silvery phacelia is a hairy, fleshy perennial herb with thick leaves that are coated in long, straight, silvery hairs. It occupies open sand above the high tide line, open and partly stabilized sand dunes farther inland and coastal bluffs.[429] It flowers from late May to early August. According to the ASC, Silvery phacelia occurs in Coos and Curry counties along the Oregon coast and in Del Norte County in California, with the majority of occurrences in Oregon.[430]

The proposed facility site boundary and analysis area includes suitable habitat for Silvery phacelia. As explained in the ASC, SHN conduced focused surveys in 2013 in areas identified as suitable habitat and did not detect Silvery phacelia.[431] According to the ASC, there are no anticipated impacts to suitable habitat for Silvery phacelia during construction, operation or retirement, and, therefore, no impact to the species is expected.

[424] ASC, Exhibit Q, Q-16.
[425] ASC, Exhibit Q, Q-16.
[426] ASC, Exhibit Q, Q-17.
[427] ASC, Exhibit Q, Q-17.
[428] Federal Species of Concern.
[429] ASC, Exhibit Q, Q-17.
[430] ASC, Exhibit Q, Q-17.
[431] ASC, Exhibit Q, Q-17.

Western Lily (State Endangered)[432]

The Western lily is one of the rarest plants on the west coast. It is a member of the perennial lily family and grows up to five feet tall with nodding red, sometimes deep orange, flowers.[433] Western lily inhabits 31 small, widely separated populations in freshwater marshes and swamps, coastal scrub and prairie, and openings in Sitka spruce dominated coast coniferous forest along the coast of southern Oregon and northern California. It occurs within four miles of the coast and is generally found on marine terraces 0-300 feet above mean sea level.[434] As explained in the ASC, the wetlands where Western lilies occur are not traditional wetlands but are the areas where the marsh is flooded in the winter and is typically very dry in the summer. The species emerges in Oregon in late March or early April and flowers in late June or July.

According to the ASC, the closest known western lily occurrence to the site boundary is approximately 5.2 miles northeast of Hauser Bog. There are no records of the western lily north of Hauser Bog along the Oregon Coast.[435] The applicant conducted seasonally timed and focused surveys, following the USFWS protocol for the Western lily, which yielded no detections of the species.[436] Therefore, the proposed facility is not likely to adversely impact the western lily as the species has not been found during focused surveys and the areas to be impacted by the SDP are not expected to include western lily habitat.

Wolf's Evening Primrose (State Threatened)[437]

Wolf's evening primrose is a rare species of flowering plant in the evening primrose family. It occurs in well-drained sandy soils in coastal strands, roadsides, and coastal bluffs. Wolf's evening primrose is associated with a high disturbance regime, and several occurrences in California are located along roadsides with sandy soil.[438] As provided in the ASC, Wolf's evening primrose is typically associated with low elevation coastal habitats, but there have been reported occurrences in lower montane coniferous forest in California at elevations greater than 2,500 feet above mean sea level.

As explained in the ASC, although the closest known occurrence of the species is located approximately 60 miles to the south in Port Orford, the applicant included the species in the botanical surveys because suitable habitat exists within the analysis area and the SDP footprint. However, wolf's evening primrose was not detected during the applicant's surveys.[439] Thus, project-related impacts to this species are not anticipated.

[432] Federal Endangered. ASC, Exhibit Q, Q-18.
[433] ASC, Exhibit Q, Q-18.
[434] ASC, Exhibit Q, Q-18.
[435] ASC, Exhibit Q, Q-18.
[436] ASC, Exhibit Q, Q-18.
[437] Federal Species of Concern. ASC, Exhibit Q, Q-18.
[438] ASC, Exhibit Q, Q-18.
[439] ASC, Exhibit Q, Q-19.

Amphibians and Reptiles

As explained in the ASC, no threatened or endangered amphibian species are known to occur or anticipated to occur within the SDP analysis area. Sea turtles are the only listed reptile species with the potential to occur within the analysis area and are addressed below.

Sea Turtles[440]

As provided in the ASC, sea turtles are not know to nest on the Oregon coast, although they may occasionally be found in the Exclusive Economic Zone (EEZ), which extends from 12-200 nautical miles offshore. Threatened and Endangered sea turtles that have the potential to occur in the analysis area are described below. An impact analysis addressing all sea turtles follows the brief descriptions.

Green Sea Turtle (State Endangered)[441]

Green sea turtles are typically found in warm tropical waters and, to a lesser extent, subtropical waters. The turtles are attracted to lagoons and shoals with an abundance of marine grass and algae. According to the ASC, green sea turtles have strong nesting site fidelity and migrate long distances between feeding grounds and nesting beaches. There are no known nesting green sea turtles on the U.S. Pacific Coast.[442] No critical habitat for this species is located on the U.S. Pacific Coast and therefore they are likely infrequent visitors to the Oregon coast.[443]

Leatherback Sea Turtle (State Endangered)[444]

Leatherback sea turtles are the largest, most migratory sea turtle species with the widest range of all extant sea turtles. In 2012, the National Marine Fisheries Service (NMFS) designated critical habitat for this species along the Oregon and Washington coasts from Cape Blanco to Cape Flattery. Critical habitat includes nearshore waters within the analysis area for the SDP.[445] Nesting occurs on sandy tropical beaches and no known nesting locations occur on the U.S. Pacific Coast.[446] Peak numbers of leatherback turtles occur from July to September in coastal zones, when intermittent decreases in upwelling allow surface water temperatures to increase. According to the ASC, leatherback sea turtles aggregate in warm, highly productive coastal areas to forage on prey.

Loggerhead Sea Turtle (State Threatened)[447]

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[440] In addition to the sea turtles discussed in this section, the applicant also addressed the Olive Ridley Sea Turtle in the application. However, the Olive Ridley Sea turtle is not state listed, therefore, it is not discussed within this order because the Council's Threatened and Endangered Species Standard only addresses those species listed as threatened or endangered by the responsible agencies in Oregon. Nonetheless, while not addressed within this order because it is outside Council jurisdiction, the applicant must still comply with all applicable federal laws, including laws protecting these species.

[441] Federal Threatened. ASC, Exhibit Q, Q-19.

[442] ASC, Exhibit Q, Q-20

[443] ASC, Exhibit Q, Q-20.

[444] Federal Endangered. ASC, Exhibit Q, Q-20.

[445] ASC, Exhibit Q, Q-20.

[446] ASC, Exhibit Q, Q-20.

[447] Federal Endangered Species. ASC, Exhibit Q, Q-20.

Loggerhead sea turtles occupy three different ecosystems during their lives—the terrestrial zone, the oceanic zone, and the neritic (coastal) zone. Critical habitat was proposed for the North Pacific Ocean distinct population segments (DPS);[448] however, in July 2013 the NMFS determined that there are no areas meeting the definition of critical habitat for the DPS.[449]

Sea Turtle Impacts

As discussed in the ASC, sea turtles are generally found in warmer waters and occur only occasionally off the Oregon coast during migrations and foraging. There are no known nesting of any of the species described above on the U.S. Pacific Coast. Any potential impacts to sea turtles, therefore, would be related to the offshore activities associated with the proposed barge berth, including vessel traffic.[450] However, as provided in the ASC, given the limited number of barge trips estimated for the SDP project (no more than38 trips for the SDP facility) , and the rarity of sea turtle occurrences in Coos Bay, adverse impacts to sea turtles as a result of construction and operation of the proposed facility is not anticipated.[451]

Oil, gasoline or diesel spills are also not likely to adversely impact sea turtles because of the low potential for spills and the tug boat contractors spill prevention and emergency response plans in place, which would require reporting of any spills to the appropriate agencies. In addition, the applicant provides that a spill prevention and response plan, the Geographic Response Plan, has been developed by the ODEQ, Untied States Coast Guard and EPA, which prioritizes resources in the event of a spill and provides for immediate and proper action.[452]

Birds[453]

Brown Pelican

The brown pelican is found in nearshore waters, in large bays and river mouths, and on beaches and spits. These birds are rarely seen inland or more than 40 miles from shore, feeding mostly in shallow estuarine waters. As explained in the ASC, pelicans make extensive use of sand spits, offshore sand bars and islets for nocturnal roosting and daily loafing.[454] In Coos Bay, brown pelicans are most commonly known to occur from river mile (RM) 6 to the open ocean and are considered a common post-breeding migrant on the North Spit. They arrive from the south along the Ocean coast in April and become abundant by August and September.

[448] There are nine distinct population segments for loggerhead turtles under the Federal Endangered Species Act. ASC, Exhibit Q, Q-21.
[449] ASC, Exhibit Q, Q-21.
[450] ASC, Exhibit Q, Q-21—Q-22.
[451] ASC, Exhibit Q, Q-22.
[452] ASC, Exhibit Q, Q-23.
[453] In addition to the bird species discussed herein, the applicant also discussed the short-tailed albatross in the ASC. However, the short-tailed albatross is not a state listed species. Therefore, the short-tailed albatross is not discussed within this order as the Council's Threatened and Endangered Species Standard only addresses those species listed as threatened or endangered by the responsible agencies in Oregon and it is therefore outside the jurisdiction of the Council. However, the applicant must still comply with all applicable federal laws, including laws protecting these species.
[454] ASC, Exhibit Q, Q-22.

As explained in the ASC, Coos Bay is considered foraging and roosting habitat for the brown pelican, with roosting occurring on the north side of the bay on the sunken jetty close to the bay mouth, on the sand spit of the North Spit, and on the dredge spoil islands around RM 3 to 4.[455] During surveys conducted in October 2012, the applicant recorded the species foraging near the SDP site boundary more than 500 feet from the shore and loafing daily across the bay in moderate numbers. Further, the species was also observed through early September during surveys conducted in 2005 and 2006.[456] However, as explained in the ASC, the analysis does not provide nesting habitat for brown pelican, nor have nesting sites within the Coos Bay estuary been documented.[457] Therefore, the species is not believed to breed in or near the project vicinity.

While the brown pelican may be present in the Coos Bay area near the proposed site during construction and operation, the applicant does not anticipate adverse impacts to brown pelican roosting and feeding habitats. As stated in the ASC, the incremental noise, human activities and low-level facility lighting are not likely to directly affect the brown pelican in the project due to the pelicans' acclimation to current human-generated sounds and facilities already common to the area.[458] Further, the applicant does not anticipate gasoline or diesel spills to adversely impact brown pelicans because the risk of spills is low and the tug boat operators would be equipped with spill prevention and emergency response plans. In addition, as discussed above tug boat operators will be required to follow the procedures outlined in the Geographic Response Plan in the event of a spill, which prioritizes resources to be protected.

Additionally, recommended Condition H.5, above, requires the applicant to construct transmission lines in accordance with the Avian Protection Guidelines. Therefore, significant adverse impacts to brown pelicans are not anticipated as a result of the proposed facility.

Marbled Murrelet (State Threatened)[459]

The marbled murrelet is a small, robin-sized, diving seabird with a very short neck. It spends the majority of its time on the ocean roosting and feeding, and comes inland up to 50 miles to nest in forest stands with old growth characteristics.[460] As explained in the ASC, mature adult murrelet generally lay a single egg on a mossy limb of an old-growth conifer tree, with both sexes incubating the egg in alternating 24-hour shifts until the young fledge from the nest in about 28 days.[461] Nesting adults make daily foraging trips to shallow, protected, nearshore coastal waters, feeding mostly on small fish but sometimes on euphausiids. When at sea, marbled murrelets are rarely found more than a few miles out from the shore.[462]

[455] ASC, Exhibit Q, Q-22.
[456] ASC, Exhibit Q, Q-22.
[457] ASC, Exhibit Q, Q-22.
[458] ASC, Exhibit Q, Q-22.
[459] Federal Threatened. ASC, Exhibit Q, Q-23.
[460] ASC, Exhibit Q, Q-23.
[461] ASC, Exhibit Q, Q-23.
[462] ASC, Exhibit Q, Q-23.

As provided in the ASC, based upon guidance provided by the USFWS, marbled murrelet nesting habitat does not occur within the SDP analysis area.[463] Further, no individual murrelets were observed during wildlife surveys and the closest documented nesting habitat is over eight miles from the SDP site boundary, outside of the analysis area.[464] However, as stated in the ASC, murrelets could fly over the bay within the analysis area and perhaps over the SDP site when in transit between terrestrial nesting and offshore feeding.[465] Additionally, marbled murrelets that forage offshore in Coos Bay could be impacted by underwater noise generated during construction; barge berth disturbance during feeding, or collisions with aboveground transmission lines within the SDP site during daily flights to and from foraging areas.[466]
As provided in Appendix Q-8 of the ASC, the applicant used the USFWS guidelines for determining effects to marbled murrelets within the analysis area and concluded that the species is not expected to be exposed to ship noise that would cause harm. While the tug boat noise levels could reach 160db within 15 meters of the boat, the applicant states that exposure to that level of noise is not expected to cause behavioral effects given the limited number of barge trips and the murrelet density in the analysis area.[467] In addition, the applicant does not anticipate underwater noise from pile diving to impact diving murrelets because pile driving related to construction of the proposed barge berth would be land based.[468] Lastly, recommended condition H.5, above, requires the site certificate holder to construct the transmission line in accordance with the Avian Protection Guidelines, to minimize any potential collisions to transmission infrastructure. Thus, based upon the applicant's analysis, significant adverse impacts to foraging murrelets are not likely as a result of the proposed facility.

Northern Spotted Owl (State Threatened)[469]

The northern spotted owl is dependent on old-growth components in coniferous forests, and is extremely rare on the immediate coast of Oregon and in coastal Coos County. In Oregon, the owl is found in low-and mid-elevation coniferous forests in the Coast, Siskiyou and Cascade mountain ranges, including many spotted owl habitat areas in the forests inland of Coos Bay. According to the ASC, the nearest documented occurrence of a spotted owl nest to the SDP site boundary was just inside the five-mile radius of the analysis area in the Kentuck Creek drainage.[470] However, as explained in the ASC, no spotted owls were observed during wildlife surveys at the site and there is a lack of suitable habitat in or near the SDP site.[471] Further, construction and operation of the proposed facility would not impact any mature or old-growth forests; therefore, no adverse impacts to the northern spotted owl are anticipated.

[463] ASC, Exhibit Q, Q-24.
[464] ASC, Exhibit Q, Q-24.
[465] ASC, Exhibit Q, Q-24
[466] ASC, Exhibit Q, Q-24.
[467] ASC, Exhibit Q, Q-24.
[468] ASC, Exhibit Q, Q-24.
[469] Federal Threatened Species. ASC, Exhibit Q, Q-25.
[470] ASC, Exhibit Q, Q-25.
[471] ASC, Exhibit Q, Q-25.

Streaked Horned Lark (State Sensitive-Critical)[472]

The streaked horned lark is a rare subspecies of the horned lark. The streak horned lark migrates between Oregon and Washington, with breeding populations found in the Puget Sound lowlands, Columbia River/Coastal Washington, and the Willamette Valley in Oregon from late March to early August.[473] As explained in the ASC, the species occurs in bare and sparsely vegetated habitat such as coastal dunes, beaches, gravel roads, airport runways, grazed pastures, and dry mudflats. According to the ASC, larks also occur where dredge spoils are deposited or in areas where there is accretion (deposition) of sand causing beach areas to become wider. However, when new unvegetated land is created by dredge spoils and sand accretion, it is not used by larks for the first year or two after deposition. Once the site becomes sparsely vegetated, it can be quickly colonized by larks, especially on fill where there is no off-road vehicle traffic. As explained in the ASC, as sandy habitats on the coast continue to be colonized by beach grasses, streaked horned larks do not use these habitats for breeding or over-wintering once the site becomes densely vegetated.[474] Therefore, for larks to use the site, the site must be sparsely vegetated and immediately adjacent to water.[475]

The applicant conducted a focused field evaluation within the SDP site boundary on April 23, 2013 to assess the presence of suitable habitat for streaked horned larks. While a few areas of potential habitat were identified, the areas were not adjacent to water and after a literature review as well as personal communications with Dr. Scott Pearson of the WDFW, the applicant determined that the areas are not suitable habitat within the SDP site.[476] Additionally, while the proposed fill could become suitable lark habitat, construction disturbance at the site would prevent it from becoming sufficiently vegetated for suitable habitat.[477] Further, according to the ASC, in consultation with Dr. Pearson, it was determined that suitable habitat for streaked horned larks is likely not present near the SDP site because of the lack of open water immediately adjacent to the few locations where sparsely vegetated lark habitat potentially exists.[478] In addition, encroachment by European beachgrass and other noxious weed species further reduces the suitability of potential lark habitat within the area. As explained in the ASC, an occasional lark may show up to forage in the vicinity of the proposed facility; however, the construction and development activities within the site boundary are likely to preclude any continued use of the area by larks.[479] Thus, significant adverse impacts to the streaked horned lark populations from construction, operation and retirement are not anticipated.[480]

Western Snowy Plover (State Threatened)[481]

[472] Federal Threatened Species. ASC, Exhibit Q, Q-26.
[473] ASC, Exhibit Q, Q-27.
[474] ASC, Exhibit Q, Q-27.
[475] ASC, Exhibit Q, Q-27.
[476] ASC, Exhibit Q, Q-28.
[477] ASC, Exhibit Q, Q-28.
[478] ASC, Exhibit Q, Q-28.
[479] ASC, Exhibit Q, Q-28.
[480] ASC, Exhibit Q, Q-28.
[481] Federal Threatened Species. ASC, Exhibit Q, Q-28.

The western snowy plover is a small shorebird approximately six inches long with a thin, dark bill. The extent of the Pacific Coast breeding population includes Oregon, with coastal populations typically consisting of resident and migratory birds. As provided in the ASC, the North Spit of Coos Bay supports the most-productive snowy plover population segment on the Oregon Coast.[482] On the coast, the western snowy plover inhabits sand beaches almost exclusively.[483] The southwestern portion of the North Spit is designated as critical habitat for the western snowy plover from the ocean beach at Horsfall to the Coos Bay north jetty, and includes all federal lands at the south end of the spit. The closest known snowy plover nest is more than three miles from the proposed SDP site, and the SDP site boundary is approximately 1.3 miles from the northern extent of the critical habitat.[484] Primary nesting areas are located approximately 4.5 miles from the proposed site.[485] Nesting in Oregon may occur as early as mid-March, with peak nest initiation occurring from mid-April through mid-July. However, as explained in the ASC, it is unlikely that this species would nest in or around the SDP site boundary because of the lack of primary habitat for the species (upper edge of beaches, below the foredunes) near the site.[486] As provided in the ASC, past predation by corvids has been the main cause of known nest failure, with additional threats including the introduction of European beachgrass, which encroaches on available nesting and foraging habitat, and disturbance from humans, dogs and off-highway vehicles in important foraging and nesting areas.[487] As explained in the ASC, current management activities and use restrictions for snowy plover populations within the North Spit Recreation Management Area include predator management, symbolic fencing, habitat restoration, public outreach and education, monitoring of snowy plover populations, and seasonal recreational use restrictions.[488]

According to the ASC, there is not suitable plover nesting habitat within the SDP project area and no plovers were detected during field surveys from 2005 to the present.[489] An occasional individual may use the sandflats adjacent to the SDP site for foraging, however, the applicant states that breeding is not likely.[490] Further, of the known threats to snowy plover, the proposed facility would introduce increased human activity, which could attract snowy plover predators if the predators are attracted to construction sites by garbage or discarded food.[491] However, as stated in the ASC, because of the distance to the closest documented plover nest, increased predation as a result of the SDP activities is not likely.[492] Therefore, the applicant does not anticipate significant adverse impacts to the western snowy plover as a result of construction, operation and retirement of the proposed facility due to the lack of nesting

[482] ASC, Exhibit Q, Q-28.
[483] ASC, Exhibit Q, Q-29.
[484] ASC, Exhibit Q, Q-29.
[485] ASC, Exhibit Q, Q-29.
[486] ASC, Exhibit Q, Q-29.
[487] ASC, Exhibit Q, Q-30.
[488] ASC, Exhibit Q, Q-30.
[489] ASC, Exhibit Q, Q-30.
[490] ASC, Exhibit Q, Q-30.
[491] ASC, Exhibit Q, Q-30.
[492] ASC, Exhibit Q, Q-30.

habitat in or near the site boundary. However, protective mitigation measures are addressed in more detail due to the critical habitat designation on the North Spit of Coos Bay.

Mammals

Fisher (State Sensitive-Critical)[493]

The fisher is a large weasel that inhabits forests with high canopy closure, large trees and snags, large woody debris, large hardwoods, and multiple canopy layers.[494] Fishers are known to have very large home ranges and to wander widely. Fishers avoid areas lacking overhead canopy cover and disturbance by humans, and occupy and reproduce in some managed forest landscapes and forest stands not classified as late-successional that provide important habitat elements.[495] As explained in the ASC, the presence of the fisher on the North Spit is not likely due to the rarity of the species and the lack of large, well-connected tracts of mature forest with continuous canopies. Fishers are reluctant to cross openings greater than 25 meters and most forested areas on the North Spit are interspersed with open sand. Additionally, fishers would be separated from Coast Range populations by Highway 101, human development and fragmentation of mature forests.[496]

While the species has the potential to occur on the North Spit, according to the ASC, there are no records of its presence and no fishers were observed during focused wildlife surveys of the area.[497] Therefore, because of the lack of observation of fishers in the proposed SDP vicinity, no impacts to fishers are expected as a result of the construction and operation of the proposed facility.

Gray Wolf (State Endangered)[498]

Gray wolf numbers fluctuate throughout the year as wolves disperse, pups are born and new packs are formed. The majority of the documented wolves occur in Wallowa, Umatilla, Union, and Baker counties, Oregon. The closest areas of known wolf activity are in Jackson, Klamath and Douglas counties.[499] Therefore, it is not likely that the gray wolf would occur within the SDP analysis area, and, therefore, construction, operation and retirement of the proposed facility are not anticipated to have any impact on the gray wolf.

Fish[500]

[493] Federal Candidate. ASC, Exhibit Q, Q-31.
[494] ASC, Exhibit Q, Q-31.
[495] ASC, Exhibit Q, Q-31.
[496] ASC, Exhibit Q, Q-31.
[497] ASC, Exhibit Q, Q-31.
[498] Federal Endangered Species. ASC, Exhibit Q, Q-31.
[499] ASC, Exhibit Q, Q-32.
[500] In addition to the fish species discussed herein, the applicant also discussed the Pacific Eulachon and the Green Sturgeon. However, neither the Pacific Eulachon nor the Green Sturgeon are state listed species Therefore, neither are discussed within this order as the Council's Threatened and Endangered Species Standard only addresses those species listed as threatened or endangered by the responsible agencies in Oregon. However, the applicant must still comply with all applicable federal laws, including laws protecting these species. Additionally,

Oregon Coast Coho Salmon (State sensitive-Critical)[501]

Essential physical and biological features or primary constituent elements (PCEs) of estuaries include whether an area is free of obstruction, water quality, and salinity conditions supporting juvenile and adult physiological transitions between freshwater and saltwater, natural cover, and foraging opportunities. As explained in the ASC, the Coos Bay estuary adjacent to the proposed SDP site has one or more PCE's within the acceptable range of values required to support the biological processes for which Coho salmon use the habitat.[502] Therefore, Coho salmon adults and smolts could migrate through this area and use the area to make the physiological transition between marine and freshwater environments.[503] Nonetheless, based on various ODFW seining surveys, there is very little habitat available for Coho Salmon in the immediate project area, except where they traverse the area on their migrations to and from the ocean.[504]

As provided in the ASC, the proposed SDP would not require intake and no entrainment or impingement of fish would occur as a result of the facility. Stormwater runoff from impervious surfaces at the site could include trace metals such as copper and zinc, which are of concern to aquatic organisms. However, as discussed with regard to the Waste Management Standard below, contact stormwater would be treated prior to being discharged through the Port's ocean outfall. All stormwater would be treated or managed to meet DEQ requirements under a modified NPDES permit and approved stormwater management plan. Therefore, based upon the above considerations, stormwater runoff would not likely impact aquatic species. Additionally, as provided in the ASC, Coho salmon could be impacted as a result of the construction of the barge berth and access triangle due to turbidity or sedimentation impacts. However, Condition H.12, above, requires the applicant to install Open Cell sheet pile membrane walls during construction of the barge berth and a turbidity curtain to reduce turbidity and sedimentation impacts to surrounding habitat and to provide water quality monitoring reports to the department. In addition, most importantly, the applicant states that all in-water work would be conducted during the ODFW approved in-water work window. Therefore, the department recommends the Council adopt the following condition to ensure in-water work does not occur outside that window:

> **Condition I.1:** All in-water work shall be conducted during the ODFW approved in-water work window from October 1st through February 15th, unless otherwise allowed by ODFW, to avoid vulnerable fish life stages including, mitigation, spawning and rearing

based on various ODFW seining surveys, use of the Coos Bay system by the Pacific eulachon and green sturgeon is sporadic. ASC, Exhibit Q, Q-32.

[501] Federal Threatened Species. ASC, Exhibit Q, Q-32.

[502] ASC, Exhibit Q, Q-32.

[503] ASC, Exhibit Q, Q-32—Q-33.

[504] ASC, Exhibit Q, Q-32.

Marine Mammals[505]

Gray Whales (State Endangered)[506]

Gray whales are found mainly in the shallow coastal waters of the North Pacific Ocean. The Eastern North Pacific stock spends the summer months feeding primarily in the northern Bering and Chukchi seas in Alaska, however, some whales will remain farther south, feeding in the waters along the west coast from southeast Alaska to California, including Oregon. In the fall and winter, gray whales migrate from their summer feeding grounds to winter breeding grounds and calving areas off the coast of Baja California, Mexico. As explained in the ASC, the height of the winter grey whale migration in Oregon typically occurs between late December and early January, with the stock migrating back along the U.S. west coast from mid-February to May. Additionally, there is a population of approximately 200 resident gray whales that live almost year-round in Oregon.[507]

According to the ASC, while gray whales typically reside in shallow coastal waters, they may occasionally enter bays and estuaries and local reports have documented gray whales entering Coos Bay in 2000 and 2009; and a gray whale calf was beached in July, 2014, approximately one mile south of the entrance to Coos Bay.[508] The applicant does not anticipate adverse impacts to gray whales as a result of the construction and operation of the proposed facility because of the rarity of whale occurrences in the bay, the low risk of vessel strikes due to the limited number (38) of barge berth trips projected and the speed at which the barges travel and the low risk of oil spills.[509] However, as discussed above, tug boat operators will be required to follow the procedures outlined in the Geographic Response Plan in the event of a spill, which prioritizes resources to be protected.

Based upon the above information, no threatened or endangered plant or animal species were observed within the site boundary during field surveys, and while a number of threatened and endangered plant and animal species potentially could occur within the analysis area, the applicant does not anticipate a significant adverse impact to any species as a result of the construction and operation of the proposed facility due to the avoidance, minimization and mitigation measures proposed.

[505] In addition to the marine mammal species discussed herein, the applicant also addressed the South Resident Orcas. However, the Southern Resident Orcas are not state listed species Therefore, they are not discussed within this order as the Council's Threatened and Endangered Species Standard only addresses those species listed as threatened or endangered by the responsible agencies in Oregon. However, the applicant must still comply with all applicable federal laws, including laws protecting these species. Additionally, as explained in the ASC, the harbor seal and the Steller sea lion may also enter the Bay. However, neither the harbor seal nor the Steller sea lion are state listed species. ASC, Exhibit Q, Q-36.

[506] No federal listing. ASC, Exhibit Q, Q-37.

[507] ASC, Exhibit Q, Q-37.

[508] ASC, Exhibit Q, Q-37—Q-38.

[509] ASC, Exhibit Q, Q-38.

The Point Reyes bird's beak was the only state listed plant species that was identified as occurring within the analysis area. As discussed above, to avoid potential impacts around the Point Reyes bird's beak populations from erosion and sedimentation, the department recommends the Council adopt Condition D.1, which requires the applicant to conduct all construction related activities in compliance with its NPDES 1200-C permit. In addition to Condition D.1, the department also recommends the Council adopt the following measure to ensure all proposed construction and operation activities are consistent with conserving and protecting the Point Reyes bird's beak populations:

Condition I.2: Prior to beginning construction, the certificate holder shall conduct pre-construction surveys for Point Reyes bird's beak populations. The certificate holder shall conduct pre-construction surveys within 1,000 feet of any area that would be disturbed by construction of the facility. If Point Reyes Bird's Beak populations are discovered, the certificate holder shall develop mitigation measures in consultation with the Oregon Department of Agriculture and submit to the department for approval. Proposed mitigation measures shall include brightly colored fencing and buffer zones. Construction activities shall be restricted until consultation with ODA has occurred and mitigation has been approved by the department.

While western snowy plover were not observed during wildlife surveys, and there is no critical habitat within the site boundary, the department recommends the Council adopt the following condition to ensure the proposed facility construction and operation do not attract predators to the area, which could, in turn, impact the western snowy plover populations on the North Spit.

Condition I.3: Prior to beginning construction, the site certificate holder shall develop a snowy plover mitigation plan, in consultation with the Fish and Wildlife Service.

Based on this analysis and subject to compliance with the recommended site certificate conditions, the department recommends that the Council find that the design, construction and operation of the proposed facility, will not significantly reduce the likelihood of the survival or recovery of any threatened or endangered plant or wildlife species listed under Oregon law.

IV.I.2. Threatened and Endangered Species: Conclusions of Law

Based on the foregoing findings of facts and conclusions, and subject to compliance with the recommended site certificate conditions, the Department recommends that the Council find that the proposed facility complies with the Council's Siting Standard for Threatened and Endangered Species.

IV.J. Scenic Resources [OAR 345-022-0080]

(1) Except for facilities described in section (2), to issue a site certificate, the Council must find that the design, construction and operation of the facility, taking into account

mitigation, are not likely to result in significant adverse impact to scenic resources and values identified as significant or important in local land use plans, tribal land management plans and federal land management plans for any lands located within the analysis area described in the project order.

(2) The Council may issue a site certificate for a special criteria facility under OAR 345-015-0310 without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

IV.J.1. Scenic Resources: Findings of Fact

OAR 345-022-0080 requires that the Council determine that the design, construction, and operation of the proposed Facility will not have a "significant adverse impact" to any significant or important scenic resources and values in the analysis area. For purposes of this rule, "local land use plans" includes applicable state management plans.

The proposed facility is not a special criteria facility under OAR 345-015-0310; therefore OAR 345-022-0080(2) is not applicable.

In order to find compliance with the standard, the Council must determine whether the proposed facility would create a "significant adverse impact" on scenic resources and values identified as 'significant' or 'important' within the analysis area. OAR 345-001-0010(53) defines 'significant' as:

(53) "Significant" means having an important consequence, either alone or in combination with other factors, based upon the magnitude and likelihood of the impact on the affected human population or natural resources, or on the importance of the natural resources affected, considering the context of the action or impact, its intensity, and the degree to which possible impacts are caused by the proposed action. Nothing in this definition is intended to require a statistical analysis of the magnitude or likelihood of a particular impact.

The applicant provided evidence about potential impacts to scenic resources in Exhibit R of the application. The analysis area for the Scenic Resources standard is the area within the site boundary and 10 miles surrounding the site boundary.

A. Visual Features of the Site and Proposed Facility

The SDP facility is proposed to be constructed at a site zoned for industrial use and formerly occupied by the Weyerhaeuser linerboard mill. The existing site is composed of large paved areas and an adjacent vacant area of sand covered with rough grass.[510] Because fill is to be

[510]ASC, Exhibit R, R-12.

placed on the site prior to construction, there will be no vegetation on the proposed site prior to commencement of construction.[511] To analyze the potential visibility of the proposed facility from scenic resources up to 10 miles away, the applicant performed an initial computer-based visibility analysis to determine the Zone of Visual Influence (ZVI) for lands within the analysis area.[512] According to the ASC, the ZVI analysis incorporated the SDP site layout and focused on the tallest and most prominent features of the facility:[513] the combustion stacks and the 115kV power transmission corridor poles, which, according to the ASC, would have the highest likelihood of being seen from surrounding areas.[514] For purposes of this analysis, the applicant assumed that the stacks would have a top elevation of 165 feet, the poles would a have top elevation of 163 feet and the air-cooled condensers would have a top elevation of 121 feet.[515]

As explained in detail in the ASC, the ZVI analysis uses a combination of digital elevation modeling and ERSI ArcGIS, which does have some limitations to note. The ZVI analysis does not include vegetative cover, minor topography, distant landscape background, or existing structures. Rather, it represents line of sight results under a 'bare earth' condition. Therefore, as explained by the applicant, the identified patterns of visibility are conservative because they overstate the potential for facility components to be seen.[516] Due to the limitations of the ZVI analysis the applicant also conducted aerial photo interpretation in order to better understand the visibility patterns from potential visual resources.[517]

B. Effect on Identified Scenic Values

In order to determine compliance with the Scenic Resources Standard, the Council must determine whether any of the land management plans in effect within the analysis area identify 'significant' or 'important' scenic resources or values. The Council must then determine whether the proposed facility would result in a significant adverse impact to identified 'significant' or 'important' scenic resources and values.

The applicant identified the following land management plans within the analysis area:

a. Oregon Dunes National Recreation Area (NRA) Management Plan 1994

[511] ASC, Exhibit R, R-12.
[512] ASC, Exhibit R, R-4
[513] As explained in the ASC, the proposed facility would dispose of heat from each power block using air-cooled condensers rather than an evaporative cooling tower. This method of cooling does not produce a condensed water vapor plume. Therefore, the proposed facility would not have a cooling tower, which produces the bulk of plumes that are generally associated with power plants. The proposed facility's heat recovery steam generator would produce water vapor and under certain climatic conditions, the water vapor may appear as a wispy translucent plume. However, according to the ASC, the plume would be infrequently and briefly visible (25% of the hours during a year, with 10% occurring during early morning visible hours). Therefore, the wispy, translucent would not constitute a significant visual impact on any scenic resources. ASC, Exhibit R, R-13.
[514] ASC, Exhibit R, R-4.
[515] As provided in the ASC, all figures are feet above sea level. ASC, Exhibit R, R-4.
[516] ASC, Exhibit R, R-4.
[517] ASC, Exhibit R, R-4.

b. Final North Spit Plan 2006, An Update to the Coos Bay Shorelands Plan of 1995, BLM (BLM North Spit Plan)
c. Coos Bay Shorelands Plan of 1995, BLM. This Plan was superseded by the Final North Spit Plan so analysis for this exhibit was based upon the BLM North Spit Plan.
d. Coos Bay Estuary Management Plan, Coos County, 1975
e. Coos County Comprehensive Plan
f. City of North Bend Comprehensive Plan
g. City of Coos Bay Comprehensive Plan 2000
h. City of Lakeside Comprehensive Plan2
i. Pacific Coast Scenic Byway Corridor Plan for US 101 in Oregon.

No tribal land management plans were identified.[518] Of the plans listed above, only the following plans specifically identify or discuss resources with scenic values: the Oregon Dunes NRA Management Plan; the BLM North Spit Plan; the Coos Bay Estuary Management Plan; Coos County Comprehensive Plan; City of Coos Bay Comprehensive Plan 2000; and the Pacific Coast Scenic Byway Corridor Plan for US 101 in Oregon. Table J.1, as provided in the application and reproduced below, includes a summary of the important visual resources that were identified in the applicable management plans, the specific plan which identified each resource, and the distance and direction from each resource to the facility. Each identified scenic area is discussed in more detail below.

Table J-1. Important Scenic Resources Identified in Applicable Federal and Local Management Plans that Pertain to Lands within 10 Miles of the Site Boundary

Scenic Resource	**Managing Jurisdiction**	**Applicable Plan Identifying the Resource**	**Approximate Distance in Miles and Direction from Facility**	**Is SDPP Potentially Visible, Based on Computer Modeling?**
Oregon Dunes National Recreation Area	USDA Forest Service	Oregon Dunes National Recreation Area Management Plan	0.75, north	Yes
BLM lands on the North Spit	BLM	BLM North Spit Plan of 2006	2.5, southwest	Yes
Coos Bay Estuary	Coos County	Coos Bay Estuary Management Plan, City of Coos Bay Comprehensive Plan 2000	Adjacent, south	Yes

[518] ASC, Exhibit R, R-6.

Shore Acres State Park	Oregon State Parks and Recreation Department	Coos County Comprehensive Plan	10, southwest	Yes
Sunset Bay State Park	Oregon State Parks and Recreation Department	Coos County Comprehensive Plan	10, southwest	Yes
Gregory Point	Coos County	Coos County Comprehensive Plan	8, southwest	Yes
Yoakam Point State Natural Area/State Park	Oregon State Parks and Recreation Department	Coos County Comprehensive Plan	8, southwest	Yes
Coos Head	Coos County	Coos County Comprehensive Plan	7, southwest	Yes
Pacific Coast Scenic Byway/ US 101	ODOT	Oregon Dunes National Recreation Area Management Plan, Pacific Coast Scenic Byway	0.75, east	Yes

Oregon Dunes National Recreation Area

As explained in the ASC, the Oregon Dunes NRA, which covers 31,500 acres and was established by an act of Congress in 1972, is recognized as one of the largest temperate coastal sand dune areas in the world and is managed for "public outdoor recreation and enjoyment" and "for the conservation of scenic, scientific, historic, and other values contributing to public enjoyment."[519] The NRA is administered by the USDA Forest Service (USFS).[520] As provided in the management plan, "primary viewsheds at the NRA are those seen from overlooks, roads and trials."[521] According to the ASC, important scenic resources identified within the plan and located within the analysis area include: all trails, Highway 101 and Horsfall [Beach] Road. Nearly all trails within the analysis area are sand-surfaced, and offer views of exposed wind-sculpted sand dunes, small lakes, and coastal spruce and fir forest, with some high dune points offering views of the Pacific Ocean.[522] Trails nearest the SDP site include Wild Mare Horse Trail and Bluebill Trail. According to the ASC, both trails are short (day-use trails) and are located in areas closed for off-road vehicle use. Regarding Highway 101, within Oregon, it is over 350 miles long and is classified as an All-American Roadway by the Federal Highway Administration.[523] Within the analysis area, Highway 101 offers westward views of sand dunes, lakes, and evergreen forest. Additionally, drivers and cyclists along Highway 101 may also

[519] ASC, Exhibit R, R-8.
[520] ASC, Exhibit R, R-8.
[521] ASC, Exhibit R, R-8.
[522] ASC, Exhibit R, R-8.
[523] ASC, Exhibit R, R-9.

occasionally glimpse views of the Pacific Ocean.[524] Horsfall Beach Road is located off Transpacific Parkway and is an access point to the NRA. According to the ASC, views along the road are screened by adjacent vegetation, and mostly limited to the road corridor, however, some brief views of Horsall and Bluebill Lakes may be available.[525]

As explained in the ASC, the USFS manages these specified viewsheds by established Visual Quality Objectives (VQO), which describe the desired condition of the landscape viewed from these points, and how much visible modification from a natural, undeveloped condition is acceptable. According to the ASC, VQO's range from 'preservation' to 'retention' to 'modification.'[526]As provided in the ASC, the VQO established for all trails and Highway 101 is 'retention,' and the VQO for Horsfall Beach Road is 'partial retention.' According to the ASC, 'retention' allows for slight alteration of the viewed area, although "to the average forest visitor, activities are not evident from the viewing location…Vegetation and landforms are used to screen facilities from unwanted views." 'Partial retention' calls for "management activities [that] are more apparent to the average forest visitor. These activities are visually subordinate to the natural landscape."[527] According to the ASC, the purpose of these VQOs is to manage vegetation removal and development activities while still allowing for some level of alteration of the natural landscape.[528]

Based on the applicant's visibility analysis, portions of the proposed facility would be visible from multiple high-point areas within the Oregon Dunes NRA, including potentially Horsfall Beach Road. However, based upon further field investigations, the applicant determined that views throughout the NRA are frequently limited to the foreground by changeable sand formations, conifer forest cover or a combination of these. Appendix R-6, Figure 6-1 of the ASC (included as Appendix J to this order) shows existing conditions and a visual simulation at the Horsfall Beach Observation Area and campground. As demonstrated in the photos included in Appendix J, views of the facility would be blocked by nearby sand dunes covered in vegetation and conifer trees.[529]

As discussed above, the trails and Horsfall Beach Road have VQOs of 'retention' or 'partial retention,' which allow for some level of alteration of the natural landscape. While the facility may be visible from various high-point locations within the NRA, the proposed facility would not result in a significant adverse impact to the scenic quality of the resource because the SDP features would not dominate or overwhelm views of the naturally present landforms or

[524] ASC, Exhibit R, R-9.
[525] ASC, Exhibit R, R-9.
[526] ASC, Exhibit R, R-8.
[527] ASC, Exhibit R, R-8.
[528] ASC, Exhibit R, R-14. To be clear, the proposed facility would be located on private lands beyond the jurisdiction of the visual resource management guidelines employed the agencies managing those lands. Nonetheless, the applicant has provided these guidelines as a point of context to consider while evaluating the facility's compliance with the Council's Scenic Resources Standard.
[529] ASC, Exhibit R, R-14.

vegetation.[530] Views from trails and roads within the NRA would be limited to the immediate foreground due to vegetation and sand formations, and, consequently, the proposed facility would not result in a significant adverse impact to the Oregon Dunes NRA.

BLM Lands on the North Spit

As explained in the ASC, the Final North Spit Plan specifically discusses the 1,864 acres of BLM-owned and administered lands on the North Spit. The plan's actions are in the pursuance of its goal "to conserve the natural, cultural, and recreational values of the Spit."[531] The Plan discusses visual resources and notes that the "public lands on the south shore of the North Spit are a dominant visual resource element in the overall scenic backdrop of the Coos Bay estuary."[532] The ASC, explains that, the Plan identifies BLM-owned lands on the Spit and differentiates each into three classes, which the BLM utilizes for visual resource management. Each class describes an acceptable level of visual change (or intrusion) to a purely natural landscape that may be visible from a given viewpoint; classes range from I to IV, with class IV allowing for 'major modification' and Class I requiring 'preservation.'[533]

According to the ASC, the nearest parcel of BLM land to the SDP site is located south of the Transpacfic Parkway and it is classified as Class III. The Class III objective for visual resource management is to partially retain the existing character of the landscape. Additionally, there are two undeveloped beach parcels, slightly farther south along the Spit, which are designated as Class II. The Class II objective is to retain the existing character of the landscape.[534] The undeveloped beach parcels are covered in dune grass and evergreen vegetation and have ocean views to the west.[535]

Based on the applicant's visual analysis and field investigations, the proposed facility would not be visible from the Class II undeveloped beach parcels because the proposed facility would be located approximately five miles away and would be physically blocked from view by the beach foredune, the undulating sand formations on the North Spit and forest cover.[536] The nearest Class III parcel would be located about three-quarters of a mile west of the main SDP site, north of the utility corridor and directly south of the Transpacific Parkway. According to the ASC, this parcel is somewhat isolated from other BLM lands on the North Spit and does not provide ocean views.[537] However, because of the proximity to the SDP site, the applicant created a second visual simulation to determine what could be seen from this location (see Appendix R-6, Figure 6-6 of the ASC). Based on the results of that simulation, looking east from the identified

[530] ASC, Exhibit R, R-14.
[531] ASC, Exhibit R, R-9.
[532] ASC, Exhibit R, R-9.
[533] ASC, Exhibit R, R-9.
[534] ASC, Exhibit R, R-9.
[535] ASC, Exhibit R, R-9. Another identified area to take in views exists at the BLM North Spit boat launch area. According to the ASC, this boat launch features broad views of the waters of Coos Bay
[536] ASC, Exhibit R, R-14.
[537] ASC, Exhibit R, R-15.

BLM parcel, views of the power plant would be blocked by trees and vegetation as a dense wooded area stands between the Class III area and the proposed facility.[538] However, the Class III area would have foreground views to the south of the proposed transmission line corridor and power poles.[539] The applicant's analysis indicates that two to three poles may be visible with one pole potentially visible in its entirety from the open sandy areas of the BLM land and another pole potentially visible and silhouetted against the sky.[540] However, as discussed above, Class III designations do allow for visually contrasting elements in the landscape, so long as they remain visually subordinate to their surroundings. As explained in the ASC, while multiple tall power poles in the foreground may not be considered visually subordinate by all viewers in an otherwise scenic resource area, there currently exists a railroad and the City of Coos Bay, both of which are visible from this location.[541] Therefore, even though there may be some visual quality loss as a result of the transmission corridor at this location, the proposed facility would not result in a significant adverse impact to the scenic resource. Nonetheless, the department recommends the Council adopt the following condition to further minimize the visibility of the poles:

> **Condition J.1:** The certificate holder shall paint or otherwise finish the facility structures in neutral colors with low reflectivity finish to provide visual integration with the surrounding landscape.

Coos County Resources

According to the ASC, the Coos County Comprehensive Plan discusses the value of scenic resources generally in Part I: Plan Provisions and Part II: Inventories. As explained in the ASC, Part I provides the following goal: "Coos County shall value its identified outstanding scenic views and sites and shall strive to protect them where practicable."[542] Part II of the Plan identifies several specific scenic resources that provide the "potential for exceptional coastal experience," including the following within the analysis area: "Shore Acres, Sunset Bay, Gregory Point, Yoakam Point, and Coos Head.[543]

As explained in the ASC, Shore Acres is located 10 miles southwest of the SDP site boundary. The park, which is a preserved residential estate, is situated on a rocky bluff overlooking the ocean and features a historic home and grounds, including several formally designed gardens and a trail that leads to ocean front views. Sunset Bay is located just to the north of Shore Acres, about 10 miles from the SDP site. According to the ASC, the beach is protected from strong surf by Gregory Point, a rocky promontory to the north of the beach. Yoakam Point is located north of Gregory Point, about 8 miles southwest of the SDP site boundary. The site

[538] ASC, Exhibit R, R-15.
[539] ASC, Exhibit R, R-15.
[540] ASC, Exhibit R, R-15.
[541] ASC, Exhibit R, R-15.
[542] ASC, Exhibit R, R-10.
[543] ASC, Exhibit R, R-10.

contains a wooded area with beachfront access and the rock formation of Yoakam Point, which jut into the ocean.[544]

Based on the applicant's visual analysis, the proposed facility would be visible from some high-points within Shore Acres. However, as explained in the ASC, the visual analysis does not take into consideration vegetative cover or minor topography. Shore Acres is mostly wooded and therefore views would be limited to the foreground forest vegetation.[545] Additionally, Shore acres is located about nine miles from the proposed SDP site and views from the north are blocked by the landforms of Gregory Point. Further, viewpoints within Shore Acres are focused on westward and southerly views of the Pacific Ocean or scenery surrounding the formal grounds of the historic site.[546] Accordingly, the proposed facility would not result in a significant adverse impact on Shore Acres.

Sunset Bay, is also located about nine miles from the proposed facility and consists of a small curving stretch of beach within a tiny cove between two tall rocky formations. The applicant does not anticipate the proposed facility to be visible from this location because of the low elevation vantage point and distance.[547] Therefore, the proposed facility would not result in a significant adverse impact on Sunset Bay.

Gregory Point is also located about nine miles from the proposed facility site. However, according to map and aerial photo analysis conducted by the applicant, the landscape between Gregory Point and the proposed facility would limit the visibility of the proposed facility as the landscape is largely covered with forested vegetation and undulating topography.[548] Therefore, the proposed facility would not result in a significant adverse impact to Gregory Point.

Lastly, Yoakam Point, is located about eight miles from the proposed facility. According to the ASC, views from Yoakam Point are focused mainly southward toward Gregory Point and the Cape Arago lighthouse on Chief's Island. Additionally, as there are limited opportunities for views from this area because there has been little developed improvement at the site and the site is covered with conifer forest vegetation.[549] Therefore, the proposed facility would not result in a significant adverse impact to Yoakam Point.

Coos Bay Estuary

As explained in the ASC, the Coos Bay Estuary Management Plan is a component of the Coos County Comprehensive Plan and the purpose of the plan is to "provide a complete use and

[544] ASC, Exhibit R, R-10.
[545] ASC, Exhibit R, R-16.
[546] ASC, Exhibit R, R-16.
[547] ASC, Exhibit R, R-16.
[548] ASC, Exhibit R, R-17.
[549] ASC, Exhibit R, R-17.

management plan for the water and intertidal areas of the bay."[550] Within the analysis area, Coos County identified Coos Head and its views of Coos Bay Estuary as an exceptional aesthetic resource. As explained in the ASC, Coos Head is a promontory located due south of the entrance to Coos bay. The site is accessible to motorists, however, it is not large enough to accommodate more than a few parked cars.[551] Boaters on Coos Bay would have views of the facility as they pass along the South, however, the Estuary is not explicitly managed for visual quality and the proposed facility site would be located on industrial lands and neighbored by an active wood chip terminal and power substation.[552] Therefore, while the proposed facility would be visible from Coos Bay it would not result in significant adverse visual impacts to the Coos Bay Estuary.[553]

City of Coos Bay Resources

Two scenic resources were identified as significant by the City of Coos Bay: the waterfront areas of the city and the Coos Bay estuary. Impacts to the Coos Bay Estuary are discussed above, There are no specific visual guidelines or management criteria that govern views from Coos Head.[554] As explained in the ASC, the proposed facility may be visible from Coos Head, just landward of the south jetty at the entrance to the Coos Bay navigation channel as the area is flat and mainly clear of vegetation. However, according to the ASC, the distance from Coos Head to the proposed facility is approximately seven miles, and therefore, the facility would be in the background and visually subordinate to the adjacent landscape.[555] Additionally, the applicant notes that weather conditions such as fog or precipitation would have a strong impact on the viewer's ability to see across the distance and discern structures at the facility.[556]. Based on these factors, the proposed facility would not result in a significant adverse impact to the Coos Head.

US Highway 101

As explained in the ASC, the Pacific Coast Scenic Byway Corridor Management Plan for US 101 in Oregon was developed to help guide and facilitate coordination among managing agencies to improve visitor experience and identify unique and important features along the route.[557] The Plan states: "US 101 makes the colossal landscape of the Oregon Coast accessible. Treasured places are found in each of the [designated] regions…its threading pavement ties together

[550] ASC, Exhibit R, R-10.
[551] ASC, Exhibit R, R-11.
[552] ASC, Exhibit R, R-16.
[553] ASC, Exhibit R, R-16.
[554] ASC, Exhibit R, R-17.
[555] ASC, Exhibit R, R-17.
[556] ASC, Exhibit R, R-17. According to the ASC, weather data collected at the Southwest Oregon Regional Airport indicates that Coos Bay receives over 160 days of measurable precipitation each year and fog is prevalent.
[557] ASC, Exhibit R, R-11.

coastal communities and presents the world unequaled scenic and natural qualities."[558] In the management plan, the only provision for scenery is a limitation on billboards.

As discussed in the ASC, the applicant created a visual simulation to show potential visibility looking toward the facility from US Highway 101 where it crosses Coos Bay north of North Bend using the most conservative data and view point (i.e. the distance to the facility in the simulation represents the view when the facility would be the closest to viewers form Highway 101).[559] Based upon the visual simulation, the proposed facility stacks would be visible although visually subordinate in the overall scenery because of the distance to Highway 101 and the background topography and forest cover of the sand dunes, which help to visually absorb the visible features. In addition, this view would be of only brief duration for motorists or cyclists.[560] Therefore, as the proposed facility would be visually subordinate to the surrounding landscape and only visible for a brief duration, the proposed facility would not result in significant adverse impact on US Highway 101.

While no significant adverse impacts to scenic resources were identified, the department recommends the Council adopt the following conditions to further reduce the visual impact of the facility on those resources, which may experience some views of the proposed facility:

> **Condition J.2:** The certificate holder shall implement and provide the department a final lighting plan that is in substantial conformance with the lighting plan included as Appendix K to this Order. The lighting plan shall include provisions minimizing exterior nighttime lighting, consistent with the lighting required or recommended by the Federal Aviation Administration and such lighting that is necessary for safety and security at the proposed facility

Based on this analysis, and subject to compliance with the recommended site certificate conditions, the Department recommends that the Council find that the design, construction, and operation of the facility are not likely to result in significant adverse impacts to scenic resources and values identified as significant or important in local land use plans, tribal land management plans, and federal land management plans for any lands located within the analysis area.

IV.J.2. Scenic Resources: Conclusions of Law

Based on the foregoing findings of facts and conclusions, and subject to compliance with the recommended site certificate conditions, the Department recommends that the Council find that the proposed facility complies with the Council's Scenic Standard.

IV.K. Historic, Cultural and Archaeological Resources [OAR 345-022-0090]

[558] ASC, Exhibit R, R-11.
[559] ASC, Exhibit R, R-17.
[560] ASC, Exhibit R, R-18.

(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that the construction and operation of the facility, taking into account mitigation, are not likely to result in significant adverse impacts to:

(a) Historic, cultural or archaeological resources that have been listed on, or would likely be listed on the National Register of Historic Places;

(b) For a facility on private land, archaeological objects, as defined in ORS 358.905(1)(a), or archaeological sites, as defined in ORS 358.905(1)(c); and

(c) For a facility on public land, archaeological sites, as defined in ORS 358.905(1)(c),

* * *

IV.K.1. Historic, Cultural, and Archaeological Resources: Findings of Fact

The Council's Historic, Cultural and Archaeological Resources standard requires the Council to find that the proposed facility is not likely to result in a significant adverse impact to historic, cultural or archaeological resources, archaeological objects and archaeological sites. OAR 345-022-0090(2) and (3) do not apply to this application because the proposed facility would not produce power from wind, solar or geothermal energy and the proposed facility is not a special criteria facility as defined in OAR 345-015-0310. Therefore, only the standards in OAR 345-022-0090(1)(a) through (c) apply to the proposed facility. The applicant addressed the Council's Historic, Cultural and Archaeological Resources Standard in Exhibit S of the ASC. As established in the project order, the analysis area for this standard is the area within the site boundary.[561]

A. Cultural Resource Discovery in the Project Area

To identify historic, cultural, and archaeological resources within the site boundary, the applicant retained R. Scott Byram, Ph.D to conduct a records review and field surveys. As explained in the ASC and as depicted in Figures S-1 and S-2, field surveys have covered the entire site boundary, except in wetlands and areas in close proximity to the wetlands.[562] The proposed facility is located entirely on private lands.

As detailed within the exhibit, the applicant's consultant conducted a records review at the Oregon State Historic Preservation Office (SHPO) in Salem. The consultant reviewed reports and forms associated with previous archaeological and historical studies to determine whether

[561] Pursuant to OAR 345-021-0010(1)(s), information concerning the location of historic, cultural and archaeological resources and/or objects may be exempt from public disclosure under ORS 192.502(4) or 192.501(11). Therefore, the applicant submitted a cultural resource technical report under separate cover to the Department.

[562] ASC, Exhibit S, S-7. ASC, Exhibit S, Figures S-1 and S-2.

buildings, structures, districts, objects or archaeological resources had been previously recorded within the site boundary and its vicinity. The literature review also included regional and local environmental histories, ethnographic studies and documents pertaining to local EuroAmerican history.[563] Beyond the literature reviews, the applicant also held consultations with SHPO and three Indian Tribes: (1) Confederated Tribes of the Coos, Lower Umpqua & Siuslaw Indians; (2) Coquille Indian Tribe; and (3) Confederated Tribes of the Siletz Indians.[564]

As explained in the ASC, two types of field surveys were completed: pedestrian surveys and surveys with shovels, probes and augers.[565] Pedestrian surveys were completed where the surface was visible or could not be easily penetrated and subsurface surveys were completed where the ground could be penetrated (excluding high dunes).[566] According to the ASC, the distance between probes ranged from 15 meters to 30 meters, with a shovel probing to depths from 50-70cm below the surface and an auger probing to depths of 3.5 meters in some areas.[567] Figure S-2 in the ASC shows the precise areas in which each survey method was used.

According to the ASC, based upon the seven cultural resource investigations completed on the site, no historic or cultural resources listed or likely to be eligible for listing on the National Register of Historic Places were identified within the analysis area.[568] In addition, the applicant found no significant archaeological deposits within the site boundary.[569] Further, no archaeological objects[570] or archaeological sites[571] have been identified within the analysis area.[572] The SHPO submitted a letter of concurrence, which stated that the project would likely not have any effect on any significant archaeological object or site and that no additional archaeological research was anticipated for this project.[573] However, ground disturbing activities associated with construction of the facility could have the potential to reveal historic or cultural resources not previously discovered. In the absence of mitigation, these ground disturbing activities have the potential to result in a significant adverse impact to previously unidentified historic or cultural resources. Consequently, the applicant has developed an

[563] ASC, Exhibit S, S-9.

[564] A summary of the applicant's consultation with SHPO is included in Exhibit S. Written correspondences between the applicant and SHPO and the applicant and the identified tribes were included in the confidential cultural resource materials submitted to the department.

[565] According to the ASC, when designing and implementing surveys, SHPO was consulted for recommendations. See ASC, Exhibit S, S-8.

[566] ASC, Exhibit S, S-8.

[567] ASC, Exhibit S, S-8.

[568] ASC, Exhibit S, S-4, S-7

[569] ASC, Exhibit S, S-7.

[570] Defined as "an object that: is at least 75 years old; is part of the physical record of an indigenous or other culture found in the state or waters of the state; and is material remains of past human life or activity that are of archaeological significance including, but not limited to, monuments, symbols, tools, facilities, technological by-products and dietary by-products." ORS § 358.905(1)(a)(A)–(C).

[571] Defined as "a geographic locality in Oregon, including but not limited to submerged and submersible lands and the bed of the sea within the state's jurisdiction that contains archaeological objects and the contextual associations of the archaeological objects." ORS § 358.905(1)(c)(A).

[572] ASC, Exhibit S, S-5.

[573] SDPAPPDOC286

Unanticipated Discovery Plan.[574] The Unanticipated Discovery Plan, included as Appendix S-1 of the ASC, outlines procedures for both the discovery of potentially significant cultural resources and the discovery of human remains.[575]

Therefore, in order to avoid potential impacts to later-discovered resources, the department recommends the Council adopt the following condition:

> **Condition K.1:** Before beginning construction, the certificate holder shall appoint a cultural resources monitor. If archaeological or cultural resources are found during construction of the facility, the certificate holder shall cease all ground disturbing activities in the immediate area, and the certificate holder shall implement the procedures contained in the Unanticipated Discovery Plan, incorporated as Appendix Q of this Order.

As discussed above, the applicant consulted with the Confederated Tribes of Coos, Lower Umpqua & Siuslaw Indians; the Coquille Indian Tribe; and the Confederal Tribes of the Siletz Indians. In response to the department's request for reviewing agency comment on the complete application, the Confederated Tribes of Siletz Indians submitted comment expressing their continued interest in the facility.[576] Therefore, the department recommends the Council adopt the following condition to ensure the tribes remain informed regarding facility construction and ground-breaking events:

> **Condition K.2:** The site certificate holder shall provide 72 hours' notice to the Confederated Tribes of the Coos, Lower Umpqua & Siuslaw Indians, the Coquille Indian Tribe, and the Confederated Tribes of the Siletz Indians prior to commencement of any ground disturbing/testing activities and invite tribal representatives to be present during all ground-breaking activities.

Based on the information in Exhibit S, as well as the information provided in the confidential cultural survey materials, the department recommends that the Council find that the proposed facility is not likely to result in a significant adverse impact to historic or cultural resources described in OAR 345-022-0090(1)(a).

IV.K.2. Historic, Cultural, and Archaeological Resources: Conclusions of Law

Based on the foregoing findings of facts and conclusions, and subject to compliance with the recommended site certificate conditions, the Department recommends that the Council find that the proposed facility complies with the Council's Historic, Cultural and Archaeological Resources Standard.

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[574] This plan was developed as part of an application to FERC for the Jordan Cove LNG Terminal; however it includes evaluation of all the land within the South Dunes site boundary. ASC, Exhibit S, S-10—S-11.

[575] Additional protection measures with reference to specific resources were outlined in the confidential cultural resource materials submitted by the applicant.

[576] SDPAPPDoc260.

IV.L. Recreation [OAR 345-022-0100]

(1) Except for facilities described in section (2), to issue a site certificate, the Council must find that the design, construction and operation of a facility, taking into account mitigation, are not likely to result in a significant adverse impact to important recreational opportunities in the analysis area as described in the project order. The Council shall consider the following factors in judging the importance of a recreational opportunity:

(a) Any special designation or management of the location;

(b) The degree of demand;

(c) Outstanding or unusual qualities;

(d) Availability or rareness;

(e) Irreplaceability or irretrievability of the opportunity.

** * **

IV.L.1. Recreation: Findings of Fact

The Recreation Standard requires the Council to find that the design, construction and operation of the facility are not likely to result in a significant adverse impacts to "important" recreational opportunities.[577] Therefore, the Council's recreation standard applies to only those recreation areas that the Council finds "important" using the factors listed in the sub-paragraphs of Section (1) of the standard. Because the proposed facility is not a special criteria facility under OAR 345-015-0310, OAR 345-022-0100(2) does not apply to the proposed facility.

To analyze the facility against this standard, the department must first evaluate whether the identified recreational opportunities are 'important.' The department must then evaluate whether the design, construction or operation of the proposed facility could adversely impact the identified important recreational opportunity. If the proposed facility could adversely impact the resource, then the department must consider the significance of the possible impact.

[577] OAR 345-001-0010(53) defines significant as "having an important consequence, either alone or in combination with other factors, based upon the magnitude and likelihood of the impact on the affected human population or natural resources, or on the importance of the natural resources affected, considering the context of the action or impact, its intensity and the degree to which possible impacts are caused by the proposed action. Nothing in this definition is intended to require a statistical analysis of the magnitude or likelihood of a particular impact."

The applicant provided evidence about potential impacts to important recreational opportunities in Exhibit T of the application. The project order identified the analysis area for the Recreation Standard as the area within the site boundary and five miles from the site boundary.

IV.L.1.a. Important Recreational Opportunities within the Analysis Area

As explained in the ASC, the area within the site boundary is privately owned, and contains no state, county or federally designated lands or otherwise identified special designations or management. Recreational opportunities within the five-mile analysis area include camping, hiking, beachcombing, wildlife viewing, cycling, off-road vehicle use, horseback riding, fishing, shellfish harvesting, and boating on Coos Bay.

In the ASC, the applicant identified 7 "important" recreational opportunities based upon an analysis of the factors listed in the Council standard.. The following section addresses each important recreation opportunity identified by the applicant within the analysis area and includes the department's recommendation to the Council regarding the 'importance' of the opportunity. Potential impacts to those identified 'important' recreational opportunities are then discussed in the next section.

State and Federal Lands

Oregon Dunes National Recreation Area/Siuslaw National Forest

The Siuslaw National Forest encompasses over 630,000 acres of unique and varying ecosystems. Coos County includes 11,000 acres of the National Forest. The Oregon Dunes National Recreation Area (Oregon Dunes NRA), stretches approximately 40 miles between Florence to the north and Coos Bay to the South and is the largest expanse of coastal sand dunes in North America.[578]The southern boundary of the Oregon Dunes NRA is one mile north of the SDP site boundary. The U.S. Forest Service, Siuslaw National Forest manages the Oregon Dunes NRA.

According to the ASC, the segment of the Oregon Dunes NRA within the analysis area is intensively used for motorized recreation in off-trail areas by dune buggies, motorcycles, and other off-road vehicles (ORV).[579] Non-motorized recreation opportunities within the Oregon Dunes NRA/Siuslaw National Forest, include sailing, hiking, wildlife viewing, beachcombing, and horseback riding. Hunting is also permitted in certain areas of the Siuslaw National Forest and includes big game, waterfowl, and fur-bearing animals. As provided in the ASC, over 400,000 visitors visit the day –use and overnight camping facilities of the Oregon Dunes NRA per year; the Siuslaw National Forest received over one million recreation visitors in 2011.[580]

[578] ASC, Exhibit T, T-6.
[579] ASC, Exhibit T, T-6
[580] ASC, Exhibit T, T-6.

As the ASC explains, the Oregon Dunes NRA/Siuslaw National Forest is a unique landscape because it is the only coastal dune system in North America, and presents many varied recreational opportunities.[581] While the forested lands and beach access are common west of the Coast Range, the wild nature of the Horsfall lands within the dune ecosystem and the Oregon Dunes NRA recreational management makes this area rare and irreplaceable. Thus, the applicant proposes that these areas are important recreational opportunities. The department concurs and recommends that the Council find that the Oregon Dunes NRA/Siuslaw National Forest is an important recreational opportunity as defined under OAR 345-022-0100(1) because the recreational opportunity possesses outstanding/unusual qualities, and is rare, irreplaceable and in high demand.

Oregon Shore State Recreation Area

All beaches in Oregon up to the vegetation line are public property and are managed by the Oregon Parks Department. The Oregon Shore State Recreation Area is located approximately one mile from the proposed transmission line within the site boundary.[582] The Oregon Shore State Recreation Area offers beachcombing, bird-watching, hiking and surfing. In addition, the beach recreation areas within the analysis area present uninterrupted views along the coast, without headlands and adjacent development, which is not common along other portions of the Coast.[583] Therefore, because of the unique features of the beach recreation area, applicant proposes that the Oregon Shore State Recreation Area is an important recreation area. The department concurs and recommends that the Council find that the Oregon Shore State Recreation Area is an important recreational opportunity as defined under OAR 345-022-0100(1) because the Oregon Shore State Recreation Area within the analysis area possesses unique/outstanding features which are rare, irreplaceable and in high demand.

Conde B. McCullough State Recreation Site

This 23-acre recreational site begins at a turnoff to North Bay Road near the north end of the McCullough Memorial Bridge and is located approximately one mile east of the northeast corner of the SDP site.[584] As explained in the ASC, the Conde B. McCullough State Recreation Site is a narrow, long and steep vegetated natural shoreline between Coos Bay and houses on the north side of North Bay Road. According to the applicant, there are limited to no recreational opportunities presented at this site as facilities are limited to one picnic table at a wayside and there is no camping or boat ramp. As explained in the ASC, views of the bay are often obscured by vegetation and the area presents no unusual or unique characteristics that would not be available at other parks in the area.[585] Therefore, the applicant proposes that this area is common and replaceable and thus is not an 'important' recreation site requiring further Council consideration. The department concurs, and recommends that the Council find that the Conde B. McCullough State Recreation Site is not an important recreational opportunity as

[581] ASC, Exhibit T, T-7.
[582] ASC, Exhibit T, T-5.
[583] ASC, Exhibit T, T-7.
[584] ASC, Exhibit T, T-7.
[585] ASC, Exhibit T, T-7.

defined under OAR 345-022-0100(1) because the site is common, replaceable and offers no unique/unusual characteristics in high public demand.

Oregon Coast Bike Route

The Oregon Coast Bike Route is a 730-mile signed bike route enjoyed by thousands of bicyclists annually. For the most part, it follows U.S. Highway 101 as a shoulder bikeway. At the intersection of U.S. Highway 101 and the Transpacific Parkway, the route is approximately one mile east of the SDP site.[586] As explained in the ASC, opportunities for impressive views occur along this segment of U.S. Highway 101. As discussed in the application, within the analysis area, the Oregon Coast Bike Route within the analysis area, presents rare views of dunes, an estuary, the Conde B. McCullough Bridge and cityscapes all from a single location. Therefore, the applicant considers the Oregon Coast Bike Route an important recreational opportunity. The department concurs and recommends that the Council find that the Oregon Coast Bike Route is an important recreational opportunity as defined under OAR 345-022-0100 (1) because the bike route offers viewscapes that are not provided elsewhere on the Oregon Coast, and, therefore, the Oregon Coast Bike Route provides a rare and irreplaceable recreational opportunity.

Coos Bay Estuary

The proposed site boundary borders the Coos Bay Estuary, which encompasses all of the waters of Coos Bay. The Coos Bay estuary covers 54 square miles of open channels and periodically flooded tidal flats. The submerged waters and tidelands in Coos Bay are the property of the state and managed by the Oregon Department of State Lands. The U.S. Army Corps of Engineers is responsible for maintenance of the Coos Bay navigation channel.

As explained in the ASC, the estuary is heavily used for recreational boating, angling, clamming, and crabbing. Clamming opportunities occur within the intertidal portions of Coos Bay, including along the Transpacific Parkway where the road crosses Haynes Inlet near U.S. Highway 101. Additionally, canoeists and kayakers utilize the sloughs, bay islands, and rivers draining into Coos Bay. The water trail closest to the SDP site is approximately one mile northeast in North Slough and Haynes Inlet east of the railroad bridge that crosses Coos Bay.

The applicant proposes that the Coos Bay Estuary is an important recreational opportunity because Coos Bay presents an opportunity for high quality fishing, boating, and shellfish harvesting.[587] Additionally, estuaries cannot be recreated and there is a high volume of recreational usage. The department concurs and recommends that the Council find that the Coos Bay Estuary is an important recreational opportunity, as defined under OAR 345-022-0100(1) because it possesses outstanding qualities, is in high demand and is not replaceable.

Coos Bay Shorelands—Including North Spit

[586] ASC, Exhibit T, T-8.
[587] ASC, Exhibit T, T-9.

The Coos Bay Shorelands extend from Florence to the mouth of Coos Bay, and includes approximately 3,750 acres within the planning boundaries and 1,700 acres in the public domain. According to the ASC, the biological and recreational resources of the Coos Bay Shorelands are similar in character to the Oregon Dunes National Recreation Area. The North Spit of Coos Bay is a strip of land between the Pacific Ocean and the waters of Coos Bay. The Bureau of Land management has managed the Coos Bay Shorelands since 1984.

As provided in the ASC, in the Coos Bay District Final Resource Management Plan, the Coos Bay Shorelands is designated as a Special Recreation Management Area, and the southern portion of the North Spit is designated as an Area of Critical Environmental Concern. Therefore, under this plan, the Coos Bay Shorelands are to be managed mainly as a natural area with conservation of botanical, cultural, and wildlife resource values while providing educational, interpretive, and recreational opportunities.[588] Further, according to the BLM Final North Spit Plan, the public lands managed by the BLM on the North Spit are "destined to become the largest and most accessible tract of public open space closest to the Coos Bay area communities."[589] Recreation facilities include a boat launch facility and courtesy dock, which provides access to the Coos Bay Estuary. Additionally, the Special Recreation Management Area provide 1,600 acres for OHV use along designated sand roads. Hunting of big game and waterfowl is also available on the North Spit and it is managed by ODFW. Further, as stated in the ASC, surfing is an important recreational activity in the ocean along the North Spit.[590] As also stated in the ASC, the recreational opportunities provided at the North Spit Coos Bay Shorelands are not rare or unique and similar recreational opportunities exist in the Oregon Dunes NRA and on other ocean spits in Oregon. However, the applicant proposes that this area is an important recreational opportunity because it is the closest opportunity for recreation on land between the ocean and the estuary for Coos Bay residents. The department agrees with the applicant's analysis, and recommends that the Council find that the North Spit Coos Bay Shorelands is an important recreational opportunity as defined under OAR 345-022-0100(1) because it is has a special management plan and is in high demand by the Coos Bay residents.

Cities of North Bend and Coos Bay

As provided in the ASC, the City of North Bend has over 60 parks. However, of the identified North Bend parks, the applicant asserts that none can be considered important using the factors listed in OAR 345-022-0100(1) because the parks are replaceable, the recreational amenities provided are not unusual and the facilities are common. Based upon the applicant's analysis in the ASC, the department concurs and recommends that the Council find that no North Bend parks qualify as "important" recreation opportunities as defined under OAR 345-022-0100(1).

The City of Coos Bay Parks Department owns and operates five city parks.

[588] ASC, Exhibit T, T-9.
[589] ASC, Exhibit T, T-9.
[590] ASC, Exhibit T, T-10.

- Mingus Park. Located near the downtown business district, this park has a lake, an arboretum on the northwest side of the lake, the city municipal pool to the north, playgrounds to the south, and a Japanese flower garden to the west. Mingus Park also has a paved trail that borders the water.
- Eastside Park. Located off 5th Avenue between D and E Streets, this small 0.9-acre is considered a neighborhood pocket park. The park includes a playground, open grass, picnic tables, and restrooms.
- Ed Lund Park. This neighborhood pocket park is adjacent to the Fire Hall.Many community activities are held here, such as the annual "Clamboree."
- Historic Hollering Place Wayside. Located at the narrowest crossing of the Coos Bay estuary, the area's original inhabitants recognized the value of this location to anyone traveling along the coast. Southbound travelers would "holler" across to the village and someone would paddle over to provide passage. Located on the deepest water in the west bay, the Hollering Place became the site of the first European settlement in what would later become Coos County.
- John Topits Park. Located in the northwestern section of Coos Bay, this 120-acre natural area encompasses the Empire Lakes and protected coastal dune and forest land. No motor boats are permitted on the lakes but canoes, kayaks and other non-motorized boats are allowed. There are 5.5 miles of pedestrian and cycling trails.

The applicant proposes that Eastside and Ed Lund parks are typical city parks, common and replaceable, and, therefore, do not qualify as important recreational opportunities under OAR 345-022-0100(1). Based upon the applicant's description of each park and the recreational opportunities offered, the department concurs. Additionally, while Mingus Park features a Japanese garden, small lake and Frisbee golf course, the applicant proposes that it is not important because it is replaceable and not unique as other parks in the nearby area offer the same amenities.[591] Because these amenities are readily available in other nearby parks, the department concurs with the applicant that Mingus Park is not an important recreational opportunity, as defined under OAR 345-022-0100(1).

Historic Hollering Place Wayside

As explained above, the Historic Hollering Place Wayside is the closest point to the North Spit, with historically the deepest water access (prior to dredging of the federal navigation channel). As described in the ASC, while the wayside offers little more than a parking area and interpretive signage, which could be replaced, the location of the resource is rare because there are not additional locations that were used for 'hollering' in Coos Bay.[592] Therefore, the site of the resource is irreplaceable. Additionally, the site is used during the annual "hollering" contest." Therefore, the applicant proposes that the Historic Hollering Place Wayside is an important recreational opportunity. The department concurs and recommends that the Council find that the Historic Hollering Place Wayside is an important recreational opportunity as defined under OAR 345-022-0100(1) because the resource is rare and irreplaceable.

[591] ASC, Exhibit T, T-12.
[592] ASC, Exhibit T, T-12.

John Toptis Park

As explained in the ASC, John Toptis Park and its recreational lakes are a remarkable feature in such a small city. Therefore, the applicant states that it should be considered an important recreational opportunity as it is somewhat rare and irreplaceable. The department concurs and recommends the Council find that the John Toptis Park is an important recreational opportunity as defined under OAR 345-022-0100(1) because it offers rare and irreplaceable recreational opportunities in the area.

Private Recreational Opportunities

As explained in the ASC, the applicant does not consider the North Spit Overlook (a private nature trail owned by Weyerhaeuser Company) along with multiple privately owned campgrounds to be important recreational opportunities because the opportunities provided are common and replaceable. The department concurs and recommends the Council find that the privately owned recreational opportunities within the analysis area are not important as defined under OAR 345-022-0100(1) because they are common and replaceable.

IV.L.1.b. Potential Impacts to Important Recreation Opportunities

Direct Loss

A direct loss occurs when construction or operation of the proposed facility would impact a recreational opportunity by directly altering the resource so that it no longer exists in its current state. The proposed energy facility, which is located entirely on private property, would not be located within the boundaries of any of the above identified important recreational opportunities and the facility.[593] As explained in the ASC, the barge berth is proposed to be situated below the highest measured tide elevation and is, therefore, in state jurisdictional waters; however, it is situated above the mean low water line elevation of 0.36 feet and is consequently not located within state owned lands. Because a security buffer is not anticipated to be required on state owned lands due to operation of the proposed facility, the area adjacent to the barge berth can continue to be used for recreational uses such as waterfowl hunting and salmon fishing during operation of the proposed facility. As explained in the ASC, during construction, temporary fill would be placed on state owned lands and recreational opportunities, such as hunting and fishing, would not be accessible in the Coos Bay Estuary directly adjacent to the barge berth.[594] However, this temporary placement of fill would impact only approximately 2.36 acres of the 34,560 acre Coos Bay Estuary. This impact would not represent a significant adverse impact because construction is of a limited duration and the placement of fill would temporarily impact less than 0.007% of the Coos Bay Estuary.[595]

Indirect Loss

[593] ASC, Exhibit T, T-14.
[594] ASC, Exhibit T, T-15.
[595] ASC, Exhibit T, T-15.

Indirect loss is assessed in relation to potential noise, traffic, and visual impacts from the facility to identified important recreational opportunities.

A. Noise

The applicant provided information about predicted noise levels resulting from construction and operation of the proposed facility in Exhibit X of the ASC. Generally, as provided in the ASC, noise resulting from construction would be intermittent and variable.[596] Recreation areas north of the site, including parts of the Oregon Dunes NRA and the Horsfall area of the Siuslaw National Forest, are located one mile away or less and, consequently, may receive audible sound levels.[597] According to Table X-2, the estimated average construction sound levels at the Horsfall area would range from 48-67 dBA. For sound level context, Off-Road Vehicle allowable noise limits are 78dBA while moving at 50 feet and 95-97 dBA while stationary at 20 feet.[598] As provided in the ASC, the sound levels estimated in Table X-2 are conservative representations because attenuation due to ground absorption, atmospheric absorption, and shielding from terrain were not factored in or otherwise included. Additionally, the "average" sound levels assume that all equipment for each phase of construction is operating simultaneously at similar distances. Therefore, the sound levels provided in Table X-2 represent 'worst-case' scenarios. Thus, because construction noise would be of a limited duration, intermittent and variable, noise levels at even the estimated "average" construction sound levels would not result in a significant adverse impact to the identified recreational opportunities.

Boaters and angles on the Coos Bay Estuary may be impacted to a greater degree than other recreational users because sound travels over water and with no sound attenuation from topography or vegetation cover.[599] However, because construction noise would be temporary and the allowable noise limits for boats atmospheric exhausts is 84 dBA while moving and 100 dBA while stationary at 20 inches, construction of the proposed facility would not result in a significant adverse impact to the recreational opportunities afforded at Coos Bay Estuary.

For users of other important recreational opportunities, noise emissions from construction of the proposed facility is not likely to result in a significant adverse impact because typical sound levels associated with construction would not rise above the existing background sounds due to the distance between the proposed site and the recreational opportunities.[600]

Following construction, operational sounds would originate primarily from various equipment packages within the SDP. According to the applicant's noise contour analysis, recreational users of the Coos Bay Estuary may be able to hear low-level sounds from the operating plant during times when background noise from other industrial facilities on the North Spit (i.e. U.S.

[596] ASC, Exhibit T, T-15.
[597] ASC, Exhibit T, T-16.
[598] ASC, Exhibit T, T-16.
[599] ASC, Exhibit T, T-16.
[600] ASC, Exhibit T, T-16.

Highway 101, ORV activities in the sand dunes, the Southwest Oregon Regional Airport) are not loud enough to mask it.[601] In areas close to the shore near the main SDP site, noise levels may exceed 55 dBA, however, at Horsfall Sand Campground, operational noise level are expected to be between 45 and 50 dBA, which is below the regulatory threshold set by ODEQ. For sound level context, 50 decibels is a level of sound equated with conversation in a home.[602]Therefore, at these levels, operation of the proposed operational would not result in a significant adverse impact to any recreational opportunity within the analysis area due to noise emission levels.

Based upon the applicant's analysis, the department recommends the Council find that the construction and operation of the facility would not result in a significant adverse noise impact to any important recreational opportunity.

B. Traffic

Access to the proposed site would be from the Transpacific Parkway via Oregon Coast Highway (US 101). The Transpacific Parkway also provides access to the following important recreational opportunities: the Oregon Dunes NRA, the Horsfall Area, the Oregon Shore State Recreation Area, the North Spit, and the Coos Bay Shorelands. As discussed in greater detail under the Council's Public Services Standard (below) the anticipated increase in traffic associated with the construction and operation of the proposed facility would not result in a significant adverse impact to traffic on US 101 as all affected intersection along both the Transpacific Parkway and US 101 are expected to meet all jurisdictional standards, based upon the applicant's traffic impact analysis.[603] Further, the applicant is proposing an asymmetrical widening on the northern side of the Transpacific Parkway/US 101 intersection.[604] The parkway would be widened approximately 900 feet to provide a left-turn lane onto Highway 101. The applicant is proposing this improvement because an increase in vehicle trips heading eastbound along Transpacific Parkway is expected to result in an increase in queue lengths approaching US 101, and an increase in queue lengths corresponds to an increase in vehicle delay. As explained in the ASC, an increase in vehicle delay can cause typical drivers to begin to accept smaller gaps in traffic, which could result in an increase in traffic accidents.[605] Therefore, although the intersections impacted by facility traffic would still satisfy jurisdictional targets, to mitigate any potential safety risks associated with possible vehicle delays approaching Highway 101, the applicant proposes to widen the Transpacific Parkway and Highway 101 intersection. Consequently, recreational opportunities accessed via the Transpacific Parkway would not be

[601] ASC, Exhibit T, T-17.
[602] ASC, Exhibit T, T-17.
[603] ASC, Exhibit T, T-17.
[604] The applicant originally proposed to symmetrically widen Transpacific Parkway; however, after further review it was determined that this would require traffic lane closure during construction of each side of the widened roadway for a minimum of 5 months per side. This would have negatively impacted commercial operations at North Spit businesses because it would have constrained truck traffic as well as resulted in avoidable utility conflicts. Therefore, the applicant supplemented the ASC with the preferred alternative. SDPAPPDoc274.
[605] ASC, Exhibit T, T-18.

adversely impacted due to traffic related to the construction and operation of the proposed facility.

C. Visual Impacts of Facility Structures or Plumes

The applicant proposes to dispose of heat from each power block using air-cooled condenser (ACC's) rather than evaporative cooling tower. ACC's do not produce a condensed water vapor plume.[606] However, the proposed facility's combustion turbine heat recovery steam generators would produce water vapor and under certain climatic conditions the water vapor would appear as a wispy translucent plume.[607] According to the ASC, based upon plume studies performed for similar combined cycle generating facilities, condensed combustion vapor plumes would form for as many as 25% of the hours during a year, with 10% occurring during the early morning (dawn to mid-morning) with scant few occurring during the early evening (later afternoon to dusk); the remaining 15% occurring during the night.[608] Therefore, for the remaining 75% of hours during the year, no visible vapor plume would form. Of the important recreational opportunities, the plume may be visible from the Coos Bay Estuary, the Oregon Coast Bike Route, and potentially from limited portions of the Oregon Dunes NRA, the North Spit and the Horsfall Area.[609] However, due to the limited time that plumes would occur and the wispy translucent nature of the plume, the proposed facility's plume would not result in a significant adverse impact to any important recreational opportunities.

Construction of the proposed facility itself would be visible to recreational uses from waters of the Coos Bay, limited portions of the Coos Bay Shorelands and portions of the Oregon Coast Bike Route. Additionally, construction activities would also be noticeable to motorists using the Transpacific Parkway to access recreational activities on the North Spit and in the Horsfall Area.[610] According to the ASC, visual effects from construction activities would include dust and views of construction equipment on the site. Because construction activities are temporary and limited, construction of the proposed facility would not result in a significant adverse visual impact to important recreational opportunities.

As explained in the ASC, the most visible features of the operating SDP would be the 165 foot high (above sea level) exhaust stacks. When viewed from the Coos Bay Estuary, the exhaust stacks would present a visual contrast relative to the dunes, forest, and adjacent natural landscape to the north. Other structures visible on the proposed site would include the transmission towers, the air-cooled condensers and the control, administration and warehouse buildings.[611] Based upon the applicant's visual modeling, the proposed facility may be visible, in whole or in part, from very limited southern portions of the Oregon Dunes NRA and from limited portions of the Coos Bay Shorelands SRMA, including the BLM boat launch. Additionally,

[606] ASC, Exhibit T, T-19.
[607] ASC, Exhibit T, T-19.
[608] ASC, Exhibit T, T-19.
[609] ASC, Exhibit T, T-19.
[610] ASC, Exhibit T, T-18.
[611] ASC, Exhibit T, T-20.

the zone of visual influence (ZVI) analysis conducted for Exhibit R of the ASC, indicates that portions of the proposed facility would be seen from John Topits Park; however, as explained in the ASC, the park is forested, and so views of any part of the SDP are highly unlikely.[612] The ZVI analysis also indicates that portions of the SDP may be seen from the Historic Hollering Place Wayside; however, the Wayside faces primarily west northwest, and the SDP is oriented northeast of the Wayside. Thus, because it would not be in the line of site, views of the SDP would not be a part of the visitor's experience at the Wayside. According to the ASC, the facility would be noticeable for short periods of time to cyclists and sightseeing motorists using Highway 101, but would be seen from over a mile away and viewed in the context of currently existing industrial uses, including, the Southwest Oregon Airport and the Roseburg Forest Product facility, and, consequently, not in contrast relative to the landscape setting.[613]

The applicant's analysis indicates that overall the proposed facility would be visually consistent with other industrial elements present in the North Spit viewshed. It would not introduce a previously unseen development pattern in the analysis area. Additionally, views of the SDP would not block or otherwise visually dominate existing scenic vistas seen from recreational areas.[614] Therefore, even though the proposed facility may be visible or partially visible from identified important recreational facilities, it would not result in significant visual impact to the recreational opportunity provided.

Based on this analysis, the department recommends that the Council find that the design, construction and operation of the proposed facility are not likely to result in a significant adverse impact to any important recreational opportunities in the analysis area

IV.L.2. Recreation: Conclusions of Law

Based on the foregoing findings of facts and conclusions, and subject to compliance with the recommended site certificate conditions, the Department recommends that the Council find that the proposed facility complies with the Council's Recreation Standard.

IV.M. Public Services [OAR 345-022-0110]

> *(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that the construction and operation of the facility, taking into account mitigation, are not likely to result in significant adverse impact to the ability of public and private providers within the analysis area described in the project order to provide: sewers and sewage treatment, water, storm water drainage, solid waste management, housing, traffic safety, police and fire protection, health care and schools.*

[612] ASC, Exhibit T, T-20.
[613] ASC, Exhibit T, T-20.
[614] ASC, Exhibit T, T-20.

(2) The Council may issue a site certificate for a facility that would produce power from wind, solar or geothermal energy without making the findings described in section (1). However, the Council may apply the requirements of section (1) to impose conditions on a site certificate issued for such a facility.

** * **

IV.M.1. Public Services: Findings of Fact

The Council's Public Services standard requires the Council to identify likely significant adverse impacts to the ability of public and private service providers to supply sewer and sewage treatment, water, storm water drainage, solid waste management, housing, traffic safety, police and fire protection, health care, and schools. OAR 345-022-0110(2) and (3) do not apply to the proposed facility because it would not produce power from wind, solar or geothermal energy and the facility is not a special criteria facility as defined in OAR 345-015-0310. Therefore, only the criteria specified in OAR 345-022-0110(1) apply to the proposed facility.

The applicant provided information in Exhibit U of the ASC regarding the potential impacts of the facility on public services. The Project Order identified the analysis area for the standard as the area within the site boundary and 10 miles from the site boundary. The project is proposed to be located in Coos County, Oregon.

A. Sewage, Storm Water, and Solid Waste

During construction, the applicant proposes to utilize a contractor to provide and maintain portable toilets for the construction crew. Sanitary wastes would be collected during periodic maintenance and would be hauled off site to a permitted disposal facility. Consequently, as stated in the ASC, because these units would be privately contracted they would not present a significant adverse impact to the local wastewater treatment facilities.[615]During operations, it is anticipated that sanitary wastewater would be managed onsite in a permitted onsite sewage disposal facility and disposed of through the industrial wastewater pipeline and the Oregon International Port of Coos Bay ocean outfall line, or potentially stored, transferred and treated at the North Bend wastewater treatment plant or other permitted wastewater treatment facility.[616] According to the ASC, the anticipated wastewater flow (between 2 and 3 gallons per minute) would be insignificant to the industrial wastewater pipeline that has an estimated capacity of 3.6 to 4.0 million gallons per day.[617] Further, the City of North Bend has confirmed that it could accept this wastewater.[618] Based upon the above, in consideration of North Bend's confirmation as well as the available capacity of the wastewater pipeline,[619] the construction

[615] ASC, Exhibit U, U-32.
[616] ASC, Exhibit U, U-32.
[617] ASC, Exhibit U, U-32.
[618] ASC, Exhibit V, V-13.
[619] As discussed in more detail under the Council's waste minimization standard, discharges to Coos Bay are regulated under the Clean Water Act and require an NPDES permit. Because NPDES permits are federally-delegated permits issued by ODEQ, they fall outside of Council's jurisdiction.

and operation of the proposed facility would not likely result in a significant adverse impact to sewers and sewage treatment providers in the analysis area.

As discussed under the Council's Soil Protection standard, stormwater would be managed onsite in accordance with National Pollution Discharge Elimination System Stormwater Discharge Permits and the necessary Erosion and Sediment Control Plan.[620] As discussed under the Council's Waste Minimization Standard, non-contact stormwater would be directed to the infiltration basin with contact stormwaters discharged to the industrial wastewater pipeline, which, according to the ASC, has sufficient capacity.[621] Based on the analysis under those standards, the applicant is proposing appropriate measures to avoid or reduce erosion from stormwater run off during construction and operation of the proposed facility and stromwater would be appropriately managed so as to not impact the public service provides within the analysis area.

Solid waste during construction would primarily consist of pallets, wood packing, steel banding, steel cutoffs, cardboard packing, wood cutoff, concrete waste, and office refuse. According to the ASC, recyclable materials would be segregated and transported to acceptable sites for recycling and non-hazardous wastes would be transported to an approved landfill such as the Dry Creek Landfill, Republic Services or Waste Management. Only those materials that cannot be recycled would become wastes. The applicant anticipates that approximately five tons of solid waste would be disposed of monthly during construction.[622] During operations, the applicant estimates that approximately 10 tons of non-hazardous wastes would be produced per year. As with construction, recyclable materials would be segregated and transported to an approved site.[623]

As discussed in greater detail under the Council's Waste Minimization Standard, the SDP is expected to qualify as either a small quantity generator or a conditionally-exempt small quantity generator of hazardous wastes. As explained in the ASC, the applicant anticipates that less than one truckload of hazardous waste would be transported every three months during construction.[624] Regarding on-site management, the applicant states that hazardous waste would be segregated from and kept in storage away from non-hazardous materials, with the storage areas inspected weekly. During construction and operation, hazardous wastes would be removed from the site by licensed hazardous waste transporters and there are currently three permitted commercial hazardous waste facilities within reasonable proximity to the SDP.[625]

As explained in the ASC, the applicant anticipates minimal impact on the local community because multiple regional solid waste providers are prepared to ship solid waste to landfills

[620] ASC, Exhibit U, U-33.
[621] ASC, Exhibit U, U-33.
[622] ASC, Exhibit U, U-33—U-34.
[623] ASC, Exhibit U, U-34.
[624] ASC, Exhibit U, U-15.
[625] ASC, Exhibit U, U-16.

outside of Coos County.[626] Table M-1, reproduced from the application and provided below, identifies each potential waste disposal facility as well as the type of wastes accepted and their capacity to receive wastes.

Table M-1 Waste Disposal Facility Information

Facility	Non-Hazardous	Construction Debris	Hazardous Waste	Available Capacity
Dry Creek Landfill 8001 Table Rock Rd. White City, OR 97503	Yes	Yes	No	Yes
Waste Management Columbia Ridge Landfill 18177 Cedar Springs Ln. Arlington, OR 97812	Yes	Yes	No	Yes
Republic Services Coffin Butte Landfill 29175 Coffin Butte Rd. Corvallis, OR 97330	Yes	Yes	No	Yes
Chemical Waste Management of the Northwest Landfill 17629 Cedar Springs Lane Arlington, OR 97812	No	No	Yes	Yes
U.S. Ecology 20400 Lemley Road Grand View, ID, 83647	No	No	Yes	Yes
Clean Harbors Aragonite Incineration Facility Aragonite Rd Grantsville, UT 84029	No	No	Yes	Yes

In addition to the above table, the applicant also provided written confirmation from each identified waste disposal facility, which confirmed their capacity to receive non-hazardous solid waste from the proposed facility.[627] Based upon the above information, as well as the anticipated waste production, construction and operation of the proposed facility would not result in a significant adverse impact to the solid waste service providers in the area due to the limited amount of waste to be produced by the facility as well as the available capacity of the service providers.

[626] ASC, Exhibit U, U-14.
[627] ASC, Exhibit U, Appendix U-1.

B. Water

As discussed in Exhibit O, water for construction and operation of the proposed facility would be provided by and purchased from the CBNBWB municipal water system.[628] The CBNBWB has a system capacity of 4,000 gallons per minute.[629] The applicant estimates approximately 32 million gallons of water would be required throughout construction of the facility and 806,400 gallons per day for average daily operational water use.[630] The applicant also estimates that the potable and sanitary systems use would be approximately 4,300 gallons per day based on a 24-hour daily staff of 45 full-time equivalents, spread over three shifts per day.[631]

The CBNBWB provided a letter to the applicant on September 05, 2013, which stated that it could provide two, permanent potable water service connections and one permanent raw water service. The letter further stated the community's water supply and production needs, and the applicant's water availability needs are comfortably accounted for.[632] Therefore, based upon the above estimates and the CBNBWB letter, the construction and operation of the proposed facility would not result in a significant adverse impact to the areas water supply.

C. Housing

As stated in the ASC, there are approximately 11,775 housing units within the cities of Coos Bay and North Bend. According to the ASC, of the existing housing units in Coos County, there is a vacancy rate of 11.3% or roughly about 3,460 non-seasonal housing units available.[633] The applicant estimates that an average of 500 workers would be required during peak construction of the facility. However, while the applicant estimates requiring up to 500 personnel, the applicant anticipates that approximately 40%-60% of the construction workers would be hired locally and, therefore, already established within the area.[634] Nonetheless, for the personnel that is not local, the applicant anticipates that the average worker would be onsite for about 12 months, which would require temporary housing accommodations within a commuting distance to the facility. Accordingly, the applicant has proposed to construct temporary workforce housing to accommodate up to 2100 construction workers, which would prove more than adequate to house all workers associated with the proposed SDP facility. However, as with other construction projects, the applicant anticipates that many workers from outside of the local area would utilize their own personal campers and trailers for housing.[635] Table U-8 of the

[628] Because the applicant is relying upon another's permit for access to this resource, it is addressed as a third-party permit under the Council's Organizational Expertise Standard, above.
[629] ASC, Exhibit U, U-10.
[630] ASC, Exhibit U, U-12.
[631] ASC, Exhibit U, U-12.
[632] ASC, Exhibit U, U-13. According to the ASC, the CBNBWB has also reported that there is excess unused water supply capacity within the CBNBWB system and that they could install additional water lines to support SDP without impacting other uses. ASC, Exhibit U, U-33.
[633] ASC, Exhibit U, U-26.
[634] ASC, Exhibit U, U-25.
[635] ASC, Exhibit U, U-26.

ASC, provided a list of each recreational vehicle site within 75-minutes of North Bend. In addition to the applicant proposed housing and the available recreational vehicle hook-ups, the applicant provides that there also approximately 1,236 available motel and other temporary housing units within Coos Bay.[636] During operation, the applicant anticipates approximately 45 full-time jobs.[637] Therefore, based upon the housing proposed by the applicant, in addition to the vacancy rates and motel/recreational vehicle sites, the construction and operation of the proposed facility would not result in a significant adverse impact on the local housing supply.

D. Traffic Safety

The applicant performed a traffic impact analysis (TIA) to identify the potential effects associated with the construction and operation of the proposed SDP on traffic operations and roadway facilities in the area. Access to the SDP site would be from the TransPacific Parkway via Oregon Coast Highway (US 101).[638] During construction, facility related traffic would consist primarily of material deliveries and construction personnel traveling inbound and outbound. Because of the lack of available parking in the area near the SDP site, the applicant proposes to transport construction personnel to the site by buses or other transit vehicles, which would alleviate a large influx of vehicle traffic at shift changes.[639] However, because the traffic impacts of construction far outweigh the impacts associated with operation, the applicant's TIA focused specifically on the traffic impacts of construction.[640]

According to the ASC, the analysis focused on the following intersections due to the potential for impacts from facility construction:

- US 101 at Transpacific Parkway
- US 101 at East Bay Drive
- US 101 at Ferry Road
- Transpacific Parkway at New Private Driveway (Entrance A)
- Transpacific Parkway at Jordan Cove Road (Entrance C)
- Transpacific Parkway at Horsfall Beach Road
- Transpacific Parkway at Boxcar Hill (Entrance D)

As explained in the ASC, the analysis evaluated both existing and future background traffic operations, including an analysis of the peak use period in the summer month of August, when recreational traffic conditions are expected to coincide with the peak construction of SDP.As further explained in the ASC, to understand the construction related impacts, site-generated trips from construction activities were estimated and assigned to the transportation network

[636] ASC, Exhibit U, U-26.
[637] ASC, Exhibit U, U-28.
[638] ASC, Exhibit U, U-29.
[639] ASC, Exhibit U, U-29.
[640] ASC, Exhibit U, Appendix U-4, pg. 2. During operations, the applicant anticipates only approximately 45 daily employees and occasional deliveries.

then added to background volumes to estimate total traffic. The applicant's estimated construction trip generation is:

- AM Peak Period
  - 18 delivers (including security) inbound to site
  - 24 bus trips (12 inbound/12 outbound)
  - 34 inbound personal vehicle trips

- PM Peak Period
  - 18 deliveries (including security) outbound from site
  - 27 bus trips (13 inbound/14 outbound)
  - 50 outbound personal vehicle trips[641]

Based upon the applicant's analysis, the addition of construction-related traffic volumes onto the traffic network would not have a significant operational impact to the surrounding intersections as no locations would exceed operational targets.[642] While the proposed facility would have little to no operational degradation at any of the study area intersections, the applicant proposes an asymmetrical widening on the northern side of the intersection of Transpacific Parkway and US 101.[643] The parkway would be widened approximately 900 feet to provide a left-turn lane onto Highway 101. The applicant is proposing this improvement because an increase in vehicle trips heading eastbound along Transpacific parkway is expected to result in an increase in queue lengths approaching US 101, and an increase in queue lengths corresponds to an increase in vehicle delay. As explained in the ASC, an increase in vehicle delay can cause typical drivers to begin to accept smaller gaps in traffic, which could result in an increase in traffic accidents.[644] Therefore, although the intersections impacted by construction traffic would still satisfy ODOT operational targets, to mitigate any potential safety risks associated with possible vehicle delays approaching Highway 101, the applicant proposes to widen the Transpacific Parkway and Highway 101 intersection.

Based upon the above, no adverse impacts to traffic safety would result from the construction and operation of the proposed facility. However, the department recommends the Council adopt the following condition requiring the applicant to undertake the proposed intersection widening.

Condition M.1: The certificate holder shall undertake the intersection widening on the northern side of the intersection of Transpacific Parkway and US 101 as described in the application for site certificate. The certificate holder shall work with the Oregon Department of Transportation as well as the Coos County Road Department in designing, installing and implementing the road widening. The certificate holder shall keep business

[641] ASC, Exhibit U, Appendix U-4, pg. 9.
[642] ASC, Exhibit U, Appendix U-4, pg. 12.
[643] SDPAPPDoc274.
[644] ASC, Exhibit L, L-9.

and land owners on the North Spit appraised of the schedule and potential transportation impacts. The certificate holder shall provide the department a written progress report on the intersection widening, as well as evidence of consultation with the ODOT and the County at least 90 days prior to the commencement of construction.

Condition M.2: Upon completion of construction, the certificate holder shall restore public roads to pre-construction conditions or better to the satisfaction of the Coos County Road Department.

The ASC includes an evaluation of the proposed facility's potential impacts to the Southwest Oregon Regional Airport (SORA), which is located in North Bend, approximately one mile south of the SDP facility. The SORA is operated by the Coos County Airport District as a public-use facility and has commercial, corporate, and general aviation services, as well as related support facilities (ground transportation, aircraft re-fueling, travel agents, a small business development center).[645] As explained in the ASC, the applicant submitted the required Notices of Proposed Construction or Alteration (form 7460-1) to the Federal Aviation Administration[646] for the proposed facility. Submittal of these forms allows the FAA to evaluate the effect of the construction on operating procedures, determine any potential hazards to air navigation, chart new objects (i.e. proposed structures), and determine appropriate mitigation measures. The notices submitted by the applicant included the structures of the energy facility as well as the proposed transmission line along the utility corridor. The SORA's horizontal surface[647] is 167 feet above sea level, based on Part 77 Imaginary Surface criteria. Therefore, if a structure is above the 167-foot elevation, the structure could be deemed a hazard to air navigation. As provided in the ASC, no structures within the EFSC site boundary are above the 167 foot elevation.[648] In response to the notices, according to the ASC, the FAA issued Determinations of No Hazard[649] and stated that no mitigation measures such as lighting or marking are required for aviation safety. [650][651]

[645] ASC, Exhibit U, U-30.

[646] The applicant also provided the 7460 forms to the Oregon Department of Aviation and identified those structures located within the EFSC site boundary for ODA review.

[647] According to FAA FAR Part 77, a horizontal surface is a horizontal plane 150 feet above the established Airport Elevation, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the Primary Surface of each runway. Tangents then connect the adjacent arcs. Size of arcs as follows: a. For all runways designed visual or utility, the radius of each arc is 5,000 feet; b. For PIR and non-precision instrument runways, the radius of each arc is 10,000 feet.

[648] ASC, Exhibit U, U-38.

[649] ASC, Exhibit U, U-30. The FAA No Hazard Determinations are included in Exhibit E, Appendix E-6 and E-7.

[650] ASC, Exhibit U, U-37.

[651] The Oregon Department of Aviation provided comment on the submitted notices as well and determined that five structures exceeded the horizontal surface. SDPAPPDoc257. However, those five structures are outside the EFSC site boundary and are therefore not part of this application or subject to EFSC review. SDPAPPDoc272.

Because the FAA Determinations have an expiration date of 1/24/2016[652], and to ensure final selected equipment heights remains below 167 feet, the department recommends the Council adopt the following condition, should construction begin after that date:

> **Condition M.3**: Before beginning construction, the certificate holder shall submit to the department documentation of continuing consultations with the FAA and Oregon Department of Aviation, the results of any additional studies conducted by the FAA, and copies of any determinations of findings made with respect to the South Dunes Power Plant and related and supporting facilities from the FAA and ODA.

Beyond hazard determinations, the Oregon Department of Aviation (ODA) submitted comments to the department regarding the location of the stormwater detention basin in proximity to the airport. Specifically, ODA cited to ORS 836.623(2)(a)(A), which states:

> (2) The following requirements and conditions shall apply to safety risks associated with potential bird strike hazards resulting from new water impoundments proposed in close proximity to an airport identified under ORS 836.610 (Local government land use plans and regulations to accommodate airport zones and uses):
>
> (a) No new water impoundments of one-quarter acre or larger shall be allowed:
>
> (A) Within an approach corridor and within 5,000 feet from the end of a runway."

Under the statute, both criteria must apply for the rule to be applicable; therefore, the water impoundment must be in an approach corridor and within 5,000 feet of the end of the runway. Neither Oregon statute or rule defines 'approach corridor,' however, the term 'approach surface' is defined as a trapezoidal plane longitudinally centered on the extended runway centerline and extending outward and upward from a point starting 200 feet from each end of the runway.[653] Accordingly, the approach corridor must be centered on the runway and does not include a 5,000 feet perimeter around the runway. Based upon SORA's Master Plan, the stormwater detention basin is neither within an approach corridor nor within 5,000 feet from the end of a runway.[654] Thus, the statute is not applicable.[655]

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[652] As provided in the determination, the determination will expire on 1/24/2016 unless: the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by the FAA; extended, revised, or terminated by the issued office; the construction is subject to the licensing authority of the Federal Communications Commission and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

[653] See OAR 738-005-0010(29) and OAR 660 Division 13.

[654] *See* Master Plan, Chapter 6, Airport Airspace Drawing (Part 77) Plan View, Sheet 5 of 10. http://flyoth.com/master_plan/OTH_Chapter_6_Airport_Layout_Plan.pdf (last accessed: May 17, 2015).

[655] Moreover, the applicant asserts that the stormwater detention basin is not a water impoundment because it is designed, nor does it serve to hold, water. Rather, the applicant asserts that it is designed to facilitate the percolation of water into the subsurface. Further, the applicant states that the basin is unlikely to attract a meaningful increase of additional birds as it would capture water only during a significant rainfall event, and then

Lastly, as explained in the ASC, while the air cooled condensers to be utilized by the SDP would not create vapor plumes, they would create a thermal plume. However, as explained in the ASC, there are currently no regulations concerning thermal plumes.[656] As explained in the ASC, the FAA currently has guidance encouraging pilots to exercise caution when flying in the vicinity of potential sources of thermal plumes. Nonetheless, there are currently no regulations concerning thermal plumes.[657]

E. Police and Fire Protection

In Exhibit U, the applicant identified the local police and fire protection units within the analysis area, which include the Coos County Sheriff's Office, Coos County Fire Protection Districts, City of Coos Bay Police Department, City of Coos Bay Fire Department, City of North Bend Police Department, City of North Bend Fire Department, and the State Police Coos Bay Area Command Post.[658] During construction of the proposed facility, the applicant anticipates the required number of construction personnel to be 500.[659] However, as discussed with regard to housing, the applicant anticipates hiring approximately 40% to 60% of the construction workforce from the local population; therefore, the applicant anticipates an influx of approximately 200 to 300 temporary personnel into the area.[660] According to the ASC, this would account for a temporary population increase of approximately one percent.[661] During operations, the applicant anticipates requiring 45 full-time personnel. Once the facility is operational, generally, the applicant proposes to fence the facility and include a gated entrance, which would minimize the opportunities for theft and vandalism. Additionally, the facility would include hydrants and sprinkler and deluge systems.[662]

Furthermore, the applicant has proposed to construct the Southwest Oregon Resource Security Center, which would provide security, fire protection, and emergency services for the proposed facility.[663] In accordance with the June 2014 Memorandum of Understanding between Jordan Cove Energy Project and the State of Oregon, the SORSC personnel and equipment must be in place 30 days prior to operation of the proposed facility.[664] According to the ASC, the SORSC

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only for a very limited duration during percolation. The basin is design with the ODEQ direction to infiltrate the run off volume of two year 24 hour storm event. See SDPAPPDoc272.

[656] ASC, Exhibit U, U-30.

[657] The applicant further researched thermal plumes and the results of the investigation are attached as Appendix U-6 to the ASC.

[658] ASC, Exhibit U, U-19—U-20.

[659] ASC, Exhibit U, U-18.

[660] ASC, Exhibit U, U-18.

[661] ASC, Exhibit U, U-18.

[662] ASC, Exhibit U, U-34.

[663] ASC, Exhibit U, U-17. The SORSC is regulated under the Federal Energy Regulatory Commission and as such is not part of this application or under the jurisdiction of the Council.

[664] ASC, Exhibit U, U-17.

would have personnel and firefighting apparatus, including at least three pumpers, one ladder truck, at least 16 firefighters, one chief officer and one safety officer.[665]

Thus, given the available fire and police units in the area, the minimal and temporary increase in personnel associated with the construction and operation of the facility, and the designated response facility during operations, the proposed construction and operation of the SDP would not result in a significant adverse impact on the police and fire department's abilities to provide service to the community. However, to ensure the applicant implements the proposed mitigation measures provided in the ASC, the department recommends the Council adopt the following conditions:

Condition M.4: The site certificate holder shall fence the energy facility site and include a gated entrance.

Condition M.5: Prior to beginning construction, the certificate holder shall develop and implement a fire protection system, which shall include fire water system, portable fire extinguishers, a smoke detection system and a carbon dioxide extinguishing system.

F. Health Care

The applicant conducted an analysis of the available health care resources in the vicinity of the proposed facility.[666] The analysis found that there are 3 acute care hospitals in Coos County with a total of 171 beds currently existing and 223 beds currently licensed by the state. Within the City of Coos Bay, the Bay Area Hospital is licensed for 172 beds and currently has 130 beds. As explained in the ASC, the Bay Area Hospital is an accredited medical facility, located approximately 6 miles from the SDP site, capable of handling all routine and all but the most severe emergency medical needs of personnel during construction and operation of the SDP.[667] In the event of a natural disaster or catastrophic event, the Bay Area Hospital could also temporarily increase their capacity with tent triage.[668] As explained in the ASC, the Lower Umpqua Hospital and the Coquille Valley Hospital are also located within close proximity at 20 miles and 25 miles south, respectively.[669]

Based upon the number of construction and full-time employees and the number and proximity of available health care facilities in the region, construction and operation of the proposed

[665] ASC, Exhibit U, U-19.

[666] As explained in the ASC, a Community Health Assessment comparing Coos County to the national benchmark and Oregon hospitals found that the County is classified as a Medically Underserved Area, particularly for the service needs for low income, homeless, and those with mental health issues. However, as discussed in the application, the construction and operation of the proposed facility would not exacerbate the circumstances due to the limited increase in population as well as that the construction and operation personnel hired by the facility, would most likely not fall into those categories identified as being underserved. ASC Exhibit U, U-22.

[667] ASC, Exhibit U, U-21. *See* also Appendix U-2, which contains hospital confirmation letters.

[668] ASC, Exhibit U, U-21.

[669] ASC, Exhibit U, U-21.

facility would not result in a significant adverse impact on the ability of these providers to continue to deliver health services.

G. Schools

As explained in the ASC, the SDP site would be located within the North Bend School District. According to the ASC, the number of student enrollments in the North Bend School District has increased by 1,901 students between 2007 and 2014; however, all but 200 of the increased students were enrolled at the Oregon Virtual Academy, and according to the ASC, the district still has a 64%potential for growth.[670] In the neighboring Coos Bay School Districts, the applicant states that enrollment has fallen by 506 students from 2007 to 2014.[671] The ASC states that the Coos Bay School District has a 46% to 53% percent potential for growth.[672]

Because of the temporary nature of construction jobs, the applicant does not anticipate the majority of the non-local construction workforce to establish residency with their school age children in the area. During operation, the applicant anticipates only requiring approximately 45 full-time employees, the majority of which the applicant anticipates would be hired from the local community.[673] The applicant anticipates the entire project would add an additional 22 children to the public school system during the first school year, and approximately 125 students during the subsequent two school years.[674]

Based upon the applicant's estimate for construction and operation personnel, as well as the fact that the local school districts are operating under capacity, the construction and operation of the proposed facility would not result in a significant adverse impact to the public school systems within the analysis area.

IV.M.2. Public Services: Conclusions of Law

Based on the foregoing findings of fact and conclusions of law, and subject to compliance with the recommended site certificate conditions, the department recommends that the Council find that the facility complies with the Public Services Standard.

IV.N. Waste Minimization [OAR 345-022-0120]

(1) Except for facilities described in sections (2) and (3), to issue a site certificate, the Council must find that, to the extent reasonably practicable:

[670] ASC, Exhibit U, U-24—U-25. The Oregon Virtual Academy is an online school with no students on site. The North Bend School District provided written confirmation to the applicant regarding its capacity. This letter is included in Appendix U-3 of the ASC.
[671] ASC, Exhibit U, U-24.
[672] ASC, Exhibit U, U-25.The Coos Bay School District provided written confirmation to the applicant regarding its capacity. This letter is included in Appendix U-3 of the ASC.
[673] ASC, Exhibit U, U-36.
[674] ASC, Exhibit U, U-24.

(a) The Applicant's solid waste and wastewater plans are likely to minimize generation of solid waste and wastewater in the construction and operation of the facility, and when solid waste or wastewater is generated, to result in recycling and reuse of such wastes;

(b) The Applicant's plans to manage the accumulation, storage, disposal and transportation of waste generated by the construction and operation of the facility are likely to result in minimal adverse impact on surrounding and adjacent areas.

** * **

IV.N.1. Waste Minimization: Findings of Fact

The waste minimization standard requires the Council to find that the certificate holder will minimize the generation of solid waste and wastewater, and that the waste generated will be managed to result in minimal adverse impacts on surrounding and adjacent areas. Subsection (2) and (3) of this standard are not applicable to this application because the proposed facility would not produce power from wind, solar or geothermal energy, and is not a special criteria facility as defined in OAR 345-015-0310. Therefore, only the criteria specified in OAR 345-022-0120(1) apply to the proposed facility.

The applicant provided information about waste from the proposed facility in Exhibits G and V of the ASC. Exhibit G (Materials Analysis) includes an inventory of the quantities of industrial materials that would be used at the facility during construction and operation, the plans for management of hazardous and non-hazardous substances during construction and operation, and the measures that the applicant proposes to take to prevent and contain spills. Exhibit V (Waste Minimization) includes the applicant's plans for management of solid waste, wastewater, and stormwater during construction and operation of the proposed facility.

Specific waste management proposals for the construction, operation and restoration of the proposed facility are described below. However, to minimize waste produced during construction and operation of the facility, the applicant proposed various strategies to reduce and minimize waste production, examples of which include:

- The applicant will establish a waste minimization team. The waste minimization team will assess and prioritize each waste stream, establish source reduction, and waste minimization targets.
- The applicant will establish a routine inspection and maintenance program which would prevent and minimize releases and require immediate reporting and cleanups.
- The applicant will implement facility-wide recycling program for waste paper.
- The applicant will monitor and manage chemical and material inventories to reduce costs and eliminate wastes.
- The applicant will identify and specify use of less hazardous materials, and, whenever possible substitute those products to reduce or eliminate hazardous waste streams.

- The applicant will segregate wastes to promote reclaiming or recycling of used oil, spent solvents, solvent wipes, batteries, paints, catalysts, and other potentially hazardous materials.
- The applicant will segregate construction, operation, and demolition waste to maximize efficient resource recovery and reuse of materials such as concrete, asphalt, metal alloys, copper, stainless steel, mild steel, iron and other materials.

A. Solid Waste

As discussed in the ASC, during construction the applicant proposes to minimize the production of solid waste through the use of detailed material estimates and efficient construction practices, including the management of schedules and material inventories.[675] Approximately five tons of solid waste would be produced per month for the duration of construction, which is estimated to last 39 months[676] Construction waste would include domestic refuse, office waste, packaging materials (e.g., pallets, cardboard, packing paper, steel banding), steel cut-offs, and construction materials such as concrete, wood, plastic, glass, erosion control materials, and miscellaneous debris.[677] As explained in the ASC, recyclable material would be separated from the solid waste stream, stored and transported periodically to approved facilities.[678] Solid waste that cannot be recycled would be collected in roll-off bins and transported to an approved landfill by a licensed contractor.[679] The applicant identified waste disposal facilities in Exhibit U of the ASC, each of which have confirmed adequate capacity to receive non-hazardous solid waste from the proposed facility.[680] The applicant does not anticipate the need to acquire any sort of disposal permit for construction waste.[681]

During operation of the proposed facility, the applicant anticipates producing an estimated 10 tons of solid waste per year.[682] Solid waste generated during operation would include traditional office and maintenance waste, packaging wastes (fiberboard, plastic, or metal containers or drums, totes, and bags), and empty gas cylinders. In addition, however, operational wastes would include water treatment resins and spent air-quality control catalysts, which would be generated during routine operation and maintenance.[683] Based upon the applicant's estimation, approximately 1,700 pounds of spent resin would be disposed of each year at a permitted non-hazardous waste landfill.[684] Further, each heat recovery steam generator would contain an estimated 10 tons of air quality control catalysts, which would

[675] ASC, Exhibit V, V-12.
[676] ASC, Exhibit V, V-5.
[677] ASC, Exhibit V, V-5.
[678] ASC, Exhibit V, V-12 and V-18. Recyclable materials would likely include scrap metals, lumber, batteries, mercury-containing lights, used oil, paper cardboard and other packaging materials.
[679] ASC, Exhibit V, V-12..
[680] ASC, Exhibit U, U-15.
[681] ASC, Exhibit V, V-12.
[682] ASC, Exhibit V, V-5.
[683] ASC, Exhibit V, V-5.
[684] ASC, Exhibit V, V-5.

require replacement after seven to nine years of operation.[685] Because the catalysts use a ceramic substrate matrix with metallic oxide, the reclamation process requires the metal oxide to be separated from the ceramic matrix to allow for the recovery of the scrap metal.[686] As explained in the ASC, the scrap metal would be recycled and removed from the waste stream, while the ceramic portion would be appropriately disposed of at an approved landfill and the spent catalyst reclaimed offsite.[687] As with construction, non-hazardous landfill wastes would be collected and trucked to an approved landfill by a licensed contractor.[688]

Retirement and restoration of the site would result in scrap metals, concrete, insulation and any remaining oil, fuel and cleaners used or removed during dismantling. As explained in Exhibit W, approximately 1,000 tons of steel, 6,000 linear feet of piping, 1.3 million linear feet of electrical writing, and nearly 3 million pounds of equipment would be removed from the site during decommissioning and restoration. The scrap metals (copper, steel, piping, and wiring) would be recycled and removed from the waste stream. Additionally, approximately 22,500 tons of reinforced concrete and nearly 42,000 square feet of insulation would be removed from the site. It is the applicant's preference that all demolished concrete be recycled; however, as further explained in the ASC, the disposal of concrete during site restoration would necessarily depend upon the approved site restoration plan (see recommended conditions G.1 and G.2) as well as the local needs when the site is undergoing demolition.[689]

To ensure solid waste production is minimized and managed in accordance with the measures proposed by the applicant, the department recommends the Council adopt the following condition:

Condition N.1: Prior to construction, the certificate holder shall implement a waste management plan that includes but is not limited to the following measures:

a). Establish a waste minimization team and train all employees to minimize and recycle solid waste.

b). Implement a facility-wide recycling program for waste paper products, steel and other scrap metals, wood wastes, glass and plastics.

c). Recycle used oil and hydraulic fluid.

d). Separate non-hazardous solid waste into recyclable and non-recyclable material, and store materials in the appropriate onsite container or dumpster. The certificate holder shall ensure these containers and dumpsters are routinely picked up by a licensed contractor and disposed of at an appropriate facility.

e). Segregate all hazardous and universal wastes such as used oil, oily rags and oil-absorbent materials, mercury-containing lights and lead-acid and nickel-cadmium

[685] ASC, Exhibit V, V-6.
[686] ASC, Exhibit V, V-6.
[687] ASC, Exhibit V, V-6.
[688] ASC, Exhibit V, V-20.
[689] ASC, Exhibit V, V-6. See Exhibit W for a breakdown regarding tasks and costs assumed for decommissioning and restoration.

batteries for disposal by a licensed firm specializing in the proper recycling or disposal of hazardous and universal wastes.

B. Wastewater and Storm Water

During construction, the applicant anticipates that wastewater would result from the following: sanitary wastes; contacted stormwater; testing and commissioning of water supply systems; hydrostatic testing of tanks, piping and equipment; flushing of pipelines and equipment; and the washing of equipment and vehicles. The applicant provided estimated wastewater production values in Table V-1 of the ASC; however, as explained in the application, the volume of wastewater produced would necessarily vary depending on several circumstances, such as the number of construction workers present at the site, the phase of construction and the duration of activities.[690]

As explained in the ASC, only stormwater that has contacted oil or other hydrocarbons would be disposed of as wastewater. Non-contact stormwater would infiltrate into the sand backfill or directed to the infiltration pond, vegetated ditches or swales or biofilters/filter strips.[691] As discussed previously with regard to the Council's Soils and Protected Areas standard, during construction the applicant would be subject to compliance with the NPDES 1200-C construction stormwater permit and the associated Erosion and Sediment Control Plan (see recommended condition D.1, above).[692] Stormwater control measures would be installed and maintained along with best management practices to avoid and mitigate any impacts from stormwater on surrounding lands (a draft erosion and sediment control plan as well as a draft stormwater management plan were provided in Exhibit I of the ASC). Contacted stormwater would be directed to the facility's wastewater sump and discharged through the industrial wastewater pipeline for ocean outfall.[693] Sanitary wastewaters produced during construction (portable toilets) would be trucked to a sewage treatment plant by a licensed contractor for treatment and disposal.[694] Process wastewaters produced during the latter stages of construction and pre-operational testing would be collected and discharged to the industrial wastewater pipeline.[695] The applicant also proposes water use minimization measures, including, but not limited to: the installation of air-cooled condensers rather than a cooling tower, recovery and reuse of

[690] ASC, Exhibit V, V-7.
[691] ASC, Exhibit V, V-8.
[692] Discharges of stormwater to Coos Bay are regulated under the Clean Water Act and require a NPDES permit. As discussed above, because NPDES permits are federally-delegated permits issued by ODEQ, they are outside of the Council's jurisdiction and are not governed by the site certificate. ASC, Exhibit V, V-23.
[693] ASC, Exhibit V, V-14. As discussed previously, the applicant maintains an NPDES waste water discharge permit which allows the current treatment system to discharge existing treated waste streams to the Pacific Ocean. The existing permit does not cover wastewater discharges associated with the proposed facility. Before ODEQ can issue a wastewater discharge permit for the wastewater discharges associated with the proposed facility, the applicant must submit a complete permit modification application. If a facility meets all legal requirements, ODEQ will issue the facility's NPDES water quality permit following EPA review.
[694] ASC, Exhibit V, V-19.
[695] ASC, Exhibit V, V-20.

hydrostatic test and flush waters, use of uncontaminated stormwater for dust control and low flow sanitary facilities.[696]

During operation, the proposed facility would produce wastewater from various sources including: the sanitary system; HRSG blowdown; demineralized water treatment system (from the reverse osmosis (RO) reject and pressure filter backwash); combustion turbine washes; plant/equipment/secondary containment drains; RO chemical cleaning; and storm water.[697] Table V-2 of the ASC includes anticipated wastewater volumes and disposal methods. As explained in the ASC, the amounts of wastewater provided were based upon estimates from each source operating under annual average conditions.[698]

As with construction, non-contact stormwater would be directed to the infiltration basin with contact stormwaters discharged to the industrial wastewater pipeline.[699] Sanitary systems would be treated in an onsite wastewater treatment facility and then discharged to the industrial wastewater pipeline or potentially stored, transferred and treated at the North Bend wastewater treatment plant or other permitted wastewater treatment facility.[700] As explained in the ASC, all operational process wastewater would be sent to the wastewater collection sump for discharge to the industrial wastewater pipeline, with the exception of combustion turbine generator wash wastewater and RO chemical cleaning wastewater, which would be hauled off-site.[701] The industrial wastewater pipeline has sufficient capacity to handle this wastewater.[702]

Based upon the applicant's proposed wastewater management plan, and in consideration of the required NPDES 1200-C permit and NPDES waste discharge permit, that wastewater produced as a result of facility construction and operation would be appropriately managed by the applicant and is not likely to result in a significant adverse impact on surrounding areas. However, in addition to recommended Condition N.1, above, the department recommends the Council impose the following conditions to ensure implementation of the applicant's proposed management:

> **Condition N.2:** The certificate holder shall provide portable toilets for on-site sewage handling during construction and shall ensure that they are pumped and cleaned regularly by a licensed contractor qualified to pump and clean portable toilet facilities.

[696] ASC, Exhibit V, V-17.
[697] ASC, Exhibit V, V-8.
[698] ASC, Exhibit V, V-8—V-9.
[699] Any stormwater that could be contaminated with oil would first pass through an oil-water separator or contained for testing and sampling prior to being sent to the sump and industrial wastewater pipeline. Oily wastewater would be treated in the separator and oil removed would be retained in the separator for periodic removal and off-site disposal. ASC, Exhibit V, V-11.
[700] ASC, Exhibit V, V-8.
[701] ASC, Exhibit V, V-10. Both the City of Coos Bay and North Bend maintain approved wastewater treatment plants that could accept this wastewater.
[702] ASC, Exhibit V, V-10.

Condition N.3: Prior to construction, the certificate holder shall provide to the department a copy of its modified NPDES waste water discharge permit issued by ODEQ. During construction and operation, the certificate holder shall discharge wastewater generated at the facility in compliance with all DEQ permit requirements.

C. Hazardous Waste

Hazardous construction wastes could include oily rags, spent batteries, equipment and vehicle maintenance solvents, oils, and paints.[703] The applicant proposes to separately manage hazardous and nonhazardous chemicals generated or used during construction. To ensure proper handling and disposal, the applicant proposes to require the primary construction contractor to develop and implement a Hazardous Materials Handling and Storage Plan and a Construction Stormwater Pollution Prevention Plan (see recommended conditions D.4 and D.5, above. D.4 requires the certificate holder to implement a Hazardous Management and Monitoring Plan and condition D.5 requires the certificate holder to implement a SPCC plan).

During operation, the facility would be classified as either a Conditionally Exempt Small Quantity Generator (CESQG) or a Small Quantity Generator (SQG), both of which restrict the storage and accumulation of hazardous wastes on-site. To qualify as a CESQG, sites must generate less than 220 pounds of hazardous waste per month. To quality as a SQG, sites must generate less than 1,000 pounds of hazardous waste each month. As explained in the ASC, hazardous wastes could include oily rags, spent batteries, fluorescent lights and equipment, and vehicle maintenance solvents and oils. Table G-3 of the application includes detailed procedures to be used to manage hazardous substances or wastes on site, which includes secondary containment and spill kits and recommended conditions D.7 and D.8, specifically address the on-site refueling station. On-site storage and management of hazardous waste would be in accordance with OAR 340-100 to 340-143 and the offsite shipment of hazardous waste would comply with EPA and U.S. Department of Transportation hazardous materials regulations.[704] In consideration of the applicant's proposed management measures the department recommends the Council adopt the following conditions:

Condition N.3: The certificate holder shall use hazardous materials in a manner that protects public health, safety and the environment and shall comply with all applicable local, state, and federal environmental laws and regulations.

Condition N.4: The certificate holder shall collect all hazardous solid waste, including oily waste, used filters, and oily rags or absorbents in sealable drums. The certificate holder shall collect used oils, solvents, and cleaning materials in tanks or barrels supplied by material vendors.

[703] ASC, Exhibit V, V-5.
[704] ASC, Exhibit V, V-24.

Condition N.5: The certificate holder shall store hazardous chemicals in aboveground containers or tanks located within secondary containment areas. Other chemicals and lubricants needed for facility maintenance and operation shall be stored in the administrative/maintenance buildings.

Based on the applicant's analysis, the department recommends that the Council find that no significant adverse environmental impacts are anticipated from the accumulation, temporary storage, disposal, or treatment of solid waste, wastewater or stormwater during construction, operation or retirement of the proposed facility; that any adverse impacts that may occur will be minimized by the applicant's acquisition of required permits and development of a waste minimization plan, SPCC, site restoration plan, and stormwater management plan; and that, as a result, wastes at the proposed facility will not result in a significant adverse impact.

IV.N.2. Waste Minimization: Conclusions of Law

Based on the foregoing findings of fact and conclusions of law, and subject to compliance with the recommended site certificate conditions, the department recommends that the Council find that the facility complies with the Council's Waste Minimization Standard.

IV.O. Noise Control Regulations [OAR 340-035-0035]

(1) Standards and Regulations:

** * **

(b) New Noise Sources:

(A) New Sources Located on Previously Used Sites. No person owning or controlling a new industrial or commercial noise source located on a previously used industrial or commercial site shall cause or permit the operation of that noise source if the statistical noise levels generated by that new source and measured at an appropriate measurement point, specified in subsection (3)(b) of this rule, exceed the levels specified in Table 8, except as otherwise provided in these rules. For noise levels generated by a wind energy facility including wind turbines of any size and any associated equipment or machinery, subparagraph (1)(b)(B)(iii) applies.

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IV.O.1. Noise Control Regulations: Findings of Fact

In Exhibit X of the ASC, the applicant provided information about noise generated during construction and operation of the proposed facility. The proposed facility would be considered a "new industrial or commercial noise source" under OAR 340-035-0035(1)(b) because construction of the facility would begin after January 1, 1975.[705]OAR 340-035-0035(1)(b)

[705] OAR 340-035-0015(33) defines a "new industrial or commercial noise source" as any industrial or commercial noise source for which installation or construction was commenced after January 1, 1975 on a site not previously occupied by the industrial or commercial noise source in question.

imposes different requirements on new noise sources based upon the previous use of the site. A site is defined as "previously unused," and subject to the standards in OAR 340-035-0035(1)(b)(B), if the site has not been used by any industrial or commercial noise source during the 20 years preceding commencement of construction of a new industrial or commercial source on site.[706] Otherwise the standards of OAR 340-035-0035(1)(b)(A) apply to a "previously used" site. As explained above, the proposed facility site was the former site of the Weyerhaeuser North Bend Containerboard Mill, which ceased operations in 2003.[707]Therefore, because the proposed facility site was used by another industrial noise source in the past 20 years, the standards set forth in OAR 340-035-0035(1)(b)(A) apply.

Pursuant to OAR 345-035-0035(5)(g), sound that originates from construction sites is exempt from the noise regulations. Therefore, facility compliance with the DEQ noise rules is evaluated based only upon the operational noise of the proposed facility. As determined above, OAR 340-035-0035(1)(b)(A) is the applicable regulation for this facility, and, therefore, facility-generated operational noise must not exceed the noise limits specified in Table 8 of the regulation as measured "at an appropriate measurement point" on "noise sensitive property." OAR 340-035-0015(38) defines "noise sensitive property" as real property normally used for sleeping, or normally used as schools, churches, hospitals or public libraries. Property used in industrial or agricultural activities does not qualify as noise sensitive property unless it meets the listed criteria in more than an incidental manner. The appropriate measurement point, as defined by OAR 340-035-0035(3)(b), is "25 feet (7.6 meters) toward the noise source from that point on the noise sensitive building nearest the noise source" or "that point on the noise sensitive property line nearest the noise source," whichever is further from the source. Table 8 of the regulation provides the following statistical limits:

Table O-1. Statistical Noise Limits for Industrial and Commercial Noise Sources

Statistical Descriptor	**Maximum Permissible Hourly Statistical Noise Levels (dBA)**	
	Daytime (7:00 AM- 10:00 PM)	**Nighttime (10:00 PM - 7:00 AM)**
L_{50}	55	50
L_{10}	60	55
L_1	75	60
The hourly L_{50}, L_{10} and L_1 noise levels are defined as the noise levels equaled or exceeded 50 percent, 10 percent, and 1 percent of the hour, respectively.		

Based upon the above limits, because the proposed facility plans to operate on a 24-hour basis, the noise radiating from or attributable to operation of the proposed facility must not exceed a maximum hourly L50 noise level of 50 dBA at any noise sensitive property. Due to the

[706] OAR 340-035-0015(47).
[707] ASC, Exhibit I, I-2.

continuous operation of the facility, to comply with the maximum allowable levels, the analysis must account for the more conservative nighttime (10:00 pm to 7:00 am) noise limits.

Pursuant to OAR 345-021-0010(1)(x)(E), the applicant identified all noise-sensitive properties within one mile of the proposed site boundary. To estimate the anticipated noise levels resulting from facility operation, the applicant used an acoustical model that was created in accordance with the International Organization for Standardization (ISO) 9613, using commercially available CADNA/A software (CADNA/A Version 4.4.145) from DataKustik, GmbH.[708] As explained in the ASC, the model simulated the outdoor propagation of sound and accounted for sound wave divergence, atmospheric and ground absorption[709], sound directivity, and shielding due to interceding barriers and terrain. Additionally, in accordance with ISO 9613, the acoustical model included meteorological assumptions favorable to the propagation of sound. As an example, the model assumed all receptors were downwind of all sound sources and that there was a moderate temperature inversion present.[710]

A. Construction Noise

Although construction sound is exempt from regulation, the applicant analyzed noise associated with construction of the proposed facility in Exhibit X of the ASC. Construction of the proposed project would produce localized, short duration noise levels similar to those produced by any large construction project. As explained in the ASC, noise levels would vary with each phase of construction depending on the construction activity and the associated construction equipment required for each phase. Major construction phases would consist of: (1) site preparation; (2) foundation construction; (3) building and equipment erection and (4) site clean-up and facility start-up. In addition, steam blow would occur.[711] Addressing each phase in more detail, during site preparation, construction noise would be emitted from equipment diesel engines, which would include backhoes, bulldozers, compactors, dump trucks, graders, and front end loaders. During foundation construction, noise would be emitted from concrete handling equipment such as concrete trucks, mixers, vibrators, pumps, and pile driving equipment. The building and equipment installation phase would involve diesel-powered earth moving equipment, mobile cranes, equipment delivery, impact wrenches, saws, drills, and air compressors. Lastly, the site cleanup and facility startup phase would generally result in lower noise emissions than the preceding construction phases.

[708] ASC, Exhibit X, X-8.

[709] For ground absorption, a "G" value of 0.0 ("hard ground") was applied to all bodies of water, and a "G" value of 0.8 ("mixed ground") was applied to absorptive ground areas comprised of dirt or grass, in accordance with ISO-9613-2). ASC, Exhibit X, X-8.

[710] ASC, Exhibit X, X-8. ISO 9613 methodologies do not cover inversion conditions over water; however, the applicant states that the meteorological assumptions as well as other modeling assumptions, such as source sound levels, are generally conservative.

[711] Steam blow is an intermittent cleaning/ facility start up activity that takes place over a two to three week period five to six times for each power block. As explained by the applicant, a typical steam blow involves sending high or low pressure steam through process piping for a period of roughly 10 to 15 minutes. The steam blow would be a silenced activity for this project taking place near the power block area. ASC, Exhibit X, X-4—X-5.

Table O-2, below, provides the typical types of equipment, equipment usage, and equipment sound emissions (at a distance of 50 feet) for each phase of construction and Table P-3 presents the estimated "average" construction sound levels. As explained in the ASC, the variable nature of construction noise is best represented by an "average" sound level, in accordance with methodologies outlined by the U.S. Environmental Protection Agency (EPA). The "average" sound levels account for the type and quantity of equipment used during each phase of construction.[712] "Average" sound level estimates only include the effect of geometrical spreading of sound and attenuation due to ground absorption, atmospheric absorption, and shielding from terrain is not included, therefore, the applicant asserts that the "average" sound levels provided in the ASC, are conservative representations of construction sound levels.[713]

Table O-2. Construction Equipment Sound Level Information

Construction Equipment	Typical Assumed Sound Levels @ 50 ft	Estimated Equipment Quantity and Usage (%)	
		Qty.	Usage
Air Compressor	70 to 80 dBA	1 to 4	25%
Backhoe	80 to 90 dBA	1 to 3	70 to 95%
Bush Hammer	70 to 80 dBA	4	25%
Chop Saw	60 to 70 dBA	4 to 5	25 to 75%
Compactor	75 to 85 dBA	2 to 5	50 to 95%
Concrete Pump	70 to 80 dBA	1	10%
Concrete Saw	85 to 95 dBA	2	5%
Concrete Vibrator	65 to 75 dBA	4	16%
Diesel Generator	65 to 75 dBA	1 to 4	100%
Dozer	75 to 85 dBA	1 to 4	35 to 95%
Drill	80 to 90 dBA	1 to 4	16 to 20%
Front End Loader	75 to 85 dBA	2	33 to 70%
Grader	75 to 85 dBA	1	10 to 80%
Grinder	75 to 85 dBA	60	25%
Impact Wrench	80 to 90 dBA	10	10%
Light Plants	70 to 80 dBA	8 to 16	10%
Man Lifts	65 to 75 dBA	20	40%
Mobile Crane	75 to 85 dBA	1 to 6	15 to 80%
Pavement Breaker	75 to 85 dBA	1	30%
Pile Driving - Impact	95 to 105 dBA	1	5%
Pile Driving - Vibratory	85 to 95 dBA	1	10%
Roller	75 to 85 dBA	2	25%
Stationary Crane	75 to 85 dBA	2	30%
Sump Pump	70 to 80 dBA	5	10%
Threading Machine	80 to 90 dBA	10	20%
Torque Wrench	75 to 85 dBA	2 to 5	16 to 25%
Trailer Transporter	85 to 95 dBA	4	5%
Trencher	80 to 90 dBA	1	10 to 50%
Troweling Machine	80 to 90 dBA	3	10%
Truck	75 to 85 dBA	4 to 19	15 to 95%
Welder	75 to 85 dBA	10	70%

[712] ASC, Exhibit X, X-5.
[713] ASC, Exhibit X, X-5.

Table O-3. Estimated "Average" Construction Sound Levels

JCEP SDPP Construction Estimated "Average" Sound Levels [1]						
Construction Phase / Activity	**Construction Area**		**Reference**	**NSP-E**	**NSP-S**	**Horsfall**
Haul road / Barge berth preparation 11/2015 thru 2/2016	Barge berth	Distance	50 ft	7200 ft	5600 ft	2300 ft
		L_{av}	86 dBA	43 dBA	45 dBA	53 dBA
	Transmission corridor	Distance	50 ft	7200 ft	7200 ft	2500 ft
		L_{av}	86 dBA	43 dBA	43 dBA	52 dBA
Site Preparation	Power block	Distance	50 ft	5800 ft	8400 ft	2300 ft
		L_{av}	89 dBA	48 dBA	44 dBA	56 dBA
Foundation Construction	Barge berth 3/2017 thru 12/2019	Distance	50 ft	7200 ft	5600 ft	2300 ft
		L_{av}	87 dBA	44 dBA	46 dBA	54 dBA
	Power block 1/2017 thru 7/2017	Distance	50 ft	5800 ft	8400 ft	2300 ft
		L_{av}	87 dBA	46 dBA	43 dBA	54 dBA
	Transmission corridor 9/2018 thru 12/2019	Distance	50 ft	7200 ft	7200 ft	2500 ft
		L_{av}	87 dBA	44 dBA	44 dBA	53 dBA
Building / Equipment Erection	Power block 10/2017 thru 10/2019	Distance	50 ft	5800 ft	8400 ft	2300 ft
		L_{av}	87 dBA	45 dBA	42 dBA	53 dBA
	Transmission corridor 3/2019 thru 10/2019	Distance	50 ft	7200 ft	7200 ft	2500 ft
		L_{av}	87 dBA	44 dBA	44 dBA	53 dBA
Site Clean-up / Facility Start-up 1/2017 thru 10/2019	Power block	Distance	50 ft	5800 ft	8400 ft	2300 ft
		L_{av}	82	40	37	48
Steam Blow - Silenced [2]	Power block	Distance	50 ft	5800 ft	8400 ft	2300 ft
		L_{av}	≤ 100 dBA	≤ 59 dBA	≤ 55 dBA	≤ 67 dBA

Notes:

(1) Estimates are conservative. Assumptions include simultaneous operation of all equipment from similar distances and attenuation from geometrical spreading only. Sound levels include construction noise only.

(2) Sound level during and resulting from steam blow only.

According to the ASC, the two closest residential noise sensitive are referred to here as NSP-E and NSP-S. NSP-E is approximately 1.0 mile from the proposed facility and NSP-S is approximately 1.5 miles.[714] Horsfall Sand Campground is the closest noise sensitive property to the proposed facility and it is located approximately 2,000 feet north of the site.[715]

Based upon the information in the above table, estimated "average" construction sound levels would not exceed 56 dBA at any of the closest noise sensitive properties, with the exception of noise associated with steam blow. However, as explained in the ASC, steam blow is an intermittent cleaning/facility start-up activity that takes place five or six times for each power block, lasting for approximately 10 to 15 minutes. Steam blow would be a silenced activity that

[714] NSP-E is located on East Bay Street about 200 feet east of US 101 in North Bend. The current primary noise sources in the vicinity of NSP-E are vehicular traffic, recreational vehicle use boat traffic, and occasional aircraft noise from the Southwest Oregon Regional Airport. NSP-S is located at the corner of Colorado Avenue and Arthur Street in a residential subdivision on the south side of Coos Bay in North Bend. The area is a suburban neighborhood with occasional aircraft noise. ASC, Exhibit X, X-2.

[715] ASC, Exhibit X, X-2. Horsfall Sand campground is used for equestrian camping and the primary noise sources in the vicinity of the area are vehicular traffic, recreational vehicle use, boat traffic, and occasional air traffic.

takes place close to the power block area.[716] While the construction noise estimates are likely conservative, considering the assumptions included simultaneous operation of all equipment from similar distances and only attenuation from geometrical spreading, based upon the sound levels provided the department recommends the Council adopt the following conditions since construction noise would operate on an as-needed basis, which could include weekends and evenings, seven days a week:

> **Condition O.1:** Prior to construction, the certificate holder shall develop, implement and submit to the department a complaint procedure for construction and operation of the proposed facility. The certificate holder shall notify the department within 15 days of receiving a complaint about noise from the facility. The notification should include the date the complaint was received, the nature of the complaint, the complainant's contact information, the location of the affected property, and any actions taken, or planned to be taken, by the certificate holder to address the complaint.

B. Operational Noise

As noted above, pursuant to OAR 340-035-0035(1)(b)(A), the noise radiating from or attributable to operation of the proposed facility must not exceed a maximum hourly L50 noise level of 50 dBA at any noise sensitive property.

As previously stated, the regulation allows an applicant to measure noise levels at either "25 feet toward the noise source from that point on the noise sensitive building nearest the source" or "that point on the noise sensitive property line nearest the noise source," whichever is further. However, while the regulation allows an applicant to use the further of the two measuring points, for purposes of this analysis, the applicant used a more conservative approach by utilizing the measurement point that was closest to the noise source to predict the sound levels. [717] Therefore, the sound levels were predicted at the location along the noise sensitive property line that was nearest to the facility.

As explained in the ASC, during normal operation, the major noise sources are anticipated to be the equipment packages. Table P-4, below, provides anticipated equipment sound levels.

[716] ASC, Exhibit X, X-5.
[717] ASC, Exhibit X, X-3.

Table O-4. Equipment Sound Levels at SDP

Equipment Package / Component	Qty.	Sound Level	Source Type	Source Height	Octave Band Sound Levels (dB)									Overall Sound Level (dBA)
					32 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
HRSG Stack Exit	6	L_w (1)	Point (2)	100 ft	112	120	122	119	110	109	96	71	52	114
HRSG Casing	6	L_w (1)	Area (3)	66 ft	104	109	105	97	87	86	74	54	24	94
STG Enclosure (5)	2	L_p (4) @ 3 ft	Area (3)	30 ft	99	88	85	82	85	78	73	72	70	85
ACC Fan (6)	12	L_w (1)	Point	62 ft	108	107	113	111	107	101	94	89	76	108
Fuel Gas Compressor (5)	3	L_w (1)	Area (3)	13 ft	91	91	95	99	103	106	105	101	95	110
FGC Cooler Fan	2	L_w (1)	Point	10 ft	106	106	105	102	97	95	89	83	77	100
Step Up Transformer	8	L_w (1)	Area (3)	13 ft	102	108	110	105	105	99	94	89	82	105
Boiler Feed Pump	6	L_w (1)	Point	6 ft	103	109	107	106	105	104	103	102	98	110
CT Inlet System	6	L_w (1)	Area (3)	39 ft	113	112	105	113	108	103	97	94	88	110
CTG Compartments	6	L_w (1)	Area (3)	14 ft	107	107	107	108	101	97	92	91	88	104

Notes:
(1) Sound power level (dB re 1 pW)
(2) Includes standard stack directivity.
(3) Includes horizontal and vertical area sources.
(4) Sound pressure level (dB re 20 µPa)
(5) Furnished with enclosure to reduce noise to specified sound pressure level.
(6) "Low-noise" fans.

Based upon the applicant's acoustical model, predicted, steady-state sound levels resulting from operation of the facility are approximately 44 dBA, 39 dBA and 47 dBA at NSP-E, NSP-S and the Horsfall Sand Campground, respectively.[718] Figure X-2 of the ASC provides a map showing the operations sound level contours in 5-dBA increments.

Based on the results of the applicant's modeling, operation of the proposed facility would not exceed the lowest applicable noise level found in OAR 340-035-0035 Table 8. Even when the applicant's modeling assumed the presence of a stronger temperature inversion at the NSP-E receptor than assumed by ISO 9613, operational facility sound levels would still not exceed 50 dBA.[719] However, in order to verify actual operational noise levels are in compliance with the noise regulations, the department recommends the Council adopt the following conditions:

Condition O.2: Within 120 days of commencing operation of the facility, the certificate holder shall monitor and record the actual statistical noise levels during operations to verify

[718] ASC, Exhibit X, X-7. For information purposes, an ambient sound level survey was conducted from April 11 to 18, 2013 to quantify the existing sound levels at the residential noise sensitive properties. According to the ASC, the measured ambient Leq sound levels (comparable to the L50 sound levels) in the vicinity of NSP-E were 43 to 64 dBA. The measured ambient Leq sound levels in the vicinity of the NSP-S were 32 to 58 dBA. *See* ASC, Exhibit X, Appendix X-1.
[719] ASC, Exhibit X, X-8.

that the certificate holder is operating the facility in compliance with noise control regulations. A monitoring plan must be reviewed and approved by the department prior to implementation. The cost of such monitoring shall be borne by the certificate holder. If the monitoring results demonstrate that sound levels attributable to the operation of the facility exceed L50 noise level of 50 dBA at any noise sensitive property that is in existence as of the issuance date of the site certificate, the certificate holder shall submit a noise mitigation plan for approval by the department.

Condition O.3: Upon written notification from the department, the certificate holder shall monitor and record the actual statistical noise levels during operations to verify that the certificate holder is operating the facility in compliance with the noise control regulations. The cost of such monitoring, if required, will be borne by the certificate holder.

IV.O.2. Noise Control Regulations: Conclusions of Law

Based on the foregoing findings and subject to compliance with the recommended site certificate conditions, the department recommends the Council find the proposed facility complies with the DEQ Noise Control regulations contained at OAR 345-035-0035(1)(b)(A).

IV.P. Siting Standards for Transmission Lines [OAR 345-024-0090]

To issue a site certificate for a facility that includes any transmission line under Council jurisdiction, the Council must find that the Applicant:

> *(1) Can design, construct and operate the proposed transmission line so that alternating current electric fields do not exceed 9 kV per meter at one meter above the ground surface in areas accessible to the public;*
>
> *(2) Can design, construct and operate the proposed transmission line so that induced currents resulting from the transmission line and related or supporting facilities will be as low as reasonably achievable.*

IV.P.1. Siting Standards for Transmission Lines: Finding of Fact

OAR 345-024-0090 addresses safety hazards associated with electric fields around transmission lines. OAR 345-024-0090(1) sets a limit for electric fields from transmission lines in areas that are accessible to the public; and OAR 345-024-0090(2) requires measures to reduce the risk of induced current. The applicant provided information regarding the Siting Standards for Transmission Lines in Exhibit AA of the ASC.

A. Electric Fields

As explained in the ASC, when a conductor is energized, an electric field is formed around the conductor proportionate to the given voltage. The strength of the electric field is independent of the current flowing in the conduction. When alternating current (AC) flows through a conductor, an alternating magnetic field is created around the conductor. The magnetic field intensity decreases with distance from the conductor.[720] In AC power systems, voltage swings positive to negative and back to positive, a 360-degree cycle, 60 times every second. Current follows the voltage, flying forward, reversing direction, and returning to the forward direction, again a 360-degree cycle, 60 times every second. Each AC transmission circuit carries power over three conductors. One phase of the circuit is carried by each of the three conductors. The AC voltage and current in each phase conductor is out of sync with the other two phases by 120 degrees. The fields from these conductors tend to cancel out because of the phase difference, which is referred to as phase cancellation.[721] As described in the ASC, the transmission lines would be designed so that the conductors are attached to the structures in a consistent manner so that line workers are less apt to make mistakes in operations.[722]

The applicant proposes two new transmission lines on-site; the first proposed line is a double-circuit 115-kV transmission line that would run from the South Dunes Power Plant to the LNG facility (Transmission Line A). The second proposed line is a single-circuit transmission line that would run from the South Dunes Power Plant to the relocated substation (Transmission Line B). As stated in the ASC, the applicant calculated the maximum possible electric and magnetic field strengths using EMF Workstation ENVIRO (version 3.52), which is a program from the Electric Power Research Institute (EPRI).[723] The estimates of EMF were computed at a height of 1 meter above the ground and 200 feet from the center line of the transmission lines.[724]

Transmission Line A would be located in a corridor[725] on property owned by Jordan Cove Energy Project, with the exception of crossing Jordan Cove Road overhead.[726] There is no direct access point to this corridor. Transmission Line B would be located entirely on JCEP property and there would be no direct public access to the line. Because each of the transmission corridors are located on property owned by Jordan Cove Energy Project there is no requirement for a defined Right of Way in the traditional utility sense.[727] The utility corridor for transmission line A would have a minimum width of 150 feet and there are seven potential JCEP structures proposed within 200 feet of the transmission line centerline along with an existing Roseburg Forest Product structure. However, only the Roseburg property building is not a JCEP-related structure.[728] The route for Transmission Line B does not contain any occupied facilities within

[720] ASC, Exhibit AA, AA-2.
[721] ASC, Exhibit AA, AA-2—AA-3.
[722] ASC, Exhibit AA, AA-7.
[723] ASC, Exhibit AA, AA-7. According to the ASC, this program has been used to predict EMF levels for many years and has been confirmed by field measurements by numerous utilities.
[724] ASC, Exhibit AA, AA-2.
[725] ASC, Exhibit AA, AA-2.
[726] ASC, Exhibit AA, AA-2.
[727] ASC, Exhibit AA, AA-4.
[728] ASC, Exhibit AA, AA-4.

200 feet of the center line of the line.[729] As depicted in the ASC, the predicted field-strengths at the edges of each corridor are within the requirements of OAR 345-024-0090 and would not exceed 1-kV per meter, which is well below the regulatory requirements.[730]

Induced currents are not generally hazardous to people because of the very low voltage involved. However, under OAR 345-027-0020, the Council must adopt certain conditions in every site certificate. Two of these mandatory conditions implements the requirements in the Siting Standards for Transmission Lines that relate to reducing possible impacts to human or animal contact with induced currents. To ensure compliance with this standard, the applicant must comply with the following conditions, as required pursuant to OAR 345-027-0023(4)(a) and (b):

Condition P.1 [OAR 345-027-0023(4)]:

> (a)The certificate holder shall design, construct and operate the transmission line in accordance with the requirements of the National Electrical Safety Code (American National Standards Institute, Section C2, 1997 Edition)
> (b) The certificate holder shall develop and implement a program that provides reasonable assurance that all fences, gates, cattle guards, trailers, or other objects or structures of a permanent nature that could become inadvertently charged with electricity are grounded or bonded throughout the life of the line.

Based on the applicant's analysis, and subject to compliance with the recommended site certificate conditions, the department recommends that the Council find that the applicant can design the proposed transmission lines so that the alternating current electric fields do not exceed 9.0-kV per meter at one meter above ground surface in areas accessible to the public and that induced currents form the transmission line and related or supporting facilities will be as low as reasonably achievable.

IV.P.2. Siting Standards for Transmission Lines: Conclusions of Law

Based on the foregoing findings of fact, and subject to compliance with the recommended site certificate conditions, the department recommends that the Council find that the proposed facility complies with the Council's Siting Standards for Transmission Lines.

IV.Q. Removal-Fill Law

The Oregon Removal-Fill statutes (ORS 196.795 through 196.990) and regulations (OAR 141-085-0500 through 141-085-0785) adopted by the Oregon Department of State Lands (DSL) require a permit if 50 cubic yards or more of material is removed, filled or altered within any

[729] ASC, Exhibit AA, AA-4.
[730] ASC, Exhibit AA, AA-5.

"waters of the state."[731] The Council must determine whether a permit is needed and whether the applicant has demonstrated that the proposed facility is consistent with the protection, conservation and best use of the water resources[732] of this state.

Federal law may require a Nationwide or Individual fill permit for the proposed facility if waters of the United States are affected. The U.S. Army Corps of Engineers administers Section 404 of the Clean Water Act, which regulates the discharge of fill into waters of the United States (including wetlands), and Section 10 of the Rivers and Harbors Appropriation Act of 1899, which regulates placement of fill in navigable waters.[733] A single application form, a Joint Permit Application Form (JPA), is used to apply for both the state and federal permits. The applicant provided information about wetlands and other waters of the state in Exhibit J of the ASC. The project order identifies the analysis area for removal-fill as the area within the site boundary and wetland areas hydrologically connected to wetlands within the site boundary.

IV.Q.1. Removal-Fill: Findings of Fact

A. Delineation of Waters of the State

As explained in the ASC, the site boundary contains a mix of freshwater wetland estuarine resources that fall within state and federal jurisdiction. All wetlands and waters of the state within the EFSC site boundary are shown in Figure J-1 of the ASC and included as Appendix L to this Order. Additionally, Table J-2 provides a summary of wetland conditions and acreages in addition to quantifying impacts. Generally, as discussed in the ASC, the wetlands in the general project vicinity historically consisted of interdunal freshwater wetlands and estuarine salt marshes and mudflats.[734] Current-day freshwater wetlands, particularly those being impacted by the proposed facility, now consist of a combination of remnant wetlands surrounded by

[731] ORS 196.800(15) defines "Waters of this state" as: all natural waterways, tidal and nontidal bays, intermittent streams, constantly flowing streams, lakes, wetlands, that portion of the Pacific Ocean that is in the boundaries of this state, all other navigable and nonnavigable bodies of water in this state and those portions of the ocean shore, as defined in ORS 390.605 (Definitions), where removal or fill activities are regulated under a state-assumed permit program as provided in 33 U.S.C. 1344(g) of the Federal Water Pollution Control Act, as amended. DSL has no authority over activities on upland (land outside waters of the state) except as that authority may relate to requiring protective buffers, erosion control and other measures to minimize impacts to adjacent waters of the state. See also: Types of "Waters of the State" and Jurisdictional Limits: Pacific Ocean: extreme low tide to 3 miles out; Tidal Bays and Estuaries: highest measured tide or upper edge of wetland; Perennial Streams, Lakes and Ponds: to ordinary high water; Intermittent Streams: to ordinary high water; Wetlands: wetland boundary; Artificial Ponds and Ditches: ordinary high water; Artificial Wetlands: wetland boundary Reservoirs: normal operating pool level or upper edge of adjacent wetland. http://www.oregon.gov/dsl/PERMITS/Pages/when_is_permit_reguired.aspx (last accessed: May 18, 2015).

[732] Water resources' includes not only water itself but also aquatic life and habitats therein and all other natural resources in and under the waters of this state. ORS 196.800(14).

[733] Pursuant to Section 401 of the Clean Water Act, the applicant must provide the Corps with a water quality certification from the State of Oregon before the Corps will issue the permit.

[734] ASC, Exhibit J, J-4.

adjacent fill material and new wetlands that formed on top of placed fill.[735] A brief description of each jurisdictional wetland and the waters of this State within the EFSC site boundary, as provided in the applicant's application, is provided below.

Wetlands C, B, and D

Wetlands C, B, and D are palustrine forested wetlands formed in depressions. Ground water inflow is the primary source of the hydrology, with surface water present during the winter and early spring months. Dominant plant species include red alder, salmonberry, and slough sedge.[736]

Wetland E

Wetland E is a palustrine aquatic bed and unconsolidated bottom wetland formed in a deep depression. Ground water inflow is the primary source of hydrology, with surface water present year round. Dominant plant species include yellow pond lily.[737]

Wetland H (East and West)

Wetland H (east) consists of a palustrine emergent wetland within a ditch excavated out of fill. The primary source of hydrology is ground water, with surface water typically present year round. Inflows from wetland I (south), via a culvert connection, are also believed to occur. Wetland H (east) is a freshwater wetland dominated by common cattail.[738] Wetland H (east) flows to the west via a culvert to Wetland H (west). Therefore, wetland H (west) is an extension of the wetland H (east) ditch; however, the western portion is tidally influenced and located below the highest measured tide (HMT).[739] According to the ASC, wetland H (west) mostly consists of estuarine, unconsolidated bottom (i.ie. unvegetated) with lots of woody debris carried in by the tide. However, a narrow fringe of Hooker willow is present along the wetland margin, and some common cattail and water parsley are found at the eastern end where freshwater input is greater than the estuarine influence. Wetland H (west) transitions in to Wetland M where the ditch ends and more natural topography picks up.[740]

Wetland I (north)

Wetland I (north) consists of palustrine emergent wetland formed in a shallow depression over fill. The primary source of hydrology is a high water table and direct precipitation, with surface water likely present for only short durations after intense rain events. As stated in the ASC, most of this wetland is within an area that is regularly mowed; however, dominant vegetation consists of spreading rush and canarygrass. Wetland I (north) is hydrologially connected to Wetland I (south) via culvert.[741]

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[735] *See* the Soils section above, which provides additional information regarding the historical placement of fill and the proposed fill on the site currently.
[736] ASC, Exhibit J, J-5.
[737] ASC, Exhibit J, J-5.
[738] ASC, Exhibit J, J-5.
[739] ASC, Exhibit J, J-6.
[740] ASC, Exhibit J, J-6.
[741] ASC, Exhibit J, J-6.

Wetland J and Adjacent Areas

The main body of Wetland J is a salt marsh. However, fingers extend west and north of the main body and contain freshwater palustrine emergent wetlands. The primary source of hydrology to the salt marsh is daily tidal inundation from Coos Bay. The primary source of hydrology to the freshwater portions is groundwater from stormwater runoff from adjacent upland areas. The salt marsh community is dominated by salt-tolerant species, including silverweed, Lyngbye's sedge, and saltgrass. The freshwater wetlands are dominated by tall fescue, spreading rush, brewers rush, common velvetgrass, annual bluegrass, and salt grass.[742] According to the ASC, there are areas adjacent to Wetland J that were determined to be upland based on field delineation indicators but they occur below the Highest Measured Tide (HMT). These areas are jurisdictional and permanent impacts have been accounted for incorporated into the Compensatory Wetland Mitigation Plan as though they are estuarine resource impacts.[743]

Wetland L

Wetland L is a palustrine emergent and palustrine unconsolidated bottom wetland in a small remnant pond surrounded largely by old fills areas. Groundwater provides the primary source of hydrology and it is dominated entirely by dense growth of soft rush and a small area of open water.[744]

Wetland M

As noted above, wetland M connects directly wetland H (west). According to the ASC, the distinction between these two features is that wetland H is a ditched wetland formed in fill, while wetland M consists of salt marsh and unvegetated mudflats that are part of the larger expanse of these habitats in Jordan Cove. Wetland M is classified as estuarine intertidal emergent and estuarine intertidal unconsolidated shore wetlands. The primary source of hydrology is twice-daily tidal inundation from Coos Bay. Vegetated portions of Wetland M are dominated by typical salt marsh species.[745]

Wetlands 2012-2 and 2013-6

Wetlands 2012-2 and 2013-6 are palustrine scrub-shrub and emergent wetlands formed in depressions at the base of a large sand dune. The primary source of hydrology is groundwater with surface water present year round. The dominant vegetation consists of shorepine, California wax myrtle, hooker willow, slough sedge, and soft rush.[746]

Wetlands 2013-1 and 2013-2

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[742] ASC, Exhibit J, J-6.

[743] ASC, Exhibit J, J-6.

[744] ASC, Exhibit J, J-7.

[745] According to the ASC, as delineated based on field conditions, portions of Wetland M do not extend all the way to the highest measured tide elevation. Areas of upland vegetation situated below the HMT elevation were included as estuarine habitat for jurisdictional purposes. ASC, Exhibit J, J-7.

[746] ASC, Exhibit J, J-7.

Wetland 2013-1 is a large palustrine forested, scrub-shrub, emergent and unconsolidated bottom wetland. Only a very small portion of this wetland lies within the SDP site boundary. According to the ASC, the wetland is located within a depression, and the primary source of hydrology is groundwater, with surface water likely present during the winter and early spring.[747] Dominant vegetation consist of shorepine, Hooker willow and slough sedge.

Wetland 2013-2 is similar to 2013-1 but much smaller. A small bridge of upland separates the two.[748]

Wetland 2012-7

Wetland 2012-7 is a long narrow highly disturbed palustrine emergent wetland situated in a shallow depression. Hydrology is provided by runoff and groundwater inflow. Dominant vegetation consists of slough sedge and common velvet grass. Sitka willow is also present at the east end of the wetland

Barge Berth and Access Triangle

The barge berth and access triangle are located along the shoreline of Coos Bay up to the HMT elevation. The area consists of sand shore that is only occasionally inundated throughout the year by tides, intertidal areas that are inundated twice daily, shallow subtidal areas (between zero and -15 feet MLLW datum) and deep subtidal habitats. These habitats are mostly unvegeated. However, a narrow band of eelgrass is located in some areas between roughly 3 and -3 feet MLLW datum.

As explained in the ASC, these resources were delineated by the applicant over several years and wetland delineation reports were provided to DSL and the Army Corps of Engineers for review and concurrence. DSL reviewed the delineations and provided concurrence to the applicant. The DSL concurrence letters, regarding the above described wetlands and waters of this State within the EFSC site boundary, are included in Appendix J-2 of the ASC, as Tab C.[749]

Permanent and Temporary Impacts

According to the ASC, permanent impacts would result from permanent placement of fill or removal activities and construction of permanent structures. The applicant anticipates permanently impacting a total of 2.67 acres of estuarine wetlands and a total of 2.09 acres of freshwater wetlands.[750] Further, the applicant anticipates temporary disturbances to result in

[747] Note, only a small portion of this wetland is within the SDP site boundary. ASC, Exhibit J, J-8.
[748] ASC, Exhibit J-8.
[749] ASC, Exhibit J, J-3.The applicant also identified non-jurisdictional wetlands, with this delineation concurred with by DSL. As explained in the application, Wetlands F and G are non-jurisdictional because they were artificially constructed in uplands and are less than 1 acres. (ASC, Exhibit J, J-5). Wetland I (South) and wetland N are also non-jurisdictional because they were both created in upland fill material. (ASC, Exhibit J, Appendix J-2, Tab C, WD#2013-0218).
[750] ASC, Exhibit J, J-10. Permanent impacts would also occur to wetland B; however, these impacts have all been assigned to the Jordan Cover LNG Terminal because the impacts are all associated with the construction of the

0.95 acres of temporary impact to estuarine wetlands and 0.16 acres of temporary impacts to freshwater wetlands. According to the ASC, temporary impacts would result from temporary construction disturbance, including temporary fill placement in some instances.[751]

More specifically, as explained in the ASC, wetlands C, E, 2012-02, 2013-06, 2013-1, and 2013-2, would experience fills associated with the construction of the proposed road and utility corridor and the construction of the haul road necessary to support the construction of the SDP facility. Bridge structures would also be constructed to cross wetlands E and 2013-6. Because the haul road would remain in place for more than 2 years, the applicant included these associated impacts as permanent impacts. However, haul routes fills within wetlands E, 2013-6 and 2012-2 would be removed at the end of construction, with only the new bridge footings remaining within wetlands E and 2013-6.[752]

As explained in the ASC, wetlands H (east and west), I (north), J (including areas adjacent, below HMT), L, M (including areas adjacent below HMT), and 2012-7, would be filled as part of SDP and associated facilities. According to the application, impacts to wetlands H (east and west), I (north), J (including areas adjacent, below HMT), L, and 2012-7 would be considered relatively insignificant because these wetlands are generally considered degraded due to high presence of invasive and non-native species and high levels of past disturbance within and adjacent to them.[753] Impacts to wetland M, however, would considered significant because of the loss of salt marsh that has historically occurred within the Coos Bay estuary.[754] [755]

In addition to the above impacts, impacts would also occur to estuarine resources at the proposed barge berth location. As explained in the ASC, fill for the berth would be placed beyond the permanent barge berth footprint, which would allow sheet pile to be installed from the land along the proposed permanent edge of the berth.[756] Once sheet pile has been installed, the fill located further into the bay would be removed and excavation of the already approved access channel would commence.[757]Impacts would occur to unvegetated mudflat and a small portion of eelgrass.

B. Removal-Fill Permit

Southwest Oregon Regional Safety Center facility, which is outside of the Council's jurisdiction. Therefore, impacts to wetland B were not included as part of this applicant or as part of EFSC's review. ASC, Exhibit J, J-11.

[751] Any fill that would be in place for than two years was considered and classified as a permanent impact. ASC, Exhibit J, J-10.

[752] ASC, Exhibit J, J-11.

[753] ASC, Exhibit J, J-11.

[754] ASC, Exhibit J, J-11—J-12.

[755] Fill would be placed within wetlands F and G as well, however, as noted above they are non-jurisdictional, and therefore do not require a removal-fill permit.

[756] ASC, Exhibit J, J-12.

[757] ASC, Exhibit J, J-12.

Because 50 yards or more of material would be removed, filled or altered within waters of the state, a removal-fill permit is required. The removal-fill permit is a state permit within the Council's jurisdiction. Pursuant to ORS 469.503(3) and ORS 469.401(3), the Council must determine whether DSL should issue the removal-fill permit and, if so, the Council must determine the conditions of that permit.[758] DSL will have continuing enforcement authority over the permit.

The applicant submitted a Joint Permit Application (JPA) to DSL on October 31, 2014, which was subsequently revised based on DSL's completeness review and resubmitted on March 20, 2014 and again on October 10, 2014.[759] On February 11, 2015, DSL provided a comment letter to the department, which stated that the information provided in Appendix J of the ASC met the basic completeness requirements required under OAR 141-085-0550.[760] Under ORS 196.825(1)(a), a removal of material from waters of the State must "be consistent with the protection, conservation and best use of the water resources of this State as specified in ORS 196.600 to 196.905." Similarly, ORS 196.825(1)(b) allows fill to be placed in a water of the state if the proposed fill "would not unreasonably interfere with the paramount policy of this State to preserve the use of its waters for navigation, fishing and public recreation." The criteria applicable to the issuance of a removal-fill permit are outlined in ORS 196.825(2).

OAR 141-085-0565 implements the requirements of ORS 196.825. Pursuant to OAR 141-085-0565(3), a removal-fill permit will be issued if it is determined that the project described in the application has independent utility[761], is consistent with the protection, conservation and best use of the water resources of this state as specified in ORS 196.600 to196.990, and would not unreasonably interfere with the paramount policy of this state to preserve the use of its waters for navigation, fishing and public recreation when the project is on state-owned lands.[762] OAR 141-085-0565 (4) implements the requirements of ORS 196.825(2) and requires the department to consider the following when determining whether to issue a permit:

> *(a) The public need for the proposed fill or removal and the social, economic or other public benefits likely to result from the proposed fill or removal. When the applicant for a permit is a public body, the Department may accept and rely upon the public body's findings as to local public need and benefit;*

[758] See also OAR 345-021-0010(1)(j)(E)
[759] *See* SDPAPPDoc210, SDPAPPDoc200.
[760] SDPAPPDoc250.
[761] According to the DSL, the policy purpose behind the "independent utility" requirement is to avoid issuing permits on a piecemeal basis, which prevents comprehensive review of all impacts to water resources. *See* DSL Permit 37712-RF.
[762] The proposed facility is not located on state-owned lands. The barge berth is proposed to be situated below the HMT elevation and is therefore in state jurisdictional waters; however, it is situated above the mean low tide elevation of 0.36 feet and is consequently not within state owned-lands. *See* ASC, Exhibit J, Appendix J-2, Tab H, which provides a concurrence letter from DSL on the matter.

According to DSL, part of the policy behind this consideration is to avoid issuance of permits for speculative projects, which can result in unnecessary impacts to water resources.[763] As provided in detail in Table J-2, the applicant has demonstrated that there is a need for the placement of fill in order to raise the site out of the tsunami inundation zone which is necessary for safe industrial use of the site.[764] This consideration is directed at the public need for the proposed removal and fill, not the public need for the proposed facility. The applicant has demonstrated that there is a public need for the proposed fill and removal.

(a) The economic cost to the public if the proposed fill or removal is not accomplished;

If the proposed removal fill is not accomplished, it could result in the facility not being built as the site would not be raised to the tsunami resistant height as need. If the facility was not built, the public would not realize any potential economic benefits associated with the proposed energy facility. According to the ASC, the public and private service providers in the area would greatly benefit from the proposed facility due to economic benefits resulting from property taxes, increased employment and spending within the community, and additional school funding,[765]

(c) The availability of alternatives to the project for which the fill or removal is proposed;
(d) The availability of alternative sites for the proposed fill or removal

The applicant included an alternative's analysis in its JPA submitted to DSL. As discussed in that submittal, many of the proposed wetland impacts result from the need to place fill in the project area in order to establish a tsunami barrier and to avoid tsunami inundation of the project site. According to the alternative's analysis, the applicant evaluated a number of alternative configurations prior to settling on the final location. The primary focus of the evaluation process was to minimize visual and environmental effects, while at the same time creating a safe facility with the least amount of land disturbance.[766] The applicant ultimately determined that there was no way to preserve each discontinuous wetland and meet all safety requirements and achieve the tsunami resistant placement of the facilities. The applicant does proposes to minimize the overall project footprint while avoiding and minimizing wetland impacts to the extent able.

(a) Whether the proposed fill or removal conforms to sound policies of conservation and would not interfere with public health and safety;

[763] *See* Removal Fill Permit 37712-RF.
[764] ASC, Exhibit I, I-3. ASC, Exhibit B, B-9—B-10.
[765] ASC, Exhibit U, U-4.
[766] ASC, Exhibit J, Appendix J-2, Appendix A.6, pg. 222.

As provided in the application and JPA, practicable alternatives to avoid and to minimize impacts to wetlands were considered by the applicant. The proposed removal and fill incorporates appropriate protection of water resources and conservation measures for such resources, and the applicant proposes a compensatory wetland mitigation plan for impacts that are unavoidable. Consequently, the proposed removal fill conforms to policies regarding conservation and would not interfere with public health and safety.

> *(a) Whether the proposed fill or removal is in conformance with existing public uses of the waters and with uses designated for adjacent land in an acknowledged comprehensive plan and land use regulations; and*
> *(b) Whether the proposed fill or removal is compatible with the acknowledged comprehensive plan and land use regulations for the area where the proposed fill or removal is to take place or can be conditioned on a future local approval to meet this criterion;*

As addressed above under the Council's Land Use Standard, the proposed removal and fill is compatible with the acknowledged comprehensive plan and land use regulations for the area. The proposed removal and fill conforms with existing public uses of waters and to uses designated for adjacent land in acknowledged comprehensive plans.

> *(h) Whether the proposed fill or removal is for stream bank protection; and*

The proposed removal fill is not specifically for stream bank protection.

> *(i) Whether the applicant has provided all practicable mitigation to reduce the adverse effects of the proposed fill or removal in the manner set forth in ORS196.800.*

As stated previously, the overall project footprint was minimized to the extent possible. In addition, the applicant has prepared a compensatory wetland mitigation plan (CWMP) and that plan includes a monitoring program. The CWMP addresses both freshwater impacts and mitigation and estuarine impacts and mitigation.[767] As provided in the ASC, the proposed mitigation would adequately offset the loss of acreage and functions provided by the wetlands.[768]The applicant's CWMP is attached to this order as Appendix M.

Based upon the above considerations, the department finds that project has independent utility to accomplish its intended purpose as an energy facility without needing additional phases or projects. Additionally, the department finds that the project is consistent with the protection, conservation, and best uses of the water resources of this state.

Based on the applicant's analysis, the project has independent utility to accomplish its intended purpose as an energy facility without needing additional phases or projects; and, that the

[767] ASC, Exhibit J, J-15.
[768] ASC, Exhibit J, J-12.

project is consistent with the protection, conservation, and best uses of the water resources of this state.

Condition Q.1: Before beginning construction, the certificate holder must obtain and provide proof to the department that a removal-fill permit from the DSL was obtained and that it includes the conditions recommended in the Appendix N to this Order. The certificate holder must comply with all conditions of the removal-fill permit.

Based on this analysis, the department recommends the Council find that a removal-fill permit is necessary for the construction and operation of the proposed facility and that the applicant has demonstrated that the proposed facility is consistent with the protection, conservation and best use of water resources of this State.

IV.Q.2. Removal-Fill: Conclusions of Law

Based on the foregoing findings of fact and conclusions, and subject to compliance with the recommended conditions, the Department recommends that the Council find the facility complies with the removal-fill law; and that Department of State Lands should issue a removal-fill permit that includes the recommended conditions contained in Appendix N to this Order.

IV.R. Ground Water

Through the provisions of the Ground Water Act of 1955, ORS 537.505 to 537.795 and 537.992, and OAR Chapter 690, the Oregon Water Resources Department (OWRD) administers water rights for appropriation and use of the water resources of the state. Under OAR 345-022-0000(1)(b), the Council must determine whether the proposed facility would comply with these statutes and administrative rules. The applicant provided information about anticipated water use for construction and operation of the proposed facility in Exhibit O of the ASC.

IV.R.1. Ground Water: Findings of Fact

During construction, the applicant estimates that the project would use approximately 32 million gallons of water. Water during construction would be used for dust control, washing equipment and vehicles, washing concrete trucks after delivery of concrete loads, fire suppression during construction, and water supply for flushes, testing and commissioning.[769] Table O-1 of the ASC includes a breakdown of the estimated construction water uses.

During operation, the applicant anticipates average daily operational uses at 806,400 gallons per day and a maximum daily use of 1.03 million gallons per day.[770] Primary water uses would

[769] ASC, Exhibit O, O-3.
[770] ASC, Exhibit O, O-4.

be steam generation and mono-nitrogen oxides (NOx) emission control injection system supply, however, normal operational uses would also include potable/service water, and combustion turbine power augmentation system supply.[771]

As provided in the ASC, the CBNBWB would be the sole source of water for the SDP facility during construction and operation. According to the ASC, the CBNBWB system has two water treatment plants with a total water treatment plant capacity of 13 million gallons per day (MGD). Additionally, the applicant states that the CBNBWB could supply up to 4 MGD of untreated raw water for industrial use in addition to the treated water supply.[772] Included as Appendix O-1 of the ASC, the CBNBWB submitted a letter to the applicant, which confirmed its ability to serve the water demands of the proposed facility. Consequently, the proposed facility does not need a groundwater permit, a surface water permit, or a water right transfer for construction and operation of the facility.[773]

Based upon the above information, the department recommends that the Council find that the proposed facility can comply with the applicable rules and statutes related to the appropriation of and use of water resources. The department, however, does recommend the Council adopt the following condition to ensure that the site certificate holder obtain and use water as represented in the ASC,

> **Condition R.1:** During operation of the facility, the certificate holder shall limit the use of water obtained from the CBNBWB to the amounts found to be within the scope of the water rights held by the CBNBWB.

IV.R.2. Ground Water Act: Conclusions of Law

Based on the foregoing findings of fact, and subject to compliance with the site certificate conditions recommended, the department recommends that the Council conclude that the proposed water use related to the construction and operation of the proposed facility complies with the Ground Water Act of 1955.

IV.S. Carbon Dioxide Standard [OAR 345-024-0500]

> *To issue a site certificate, the Council must find that the energy facility complies with any applicable carbon dioxide emission standard adopted by the Council or enacted by statute. The Council shall adopt standards for fossil-fueled power plants and may adopt carbon dioxide standards for other energy facilities that emit carbon dioxide.*

OAR 345-024-0550: Carbon Dioxide Standard for Base Load Gas Plant

[771] ASC, Exhibit O, O-4—O-5.
[772] ASC, Exhibit O, O-5.
[773] ASC, Exhibit O, O-11.

To issue a site certificate for a base load gas plant, the Council must find that the net carbon dioxide emissions rate of the proposed facility does not exceed 0.675 pounds of carbon dioxide per kilowatt-hour of net electric power output, with carbon dioxide emissions and net electric power output measured on a new and clean basis. For a base load gas plant designed with power augmentation technology as defined in OAR 345-001-0010, the Council shall apply the standard for a non-base load power plant, as described in OAR 345-024-0590, to the incremental carbon dioxide emissions from the designed operation of the power augmentation technology. The Council shall determine whether the base load carbon dioxide emissions standard is met as follows:

(1) The Council shall determine the gross carbon dioxide emissions that are reasonably likely to result from the operation of the proposed energy facility. The Council shall base such determination on the proposed design of the energy facility. The Council shall adopt site certificate conditions to ensure that the predicted carbon dioxide emissions are not exceeded on a new and clean basis.

(2) For any remaining emissions reduction necessary to meet the applicable standard, the applicant may elect to use any of the means described in OAR 345-024-0560, or any combination thereof. The Council shall determine the amount of carbon dioxide or other greenhouse gas emissions reduction that is reasonably likely to result from the applicant's offsets and whether the resulting net carbon dioxide emissions meet the applicable carbon dioxide emissions standard. The amount of greenhouse gas emissions means the pounds of carbon dioxide and the carbon dioxide equivalent of other greenhouse gases. For methane, one pound of methane is equivalent to 25 pounds of carbon dioxide. For nitrous oxide, one pound of nitrous oxide is equivalent to 298 pounds of carbon dioxide.

(3) If the applicant elects to comply with the standard using the means described in OAR 345-024-0560(2), the Council shall determine the amount of greenhouse gas emissions reduction that is reasonably likely to result from each of the proposed offsets. In making this determination, the Council shall not allow credit for offsets that have already been allocated or awarded credit for greenhouse gas emissions reduction in another regulatory setting. The fact that an applicant or other parties involved with an offset may derive benefits from the offset other than the reduction of greenhouse gas emissions is not, by itself, a basis for withholding credit for an offset. The Council shall base its determination of the amount of greenhouse gas emission reduction on the following criteria and as provided in OAR 345-024-0680:

(a) The degree of certainty that the predicted quantity of greenhouse gas emissions reduction will be achieved by the offset.
(b) The ability of the Council to determine the actual quantity of greenhouse gas emissions reduction resulting from the offset, taking into consideration any proposed measurement, monitoring and evaluation of mitigation measure performance.

(c) The extent to which the reduction of greenhouse gas emissions would occur in the absence of the offsets.

(4) Before beginning construction, the certificate holder shall notify the Department of Energy in writing of its final selection of a gas turbine vendor and shall submit a written design information report to the Department sufficient to verify the facility's designed new and clean heat rate and its nominal electric generating capacity at average annual site conditions for each fuel type. In the report, the certificate holder shall include the proposed limits on the annual average number of hours of facility operation on distillate fuel oil, if applicable. In the site certificate, the Council may specify other information to be included in the report. The Department shall use the information the certificate holder provides in the report as the basis for calculating, according to the site certificate, the amount of greenhouse gas emissions reductions the certificate holder must provide under OAR 345-024-0560.

345-024-0560 Means of Compliance for Base Load Gas Plants

The applicant may elect to use any of the following means, or any combination thereof, to comply with the carbon dioxide emissions standard for base load gas plants. For a base load gas plant designed with power augmentation technology, the applicant shall comply with the standard for a non-base load power plant in the manner as described in OAR 345-024-0600 for the incremental carbon dioxide emissions from the designed operation of the power augmentation technology.

(1) Designing and operating the facility to produce electrical and thermal energy sequentially from the same fuel source and using the thermal energy to displace another source of carbon dioxide emissions from fossil fuel that would have otherwise continued to occur. The Council shall adopt site certificate conditions ensuring that the carbon dioxide emissions reduction will be achieved.

(2) Implementing offset projects directly or through a third party, pursuant to OAR 345-024-0680. The Council may adopt site certificate conditions ensuring that the proposed offset projects are implemented by the date specified in the site certificate, but shall not require that predicted levels of avoidance, displacement or sequestration of greenhouse gas emissions be achieved.

(3) Providing offset funds, directly or through a third party, in an amount deemed sufficient to produce the reduction in greenhouse gas emissions necessary to meet the applicable carbon dioxide emissions standard. The applicant or third party shall use the funds as specified in OAR 345-024-0710. The Council shall deem the payment of the monetary offset rate, pursuant to OAR 345-024-0580, to result in a reduction of one ton of carbon dioxide emissions. The Council shall determine the offset funds using the monetary offset rate and the level of emissions reduction required to meet the applicable standard. If the Council issues a site certificate based on this section, the

Council may not adjust the amount of the offset funds based on the actual performance of offsets.

(4) Any other means that the Council adopts by rule for demonstrating compliance with the carbon dioxide emissions standard.

(5) If the Council or a court on judicial review concludes that the applicant has not demonstrated compliance with the applicable carbon dioxide emissions standard under sections (1), (2) or (4) of this rule, or any combination thereof, and the applicant agrees to meet the requirements of section (3) for any deficiency, the Council or a court shall find compliance based on such agreement.

OAR 345-024-0710 Monetary Path Payment Requirements

(1) If the applicant elects to meet the applicable carbon dioxide emissions standard in whole or in part under OAR 345-024-0560(3), OAR 345-024-0600(3) or OAR 345-024-0630(2), (4) and (5), the applicant shall provide a bond or letter of credit in a form reasonably acceptable to the Council to ensure the payment of the offset funds and the additional funds required under section (4) of this rule. The applicant shall provide such security by the date specified in the site certificate. In the site certificate, the Council shall specify a date no later than the commencement of construction of the facility for base load gas plants and non-base load power plants. For nongenerating facilities, the Council shall specify a date no later than the commencement of construction of the facility for providing the initial bond or letter of credit, and the Council shall specify conditions for providing subsequent incremental payments to meeting the monetary path payment requirement. The certificate holder for a nongenerating facility must meet its incremental monetary path payment requirements before exhausting its offset credit account, as described in OAR 345-024-0630(4). In no case shall the applicant diminish the bond or letter of credit or receive a refund from a qualified organization based on the calculations of the facility's emissions on a new and clean basis for a fossil-fueled power plant or any other measure for a nongenerating energy facility. A qualified organization shall not refund any offset funds to a certificate holder based on the operation or performance of a non-base load power plant during any five-year period reported under OAR 345-024-0590(5) or, for a nongenerating facility, on any offset credits the certificate holder provided under OAR 345-024-0620(5).

(2) In the site certificate, the Council shall require the certificate holder to disburse the offset funds and other funds required as specified in sections (3) and (4), unless the Council finds that no qualified organization exists, in which case the Council shall require the certificate holder to disburse the offset funds as specified in OAR 345-024-0720(2).

(3) When the certificate holder receives written notice from the qualified organization certifying that the qualified organization is contractually obligated to pay any funds to

implement offsets using the offset funds, the certificate holder shall make the requested amount available to the qualified organization unless the total of the amount requested and any amounts previously requested exceeds the offset funds, in which case the certificate holder shall make available only the remaining amount of the offset funds. The qualified organization shall use at least 80 percent of the offset funds for contracts to implement offsets. The qualified organization shall assess offsets for their potential to qualify in, generate credits in or reduce obligations in other regulatory settings. The qualified organization may use up to 20 percent of the offset funds for monitoring, evaluation, administration and enforcement of contracts to implement offsets.

(4) At the request of the qualified organization and in addition to the offset funds, the certificate holder shall pay the qualified organization an amount equal to 10 percent of the first $500,000 of the offset funds and 4.286 percent of any offset funds in excess of $500,000. The certificate holder for a base load gas plant shall pay not less than $50,000, unless the Council specifies a lesser amount in the site certificate. In the site certificate, the Council may specify a minimum amount that other fossil-fueled power plants or nongenerating energy facilities must pay. This payment compensates the qualified organization for its costs of selecting offsets and contracting for the implementation of offsets.

(5) Notwithstanding any provision to the contrary, a certificate holder subject to this rule has no obligation with regard to offsets, the offset funds or the funds required by section (4) other than to make available to the qualified organization the total amount required under OAR 345-024-0560(3), OAR 345-024-0600(3) and (4), OAR 345-024-0630(2), (4) and (5), and section (4) of this rule. The Council shall not base a revocation of the site certificate or any other enforcement action with respect to the certificate holder on any nonperformance, negligence or misconduct by the qualified organization.

(6) For monetary path payments a certificate holder must make before beginning construction, the certificate holder shall make all offset fund payments and all payments required by section (4) to the qualifying organization in real dollars of the year in which the Council issues a final order applying the carbon dioxide emissions standard to the energy facility. In the site certificate, the Council shall specify an appropriate inflation index for calculating real dollars. For a non-base load power plant, if a certificate holder must make a payment as described in OAR 345-024-0600(4), the certificate holder shall make a payment that has the same present value per ton of carbon dioxide as the monetary path offset rate of the year in which the Council issued the final order applying the carbon dioxide standard. In the site certificate, the Council shall specify the methodology for calculating present value. If the certificate holder of a nongenerating facility must make payments as described in OAR 345-024-0630(4) and (5), the Council shall specify in the site certificate the method for calculating the rate for the dollar value per ton of carbon dioxide required according to subsection (a) or (b) below:

(a) Unless the applicant and the Council agree to the methodology in subsection (b), the certificate holder shall make payments that have the same present value per ton of carbon dioxide as the monetary path offset rate of the year in which the Council issued the final order applying the carbon dioxide standard. The Council shall set an appropriate discount rate for calculating the present value, using the cost of capital most recently approved by a state utility regulatory commission for that utility or a similar utility as a guide; or

(b) If the applicant requests and the Council agrees, the certificate holder shall make payments at the monetary path offset rate in effect on the date the certificate holder makes the payment.

OAR 345-024-0720 Qualified Organization

(1) If the applicant elects to meet the applicable carbon dioxide emissions standard in whole or in part under OAR 345-024-0560(3), OAR 345-024-0600(3) and (4), or OAR 345-024-0630(2), (4) and (5), the applicant shall identify the qualified organization. The applicant may identify an organization that has applied for, but has not received, an exemption from federal income taxation, but the Council may not find that the organization is a qualified organization unless the organization is exempt from federal taxation under section 501(c)(3) of the Internal Revenue Code as amended and in effect on December 31, 1996.

(2) If the Council finds there is no qualified organization, the certificate holder shall disburse the offset funds according to one or more contracts for implementation of offsets as determined by the following process:

(a) The Council shall establish criteria for selection of offsets, based on the reduction of net carbon dioxide emissions and the criteria set forth in OAR 345-024-0550(3) for base load plants, OAR 345-024-0590(3) for non-base load power plants and OAR 345-024-0620(3) for nongenerating facilities. The Council may consider the costs of particular types of offsets in relation to the expected benefits of such offsets. In establishing criteria, the Council shall not require the certificate holder to select particular offsets and shall allow the certificate holder a reasonable range of choices in selecting offsets.

(b) Based on the criteria established by the Council, the certificate holder shall select one or more offsets. The certificate holder shall give written notice of its selections to the Council and to any person requesting notice. For the purposes of this rule, the date of notice is the date the certificate holder places the notice in the United States mail, with first-class postage prepaid.

(c) On petition by the Department of Energy or by any person adversely affected or aggrieved by the certificate holder's selection of offsets, or on the Council's own motion, the Council may review the selection. The petition must be received by the Council within 30 days of the date of notice.

(d) The Council shall approve the certificate holder's selection unless it finds that the selection is not consistent with criteria established under subsection (a).

(e) The certificate holder shall execute one or more contracts to implement the selected offsets within 18 months after commencing construction of the facility unless the Council allows additional time based on a showing of good cause by the certificate holder. If a certificate holder would have made a payment to a qualified organization as described in OAR 345-024-0600(4) or OAR 345-024-0630(4) or (5), the certificate holder shall instead execute one or more contracts to implement the selected offsets, by a method acceptable to the Council, within 18 months after reporting to the Council as described in OAR 345-024-0590(5) or within 18 months after the Department notifies the certificate holder that the certificate holder must replenish the offset credit account as described in OAR 345-024-0630(4). The certificate holder shall, under such contracts, obligate the expenditure of at least 85 percent of the offset funds for the implementation of offsets. The certificate holder may spend no more than 15 percent of the offset funds on monitoring, evaluation and enforcement of such contracts.

(f) The certificate holder's financial liability for implementation, monitoring, evaluation and enforcement of offsets under this subsection (2) is limited to the amount of any offset funds not already contractually obligated. The Council shall not base a revocation of the site certificate or any other enforcement action with respect to the certificate holder on any nonperformance, negligence or misconduct by the entity or entities implementing, monitoring or evaluating the selected offsets.

(3) Every qualified organization that has received funds under this rule shall, at five-year intervals beginning on the date of receipt of such funds, provide the Council with the information the Council requests about the qualified organization's performance. The Council shall evaluate the information requested and, based on such information, shall make recommendations to the Legislative Assembly that the Council deems appropriate

IV.S.1 Carbon Dioxide Findings of Fact

The applicant provided information addressing the Council's Carbon Dioxide Standard in Exhibit Y of the ASC. As explained in the ASC, the applicant is proposing the construction and operation of a natural-gas fueled combined-cycle generating plant without a limitation on the operating hours. ORS 469.503(2)92) defines base load gas plant as "a generating facility that is fueled by

natural gas, except for periods during which an alternative fuel may be used and when such alternative fuel use shall not exceed 10 percent of expected fuel use in Btu, higher heating value, on an average annual basis, and where the applicant requests and the council adopts no condition in the site certificate for the generating facility that would limit hours of operation other than restrictions on the use of alternative fuel." Therefore, the proposed facility qualifies as a base load gas plant as defined in ORS 469.503(2)(e).

The applicant proposes to construct and operate the base load gas plant with natural-gas fueled duct-firing capability to provide power augmentation for the heat recovery steam generators (HRSG) and steam turbine generators (STGs). In Exhibit Y of the ASC, the applicant evaluated the total heat input, fuel usage, carbon dioxide gross emission rate, and excess carbon dioxide emissions from the proposed facility based on year-round, continuous operation of the combined-cycle generating plant with power augmentation from the duct burners. The applicant is not requesting conditions in the site certificate that limit hours of operation of the power augmentation technology (duct burners) and consequently power augmentation is considered as part of the base load. Therefore, the evaluation of applicable standards and means of compliance are based on Council standards for a base-load gas plant.

Pursuant to OAR 345-024-0550, the Council must find that the facility complies with a carbon dioxide emission rate of 0.675 pounds of carbon dioxide per kilowatt-hour of net electric power (lb CO2/kWh) and establish a means of compliance to achieve the emission rate in accordance with OAR 345-024-0560. The Department has recommended conditions to ensure the applicant complies with these standards.

The applicant proposes to utilize the monetary path, in accordance with OAR 345-024-0560, through agreement with The Climate Trust, a qualified organization per OAR 345-024-0720[774]. The offsets needed to reduce total excess carbon dioxide emissions, based on the assumed 30-year operational lifetime of the facility, account for carbon dioxide reductions achieved through fuel displacement by thermal energy produced during cogeneration and available for non-electrical uses. Supporting evidence provided in Exhibit Y by the applicant to support the determination of compliance with the Council's Carbon Dioxide Standard is summarized in the following subsections.

Carbon Dioxide Emissions

Compliance with the Carbon Dioxide Standard for base load gas plants shall be determined by the Council through estimation of the facility gross carbon dioxide emission rate, total gross and excess carbon dioxide emissions assuming a 30-year operational lifetime based on a 100 percent capacity factor; and, evaluation of the means of compliance for reducing excess emissions required to meet the applicable carbon dioxide emission rate for base load gas plants. The Council must also establish conditions to support verification of predicted carbon

[774] ASC, Exhibit Y, Y-25

dioxide emissions compared to actual emissions over the operational lifetime of the project and based on final design and equipment specifications.

According to OAR 345-024-0550, the Council must find that the net carbon dioxide emission rate of the base load power plant does not exceed 0.675 CO_2/kWh of net electric power output technology, on a 'new and clean basis' as defined in OAR 345-001-0010(38). In accordance with OAR 345-001-0010(38)(c), the applicant shall calculate the facility carbon dioxide emission rate using a factor of 117 pound of carbon dioxide per million British thermal units (lb CO2/MMBtu) of natural gas fuel and maximum hourly fuel usage at net electrical power output (MMBtu/kWh) at average annual conditions. Average annual conditions, as provided by the applicant, and the estimated gross carbon dioxide emission rate are presented below.

The applicant provided International Organization for Standardization (ISO) standard conditions to represent the average annual conditions for the facility. [775]:

Temperature: 59.0 degree Fahrenheit
Barometric Pressure: 14.7 pounds per square inch
Relative Humidity: 60 percent

Carbon Dioxide Emission Calculations

The following discussion and tables represent a sample calculation for the proposed facility. The information is provided is an estimate and does not necessarily reflect the actual emissions, offsets, or monetary payments. The conditions proposed for inclusion in the Site Certificate relating to the carbon dioxide standard allow the applicant flexibility in its choice of equipment vendor and facility design, within the parameters allowed pursuant to OAR 345-027-0050. Therefore, pursuant to OAR 345-024-0550(4), before beginning construction of the facility, the applicant must notify the department in writing of its final selection of an equipment vendor and must submit a written design information report sufficient to verify the facility's new and clean heat rate and its nominal electric generating capacity at average annual site conditions. The department must thereafter use this information as the basis for calculating the gross carbon dioxide emissions from the facility and the amount of greenhouse gas emissions reduction the applicant must provide under OAR 345-024-0560. To ensure compliance with these requirements the department recommends the Council adopt the following condition:

Condition S.1: Before beginning construction of the facility, the certificate holder shall notify the Department in writing of its final selection of an equipment vendor and shall submit a written design information report to the Department sufficient to verify the designed new and clean heat rate and its nominal electric generating capacity at average annual site conditions for the base load gas plant, including the combined-cycle turbine generators and duct burners.

[775] ASC, Exhibit Y, Y-13.

The gross carbon dioxide emission rate from the proposed facility was estimated at 0.934 lb/kWh, as presented in Table S-1, *CO2 Rate Calculation*.

Table S-1: CO2 Rate Calculation				
Maximum Hourly Fuel Usage[1] (MMBtu/hr)	'New and Clean' CO2 Emission Factor[2] (lb/MMBtu)	Maximum Hourly CO2 Emissions[3] (lb/hr)	Net Electric Power Output (kW)[4]	Gross CO2 Emission Rate (lb/kWh)[5]
3,418	117	392,592	420,110	0.934

Acronyms: lb/hr = pounds per hour; lb/kWh = pounds per kilowatt-hour; lb/MMBtu = pounds per million British thermal units; MMBtu/hr = million British thermal units per hour

Notes:

1. Maximum hourly fuel usage is based on 43 percent efficiency, 100 percent capacity factor on a new and clean basis operating at 100 percent load with year-round power augmentation (see ASC, Exhibit Y, Y-14 and Appendix Y-1).
2. New and clean CO2 emission factor obtained from OAR 345-001-0010(38)(c).
3. Maximum hourly CO2 emissions calculated as follows: maximum hourly fuel usage x CO2 emission factor obtained from OAR 345-001-0010(38)(c).
4. Net electric power output obtained from Table Y-2, ASC Exhibit Y.
5. Gross CO2 emission rate calculated as follow: maximum hourly CO2 emissions / net electric power output

The Council shall determine the rate of excess carbon dioxide emissions based on the difference between the applicant's estimated gross carbon dioxide emission rate (lb CO2/kWh) and the Council's carbon dioxide emission rate equal to 0.675 lb CO2/kWh. Based on this approach, the excess carbon dioxide emission rate from the proposed facility is estimated at 0.259 lb CO2/kWh, as presented in Table S-2, *Rate of Excess CO2 Emissions*.

Table S-2: Rate of Excess CO2 Emissions		
Description	Value	Unit
Gross CO2 Emission Rate	0.934	Lb CO2/kWh
EFSC CO2 Standard	0.675	Lb CO2/kWh
Rate of Excess CO2 Emissions	0.259	Lb CO2/kWh
Acronyms: Lb CO2/kWh = pounds of carbon dioxide per kilowatt-hour		

As presented in the ASC, the gross carbon dioxide emissions for the assumed 30-year operational lifetime of the facility, at the average conditions listed above, and operating for 8,760 hours per year, were estimated to be approximately 51.6 million tons of carbon dioxide.[776]

[776] ASC, Exhibit Y, Y-9

Table S-3: Total 30-Year Gross CO2 Emissions		
Description	Value	Units
Statutory Life of Plant	30	Years
Annual Average Hours of Operation	8,760	Hr/yr
Heat Content of Fuel Gas[1]	943	Btu/scf
Efficiency[2]	43	Percent
Stack CO2 Emissions, per Unit (fired)[2]	65,432	Lb CO2/hr
Hourly Plant Total CO2 Emissions (fired)[2]	392,592	Lb CO2/hr
Annual Plant Total CO2 Emissions (fired)[2]	1,720,000	Ton CO2/Yr
30-Year Total CO2 Emissions (fired)	51,600,000	Total Tons, CO2

Acronyms: Btu/scf: British thermal units per standard cubic foot; Hr/yr = hours per year; Lb CO2/hr = pounds of carbon dioxide per hour; Ton CO2/Yr = tons of carbon dioxide per year

Notes:

1. The heat content of fuel is based on a total facility heat input of 3,418 MMBtu/hr, including supplemental duct firing, and a daily maximum fuel usage of 87 MMscf/day, calculated as follows: total facility heat input (MMBtu/hr) x 24 hr/day / maximum daily fuel usage (MMscf/day) (see ASC, Exhibit Y, Appendix Y-1).
2. Detailed calculations are provided in ASC, Exhibit Y, Appendix Y-1.

Pursuant to OAR 345-021-0010(y)(N), the facility may lower the net carbon dioxide emission rate by estimating the annual useful thermal energy available from the facility through cogeneration for non-electric processes and that would be rejected as waste heat. The annual useful thermal energy that will be available for non-electric processes and annual thermal energy that will be rejected as waste heat were calculated by the applicant assuming power augmentation and a 100 percent capacity factor for the combined cycle units at the proposed facility. The annual useful thermal energy that will be used by non-electric processes is calculated considering the adjacent Jordan Cover Energy Project (JCEP) liquidized natural gas (LNG) Plant will be able to use approximately 67 percent of the available useful thermal energy while operating at expected production capacity (expected LNG production capacity was conservatively chosen over the design or 100 percent capacity factor rates so as to not overstate the reduction in carbon dioxide emissions available from cogeneration and thus understate the proposed facility's carbon dioxide obligation)[777]. The estimation of carbon dioxide emissions reduced through cogeneration is based on the reduction in combustion related emissions from natural gas fuel displaced through the use of useful thermal energy generated during cogeneration. The estimated reduction in carbon dioxide emissions on an annual basis and the 30-year operational lifetime of the facility is presented in Table Y-4, *Emissions Reduced from Cogeneration*. As discussed previously, these values may be modified upon completion of detailed design and prior to construction.

[777] ASC, Exhibit Y, Y-17

Table Y-4: Emissions Reduced from Cogeneration[1]		
Description	Value	Units
Estimated Annual Useful Thermal Energy Available for Non-Electric Processes	4,319,073	MMBtu/yr
Estimated Annual Useful Thermal Energy Used by Non-Electric Processes	2,893,779	MMBtu/yr
Estimated Annual Thermal Energy Rejected as Waste Heat	3,126,119	MMBtu/yr
Annual Fuel Displaced by Thermal Energy	3,024,540	MMBtu/yr
Annual CO2 Emissions Offset from Cogeneration[2,3]	(176,935)	Ton CO2/Yr
30-Year CO2 Emissions Offset from Cogeneration[3]	(5,308,069)	Total Tons, CO2

Acronyms: MMBtu/yr = million British thermal units per year; Ton CO2/Yr = tons of carbon dioxide per year

Notes:

1. Detailed calculations are provided in ASC, Exhibit Y, Tables Y-8 and Y-9, Y-18 through Y-20.
2. Annual CO2 emissions offset from cogeneration is calculated using a rate of 117 lb CO2/MMBtu/hr, consistent with the average carbon dioxide rate per hour and net electric power output of the energy facility, without degradation, on a new and clean basis as defined per OAR 345-001-0010(38)(c).
3. Annual CO2 emissions offset from cogeneration is calculated as follows: annual fuel displacement (MMBtu/yr) x 117 lb CO2/yr / 2,000 lb/ton. The annual CO2 emissions offset from cogeneration is multiplied by 30 (years) to determine the total CO2 emissions reduction over the operational lifetime of the facility (see ASC, Exhibit Y, Table Y-10, Y-21).

Values presented in "()" represent a negative number or estimated amount of emissions reduction

The applicant has proposed a monitoring and evaluation plan and an independent verification plan, consistent with OAR 345-021-0010(1)(y)(O)(xix) and OAR 345-021-0010(1)(y)(O)(xx), required to track and verify carbon dioxide emissions from natural-gas combustion during cogeneration and reduction of carbon dioxide emissions achieved through non-electric uses of thermal energy produced during cogeneration[778]. The Department recommends that the Council adopt the following conditions, which require the certificate holder to implement plans in accordance with information submitted in the ASC and maintain onsite records for compliance verification.

Condition S.2: The certificate holder shall implement a monitoring and evaluation plan, consistent with information provided in Exhibit Y of Application for Site Certificate, including methodologies to be used for data collection, monitoring, storage, reporting and management, including quality assurance and quality control provisions. The monitoring and evaluation plan shall include formulae, assumptions, and complete calculations used to estimate carbon dioxide emissions from facility operations and carbon dioxide emission reductions achieved through non-electric uses of produced thermal energy. The certificate holder shall maintain a current copy of the monitoring and evaluation plan onsite and shall make available for Department review upon request. If the applicant proposes to utilize methodologies, formulae, or assumptions which differ from the information provided in the

[778] ASC, Exhibit Y, Y-22

Application for Site Certificate, the applicant shall submit a modified monitoring and evaluation plan to the Department for review and approval prior to implementation.

Condition S.3: The certificate holder shall implement a verification plan, consistent with information provided in Exhibit Y of the Application for Site Certificate, which ensures accuracy, comparability, completeness and validity of methodologies proposed for data collection, monitoring, storage, reporting and management, to track and verify carbon dioxide emissions and carbon dioxide emission reductions from facility operations. The certificate holder shall maintain a current copy of the verification plan onsite and shall make available for Department review upon request.

Condition S.4: Before beginning operation, the certificate holder shall submit to the Department a copy of the authorized contractual agreement for the independent entity, or third party verifier, demonstrating that services required by the verification plan, as provided in Exhibit Y of the Application for Site Certificate, have been secured. The contractual agreement shall specify, at a minimum, services including: annual site visits; inspection of meters, recording equipment and any other monitoring-related equipment; annual recordkeeping audits; quarterly review of monitored data and calculations; and, semi-annual audit reports. The certificate holder shall maintain all records received from the independent entity including but not limited to semi-annual audit reports, corrective actions and findings onsite for a period of five-years and shall make available to the Department upon request.

The applicant estimated the total excess carbon dioxide emissions, with reductions achieved from cogeneration, to be approximately 9.0 million tons[779] over the 30-year operational lifetime of the facility, as presented in Table Y-3, *Total 30-Year Excess CO2 Emissions*.

Table Y-3: Total 30-Year Excess CO2 Emissions		
Description	Value	Unit
Gross CO2 Emission Rate	0.934	Lb CO2 /kWh
Base Load CO_2 Standard	0.675	Lb CO2/kWh
Rate of Excess CO2 Emissions	0.259	Lb CO2/kWh
Hourly Excess CO2 Emissions[1]	54.40	Tons CO2/hr
Annual Excess CO2 Emissions[1]	476,581	Tons CO2/Yr
30-Year Excess Emissions	14,297,435	Total Tons, CO2
30-Year Cogeneration Offset	(5,308,069)	Total Tons, CO2
30-Year Excess Emissions with Cogeneration Offset	8,989,466	Total Tons, CO2
Acronyms: lb CO2/kWhr = pounds of carbon dioxide per kilowatt-hour; Tons CO2/hr = tons of carbon dioxide per hour; Tons CO2/yr = tons of carbon dioxide per year Notes:		

[779] ASC, Exhibit Y, Y-25 and Appendix Y-1

Table Y-3: Total 30-Year Excess CO2 Emissions		
Description	Value	Unit
1. Hourly excess CO2 emissions calculated as follows: Rate of Excess CO2 emissions (lb CO2/kWh) x Net Electric Power Output (kW) / 2,000 lb/ton. The hourly excess CO2 emissions total is multiplied by 8,760 hr/yr to determine the annual excess CO2 emissions total. The annual excess CO2 emissions total is multiplied by 30 (years) to determine the total excess CO2 emissions over the 30-year operational lifetime of the facility (see ASC, Exhibit Y, Table Y-5, Y-11).		

The proposed facility will use a blend of boil-off gas and flash gas, or natural gas as fuel[780] for the cogeneration facility and natural-gas for duct firing[781]. Based on the gas composition of the boil-off gas and flash gas blend, the fuel source is considered interchangeable with natural gas[4]. The Department recommends that the Council adopt the following condition, which requires the certificate holder to use only pipeline-quality natural gas or synthetic gas, with a carbon content per million Btu, no greater than pipeline-quality natural gas.

Condition S.5: The certificate holder shall use only pipeline quality natural gas or shall use synthetic gas with a carbon content per million Btu no greater than pipeline-quality natural gas to fuel the combined-cycle combustion turbines for the base-load gas plant when operating with or without power augmentation.

Monetary Path and Monetary Path Payment Adjustments

The monetary path payment required to offset excess emissions, based on a 30-year operational lifetime of the base load gas plant, is estimated at $11.9 million, as presented in

Table Y-4, Monetary Path Requirement.

Table Y-4 Monetary Path Requirement	
Description	Value
Offset Fund Rate ($/ton CO2)	$1.27
Offset Funds Required ($ million)[782]	$11.42
Contracting and Selection Funds ($ million)[783]	$0.54
Total Estimated Offset Cost ($ million) =	$11.96

Qualified Organization

The applicant has elected to comply with the carbon dioxide emissions standard by providing offset funds to a qualified organization as allowed by OAR 345-024-0600(3) and in compliance

[780] ASC Exhibit Y, page Y-4

[781] ASC Exhibit Y, page Y-3

[782] Offset funds required were estimated by the applicant using the following calculation: total 30-year excess CO2 emissions (tons CO2) x fund rate, $1.27 per ton of carbon dioxide

[783] Selection and contracting funds are determined by applying the formula in OAR 345-024-0710(4)

with the monetary path payment requirement of OAR 345-024-0710.[784] The applicant proposes to provide offset funds and funds for the cost of selecting and contracting for offsets to the Climate Trust. The Council has previously found that the Climate Trust is a "qualified organization." The department recommends that the Council find that The Climate Trust continues to meet the requirements of a "qualified organization," as defined by ORS 469.503(2)(e)(N).[785]

Monetary Path Payment

The combination of offset funds and contracting and selection funds constitutes the monetary path payment requirement. Using the parameters in the ASC, the tables above provide the excess tons of carbon dioxide expected to result from operation of the proposed facility multiplied by the offset fund rate of $1.27 per ton of carbon dioxide. Based on the ASC, the offset funds required for the monetary path payment would amount to $11.42 million for continuous, year-round operation of the proposed facility, with contracting and selection funds represented at $0.54 million.

Pursuant to ORS 469.503(2)(d) and OAR 345-024-0710(1), if the applicant has elected to comply with the carbon dioxide emissions standard pursuant to the monetary path payment, the applicant must provide a bond or letter of credit in a form "reasonably acceptable to the Council to ensure the payment of the offset funds" and any additional funds required to the qualifying organization before beginning commencement of construction. Pursuant to OAR 345-024-0710(4), at the request of the qualified organization, the applicant must pay the qualified organization an amount equal to 10 percent of the $500,000 of the offset funds and 4.286 percent of any offset funds in excess of $500,000. This payment is to compensate the qualified organization for its costs of selecting offsets and contracting for the implementation of offsets.

[784] ASC, Exhibit Y, Y-7.

[785] The Climate Trust continues to meet the requirements of a "qualified organization," defined by ORS 469.503(2)(e)(N), for the following reasons; The Climate Trust is exempt from federal taxation under section 501(c)(3) of the Internal Revenue Code. By a letter dated November 19, 1997, the Internal Revenue Service determined that The Climate Trust (then the Oregon Climate Trust) is exempt from taxation under section 501(c)(3);The Climate Trust is incorporated in the State of Oregon. The Articles of Incorporation are filed with the Oregon Secretary of State; The Articles of Incorporation of The Climate Trust require that offset funds received under OAR 345-024-0710(3) (ORS 469.503(2)) are to be used for offsets projects that would result in direct reduction, elimination, sequestration, or avoidance of carbon dioxide emissions. The Articles of Incorporation of The Climate Trust require that decisions regarding the use of such funds be made by a body composed of seven voting members, of which three are appointed by the Council, three are Oregon residents appointed by the Bullitt Foundation, and one is appointed by applicants for site certificates that are subject to ORS 469.503(2)(d) and the holders of such site certificates; The Climate Trust has made available on an annual basis, beginning after the first year of operation, a signed opinion of an independent certified public accountant stating that the qualified organization's use of funds pursuant to ORS 469.503 conforms with generally accepted accounting principles; The Climate Trust has provided DOE with documentation that the Climate Trust has complied with OAR 345-001-0010(1)(48)(e) (ORS 469.503(2)(e)(K)(v)).

The applicant proposed to use a letter of credit to secure the funds it must provide to the qualifying organization. Pursuant to OAR 345-024-0710(6), for those monetary path payments the applicant must make before beginning construction, the applicant must make all offset fund payments and those required to compensate the qualified organization in selecting offsets and implementing offsets under OAR 345-027-0710(4), discussed above, to the qualifying organization in real dollars of the year in which the Council issues the final order for the proposed facility. In order to ensure compliance with the requirements in OAR 345-024-0590 through 345-024-0710 and to provide the mechanism for calculating the excess carbon dioxide emissions and the actual monetary path payment, the department recommends that the Council adopt the following conditions:

Condition S.6: The net carbon dioxide emissions rate for the proposed facility must not exceed 0.675 pounds of carbon dioxide per kilowatt-hour of net electric power output, with carbon dioxide emissions and net electric power output measured on a new and clean basis, as defined in OAR 345-001-0010.

Condition S.7: For the purposes of the site certificate, "monetary path payment requirement" means the amount of offset funds determined pursuant to OAR 345-024-0550, -0560, -0590 and -0600 and the amount of the selection and contracting funds that the certificate holder must disperse to The Climate Trust, as the qualified organization, pursuant to OAR 345-024-0710 and the site certificate. The certificate holder shall calculate the monetary path payment requirement using an offset fund rate of $1.27 per ton of carbon dioxide in 2015 dollars.

(a). The certificate holder shall calculate 2015 dollars using the index described is subsection (c) below.

(b). The certificate holder shall increase the amount of the letter of credit described in Condition S.11 by the percentage increase in the index. The certificate holder shall index the funds from the date of the Council's approval of the site certificate to the date of disbursement of funds to The Climate Trust.

(c). The calculation of 2015 dollars shall be made using the same index described in Condition G.4. The amount of the letter of credit shall increase annually by the percentage increase in the index and shall be pro-rated within the year to the date of disbursement to The Climate Trust from the date of Council approval of the site certificate. If at any time the index is no longer published, the Council shall select a comparable calculation of 2015 dollars without an amendment of the site certificate.

Condition S.8: To calculate the initial monetary path requirement, the certificate holder shall use the contracted design parameters for capacities and heat rates submitted to the Department per Condition S.1.

Condition S.9: Before beginning construction of the facility, the certificate holder shall enter into a Memorandum of Understanding (MOU) with The Climate Trust that establishes the disbursement mechanism to transfer selection and contracting funds and offset funds to The Climate Trust.

(a). The MOU must be substantially in the form of Appendix R this Draft Proposed Order on the Application. At the request of the certificate holder, the Council may approve a different form of a letter of credit and concurrent MOU without an amendment of the site certificate.
(b). Either the certificate holder or The Climate Trust may submit to the Council for the Council's resolution any dispute between the certificate holder and The Climate Trust concerning the terms of the letter of credit, the MOU or any other issues related to the monetary path payment requirement. The Council's decision shall be binding on all parties.

Condition S.10: Before beginning construction of the facility, the certificate holder shall submit all monetary path payment requirement calculations to the Department for verification in a timely manner before submitting a letter of credit for Council approval, before entering into the MOU with The Climate Trust as required by Condition S.9, and before making disbursements to The Climate Trust.

Condition S.11: Before beginning construction of the facility, the certificate holder shall submit to The Climate Trust a letter of credit in the amount of the offset funds of the monetary path payment requirement as determined under Condition S.7 and Condition S.8:

(a). The certificate holder shall use a form of letter of credit that is substantially in the form of Appendix B to the MOU described in Condition S.9. At the request of the certificate holder, the Council may approve a different form of a letter of credit without an amendment of the site certificate.
(b). The certificate holder shall use an issuer of the letter of credit approved by the Council.
(c). The certificate holder shall maintain the letter of credit in effect until the certificate holder has disbursed the full amount of the offset funds to The Climate Trust. The certificate holder may reduce the amount of the letter of credit commensurate with payments it makes to The Climate Trust. The letter of credit must not be subject to revocation before disbursement of the full amount of the offset funds.

Condition S.12: The certificate holder shall disburse to The Climate Trust offset funds and selection and contracting funds when requested by The Climate Trust in accordance with Condition S.9 and Condition S.11 and the following requirements:

(a). The certificate holder shall disburse selection and contracting funds to The Climate Trust before beginning construction and as appropriate when additional offset funds are required under Condition S.13.
(b). Upon notice pursuant to subsection (c), The Climate Trust may request from the issuer of the letter of credit the full amount of all offset funds available or it may request partial payment of offset funds at its sole discretion. Notwithstanding the specific amount of any contract to implement an offset project, The Climate Trust may request up to the full amount of offset funds the certificate holder is required to provide to meet the monetary path payment requirement.
(c). The Climate Trust may request disbursement of offset funds pursuant to paragraph (b) by providing notice to the issuer of the letter of credit that The Climate Trust has executed a letter of intent to acquire an offset project. The certificate holder shall require that the issuer of the letter of credit disburse offset funds to The Climate Trust within three business days of a request by The Climate Trust for the offset funds in accordance with the terms of the letter of credit.

Monetary Path Payment Adjustment

In the first 12 months of commercial operation of the facility, the certificate holder shall determine if actual excess carbon dioxide emissions calculated exceed the projected emissions and determine whether additional offsets are required to comply with the standard. To calculate actual gross carbon dioxide emissions, the applicant shall use the new and clean heat rate, as determined through 100-hour testing at full power per Condition S.13.

If the results show that the certificate holder must offset additional carbon dioxide emissions, additional selection and contracting funds would also be required. To ensure the facility reports to the Council and provides the necessary offsets based upon the actual net carbon dioxide emissions, the department recommends that the Council adopt the following conditions:

Condition S.13: Within the first 12 months of commercial operation of the facility, the certificate holder shall conduct a 100-hour test (Year One Test). As the facility is comprised of two independent power blocks, the Year One Test shall be designed to run each power block independently at 100% of the power block's capacity, with power augmentation. Each power block shall be ran for 100 hours. Tests performed for purposes of the certificate holder's commercial acceptance of the facility may suffice to satisfy this condition in lieu of testing after beginning commercial operation.

(a). The certificate holder shall conduct the Year One Test to determine the actual heat rate (Year One Heat Rate) and the net electric power output (Year One Capacity) on a new and clean basis, without degradation, with the results adjusted for the average annual site condition for temperature, barometric pressure and

relative humidity. The certificate holder shall calculate carbon dioxide emissions using a rate of 117 pounds of carbon dioxide per million Btu of natural gas fuel (b). The certificate holder shall notify the Department at least 60 days before conducting the tests required in subsection (a) unless the certificate holder and the Department have mutually agreed that less notice will suffice.
(c). Before conducting the test required in subsection (a),the certificate holder shall, in a timely manner, provide to the Department for its approval a copy of the protocol for conducting the test. The certificate holder shall not conduct the test until the Department has approved the testing protocol.
(d). Within two months after completing the Year One Test, the certificate holder shall provide to the Council a report of the results of the Year One Test.

Condition S.14: Based on the data from the Year One Test described in Condition S.13, the certificate holder shall calculate an adjusted monetary path payment, if applicable. The certificate holder shall submit its calculations to the Department for verification. If the adjusted amount exceeds the amount of the letter of credit provided according to Condition S.11 before beginning construction, the certificate holder shall fully disburse the excess amount directly to The Climate Trust within 30 days of the Department's verification of the calculations.

(a). The certificate holder shall include the appropriate calculations of the adjusted monetary path payment with its report of the result of the Year One Test required under Condition S.13.
(b). For calculating the adjusted monetary path payment, the certificate holder shall use an offset fund rate of $1.27 per ton of carbon dioxide (in 2015 dollars) and shall calculate contracting and selecting funds based on 10 percent of the first $500,000 in offset funds and 4.286 percent of any offset funds in excess of $500,000 (in 2015 dollars).
(c). In no case shall the certificate holder diminish the value of the letter of credit it provided before beginning construction or receive a refund from The Climate Trust based on the calculations made using the Year One Capacities and the Year One Heat Rates.

Condition S.15: Every five years after beginning commercial operation of the facility (five-year reporting period), the certificate holder shall submit to the Department five-year reports, within 30 days after the anniversary date of beginning commercial operation, including the following:

a. Report presenting results of a current 100-hour test to verify the actual heat rate (Btu/kWh) and net electric power output (kW) on a new and clean basis, without degradation, with the results adjusted for the difference between the actual ambient site conditions and average annual conditions. The report shall include the test protocol specifying the testing date, time, test method,

instrument calibration records, adjustment factors and references, and results.

b. The net full power heat rate of the combined-cycle combustion turbines with duct-firing as determined by the 100-hour test conducted per subpart (a). The net full power heat rate shall be measured as the total fuel input divided by the net kWh production over the 100-hour test period, adjusted for the difference between the actual ambient site conditions and average annual conditions.
c. Actual hours of operation of the base-load gas plant for each year during the five-year reporting period.
d. Amount (MMBtu/yr) and average temperature and pressure of steam supplied to the auxiliary boiler at the Jordan Cove Energy Project's Liquefied Natural Gas facility for each year during the five-year reporting period, as measured and verified in accordance with Condition S.2 and S.3.
e. Based on actual operational data provided per subparts (a) – (d), provide calculations of the gross carbon dioxide emission rate, rate of emission reductions achieved through offsite thermal energy use, excess carbon dioxide emissions for the five-year reporting period, and value of supplemental offset funds, if applicable, required to offset any additional excess carbon dioxide emissions not accounted for in the initial monetary path payment to The Climate Trust
    i. The certificate holder shall pay for the excess emissions at $1.27 per ton of carbon dioxide emissions (in 2015 dollars). The certificate holder shall pay selection and contracting funds of 10 percent of the first $500,000 in offset funds and 4.286 percent of any offset funds in excess of $500,000 (in 2015 dollars). The Department shall notify the certificate holder and The Climate Trust of the verified amount of supplemental payment required to offset excess emissions.
    ii. The certificate holder shall disburse the supplemental offset funds and supplemental selection and contracting funds to The Climate Trust within 30 days after notification by the Department of the amount that the certificate holder owes.

Based on this analysis, and subject to compliance with the proposed site certificate conditions, the Department recommends that the Council find that the design, construction and operation of the proposed facility complies with the carbon dioxide standard for base load gas plants and, when using power augmentation, the carbon dioxide standard for non-base load gas plants.

IV.S.2. Carbon Dioxide Standard: Conclusions of Law

Based on the foregoing findings of fact, and subject to compliance with the recommended site certificate conditions, the department recommends that the Council find that the proposed facility complies with the Council's Carbon Dioxide Standard.

VI. PROPOSED CONCLUSIONS AND ORDER

The applicant has submitted an application to construct a natural gas energy facility with an electric generating capacity of 420 megawatts. The Department recommends that the Council include in the site certificate the conditions contained herein, if the Council approves a site certificate for the facility. The Department recommends that the Council find that a preponderance of the evidence on the record supports the following conclusions:

1.) The proposed South Dunes Power Plant complies with the requirements of the Oregon Energy Facility Siting Statutes, ORS 469.300 to 469.520

2.) The proposed South Dunes Power Plant complies with the standards adopted by the Council pursuant to ORS 469.501

3.) The proposed South Dunes Power Plant complies with all other Oregon statutes and administrative rules identified in the project order as applicable to the issuance of a site certificate for the proposed facility

Based on the findings of fact, reasoning, recommended conditions and conclusions of law in this Draft Proposed Order, the Department recommends that the Council conclude that the applicant has satisfied the requirements for issuance of a site certificate for the proposed South Dunes Power Plant, subject to the conditions set forth in this Draft Proposed Order.

Issued this 27th day of May, 2015.

THE OREGON DEPARTMENT OF ENERGY

By: _____

Todd Cornett
Assistant Director
Energy Facility Siting
Oregon Department of Energy

Appendix A

Draft Site Certificate Conditions

A. General Standards of Review Conditions:

Condition A.1: The certificate holder shall begin construction of the facility within three years after the effective date of the site certificate. Under OAR 345-015-0085(8), the site certificate is effective upon execution by the Council chair and the applicant.

Condition A.2: The certificate holder shall complete construction of the facility within eight years of the effective date of the site certificate.

Condition A.3 [OAR 345-027-0020(2)]: The certificate holder shall submit a legal description of the site to the Department of Energy within 90 days after beginning operation of the facility. The legal description required by this rule means a description of metes and bounds or a description of the site by reference to a map and geographic data that clearly and specifically identify the outer boundaries that contain all parts of the facility.

Condition A.4 [OAR 345-027-0020(3)]: The certificate holder shall design, construct, operate, and retire the facility:

(a) Substantially as described in the site certificate;

(b) In compliance with the requirements of ORS Chapter 469, applicable Council rules, and applicable state and local laws, rules and ordinances in effect at the time the site certificate is issued; and

(c) In compliance with all applicable permit requirements of other state agencies.

Condition A.5 [OAR 345-027-0020(4)]: The certificate holder shall begin and complete construction of the facility by the dates specified in the site certificate. (See conditions A.1 and A.2 above).

Condition A.6 [OAR 345-027-0020(5)]: Except as necessary for the initial survey or as otherwise allowed for wind energy facilities, transmission lines or pipelines under this section, the certificate holder shall not begin construction, as defined in OAR 345-001-0010, or create a clearing on any part of the site until the certificate holder has construction rights on all parts of the site. For the purpose of this rule, "construction rights" means the legal right to engage in construction activities. ***

Condition A.7 [OAR 345-027-0020(6)]: If the certificate holder becomes aware of a significant environmental change or impact attributable to the facility, the certificate holder shall, as soon as possible, submit a written report to the Department describing the impact on the facility and any affected site certificate conditions.

Condition A.8 [OAR 345-027-0020(11)]: Upon completion of construction, the certificate holder shall restore vegetation to the extent practicable and shall landscape all areas disturbed by construction in a manner compatible with the surrounding and proposed use. Upon completion of construction, the certificate holder shall remove all temporary structures not required for facility operation and dispose of all timber, brush, refuse and flammable or combustible material resulting from clearing of land and construction of the facility.

Condition A.9 [OAR 345-027-0020(15)]: Before any transfer of ownership of the facility or ownership of the site certificate holder, the certificate holder shall inform the department of the proposed new owners. The requirements of OAR 345-027-0100 apply to any transfer of ownership that requires a transfer of the site certificate.

Condition A.10 [OAR 345-027-0023(2)]: The certificate holder shall submit to the Department copies of all incident reports involving the pipeline required under 49 CFR § 191.15.

Condition A.11: The certificate holder shall design, construct and operate the boil off gas pipeline in accordance with the requirements of the applicable sections of the American Society of Mechanical Engineers (ASME) B31.

B. Organizational Expertise Standard

Condition B.1: The certificate holder shall obtain all necessary federal, state and local permits or approvals required for construction, operation and retirement of the facility or ensure that its contractors obtain the necessary federal, state and local permits or approvals.

Condition B.2: The certificate holder shall contractually require all contractors and subcontractors involved in the construction of the facility to comply with all applicable laws and regulations and with the terms and conditions of the site certificate. Such contractual provisions shall not operate to relieve the certificate holder of responsibility under the site certificate.

Condition B.3 [OAR 345-027-0020(7)]: The certificate holder shall prevent the development of any conditions on the site that would preclude restoration of the site to a useful, non-hazardous condition to the extent that prevention of such site conditions is within the control of the certificate holder.

Condition B.4: Before beginning construction, the certificate holder shall provide confirmation in writing to the department that the third-party, the CBNBWB, has all necessary water rights and shall provide to the department proof of agreements between the certificate holder and the third-party regarding access to the resources or services secured by the permits or approvals.

C. Structural Standard

Condition C.1: Prior to beginning construction, the certificate holder shall provide to the department the final design reports, including but not limited to soil structure interaction numerical modeling, foundation designs, and grading recommendations.

Condition C.2: The certificate holder shall design the facility to resist ground shaking from an event with a 2,475 year recurrence level. All structures shall be designed in accordance with the Oregon Structural Specialty Code (2010) and the 2009 International Building Code.

Condition C.3: Prior to construction, the site certificate holder shall provide to the department maps identifying the final areas requiring ground improvements as well as the final proposed mitigation measures and structures based upon the final site design evaluations. In its submission, the certificate holder shall address the methodology for determining mitigation areas as well as the anticipated performance of unmitigated materials.

Condition C.4 [OAR 345-027-0020(12)]: The certificate holder shall design, engineer and construct the facility to avoid dangers to human safety presented by seismic hazards affecting the site that are expected to result from all maximum probable events. As used in this rule, "seismic hazard" includes ground shaking, landslide, liquefaction, lateral spreading, tsunami inundation, fault displacement, and subsidence.

Condition C.5 [OAR 345-027-0020(13)]: The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if site investigations or trenching reveal that conditions in the foundation rocks differ significantly from those described in the application for a site certificate. After the Department receives the notice, the Council may require the certificate holder to consult with the Department of Geology and Mineral Industries and the Building Codes Division and to propose mitigation actions.

Condition C.6 [OAR 345-027-0020(14)]: The certificate holder shall notify the Department, the State Building Codes Division and the Department of Geology and Mineral Industries promptly if shear zones, artesian aquifers, deformations or clastic dikes are found at or in the vicinity of the site.

Condition C.7: The certificate holder shall design, engineer and construct the facility to avoid dangers to human safety presented by non-seismic hazard. As used in this condition, "non-seismic hazards" include settlement, landslides, flooding and erosion.

D. Soil Protection

Condition D.1: The certificate holder shall conduct all construction work in compliance with an Erosion and Sediment Control Plan (ESCP) satisfactory to the Oregon Department of Environmental Quality and as required under the National Pollution Discharge Elimination Systems (NPDES) Construction Stormwater Discharge General Permit #1200-C. The certificate holder shall include in the ESCP any procedures necessary to meet local erosion and sediment control requirements or stormwater management requirements, including, but not limited to:

a. All exposed soils shall be stabilized during and after construction;
b. Filter bags, sediment fences, sediment traps or catch basins, leave strips or berms or other measures shall be used to prevent movement of soil into waterways and wetlands;
c. Compost berms, impervious materials or other equally effective methods, shall be used to protect soil stockpiled during rain events or when the stockpile site is not moved or reshaped for more than 48 hours;
d. Where vegetation is used for erosion control on slopes steeper than 2:1, a tackified seed mulch shall be used so that the seed does not wash away before germination and rooting;
e. Dredged or other excavated material shall be placed on upland areas having stable slopes and shall be prevented from eroding back into waterways and wetland;
f. Routinely inspect and maintain erosion control measures to ensure their continued effectiveness until soils become stabilized;
g. If soils are to remain exposed for more than seven days after completion of the construction, they shall be covered with erosion control pads, mats or similar erosion control devices until vegetative stabilization is installed and;
h. All erosion control structures shall be removed when the construction is complete and soils are stabilized and vegetated.

Condition D.2: Unless part of the authorized fill, all construction access points through, and staging areas in, riparian and wetland areas shall use removable pads or mats to prevent soil compaction. The certificate holder shall install stabilized construction entrances where the entrances intersect public road rights-of-way or undisturbed property. The certificate holder shall stabilize the temporary haul road with graded aggregate and gravel.

Condition D.3: During construction, the certificate holder shall limit truck traffic to improved surfaces. Within 60 days of completing construction, the applicant shall mitigate any areas of soil compaction by measures to include scarification and reseeding.

Condition D.4: The certificate holder shall develop and implement a hazardous materials management and monitoring plan, which shall include and maintain a materials safety data sheet for all hazardous chemicals stored onsite. The plan shall include best management practices and hazardous waste training for construction and operation personnel involved in the handling of hazardous waste. The certificate holder shall submit a copy of this plan to the department prior to commencing construction of the facility.

Condition D.5: Prior to operation, the certificate holder shall develop a Spill Prevention Control and Countermeasure Plan for implementation during the facility's operation. The certificate holder shall submit a copy of this plan to the department prior to commencement of operation of the facility.

Condition D.6: If a reportable release of hazardous material occurs during construction or operation of the facility, the certificate holder shall notify the department within 72 hours of the occurrence, clean up the release, and dispose of any contaminated soil or other materials according to applicable regulations. The certificate holder shall make spill control and containment kits readily available in areas containing fuel oil, lubricating oil, hydraulic oil, and chemicals, as well as chemical unloading areas. The spill kits shall be equipped with sorbent pads, diatomaceous earth, shovels and appropriate hand tools, curtain booms if working near open water, personal protection equipment, and temporary waste disposal containers.

Condition D.7: For the aboveground diesel fuel storage tank, the site certificate holder shall install a double-walled steel tank, not to exceed a maximum capacity of 5,000 gallons. The site certificate holder shall provide to the department a copy of the aboveground storage tank application and subsequent approval by the Office of the State Fire Marshall prior to operation.

Condition D.8: All vehicle refueling activities shall occur in dedicated areas equipped with spill containment with at least 5 gallons of capacity to capture and contain leaks, drips and spills. A fire extinguisher and a spill kit must be easily accessible near the proposed refueling station. Each vehicle shall be equipped with absorbent spill pads, shovels and buckets.

Condition D.9: Prior to construction, the certificate holder shall develop and implement an Unanticipated Hazardous Waste Discovery Plan in accordance with applicable regulations. The certificate holder shall provide a copy of the Plan to the department prior to construction. In the event of a discovery, the certificate holder shall notify the department within 48 hours of the discovery and include in the notification the certificate holder's response actions taken, consistent with the Plan.

E. Land Use

Condition E.1: Prior to beginning construction, the certificate holder shall provide to the department and the Coos County Planning department a letter from a qualified archaeologist/historian or a duly authorized representative of a local Indian tribe(s) confirming that the proposed project would not adversely impact the historical and archaeological values of the project's site. If adverse impacts are identified, the certificate holder must propose appropriate measures to avoid and preserve the archaeological value. The certificate holder must submit those proposed measures to the department for approval, prior to beginning construction.

Condition E.2: Prior to beginning construction, the certificate holder shall provide a final parking and landscaping plan to the department and Coos County Roadmaster for review and approval. The final parking and landscaping plan shall be in substantial conformance with the plan included as Appendix C to this Order.

F. Protected Areas

No conditions recommended.

G. Retirement and Financial Assurance

Condition G.1 [OAR 345-027-0020(9)]: The certificate holder shall retire the facility if the certificate holder permanently ceases construction or operation of the facility. The certificate holder shall retire the facility according to a final retirement plan approved by the Council, as described in OAR 345-027-0110. The certificate holder shall pay the actual cost to restore the site to a useful, non-hazardous condition at the time of retirement, notwithstanding the Council's approval in the site certificate of an estimated amount required to restore the site.

Condition G.2 [OAR 345-027-0020(16)]: If the Council finds that the certificate holder has permanently ceased construction or operation of the facility without retiring the facility according to a final retirement plan approved by the Council, as described in OAR 345-027-0110, the Council shall notify the certificate holder and request that the certificate holder submit a proposed final retirement plan to the Department within a reasonable time not to exceed 90 days. If the certificate holder does not submit a proposed final retirement plan by the specified date, the Council may direct the Department to prepare a proposed final retirement plan for the Council's approval. Upon the Council's approval of the final retirement plan, the Council may draw on the bond or letter of credit described in OAR 345-027-0020(8) (Condition G.4), to restore the site to a useful, non-hazardous condition according to the final retirement plan, in addition to any penalties the Council may impose under OAR Chapter 345, Division 29. If the amount of the bond or letter of credit is insufficient to pay the actual cost of retirement, the certificate holder shall pay any additional cost necessary to restore the site to a useful, non-hazardous condition. After completion of site restoration, the Council shall issue an order to terminate the site certificate if the Council finds that the facility has been retired according to the approved final retirement plan.

Condition G.3 [OAR 345-027-0020(8)]: Before beginning construction of the facility, the certificate holder shall submit to the State of Oregon, through the Council, a bond or letter of credit in a form and amount satisfactory to the Council to restore the site to a useful, non-hazardous condition. The certificate holder shall maintain a bond or letter of credit in effect at all times until the facility has been retired. The Council may specify different amounts for the bond or letter of credit during construction and during operation of the facility.

Condition G.4: Before beginning construction of the facility, the certificate holder shall submit to the State of Oregon, through the Council a bond or letter of credit naming the State of Oregon, acting by and through the Council, as beneficiary or payee. The initial bond or letter of credit amount for the facility is $20,378,000.00, to be adjusted to the date of issuance, and adjusted on an annual basis thereafter, as described in sub-paragraph (b) of this condition:

a) The certificate holder may adjust the amount of the initial bond or letter of credit based on the final design configuration of the facility. Any revision to the restoration costs should be adjusted to the date of issuance as described in (b) and subject to review and approval by the department.
b) The certificate holder shall adjust the amount of the bond or letter of credit using the following calculation:
   A. Adjust the amount of the bond or letter of credit to present value, using the U.S. Gross Domestic Product Implicit Price Deflator, Chain-Weight, as published in the Oregon Department of Administrative Services' "Oregon Economic and Revenue Forecast" or by any successor agency and using the second quarter 2014 index value and the quarterly index value for the date of issuance of the new bond or letter of credit. If at any time the index is no longer published, the Council shall select a comparable calculation to adjust second quarter 2014 dollars to present value.
   B. Round the result to the nearest $1,000 to determine the financial assurance amount
c) The certificate holder shall use an issuer of the bond or letter of credit approved by the Council
d) The certificate holder shall use a form of bond or letter of credit approved by the Council. The certificate holder shall describe the status of the bond or letter of credit in the annual report submitted to the Council under OAR 345-026-0080. The bond or letter of credit shall not be subject to revocation or reduction before retirement of the facility site.

H. Fish and Wildlife

Condition H.1: Before beginning construction, the certificate holder shall provide the department and the Oregon Department of Fish and Wildlife (ODFW) a detailed map of the facility site, showing all project components, and a table detailing the acres of temporary habitat impacted by habitat category and subtype and the acres of permanent habitat impacted by habitat category and subtype. The maps of the facility site shall indicate the habitat categories of all areas that will be affected during construction. In classifying the affected habitat into habitat categories, the certificate holder shall consult with ODFW. The certificate holder shall not begin construction of the proposed facility until the habitat assessment has been approved by the department, in consultation with ODFW. The certificate holder shall not construct any facility components within areas of Category 1 habitat and shall avoid temporary disturbance of Category 1 habitat.

Condition H.2: If great blue herons, osprey, bald eagles, peregrine falcons or golden eagles are found to be active or nesting on-site following the pre-construction surveys required by

Condition H.7, the applicant shall consult with the department and ODFW to determine if noise protection measures are necessary, prior to undertaking any construction activities. If it is determined that noise protection measures are necessary, the applicant shall implement measures consistent with the Oregon Forest Practices Act guidelines.

Condition H.3: The certificate holder shall implement weed management practices consistent with the measures described in the Habitat Mitigation Plan, adopted under Condition H.13, and as amended. Weed management shall include an integrated management approach, using an appropriate combination of prevention and control methods. The certificate holder shall obtain ODFW and Coos County approval prior to the use of herbicides or pesticides.

Condition H.4: The certificate holder shall restore areas disturbed by facility construction but not occupied by permanent facility structures consistent with the re-vegetation measures contained in the Habitat Mitigation Plan adopted under Condition H.13, and as amended. The certificate holder shall provide temporary seeding to re-establish vegetative cover in previously disturbed areas to prevent erosion of exposed soils. Restoration of shall be conducted using a native seed mix.

Condition H.5: The certificate holder shall construct the transmission structures to meet the Avian Protection Guidelines jointly adopted by the Aviation Power Line Interaction Committee of the Edison Electric Institute and the U.S. Fish and Wildlife Service.

Condition H.6: During all years in which construction occurs, if construction-related activities occur during the aviation breeding season (February 1 through August 31), the certificate holder must conduct pre-construction nesting surveys. If active nests are located, the certificate holder shall notify the department and the Oregon Department of Fish and Wildlife (ODFW) to identify appropriate avoidance or mitigation measures prior to beginning construction. A biologist shall monitor daily the status of the active nests during nearby active construction and document adverse interactions with the project. If adverse impacts are documented, the certificate holder must notify the department and consult with ODFW to determine appropriate mitigation measures. If there is any time lapse greater than one week between vegetation clearing and commencement of construction activities, the certificate holder shall re-conduct the nest surveys.

Condition H.7: Prior to beginning construction, the certificate holder shall conduct wildlife surveys ("pre-construction survey") within the site boundary for the American peregrine falcon, osprey, bald eagle, Pacific marten, northern red-legged frog, western pond turtle, clouded salamander, the great blue heron and golden eagle. The certificate holder shall submit a survey plan to the department and the Oregon Department of Fish and Wildlife prior to conducting the surveys. If any of the above species are observed within the site boundary during the pre-construction surveys, the certificate holder shall implement avoidance and minimization measures, to be developed in consultation with the department and ODFW. If the northern red-

legged frog and western pond turtle are documented, or any additional special status amphibians or reptile species, the certificate holder shall develop and implement a salvage plan in conformance with ODFW's Wildlife Capture, Holding, Transport, and Relocation Guidance.

Condition H.8: The certificate holder shall provide the department and ODFW with a written summary of all results of biological pre-construction surveys, including nest surveys, within 10 days of survey completion.

Condition H.9: The certificate holder shall implement the following measures to avoid or mitigate impacts to sensitive wildlife habitat during construction:

a. The certificate holder shall prepare maps to show exclusion areas that are off-limits to construction personnel, such as nesting or denning areas for sensitive wildlife species
b. The certificate holder shall limit construction work to approved and surveyed areas, including truck traffic

Condition H.10: The certificate holder shall use a qualified environmental professional to provide environmental training during construction and operation. Environmental training shall include information on the sensitive species present onsite, precautions to avoid injuring or destroying wildlife or sensitive wildlife habitat, exclusion areas, permit requirements and other environmental issues. The certificate holder shall instruct construction and operations personnel to report any injured or dead wildlife detected while on the site to the appropriate onsite environmental manager.

Condition H.11: Prior to conducting preconstruction surveys in compliance with Condition H.7, the site certificate holder shall consult with the ODFW regarding nearby suitable habitat where salvaged species could be relocated. The certificate holder shall map these areas and receive ODFW concurrence prior to beginning construction.

Condition H.12: The site certificate holder shall install sheet pile during construction of the barge berth and utilize a turbidity curtain to reduce turbidity and sedimentation impacts to surrounding habitat during in-water work. The site certificate holder shall conduct water quality monitoring throughout construction and provide the department the results of those test within 10 days of completion.

Condition H.13: Prior to commencement of construction, following compliance with Condition H.1, the certificate holder shall consult with the ODFW to determine the final habitat mitigation required. Mitigation shall be provided in accordance with the final acreage determinations provided in response to Condition H.1 and in substantial conformance with the Habitat Mitigation Plan included as Appendix I to this Order.

Condition H.14: The site certificate holder shall conduct monitoring as described in the Habitat Mitigation Plan, included as Appendix I to this Order, and as adopted under Condition H.13. Monitoring activities shall address erosion and sediment control measures, preventative measures to stop the spread of invasive and noxious weed species, water quality monitoring and mitigation site maintenance. The certificate holder shall receive department and ODFW approval of mitigation objectives and performance standards in order to assess the success of mitigation during monitoring activities. Should mitigation not meet the identified performance standard, contingency plans shall be developed.

Condition H.15: The site certificate holder shall endow a land manager to conduct long term monitoring and maintenance at the acquired mitigation sites throughout the life of the project. Monitoring shall begin upon the substantial completion of mitigation construction and implementation. In the first year of monitoring, the certificate holder shall conduct an as-built survey to document the appropriate contours, grading and plantings.

I. Threatened and Endangered Species

Condition I.1: All in-water work shall be conducted during the ODFW approved in-water work window from October 1st through February 15th, unless otherwise allowed by ODFW, to avoid vulnerable fish life stages including, mitigation, spawning and rearing

Condition I.2: Prior to beginning construction, the certificate holder shall conduct pre-construction surveys for Point Reyes bird's beak populations. The certificate holder shall conduct pre-construction surveys within 1,000 feet of any area that would be disturbed by construction of the facility. If Point Reyes Bird's Beak populations are discovered, the certificate holder shall develop mitigation measures in consultation with the Oregon Department of Agriculture and submit to the department for approval. Proposed mitigation measures shall include brightly colored fencing and buffer zones. Construction activities shall be restricted until consultation with ODA has occurred and mitigation has been approved by the department.

Condition I.3: Prior to beginning construction, the site certificate holder shall develop a snowy plover mitigation plan, in consultation with the Fish and Wildlife Service.

J. Scenic Resources

Condition J.1: The certificate holder shall paint or otherwise finish the facility structures in neutral colors with low reflectivity finish to provide visual integration with the surrounding landscape.

Condition J.2: The certificate holder shall implement and provide the department a final lighting plan that is in substantial conformance with the lighting plan included as Appendix K to this Order. The lighting plan shall include provisions minimizing exterior nighttime lighting,

consistent with the lighting required or recommended by the Federal Aviation Administration and such lighting that is necessary for safety and security at the proposed facility

K. Historic, Cultural, and Archaeological Resources

Condition K.1: Before beginning construction, the certificate holder shall appoint a cultural resources monitor. If archaeological or cultural resources are found during construction of the facility, the certificate holder shall cease all ground disturbing activities in the immediate area, and the certificate holder shall implement the procedures contained in the Unanticipated Discovery Plan, incorporated as Appendix Q of this Order.

Condition K.2: The site certificate holder shall provide 72 hours' notice to the Confederated Tribes of the Coos, Lower Umpqua & Siuslaw Indians, the Coquille Indian Tribe, and the Confederated Tribes of the Siletz Indians prior to commencement of any ground disturbing/testing activities and invite tribal representatives to be present during all ground-breaking activities.

L. Recreation

No conditions recommended.

M. Public Services

Condition M.1: The certificate holder shall undertake the intersection widening on the northern side of the intersection of Transpacific Parkway and US 101 as described in the application for site certificate. The certificate holder shall work with the Oregon Department of Transportation as well as the Coos County Road Department in designing, installing and implementing the road widening. The certificate holder shall keep business and land owners on the North Spit appraised of the schedule and potential transportation impacts. The certificate holder shall provide the department a written progress report on the intersection widening, as well as evidence of consultation with the ODOT and the County at least 90 days prior to the commencement of construction.

Condition M.2: Upon completion of construction, the certificate holder shall restore public roads to pre-construction conditions or better to the satisfaction of the Coos County Road Department.

Condition M.3: Before beginning construction, the certificate holder shall submit to the department documentation of continuing consultations with the FAA and Oregon Department of Aviation, the results of any additional studies conducted by the FAA, and copies of any determinations of findings made with respect to the South Dunes Power Plant and related and supporting facilities from the FAA and ODA.

Condition M.4: The site certificate holder shall fence the energy facility site and include a gated entrance.

Condition M.5: Prior to beginning construction, the certificate holder shall develop and implement a fire protection system, which shall include fire water system, portable fire extinguishers, a smoke detection system and a carbon dioxide extinguishing system.

N. Waste Minimization

Condition N.1: Prior to construction, the certificate holder shall implement a waste management plan that includes but is not limited to the following measures:

a.) Establish a waste minimization team and train all employees to minimize and recycle solid waste.

b.) Implement a facility-wide recycling program for waste paper products, steel and other scrap metals, wood wastes, glass and plastics.

c.) Recycle used oil and hydraulic fluid.

d.) Separate non-hazardous solid waste into recyclable and non-recyclable material, and store materials in the appropriate onsite container or dumpster. The certificate holder shall ensure these containers and dumpsters are routinely picked up by a licensed contractor and disposed of at an appropriate facility.

e.) Segregate all hazardous and universal wastes such as used oil, oily rags and oil-absorbent materials, mercury-containing lights and lead-acid and nickel-cadmium batteries for disposal by a licensed firm specializing in the proper recycling or disposal of hazardous and universal wastes.

Condition N.2: The certificate holder shall provide portable toilets for on-site sewage handling during construction and shall ensure that they are pumped and cleaned regularly by a licensed contractor qualified to pump and clean portable toilet facilities.

Condition N.3: Prior to construction, the certificate holder shall provide to the department a copy of its modified NPDES waste water discharge permit issued by ODEQ. During construction and operation, the certificate holder shall discharge wastewater generated at the facility in compliance with all DEQ permit requirements.

Condition N.4: The certificate holder shall collect all hazardous solid waste, including oily waste, used filters, and oily rags or absorbents in sealable drums. The certificate holder shall collect used oils, solvents, and cleaning materials in tanks or barrels supplied by material vendors.

Condition N.5: The certificate holder shall store hazardous chemicals in aboveground containers or tanks located within secondary containment areas. Other chemicals and

lubricants needed for facility maintenance and operation shall be stored in the administrative/maintenance buildings.

O. Noise

Condition O.1: Prior to construction, the certificate holder shall develop, implement and submit to the department a complaint procedure for construction and operation of the proposed facility. The certificate holder shall notify the department within 15 days of receiving a complaint about noise from the facility. The notification should include the date the complaint was received, the nature of the complaint, the complainant's contact information, the location of the affected property, and any actions taken, or planned to be taken, by the certificate holder to address the complaint.

Condition O.2: Within 120 days of commencing operation of the facility, the certificate holder shall monitor and record the actual statistical noise levels during operations to verify that the certificate holder is operating the facility in compliance with noise control regulations. A monitoring plan must be reviewed and approved by the department prior to implementation. The cost of such monitoring shall be borne by the certificate holder. If the monitoring results demonstrate that sound levels attributable to the operation of the facility exceed L50 noise level of 50 dBA at any noise sensitive property that is in existence as of the issuance date of the site certificate, the certificate holder shall submit a noise mitigation plan for approval by the department.

Condition O.3: Upon written notification from the department, the certificate holder shall monitor and record the actual statistical noise levels during operations to verify that the certificate holder is operating the facility in compliance with the noise control regulations. The cost of such monitoring, if required, will be borne by the certificate holder.

P. Siting Standards for Transmission Lines

Condition P.1 [OAR 345-027-0023(4)]:

(a)The certificate holder shall design, construct and operate the transmission line in accordance with the requirements of the National Electrical Safety Code (American National Standards Institute, Section C2, 1997 Edition)
(b) The certificate holder shall develop and implement a program that provides reasonable assurance that all fences, gates, cattle guards, trailers, or other objects or structures of a permanent nature that could become inadvertently charged with electricity are grounded or bonded throughout the life of the line.

Q. Removal-Fill

Condition Q.1: Before beginning construction, the certificate holder must obtain and provide proof to the department that a removal-fill permit from the DSL was obtained and that it includes the conditions recommended in the Appendix N this Order. The certificate holder must comply with all conditions of the removal-fill permit.

R. Ground Water

Condition R.1: During operation of the facility, the certificate holder shall limit the use of water obtained from the CBNBWB to the amounts found to be within the scope of the water rights held by the CBNBWB.

S. Carbon Dioxide

Condition S.1: Before beginning construction of the facility, the certificate holder shall notify the Department in writing of its final selection of an equipment vendor and shall submit a written design information report to the Department sufficient to verify the designed new and clean heat rate and its nominal electric generating capacity at average annual site conditions for the base load gas plant, including the combined-cycle turbine generators and duct burners.

Condition S.2: The certificate holder shall implement a monitoring and evaluation plan, consistent with information provided in Exhibit Y of Application for Site Certificate, including methodologies to be used for data collection, monitoring, storage, reporting and management, including quality assurance and quality control provisions. The monitoring and evaluation plan shall include formulae, assumptions, and complete calculations used to estimate carbon dioxide emissions from facility operations and carbon dioxide emission reductions achieved through non-electric uses of produced thermal energy. The certificate holder shall maintain a current copy of the monitoring and evaluation plan onsite and shall make available for Department review upon request. If the applicant proposes to utilize methodologies, formulae, or assumptions which differ from the information provided in the Application for Site Certificate, the applicant shall submit a modified monitoring and evaluation plan to the Department for review and approval prior to implementation.

Condition S.3: The certificate holder shall implement a verification plan, consistent with information provided in Exhibit Y of the Application for Site Certificate, which ensures accuracy, comparability, completeness and validity of methodologies proposed for data collection, monitoring, storage, reporting and management, to track and verify carbon dioxide emissions and carbon dioxide emission reductions from facility operations. The certificate holder shall maintain a current copy of the verification plan onsite and shall make available for Department review upon request.

Condition S.4: Before beginning operation, the certificate holder shall submit to the Department a copy of the authorized contractual agreement for the independent entity, or

third party verifier, demonstrating that services required by the verification plan, as provided in Exhibit Y of the Application for Site Certificate, have been secured. The contractual agreement shall specify, at a minimum, services including: annual site visits; inspection of meters, recording equipment and any other monitoring-related equipment; annual recordkeeping audits; quarterly review of monitored data and calculations; and, semi-annual audit reports. The certificate holder shall maintain all records received from the independent entity including but not limited to semi-annual audit reports, corrective actions and findings onsite for a period of five-years and shall make available to the Department upon request.

Condition S.5: The certificate holder shall use only pipeline quality natural gas or shall use synthetic gas with a carbon content per million Btu no greater than pipeline-quality natural gas to fuel the combined-cycle combustion turbines for the base-load gas plant when operating with or without power augmentation.

Condition S.6: The net carbon dioxide emissions rate for the proposed facility must not exceed 0.675 pounds of carbon dioxide per kilowatt-hour of net electric power output, with carbon dioxide emissions and net electric power output measured on a new and clean basis, as defined in OAR 345-001-0010.

Condition S.7: For the purposes of the site certificate, "monetary path payment requirement" means the amount of offset funds determined pursuant to OAR 345-024-0550, -0560, -0590 and -0600 and the amount of the selection and contracting funds that the certificate holder must disperse to The Climate Trust, as the qualified organization, pursuant to OAR 345-024-0710 and the site certificate. The certificate holder shall calculate the monetary path payment requirement using an offset fund rate of $1.27 per ton of carbon dioxide in 2015 dollars.

a. The certificate holder shall calculate 2015 dollars using the index described is subsection (c) below.

b. The certificate holder shall increase the amount of the letter of credit described in Condition S.11 by the percentage increase in the index. The certificate holder shall index the funds from the date of the Council's approval of the site certificate to the date of disbursement of funds to The Climate Trust.

c. The calculation of 2015 dollars shall be made using the same index described in Condition G.4. The amount of the letter of credit shall increase annually by the percentage increase in the index and shall be pro-rated within the year to the date of disbursement to The Climate Trust from the date of Council approval of the site certificate. If at any time the index is no longer published, the Council shall select a comparable calculation of 2015 dollars without an amendment of the site certificate.

Condition S.8: To calculate the initial monetary path requirement, the certificate holder shall use the contracted design parameters for capacities and heat rates submitted to the Department per Condition S.1.

Condition S.9: Before beginning construction of the facility, the certificate holder shall enter into a Memorandum of Understanding (MOU) with The Climate Trust that establishes the disbursement mechanism to transfer selection and contracting funds and offset funds to The Climate Trust.

a. The MOU must be substantially in the form of Appendix X to this Draft Proposed Order on the Application. At the request of the certificate holder, the Council may approve a different form of a letter of credit and concurrent MOU without an amendment of the site certificate.

b. Either the certificate holder or The Climate Trust may submit to the Council for the Council's resolution any dispute between the certificate holder and The Climate Trust concerning the terms of the letter of credit, the MOU or any other issues related to the monetary path payment requirement. The Council's decision shall be binding on all parties.

Condition S.10: Before beginning construction of the facility, the certificate holder shall submit all monetary path payment requirement calculations to the Department for verification in a timely manner before submitting a letter of credit for Council approval, before entering into the MOU with The Climate Trust as required by Condition S.9, and before making disbursements to The Climate Trust.

Condition S.11: Before beginning construction of the facility, the certificate holder shall submit to The Climate Trust a letter of credit in the amount of the offset funds of the monetary path payment requirement as determined under Condition S.7 and Condition S.8:

a. The certificate holder shall use a form of letter of credit that is substantially in the form of Appendix B to the MOU described in Condition S.9. At the request of the certificate holder, the Council may approve a different form of a letter of credit without an amendment of the site certificate.

b. The certificate holder shall use an issuer of the letter of credit approved by the Council.

c. The certificate holder shall maintain the letter of credit in effect until the certificate holder has disbursed the full amount of the offset funds to The Climate Trust. The certificate holder may reduce the amount of the letter of credit commensurate with payments it makes to The Climate Trust. The letter of credit must not be subject to revocation before disbursement of the full amount of the offset funds.

Condition S.12: The certificate holder shall disburse to The Climate Trust offset funds and selection and contracting funds when requested by The Climate Trust in accordance with Condition S.9 and Condition S.11 and the following requirements:

a. The certificate holder shall disburse selection and contracting funds to The Climate Trust before beginning construction and as appropriate when additional offset funds are required under Condition S.13.

b. Upon notice pursuant to subsection (c), The Climate Trust may request from the issuer of the letter of credit the full amount of all offset funds available or it may request partial payment of offset funds at its sole discretion. Notwithstanding the specific amount of any contract to implement an offset project, The Climate Trust may request up to the full amount of offset funds the certificate holder is required to provide to meet the monetary path payment requirement.

c. The Climate Trust may request disbursement of offset funds pursuant to paragraph (b) by providing notice to the issuer of the letter of credit that The Climate Trust has executed a letter of intent to acquire an offset project. The certificate holder shall require that the issuer of the letter of credit disburse offset funds to The Climate Trust within three business days of a request by The Climate Trust for the offset funds in accordance with the terms of the letter of credit.

Condition S.13: Within the first 12 months of commercial operation of the facility, the certificate holder shall conduct a 100-hour test (Year One Test). As the facility is comprised of two independent power blocks, the Year One Test shall be designed to run each power block independently at 100% of the power block's capacity, with power augmentation. Each power block shall be ran for 100 hours. Tests performed for purposes of the certificate holder's commercial acceptance of the facility may suffice to satisfy this condition in lieu of testing after beginning commercial operation.

a. The certificate holder shall conduct the Year One Test to determine the actual heat rate (Year One Heat Rate) and the net electric power output (Year One Capacity) on a new and clean basis, without degradation, with the results adjusted for the average annual site condition for temperature, barometric pressure and relative humidity. The certificate holder shall calculate carbon dioxide emissions using a rate of 117 pounds of carbon dioxide per million Btu of natural gas fuel and annual operations equal to 8,760 hours per year.

b. The certificate holder shall notify the Department at least 60 days before conducting the tests required in subsection (a) unless the certificate holder and the Department have mutually agreed that less notice will suffice.

c. Before conducting the test required in subsection (a),the certificate holder shall, in a timely manner, provide to the Department for its approval a copy of the protocol for conducting the test. The certificate holder shall not conduct the test until the Department has approved the testing protocol.

d. Within two months after completing the Year One Test, the certificate holder shall provide to the Council a report of the results of the Year One Test.

Condition S.14: Based on the data from the Year One Test described in Condition S.13, the certificate holder shall calculate an adjusted monetary path payment, if applicable. The certificate holder shall submit its calculations to the Department for verification. If the adjusted amount exceeds the amount of the letter of credit provided according to Condition S.11 before beginning construction, the certificate holder shall fully disburse the excess amount directly to The Climate Trust within 30 days of the Department's verification of the calculations.

a. The certificate holder shall include the appropriate calculations of the adjusted monetary path payment with its report of the result of the Year One Test required under Condition S.13.

b. For calculating the adjusted monetary path payment, the certificate holder shall use an offset fund rate of $1.27 per ton of carbon dioxide (in 2015 dollars) and shall calculate contracting and selecting funds based on 10 percent of the first $500,000 in offset funds and 4.286 percent of any offset funds in excess of $500,000 (in 2015 dollars).

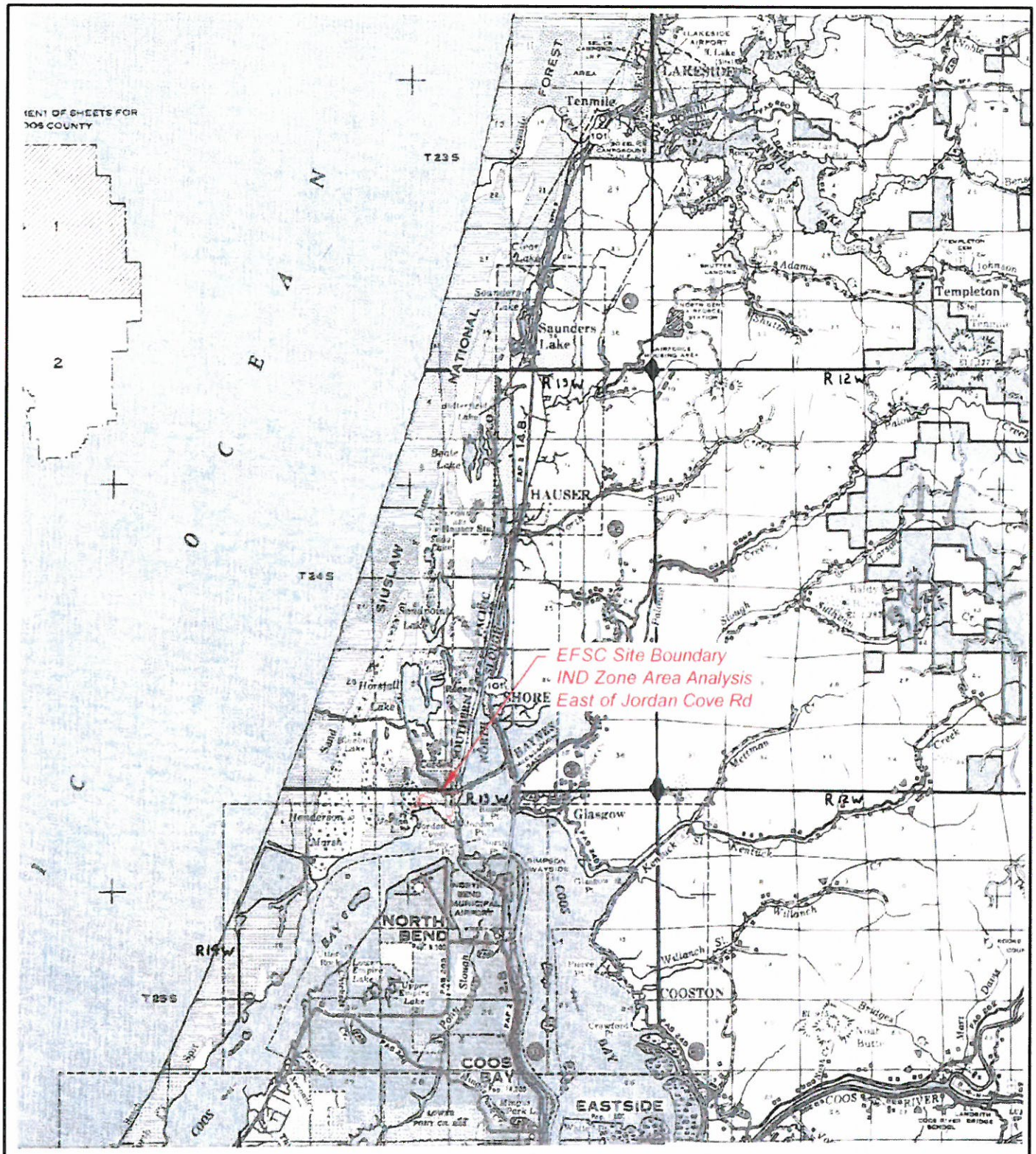
c. In no case shall the certificate holder diminish the value of the letter of credit it provided before beginning construction or receive a refund from The Climate Trust based on the calculations made using the Year One Capacities and the Year One Heat Rates.

Condition S.15: Every five years after beginning commercial operation of the facility (five-year reporting period), the certificate holder shall submit to the Department five-year reports, within 30 days after the anniversary date of beginning commercial operation, including the following:

a. Report presenting results of a current 100-hour test to verify the actual heat rate (Btu/kWh) and net electric power output (kW) on a new and clean basis, without degradation, with the results adjusted for the difference between the actual ambient site conditions and average annual conditions. The report shall include the test protocol specifying the testing date, time, test method, instrument calibration records, adjustment factors and references, and results.

b. The net full power heat rate of the combined-cycle combustion turbines with duct-firing as determined by the 100-hour test conducted per subpart (a). The net full power heat rate shall be measured as the total fuel input divided by the net kWh production over the 100-hour test period, adjusted for the difference between the actual ambient site conditions and average annual conditions.
c. Actual hours of operation of the base-load gas plant for each year during the five-year reporting period.
d. Amount (MMBtu/yr) and average temperature and pressure of steam supplied to the auxiliary boiler at the Jordan Cove Energy Project's Liquefied Natural Gas facility for each year during the five-year reporting period, as measured and verified in accordance with Condition S.2 and S.3.
e. Based on actual operational data provided per subparts (a) – (d), provide calculations of the gross carbon dioxide emission rate, rate of emission reductions achieved through offsite thermal energy use, excess carbon dioxide emissions for the five-year reporting period, and value of supplemental offset funds, if applicable, required to offset any additional excess carbon dioxide emissions not accounted for in the initial monetary path payment to The Climate Trust
    i. The certificate holder shall pay for the excess emissions at $1.27 per ton of carbon dioxide emissions (in 2015 dollars). The certificate holder shall pay selection and contracting funds of 10 percent of the first $500,000 in offset funds and 4.286 percent of any offset funds in excess of $500,000 (in 2015 dollars). The Department shall notify the certificate holder and The Climate Trust of the verified amount of supplemental payment required to offset excess emissions.
    ii. The certificate holder shall disburse the supplemental offset funds and supplemental selection and contracting funds to The Climate Trust within 30 days after notification by the Department of the amount that the certificate holder owes.

Appendix B
Special Considerations Phenomenon 7-Natural Hazards



Not to Scale

Data Source: Coos County Zoning and Land Development Ordinance (CCZ-LDO) Article 4.7

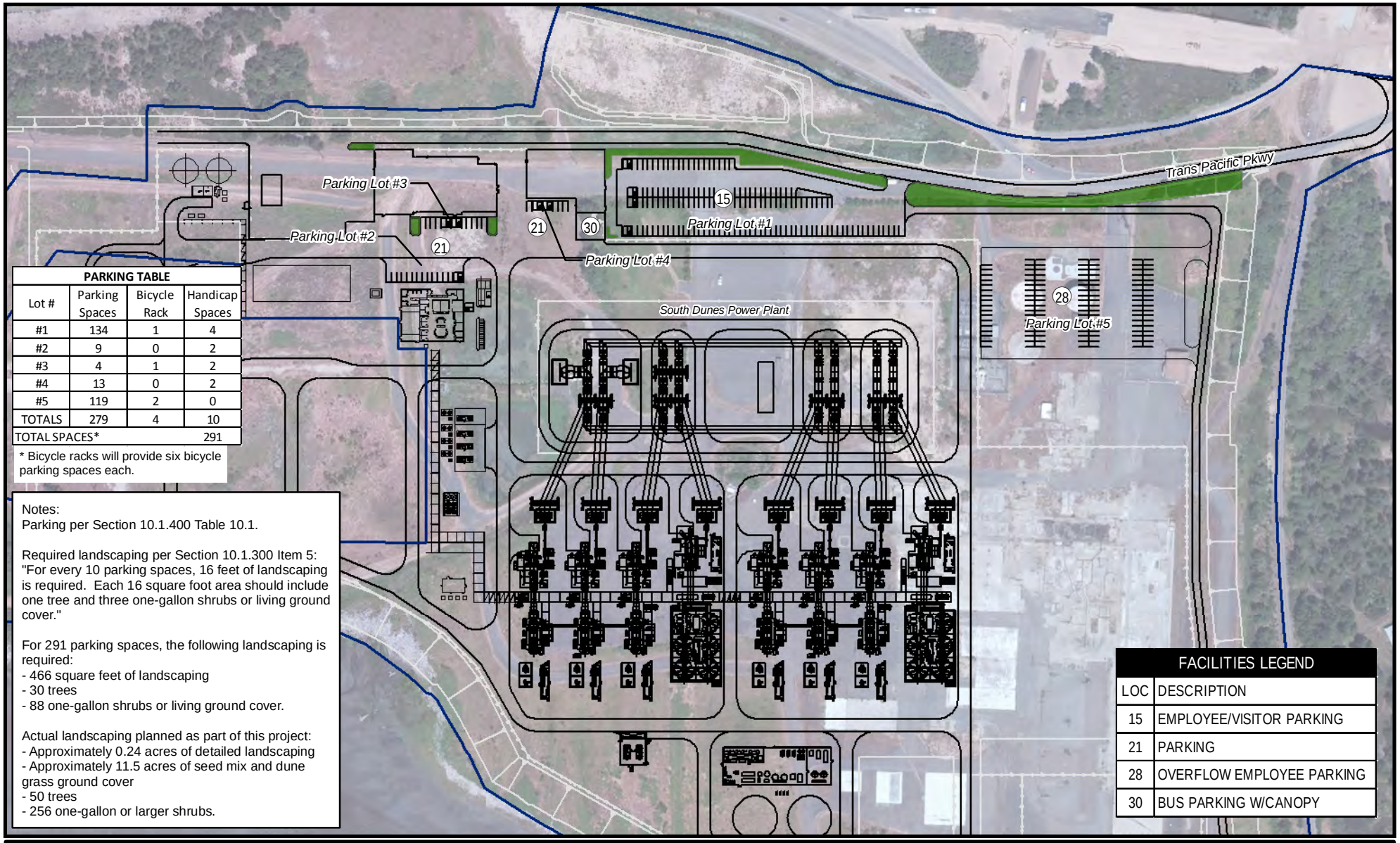
South Dunes Power Plant Project

EFSC Application

EXHIBIT K
Figure K-4.7
Table 4.7a - Special Considerations
Phenomenon 7 - Natural Hazards

Date: 11/15/2013
Reviewed By: SD
Designed By: MW

appendix C
Parking and Landscaping Plan



PARKING TABLE			
Lot #	Parking Spaces	Bicycle Rack	Handicap Spaces
#1	134	1	4
#2	9	0	2
#3	4	1	2
#4	13	0	2
#5	119	2	0
TOTALS	279	4	10
TOTAL SPACES*			291

* Bicycle racks will provide six bicycle parking spaces each.

Notes:
Parking per Section 10.1.400 Table 10.1.

Required landscaping per Section 10.1.300 Item 5: "For every 10 parking spaces, 16 feet of landscaping is required. Each 16 square foot area should include one tree and three one-gallon shrubs or living ground cover."

For 291 parking spaces, the following landscaping is required:
- 466 square feet of landscaping
- 30 trees
- 88 one-gallon shrubs or living ground cover.

Actual landscaping planned as part of this project:
- Approximately 0.24 acres of detailed landscaping
- Approximately 11.5 acres of seed mix and dune grass ground cover
- 50 trees
- 256 one-gallon or larger shrubs.

FACILITIES LEGEND	
LOC	DESCRIPTION
15	EMPLOYEE/VISITOR PARKING
21	PARKING
28	OVERFLOW EMPLOYEE PARKING
30	BUS PARKING W/CANOPY

N

0 150 300 Feet

1 inch = 300 feet

EFSC Site Boundary
Planned Landscaping

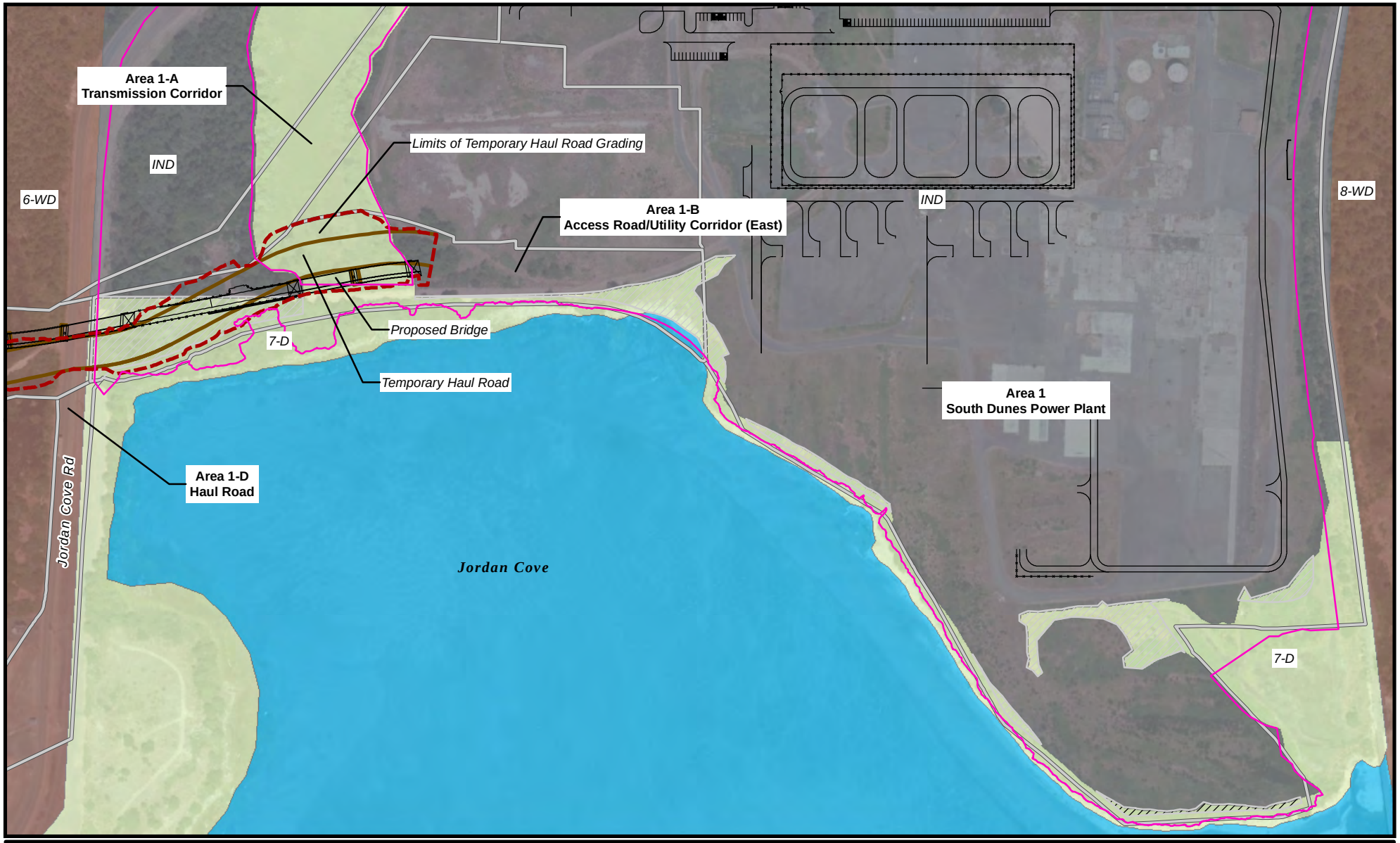
South Dunes Power Plant Project

EFSC Application

EXHIBIT K
Figure K-3
Parking and Landscaping Plan

Date: 9/22/2014
Reviewed By MW
Designed By SAST

Appendix D
Approved 7-D Fill Areas and Temporary Fill for Utility Corridor in Wetland E

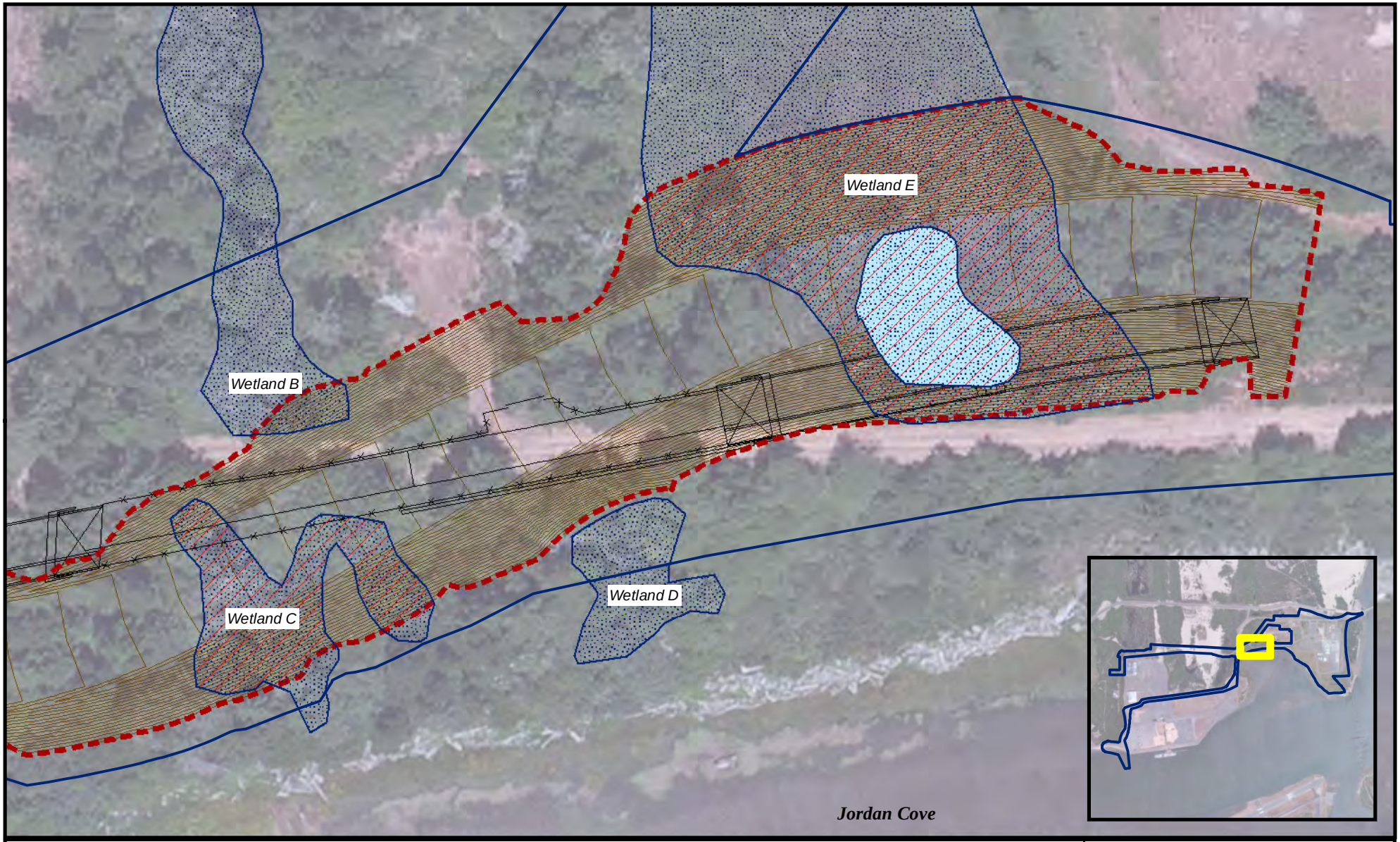


South Dunes Power Plant Project

EFSC Application

EXHIBIT K
Figure K-2.1
Approved 7-D Fill Areas

Date: 9/22/2014
Reviewed By MW
Designed By SAST



N

0 45 90 Feet

1 inch = 90 feet

EFSC Site Boundary
Delineated Wetland
Open Water
Permanent Jurisdictional Wetland Impact
Proposed Bridge Design
Limits of Temporary Haul Road Grading
Temporary Contour (2' Interval)

South Dunes Power Plant Project

EFSC Application

EXHIBIT K
Figure K-7
Temporary Fill for Utility
Corridor in Wetland E

Date: 9/22/2014
Reviewed By MM
Designed By SAST

Appendix E
SHN Letter-Floodplain

EXHIBIT K-2

CONSULTING ENGINEERS & GEOLOGISTS, INC.
275 Market Avenue• Coos Bay, Oregon 97420-2228 • Phone: 541/266-9890 • FAX: 541/266-9496•shninfo@shn-engr.com

Reference: 611048.143

November 21, 2013

Mr. Mark Whitlow
Perkins Coie, LLP
1120 N.W. Couch Street, Tenth Floor
Portland, OR 97209-4128

Subject: South Dunes Power Plant Site Development: Analysis and Certification of Impacts of Fill on the Flood Hazard of Coos Bay at River Mile 8.5 to River Mile 9.2

Mr. Whitlow:

This letter report presents SHN's analysis and certification of the impacts of fill on lands identified in Coos County's floodplain overlay zone (FP). The SDPP project proposes fill within a Special Flood Hazard Area of Coos Bay at River Mile (RM) 8.5 to RM 9.2 (Firm Panel 41011C0186D). As shown in the attached Figure, portions of the fill associated with the South Dunes Power Plant will be placed within the FP zone, an area designated by Coos County Code Section 4.6.205 as a Special Flood Hazard Area (SFHA). According to Coos County floodplain regulations in LDO Section 4.6.230(4), development within the SFHA cannot increase the base flood elevation by more than 1-foot (or create an increase in the flood hazard). The Base Flood Elevation (BFE) for the SFHA for this portion of Coos Bay has been established by the Federal Emergency Management Agency (FEMA) at elevation 12.0 (NAVD 88).

Coos County's Floodplain zoning purposes to balance the benefits from floodplain development against the resulting increase in flood hazards and/or flood damage. A designated regulatory floodway is often prescribed by local agencies to assist in managing development within areas subject to flooding. Under this concept, the area of the established flood elevation is divided into a floodway and a fringe. The floodway defines the portion of the stream or river channel plus adjacent floodplain areas that are reserved to provide sufficient hydraulic capacity to convey a flood at a known elevation. Generally, the floodway must be managed to be free of restrictions so that the 1-percent-annual-chance flood (100 year flood) can be conveyed without substantial and damaging increases in flood heights or an increase in water velocity. Minimum Federal standards and Coos County FP policy limit the increase in the flood elevation to 1.0 foot, provided that hazardous velocities are not produced.

FEMA has established the BFE for the Coos Bay Estuary; however, no floodway has been designated for the portion of estuary adjacent to the project area. The September 25, 2009, FEMA Flood Insurance Study for Coos County Oregon and Incorporated Areas states: "...the floodway concept is not applicable in areas where flooding is controlled by tidal influences." The proposed fill areas are located in the lower bay where the BFE is controlled by tidal influence. Provided the fill does not reduce the hydraulic capacity of the estuary (i.e. restrict the ebb and flow of bay water), the fill should have no affect on the base flood elevation.

In order to determine the possible impacts of the project on the flood level, cross sectional areas of the estuary within the vicinity of the project and immediately upstream and downstream were evaluated. Approximately 1,800 feet downstream of the project area, the river channel narrows to form a limiting cross section where the ebb and flow of the bay is constricted by the natural confines of the estuary channel and narrow tide lands. The total width of the channel associated with the BFE in this area is approximately 2,400 feet. Another river channel constriction is located immediately upstream of the project area at Jordan point. The BFE channel width at this point is approximately 2,600 ft. The proposed fill areas occur between these two points of flow constriction in a wider cross sectional portion of the estuary. Because the proposed fill does not reduce the controlling cross sectional areas of the channel, the velocity during the ebb and flow of bay waters will remain unchanged and the fill will have no affect on the base flood elevation or the flood hazard.

Considering the expansive volume of intertidal and runoff storage existing in the Coos Bay Estuary, the overall impacts associated with the small amounts of proposed fill in the existing fringe areas are insignificant and will have no affect on the BFE nor result in an increase in flood hazards. The area of the bay between the two channel constrictions is approximately 674 acres (area between RM 8.5 and RM 9.2 including Pony Slough). The total amount of fill placed within this portion of the bay is estimated at 5,200 cubic yards (3.2 acre-feet). Ignoring tidal influences and the flow through the upper and lower controlling cross sectional areas of the bay; the fill will displace a volume of water equivalent to an increase in the height of water above the BFE of 0.005 feet (less than 1/16th of an inch). The impact of the proposed fill on the storage volume for this portion of the bay is therefore inconsequential.

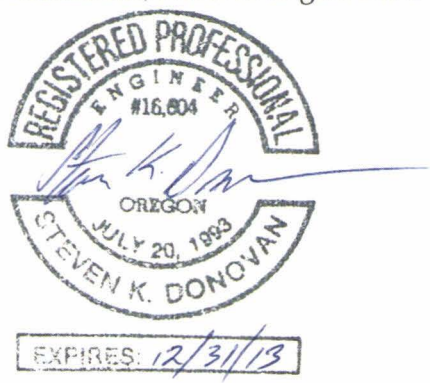
The base flood elevation between Coos Bay RM 8.5 and RM 9.2 is controlled by tidal influence; consequently, a floodway has not been designated. The placement of fill along the fringe of Coos Bay will have no affect on the BFE nor will the fill cause an increase in the velocity of water or increase flood hazards. We conclude that the proposed fill for the SDPP will have no affect on the special flood hazard area for this portion of Coos Bay, result in any increase in flood levels during the occurrence of the base flood discharge; or, result in a cumulative increase of more than one foot during the occurrence of the base flood discharge

We trust this report assists you in addressing the SDPP impacts of fill on the base flood elevation and special flood hazard area. Should you have any questions or comments, feel free to give me a call at 541-266-9890.

Regards,
SHN Consulting Engineers & Geologists, Inc.

Steven K. Donovan, P.E.
Regional Manager

SKD:dkl



Appendix F
SHN Letter-Beaches & Dunes

EXHIBIT K-3

CONSULTING ENGINEERS & GEOLOGISTS, INC.
275 Market Avenue• Coos Bay, Oregon 97420-2228 • Phone: 541/266-9890 • FAX: 541/266-9496•shninfo@shn-engr.com

Reference: 611048.143

December 19, 2013

Mr. Mark Whitlow
Perkins Coie, LLP
1120 N.W. Couch Street, Tenth Floor
Portland, OR 97209-4128

Subject: South Dunes Power Plant Site Development Policy #30 Analysis: Suitability of Area 1, Area 1-A, and Area 1-B Relative to Beach and Dune Provisions of the Coos County Comprehensive Plan

Dear Mr. Whitlow:

This letter report presents a supplement to SHN's prior August 7, 2012 assessment of development suitability of land identified by Coos County as "Beaches & Dunes with a Limited Suitability for Development" for certain areas of land formerly known as the Weyerhaeuser Mill Site. That land is now proposed for development by the Jordan Cove Energy Project, L.P. (JCEP) as the South Dunes Power Plant (SDPP), with accessory transmission line corridor and accessory road and utility corridor. This letter will reference SHN's prior August 7, 2012 assessment letter and its related exhibits, copies of which are attached.

The prior letter assessed areas of land for suitability to place fill to make those areas ready for development. The purpose of this letter is twofold: (1) assess those same areas for suitability to develop them for a power plant/port facility industrial and related use; and (2) assess a small, new area not covered by the prior letter for suitability for *both* the placement of fill and the proposed power plant use. Please note that there is no appreciable difference in the reviews needed under the County's rules for development of beaches and dunes to authorize the placement of fill, as opposed to the reviews needed to use those same areas for an allowed use in the same zone.

As in the prior letter, this letter will address land in the Coos Bay Estuary Management Plan (CBEMP) Zoning District 7-D but, to a lesser extent, land in the adjacent IND zone. As indicated in the prior letter, the IND land is considered "Balance of County" in the Coos County Comprehensive Plan (CCCP), and is subject to the requirements outlined in Section 5.10 (Strategy 2) of Appendix 1, Volume I of the CCCP. Areas within district 7-D are covered within the CBEMP, and are subject to Policy #30 within Appendix 3, Volume II.

This letter report presents SHN's site investigation report for the suitability of development for three areas of the proposed SDPP. The three areas shown in the attached Figure are the SDPP site (Area 1) and accessory corridors to the SDPP which include a transmission corridor (Area 1-A) and a roadway and utility corridor east of Jordan Cove Road (Area 1-B). These corridors include lands located in Zoning District 7-D with dune forms identified in Coos County's Special Considerations Map as "Beaches and Dunes with a Limited Suitability for Development". Industrial and Port Facility use is permitted within the 7-D zone subject to General Conditions that include consistency with CBEMP Policy #30 requirements for special dune areas. The intent of this letter is to prepare a

site investigation report that documents the absence of potential impacts to Beaches and Dunes from the proposed industrial and port facility activities at the following locations:

Area -1 The area of the former Weyerhaeuser Mill Site in the IND zone. There are no dune formations in this area. The remainder of the report will only address the other two areas discussed below.

Area -1-A An east-southwest transmission corridor west of the SDPP site that is zoned IND except for the portion of the corridor that crosses a wetland located in Zoning District 7-D. The western end of the corridor in IND zoning is included in the Coos County detailed inventory map as an area of Beach and Dune Special Consideration Areas while the eastern end is not. As indicated on the CBEMP Special Considerations Map, the portion that crosses the 7-D zoning also extends across a Wet Deflation Plain (WDP) on land identified as a Beach and Dune Special Consideration Area;

Area -1-B An east-west roadway/utility corridor extending eastward from Jordan Cove Road toward Jordan Point. The area affected includes portions of land with IND zoning and 7-D zoning that extends across a Wet Deflation Plain (WDP) on land identified as a Beach and Dune Special Consideration Area. The eastern side of the utility corridor in IND zoning is not located in an area of Special Consideration for Beaches and Dunes with limited development suitability.

The analysis described herein is required under the regulatory guidelines presented in CBEMP Policy #30 of Appendix 3, Volume II and CCCP Section 5.10 (Strategy 2). Both Policies are essentially identical except where the Polcy # 30 addresses land in the CBEMP and Section 5.10 addresses land in the balance of county. Specifically, the subject areas are shown as "Beach and Dune Areas with Limited Development Suitability" on the Coos Bay Estuary Management Plan Special Considerations Map. As stated in Policy #30 and Section 5.10, all dune forms except older stabilized dunes, active foredunes, conditionally stabilized foredunes that are subject to ocean undercutting or wave overtopping, and interdune areas (deflation plains) subject to ocean flooding, are considered "Beach and Dune areas with Limited Development Suitability." For the reasons discussed below, the dune forms in Area 1-A and Area 1-B are included in the category of Beach and Dune Areas with Limited Development Suitability, and are subject to the requirements of Policy #30 and Section 5.10 which dictate the establishment of findings relative to a list of minimum requirements. Policy # 30 has five requirements while Section 5.10 has four, all of which are included in Policy # 30. This report is not intended to address whether a use is appropriate with regard to any adverse effects associated with the development, public health and safety, or hazards to the natural environment to the extent that it does not relate to the geotechnical issues considered by Policy 30.

CBEMP Policy #30/CCCP Section 5.10 (Strategy 2)

As shown in the attached Figure, Area 1-A and Area 1-B include portions of land identified in the Coos County Beaches and Dunes Special Considerations Area. Based on historical photos of the

area, an interdune feature existed along this portion of the old "Weyerhaeuser" property. During the past half century the area has been modified by development of roadways and industrial activity. Only remnant features of the historic interdune complex remain. These remnants include a wet deflation plain now divided by the Jordan Cove Road, Trans Pacific Highway, and two existing Mill Site utility corridors.

Based on topographical data (LiDAR and GPS survey) Area 1-A and Area 1-B are outside the limits of ocean flooding as indicated by the Federal Emergency Management Agency (FEMA) flood maps. Areas subject to ocean flooding are mapped using the base flood elevation established by FEMA for the Jordan Cove area of Coos Bay. The land form mapped as a Beaches and Dune Special Consideration Area, including the interdune areas ("Wet Deflation Plains") identified within the project boundary, are located above the base flood elevation and not subject to ocean flooding. The area is therefore, subject to CBEMP Policy #30 (and CCP Section 5.10) as an area with "Limited Development Suitability". This area includes dune forms that are not older stabilized dunes, active foredunes, or Wet Deflation Plain dune forms subject to ocean flooding. Each policy provides criteria for development in such interdune areas by "recognizing that development in sensitive beach and dune areas is compatible with or can be made compatible with the fragile and hazardous conditions common to beach and dune areas". Although there are minor differences in specific wording, the two policies are generally the same. Of the five criteria outlined below, which all appear in Policy #30, only criteria "e" is not included in Section 5.10 (Strategy 2). The five criteria are outlined below.

- ***Restricting Actions in Beach and Dune Areas with "Limited Development Suitability" and Special Consideration for Sensitive Beach and Dune Resources***

  1. *Coos County shall permit development within areas designated as "Beach and Dune Areas with Limited Development Suitability" on the Coos Bay Estuary Special Considerations Map only upon the establishment of findings that shall include at least:*
     a. *The type of use proposed and the adverse effects it might have on the site and adjacent areas;*
     b. *Temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation;*
     c. *Methods for protecting the surrounding area from any adverse effects of the development;*
     d. *Hazards to life, public and private property, and the natural environment which may be caused by the proposed use; and*
     e. *Whether drawdown of groundwater would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of saltwater into water supplies.*

The discussion that follows provides assessment of the five criteria within Policy #30.

1. Proposed use and potential adverse effects on the site and adjacent areas:

The proposed areas for industrial and port facility uses include:

Area 1-A - A transmission corridor west of the SDPP that extends from the IND zone across the 7-D zone where the corridor crosses a freshwater wetland (Wetland E) before merging with the roadway and utility corridor (Area 1-B). The affected area extends westward from the edge of a WDP ("interdune form") identified as the boundary of the Beach and Dune Special Consideration Area. The proposed transmission corridor spans the existing wetland with necessary support structures (poles) located in adjacent areas including neighboring IND land and the roadway and utility corridor.

Area 1-B - A roadway and utility corridor west of the SDPP that crosses 7-D zoning from an overpass of Jordan Cove Road east, toward Jordan Point. The proposed roadway and utility corridor replaces the existing Weyerhaeuser utility corridor which runs along a narrow strip of land between Wetland E (to be temporarily impacted) and the shore of Jordan Cove (to be avoided). As such, the roadway and utility corridor is spatially confined requiring fill in Wetland E for a temporary road for haul vehicles and construction of a permanent bridge to span the existing narrow corridor and avoid impacts to the shore of Jordan Cove. Industrial and Port Facility activities in Area 1-B include fill, embankment stabilization, abutments (for bridge support), power poles, transmission lines, utilities, road fill, road surfacing, wetland restoration, and a utility bridge. The western end of the proposed alignment is within a Wet Deflation Plain (not subject to ocean flooding); the eastern end extends beyond the area of special dune consideration (Figure 1) into IND zone.

Discussion. Industrial and Port Facility activities in Area 1-A will include installation and maintenance of overhead transmission lines. Power poles will be located in adjacent IND areas and in the roadway and utility corridor. All work, including placement of the power lines will occur outside or above Wetland E. Impacts to vegetation, wetlands, or surrounding natural areas are not anticipated along the location of the transmission corridor within or adjacent to the Area of Special Consideration.

Industrial and Port Facility activities in Area 1-B will have short-term impacts to natural vegetation and wetlands; however, impacts will be temporary and have no long-term effects on Beaches and Dune Areas with Limited Development Suitability. The roadway and utility corridor will require clearing and grubbing of existing vegetation (not previously removed by fill). Fill will be placed in Wetland E for construction of a temporary roadway for haul vehicles and to provide a work area for construction of a permanent bridge crossing of Wetland E. Upon completion of the haul road and permanent bridge crossing, fill soils will be removed and Wetland E restored. Use of a permanent bridge in Area 1-B avoids impacts to adjacent beach and dune areas and the bridge allows restoration of Wetland E. Fill placed in Wetland E,

mitigation of the wetland impacts, and restoration of the wetland will be performed in accordance with state and federal requirements.

Project areas will be staked, lined with silt fencing, and sensitive areas flagged to minimize encroachment outside the project area. Finished slopes on any disturbed vegetated areas will be graded to match surrounding dune forms and planted with native dune species. Impacts within the special consideration area will be temporary and restoration activities will provide a stable landform for the roadway and utility corridor with no lasting effects to adjacent beach and dune areas.

Construction activities, roadway, and bridge facilities will incorporate collection, treatment, and disposal of stormwater in accordance with the Project's Storm Water Management Plan. Drainage systems will be designed and operated to avoid concentrating runoff and creating erosive conditions. Best management practices will be employed during and after construction to prevent pollution and control erosion. Drainage systems within the roadway and utility corridor will utilize subsurface disposal through the sand fill where practical. Natural vegetation will be retained surrounding the modification areas and new slopes will be vegetated with native plants to enhance filtration of stormwater before runoff enters the receiving waters.

Finding. The proposed Industrial and Port Facility use for the transmission and roadway and utility corridor are consistent with past practices on the old Mill Site where the area was previously used as a utility corridor. The proposed transmission corridor is a benign feature that will have no lasting impacts beyond the spatial impact of reserving a corridor for overhead power transmission lines. The roadway and utility corridor will have temporary but no long-term impacts to the Special Consideration Beach and Dune Areas. Short term impacts are associated with fill in Wetland E for the construction of the roadway and utility corridor. These impacts will be mitigated according to state and federal requirements. Once the bridge is complete, the fill within Wetland E will be removed and the wetland restored also pursuant to state and federal guidelines. The bridge will be constructed to avoid impacts to adjacent Special Consideration Areas Unsuitable for Development. Fill slopes will be graded to match surrounding dune topography and vegetation reestablished with native dune species.

With the incorporation of a bridge to avoid impacts to sensitive areas of Jordan Cove and federal and state requirements for erosion control, wetland mitigation, and restoration of the wetland area, it is concluded that the proposed use is consistent with the general conditions as outlined in the CBEMP and are not associated with adverse impacts to Special Consideration Beach and Dune Areas or adjacent areas.

2. Temporary and Permanent Stabilization and Maintenance of Vegetation

Discussion. Native sandy soils excavated from other areas of the project will be used as fill for the roadway and utility corridor. Native or reworked dune sand is a loose, cohesionless granular material that is highly susceptible to erosion by both wind and water. Short-term

impacts related to migration of soil from the site during construction will be mitigated through the development and implementation of comprehensive erosion control plan and NPDES 1200 C permit issued by the Department of Environmental Quality (DEQ). As such, the project will be subject to both State and Federal requirements relative to the short - and long-term stabilization of erosion-susceptible soils and maintenance of vegetation. Permit requirements should include monitoring and performance criteria should remain in effect until permanent stabilization has been achieved.

Design-level configuration of embankment side slopes for the bridge abutments and the temporary road crossing for Wetland E will be dictated by the recommendations of the project Engineer (Black & Veatch); however, fill slopes are anticipated to be a maximum of 2H:1V (horizontal:vertical), incorporate appropriate slope stabilization, and be revegetated prior to project completion. Bridge abutments will be armored with rip rap in areas where vegetation cannot be established. Fill within Wetland E will be removed upon completion of the utility bridge.

Stabilization of soils in the area is feasible, and has been achieved by a variety of means at numerous sites in the vicinity. Proposed stabilization methods for this project include: development of structures and hardscape (paving, for example), rock or other structural armoring methods (where subject to erosion by water), fabrics, geotextile grids and cells, and vegetative stabilization. Vegetative stabilization has been the most common method of dune stabilization in the past, and is likely to be the primary method associated with the proposed improvements. It is anticipated that vegetative stabilization will be achieved utilizing native species suited for the unique site conditions (drought and salt tolerant). A revegetation plan will be prepared for the project and include short and long term maintenance programs.

Finding. The proposed Industrial and Port Facility transmission and roadway and utility corridors are subject to State guidelines that require development and implementation of erosion control plans and long-term monitoring of stabilization methods. The lead agency that will issue permits related to erosion control is the Oregon DEQ. Stabilization will be a critical element of the project, but can be achieved through a variety of proven methods. Geotechnical parameters that will define stabilization methods will be defined by the project engineer.

3. Methods for Protecting the Surrounding Areas from Adverse Effects

Discussion. Once the proposed corridors have been completed, the activity will have minimal potential to generate adverse effects on surrounding areas. Potential erosion of cohesionless soils will be mitigated through stabilization and erosion control, as described above, which will minimize potential for off-site sedimentation. Where the proposed fill borders sensitive wetland habitat or aquatic shorelines, the corridor footprint will be minimized to avoid permanent encroachment. Fill for construction of the haul road in Wetland E (Area 1-B) will be vegetated and subject to storm water pollution control prevention as outlined in the site 1200C permit. Haul road fill will be removed and the wetland restored after the bridge has been constructed. The bridge has been incorporated into the roadway and utility corridor to avoid

impacts to surrounding areas. Geotechnical methods will be used to stabilize the abutments, and install the bridge across the restored fresh water wetlands. Impacts to native vegetation on surrounding areas will be minimized during construction, and will be avoided in all cases. Vegetation introduced for stabilization of soil embankments will be native, to reduce the potential impacts to existing plant populations.

Finding. The proposed Industrial and Port Facility corridors have only minimal potential to generate adverse effects to surrounding areas. Construction of a bridge is the primary means to eliminate potential impacts to nearby sensitive Beach and Dune Areas. Careful construction methods that minimize impacts to adjacent vegetated areas and use of native species compatible with local plant populations will largely eliminate potential off-site impacts. Stormwater collected from hardened surfaces will be treated and disposed of using oil water separators, infiltration through the sandy fill soils, and/or biofiltration through vegetated swales. Impacts to Wetland E will be mitigated in accordance with state and federal requirements. The fill placed in Wetland E will be removed and the wetland restored after the bridge is constructed and the haul road is removed from service.

4. Hazards to Life, Public and Private Property, and the Natural Environment

Discussion. The proposed corridors will involve routine earthwork and construction using typical equipment and standard work methods, which will not cause hazards to life, property, or the natural environment.

Finding. The proposed Industrial and Port Facility corridors will be constructed in a manner that will be stable and that will not pose hazards to life, public and private property, or the natural environment. The proposed improvements can be protected from natural hazards with standard engineering practices and implementation of protective measures (armoring, paving, vegetation for example).

5. Whether Drawdown of Groundwater Would Lead to Loss of Stabilizing Vegetation, Loss of Water Quality, or Intrusion of Saltwater into Water Supplies

Discussion. As with most above-ground civil works projects, the proposed corridors will not have impacts to the groundwater table, and therefore will not result in the loss of vegetation or the degradation of regional water quality. The project will not increase the potential for saltwater intrusion that may affect domestic water supplies.

Finding. The proposed Industrial and Port Facility use will not draw the groundwater table down and will not increase the potential for saltwater intrusion.

Based on the assessment described herein, we conclude that the proposed transmission and roadway and utility corridors are suitable activities for the Limited Development Suitability dune areas, consistent with the guidelines in the CBEMP and CCCP.

We trust this report assists you in addressing the Coos County Policy #30 and Section 5.10 requirements for the aforementioned areas. Should you have any questions or comments, feel free to give me a call at 541-266-9890.

Regards,
SHN Consulting Engineers & Geologists, Inc.

Steven K. Donovan, P.E.
Regional Manager

SKD:dkl

Appendix G
SHN Letter-Policy 30 Findings for 6-WD

CONSULTING ENGINEERS & GEOLOGISTS, INC.
275 Market Avenue• Coos Bay, Oregon 97420-2228 • Phone: 541/266-9890 • FAX: 541/266-9496•shninfo@shn-engr.com

Reference: 614029.100

March 20, 2015

Mr. Mark Whitlow
Perkins Coie, LLP
1120 N.W. Couch Street, Tenth Floor
Portland, OR 97209-4128

Subject: ACU in 6-WD for Barge Berth; Policy #30 Analysis: Suitability of Beaches and Dunes Areas for Development

Dear Mr. Whitlow:

This letter is written in support of the land use application filed by Jordan Cove Energy Project, L.P. (JCEP) for administrative conditional uses, floodplain certification and other determinations to authorize the Energy Faculity Siting Council to issue administrative conditional use (ACU) and a zoning compliance letter for JCEP's proposed South Dunes Power Plant (SDPP).

This letter report presents a supplement to SHN's prior August 7, 2012 and December 19, 2013 assessments of development suitability of land identified by Coos County as "Beaches & Dunes with a Limited Suitability for Development" for certain areas of land formerly known as weyeiheueser's Ingram Yard. That land is now proposed for development by JCEP including an area of fill located along the southern edge of the beach and dune areas of special consideration where JCEP proposes to construct a barge berth.

The prior letters assessed areas of land for suitability to place fill to make those areas ready for related use and development. The purpose of this letter is to assess a new area not covered by the prior letters: Barge Berth fill Area on Figure 1 -where placement of fill in the 6-WD zone will allow the development of the barge berth, an industrial and port facilities use.

As in the prior letters, this letter will address land in the Coos Bay Estuary Management Plan (CBEMP) Zoning District 6-WD. Areas within District 6-WD are covered within the CBEMP, and are subject to Policy #30 within Appendix 3, Volume II of the Coos County Zoning and Land Development Ordinance (CCZLDO).

This letter presents SHN's site investigation report for the suitability of development for the new area of proposed fill, a portion of which includes dune forms identified in Coos County's Special Considerations Map as "Beaches and Dunes with a Limited Suitability for Development". Industrial and Port Facility use is permitted within the 6-WD zones, subject to General Conditions that include consistency with CBEMP Policy #30 requirements for development within such dune areas. The intent of this letter is to prepare the site investigation report required by Policy #30 that documents the absence of potential impacts to Beaches and Dunes from the proposed industrial and port facility activities at the following locations:

- An area located in zoning district 6-WD on the south end of the special consideration area, which is now proposed for development as a barge berth, with additional fill being added to zoning district 6-WD. The area affected includes portions of land within a beaches and dunes special consideration area, with the area of proposed fill being a younger stabilized dune area with limited suitability for development under the criteria of CBEMP Policy #30.

The analysis described herein is of CCZLDO under the regulatory guidelines presented in CBEMP Policy #30 of Appendix 3, Volume II. The subject areas are located within the "Beach and Dune Areas with Limited Development Suitability" on the Coos Bay Estuary Management Plan Special Considerations Map and related inventory maps. As stated in Policy #30, all dune forms except older stabilized dunes, active foredunes, conditionally stabilized foredunes that are subject to ocean undercutting or wave overtopping, and interdune areas (deflation plains) subject to ocean flooding, are considered "Beach and Dune areas with Limited Development Suitability." For the reasons discussed below, the dune forms in the barge berth area, are included in the category of Beaches and Dunes Areas with Limited Development Suitability, and are subject to the requirements of Policy #30. This report is not intended to address whether a use is appropriate with regard to any adverse effects associated with the development, public health and safety, or hazards to the natural environment to the extent that it does not relate to the geotechnical issues considered by Policy 30.

CBEMP Policy #30 (Strategy 2)

The barge berth area is an area at the southern extent of the Coos County Beaches and Dunes Special Considerations Area. This portion of the special consideration area is part of a younger stabilized dune complex subject to Policy 30 review.

Based on topographical data (LiDAR and GPS survey), the 6-WD zone in the Barge Berth Area is outside the limits of ocean flooding as indicated by the Federal Emergency Management Agency (FEMA) flood maps. Areas subject to ocean flooding are mapped using the base flood elevation established by FEMA for the Jordan Cove area of Coos Bay. The land form mapped as a Beaches and Dunes Special Consideration Area, including the younger stabilized dune areas, are located above the base flood elevation and not subject to ocean flooding. The areas are, therefore, subject to CBEMP Policy #30 as areas with "Limited Development Suitability". This includes dune forms that are not older stabilized dunes, active foredunes, or Wet Deflation Plain dune forms subject to ocean flooding. Each policy provides criteria for development in such interdune areas by "recognizing that development in sensitive beach and dune areas is compatible with or can be made compatible with the fragile and hazardous conditions common to beach and dune areas". The five criteria are outlined below.

- ***Restricting Actions in Beach and Dune Areas with "Limited Development Suitability" and Special Consideration for Sensitive Beach and Dune Resources***

1. *Coos County shall permit development within areas designated as "Beach and Dune Areas with Limited Development Suitability" on the Coos Bay Estuary Special Considerations Map only upon the establishment of findings that shall include at least:*
   a. *The type of use proposed and the adverse effects it might have on the site and adjacent areas;*
   b. *Temporary and permanent stabilization programs and the planned maintenance of new and existing vegetation;*
   c. *Methods for protecting the surrounding area from any adverse effects of the development;*
   d. *Hazards to life, public and private property, and the natural environment which may be caused by the proposed use; and*
   e. *Whether drawdown of groundwater would lead to loss of stabilizing vegetation, loss of water quality, or intrusion of saltwater into water supplies.*

The discussion that follows provides assessment of the five criteria within Policy #30.

1. Proposed use and potential adverse effects on the site and adjacent areas:

The proposed areas for industrial and port facility uses include:

Fill for the barge berth in 6-WD will replace a younger stabilized dune form. Adjacent areas including neighboring aquatic zones will be protected by placement of fill above the high water line and driving sheet piles through the fill to isolate the barge berth construction from the surrounding aquatic zone. Procedures for placing fill barge berth will effectively isolate the work zone and protect the site and adjacent areas from adverse effects. All fill and sheet piling installed for construction of the barge berth will be in accordance with state and federal permit requirements.

Discussion.

The barge berth will not have impacts to beach and dune areas with limited suitability. The work area will be enclosed by a sheet pile wall. Fill placed within the sheet pile wall will replace sand excavated from the area resulting in only a minor elevation change to the landscape. North of the barge berth remaining dune features will be restored and revegated to replicate the dune setting as part of the project site landscaping.

Project areas will be staked, lined with silt fencing, and sensitive areas flagged to minimize encroachment outside the project area. Finished slopes on any disturbed vegetated areas will be graded to match surrounding dune forms and planted with native dune species. Impacts within the special consideration area will be temporary and restoration activities will provide a stable landform.

Construction activities will incorporate best management practices for control of stormwater in accordance with the Project's Storm Water Management Plan. Drainage systems will be designed and operated to avoid concentrating runoff and creating erosive conditions. Best

management practices will be employed during and after construction to prevent pollution and control erosion. Natural vegetation will be retained surrounding the fill areas and new slopes will be vegetated with native plants to enhance filtration of stormwater before runoff enters the receiving waters.

Finding. The proposed barge berth fill and construction activities will be contained within sheet pile walls to avoid impacts to areas adjacent to the barge berth. Once the barge berth is complete, fill slopes will be graded to match surrounding dune topography and vegetation reestablished with native dune species. Fill in 6-WD for the barge berth will not have adverse affects on the adjacent land which is occupied by Roseburg Lumber which is devoted to industrial use.

With the incorporation of federal and state requirements for construction of the barge berth, it is concluded that the proposed use is consistent with the general conditions as outlined in the CBEMP and not associated with adverse impacts to Special Consideration Beach and Dune Areas or adjacent areas.

2. **Temporary and Permanent Stabilization and Maintenance of Vegetation**

Discussion. Native sandy soils excavated from other areas of the project will be used as temporary fill for the barge berth. Native or reworked dune sand is a loose, cohesionless granular material that is highly susceptible to erosion by both wind and water. Short-term impacts related to migration of soil from the site during construction will be mitigated through the development and implementation of comprehensive erosion control plan and NPDES 1200 C permit issued by the Department of Environmental Quality (DEQ). As such, the project will be subject to both State and Federal requirements relative to the short - and long-term stabilization of erosion-susceptible soils and maintenance of vegetation. Permit requirements should include monitoring and performance criteria should remain in effect until permanent stabilization has been achieved.

Stabilization of soils in the area is feasible, and has been achieved by a variety of means at numerous sites in the vicinity. Proposed stabilization methods for this project include: development of structures and hardscape (paving, for example), sheet piling, armoring methods (for control of erosion by wind and water), fabrics, geotextile grids and cells, and gravel for surface stabilization. Gravel surface stabilization has been a common method of dune stabilization in the past, and is likely to be the primary method associated with the proposed barge berth improvements.

Finding. The proposed barge berth is subject to State guidelines that require development and implementation of erosion control plans and long-term monitoring of stabilization methods. The lead agency that will issue permits related to erosion control is the Oregon DEQ. Stabilization will be a critical element of the project, but can be achieved through a variety of proven methods. Geotechnical parameters that will define stabilization methods will be defined by the project engineer (Black and Veatch).

3. Methods for Protecting the Surrounding Areas from Adverse Effects

Discussion. Once the proposed barge berth has been completed, the activity will have minimal potential to generate adverse effects on surrounding areas. Potential erosion of cohesionless soils will be mitigated through stabilization and erosion control, as described above, which will minimize potential for off-site sedimentation. Where the proposed fill borders sensitive wetland habitat or aquatic shorelines, the footprint will be contained by sheet piling to avoid permanent encroachment. Areas where the barge berth boarders the estuary will be demarcated by the sheet pile wall which will effectively isolate the surrounding areas from barge berth activities.

Finding. The proposed barge berth will have only minimal potential to generate adverse effects to surrounding areas. A sheet pile wall will be constructed to isolate the barge berth from the estuary and adjacent shorelands.

4. Hazards to Life, Public and Private Property, and the Natural Environment

Discussion. The proposed barge berth will involve routine earthwork and construction using typical equipment and standard work methods, which will not cause hazards to life, property, or the natural environment.

Finding. The proposed barge berth will be constructed in a manner that will be stable and that will not pose hazards to life, public and private property, or the natural environment. The proposed improvements can be protected from natural hazards with standard engineering practices and implementation of protective measures (armoring, paving, sheet piling, and gravel surfacing).

5. Whether Drawdown of Groundwater Would Lead to Loss of Stabilizing Vegetation, Loss of Water Quality, or Intrusion of Saltwater into Water Supplies

Discussion. As with most above-ground civil works projects, the proposed barge berth will not have impacts to the groundwater table, and therefore will not result in the loss of vegetation or the degradation of regional water quality. The project will not increase the potential for saltwater intrusion that may affect domestic water supplies.

Finding. The proposed Industrial and Port Facility use will not draw the groundwater table down and will not increase the potential for saltwater intrusion.

Based on the assessment described herein, we conclude that the proposed 6-WD fill (barge berth fill) are suitable activities for the Limited Development Suitability dune areas, consistent with the guidelines in the CBEMP.

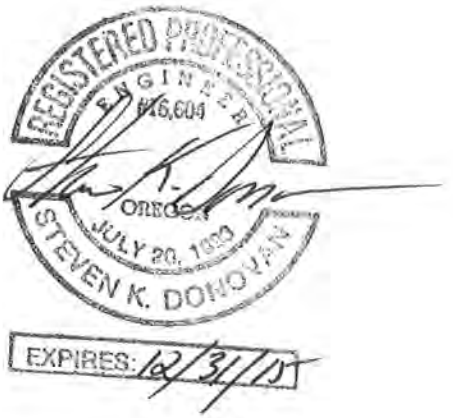
We trust this report assists you in addressing the Coos County Policy #30 for the aforementioned area. Should you have any questions or comments, feel free to give me a call at 541-266-9890.

Regards,

SHN Consulting Engineers & Geologists, Inc.

Steven K. Donovan, P.E.
Regional Manager

SKD:dkl



Appendix H
Oregon Forest Practices Act Guidelines for Osprey, Great Blue Heron and Bald Eagles, Relevant Excerpts

Oregon Department of Forestry
Forest Practice Administrative Rules and Forest Practices Act

CHAPTER 629
Forest Practices Administration

July 2008

"STEWARDSHIP IN FORESTRY"

This publication includes the text of the Forest Practices Act and the Forest Practice Administrative Rules as they exist on July 1, 2008.

Divisions 670 through 680 of the forest practice rules are not included in this publication, but are available as separate publications upon request. The rules in these divisions address civil penalties, appeals from orders of the State Forester, hearings procedure, stay of operations, access to notifications and written plans, regional forest practice committees, and the resource site inventory and protection process.

The Secretary of State publishes the official administrative rules.

The rules and statutes are also available on the Oregon Department of Forestry's website at: http://egov.oregon.gov/ODF/ as well as the Oregon Secretary of State's website at http://arcweb.sos.state.or.us/rules/alpha_index.html. See Department of Forestry, Chapter 629, Division 600-680, and the Oregon State Legislature at http://www.leg.state.or.us/ors/home.htm. See Chapter 527.

Rule and statutory language changes made since the January 2006 publication are indicated by underlined text and are listed below.

Changes:

The following rules were amended or adopted with effective dates in 2007. They remain underlined for this edition of the rules:

OAR 629-600-0100(39) Effective January 8, 2007.

OAR 629-635-0200 Effective October 1, 2007.

OAR 629-640-0110 Effective January 8, 2007.

OAR 629-640-0105 Effective January 8, 2007.

OAR 629-623-0400 was amended and 629-623-0500 was suspended through the temporary rule process. The changes are effective July 18, 2008 through January 13, 2008, or until rescinded by permanent rule, whichever comes first.

OAR 629-635-0100 and 629-635-0110 were amended and became effective October 31, 2006, but the changes were inadvertently omitted in the January 2007 publication.

OAR 629-640-0210 Effective October 1, 2007. Applicable July 1, 2008.

The following statutes were amended during the 2007 regular and 2008 special legislative sessions:

ORS 527.670, 527.687, and 527.755 Effective January 1, 2008.

ORS 527.736 Effective March 3, 2008.

The index for the administrative rules is on the inside cover page. The index for the Forest Practices Act is on page 65.

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DIVISION 660
WATER PROTECTION RULES: SPECIFIC RULES FOR OPERATIONS NEAR WATERS OF THE STATE

629-660-0040
Stream Channel Changes

(1) Operators shall not channelize, relocate, or divert water from any stream, except as allowed in the forest practice rules for construction of roads, stream improvement projects or temporary stream crossings.

(2) Operators shall not add to or remove soil or rock from any streams, except as allowed in the forest practice rules for construction of roads, stream improvement projects or temporary stream crossings.

629-660-0050
Beaver Dams or Other Natural Obstructions

(1) Except as needed for road maintenance, operators must submit a written plan to the State Forester prior to the removal of beaver dams and other natural obstructions from waters of the state during forest operations. Removal of any beaver dam that is within 25 feet of a culvert shall be considered to be needed for road maintenance.

(2) A written plan for removal of a beaver dam or obstruction must demonstrate:
  (a) A beaver dam or obstruction threatens existing forests or plantations; or
  (b) Beaver dam removal is part of a beaver population control program approved by the Oregon Department of Fish and Wildlife; or
  (c) Retaining the beaver dam or obstruction would result in greater environmental harm than benefit.

(3) Sediment releases and downstream channel scouring can occur when beaver dams are removed. Operators are encouraged to use techniques that result in a gradual release of water when a dam is removed.

629-660-0060
Headwater Amphibian Species

Amphibians that are sensitive to temperature and moisture fluctuations may live in small Type N streams. Operators are encouraged to retain portions of in-unit green live trees and snags as blocks of intact vegetation along small Type N streams.

DIVISION 665
SPECIFIED RESOURCE SITE PROTECTION RULES

629-665-0000
Purpose

(1) OAR 629-665-0000 to 0300 shall be known as the specified resource site protection rules.

(2) These rules provide a protection goal, describe the duties of the State Forester, landowner, timber owner and operator, and outline protection for:
  (a) Sensitive Bird Nesting, Roosting and Watering Resource Sites (OAR 629-665-0100);
  (b) Threatened and Endangered Fish and Wildlife Species that use Resource Sites on Forestlands (OAR 629-665-0200);
  (c) Biological Sites that are Ecologically and Scientifically Significant (OAR 629-665-0300); and
  (d) Significant Wetlands on Forestlands (OAR Chapter 629, Division 645).

629-665-0010
Protection Goal for a Resource Site

(1) The goal of resource site protection is to ensure that forest practices do not lead to resource site destruction, abandonment or reduced productivity.

(2) A resource site shall receive protection when the State Forester determines:
  (a) It is an active resource site; and
  (b) Proposed forest practices conflict with the resource site.

(3) The State Forester may grant an exception from either structural or temporal protection as determined by the Board for each species or resource site.

629-665-0020

Application of Protection and Exception Rules; State Forester Duties; Landowner, Timber Owner and Operator Duties

(1) When a landowner, timber owner or operator proposes an operation near a resource site that requires special protection, the State Forester shall inspect the resource site with the landowner or landowner's representative, the operator and when available, the appropriate representative of the Department of Fish and Wildlife. The State Forester shall:
  (a) Identify the resource site.
  (b) Apply the protection goal in OAR 629-665-0010.
    (A) If the proposed forest practices do not conflict with the resource site, the operation will not be subject to the protection requirements for the resource site. The operation shall be conducted in compliance with all other existing forest practice rules;
    (B) If the proposed forest practices conflict with the resource site, the structural and temporal protection requirements for the resource site shall be required to eliminate the conflict;
    (C) When the proposed forest practices conflict with a resource site, the landowner or operator may request a structural or temporal exception through a plan for an alternate practice, if the applicable administrative rule provides for such an exception.
    (D) The State Forester shall document and maintain on file the reasons for granting or denying all exceptions.

(2) If the proposed operation conflicts with the resource site, the operator shall submit a written plan to the State Forester before starting operations. The written plan shall comply with the requirements of OAR 629-605-0170, Written Plans.

(3) When the written plan in subsection (2) of this rule does not follow the written recommendations of the Department of Fish and Wildlife or other responsible coordinating state agency, the State Forester shall maintain on file a written explanation of the reasons for:
  (a) Differences in the identification of the resource site; and
  (b) Different protection levels required for the resource site.

(4) When a resource site is discovered by the operator, timber owner or landowner during a forest operation, the party making the discovery shall:
  (a) Immediately protect all remaining trees within 300 feet of the resource site and submit to the State Forester a written plan for the resource site; and
  (b) Immediately notify the State Forester.

629-665-0100

Species Using Sensitive Bird Nesting, Roosting and Watering Sites

The following species use sensitive bird nesting, roosting and watering resource sites:

(1) Osprey use sensitive bird nesting sites.

(2) Great blue herons use sensitive bird nesting sites.

629-665-0110

Osprey Resource Sites; Key Components; Protection Requirements; and Exceptions

(1) For osprey, the resource site is the active nest tree and any identified key components.
  (a) An active nest tree is one that has been used by osprey within the past five (5) nesting seasons. No protection is required for abandoned resource sites.
  (b) The key components associated with an osprey resource site are perching and fledging trees and replacement trees. Factors to consider when identifying key components:
    (A) Actual observation data if available;
    (B) Perching trees should provide for maximum visibility of the surrounding terrain and structure that allows the osprey easy access, such as large, tall snags or trees that have broken or dead tops, forks, or lateral branches high in the crown;
    (C) Replacement trees should provide maximum visibility of the surrounding terrain, and be large enough to support an osprey nest;
    (D) Perching and fledging trees and replacement trees should be located within 600 feet of the active nest tree;
    (E) Areas of high winds may require that additional trees be retained to protect the resource site from damage.

(2) When the State Forester identifies the resource site as per OAR 629-665-0020, the operator shall provide the following protection measures:
  (a) Retain the active nest tree; and
  (b) Retain no fewer than eight additional trees as key components (i.e.: perching, fledging and replacement trees).
  (c) During forest operations, the resource site shall be protected from damage. The operation shall be designed to protect these trees from windthrow;
  (d) During the critical period of use, the active nest tree and any perch tree identified as a key component shall be protected from disturbance. From March 1st through September 15th, forest operations shall not be permitted within 600 feet of the active nest tree or perch tree unless the State Forester determines that the operations will not cause the birds to flush from these trees. The critical period of use may be modified in writing by the State Forester as the resource site is evaluated as per OAR 629-665-0020.

(3) The State Forester shall not permit structural exceptions for the resource site: Removal of a resource site may be permitted if replacement nest trees, artificial structures, or replacement key components are provided by the operator or landowner. Replacement is not considered an exception, since the productivity of the nesting territory is maintained. When addressed in a plan for an alternate practice, replacement may be considered by the State Forester when:
  (a) Alternate forest practices which retain and protect the resource site are not economically feasible; and
  (b) The productivity of the nesting territory is not reduced.

(4) Temporal exceptions for the resource site may be approved by the State Forester when addressed in a plan for an alternate practice that demonstrates:
  (a) Nest disruption or failure for a season does not affect the local population; and
  (b) There are no economically feasible forest practices that avoid disturbance to the resource site during the critical period of use.

(5) Factors considered by the State Forester before approving a plan for an alternate practice under section (4) of this rule shall include, but are not limited to:
  (a) The size of the local population;
  (b) The contribution of the resource site in question to the local population; and
  (c) The feasibility of alternate forest practices that do not cause disturbance.

(6) The State Forester shall document all requests and decisions concerning structural or temporal exceptions. All approved structural replacements shall be documented.

629-665-0120
Great Blue Heron Resource Sites; Key Components; Protection Requirements; and Exceptions

(1) For the great blue heron, the resource site is the active nest tree(s) and any identified key components.
  (a) An active nest tree is one that has been used by one or more pair of great blue heron within the past three nesting seasons. No protection is required for an abandoned resource site.
  (b) The key components associated with a great blue heron resource site are the nest tree(s), a vegetative buffer around the nest tree(s) including perching and fledging trees, and replacement tree(s). Factors to consider when identifying key components:
    (A) Actual observation data when available;
    (B) Perching, fledging, and replacement tree(s) should be tall with plenty of space for these large birds to fly into and out. Older trees with open branching should be retained;
    (C) Areas of high winds may require that additional trees be retained to protect the active nest tree and identified key components from damage.

(2) The operator shall provide the following protection measures when operating within or near a great blue heron resource site:
  (a) Retain the active nest tree;
  (b) Retain a vegetative buffer not less than 300 feet around the outermost nest trees as key components that includes perching and fledging trees, and replacement trees.
  (c) The vegetative buffer around a rookery may be actively managed if the key components in subsection (1) are protected. When conducting forest management activities within this buffer, operators shall consider heron protection as the highest priority. The vegetative buffer needs to provide a visual screen from disturbing influences around the rookery, and must be designed to protect the nest tree(s), perching, fledging, and replacement tree(s) from windthrow. Examples of

forest management activities that may occur within the vegetative buffer include tree topping, and/or other methods of "feathering" the outer edges of the buffer to reduce windthrow potential, or remove individual trees (especially along the edge of the buffer) if the integrity of the buffer is maintained and all the key components are adequately protected. Input from the ODFW wildlife biologist and ODF's fish and wildlife specialist is important when marking trees to be removed from this buffer.

(d) During and after forest operations, the resource site shall be protected from damage. The operation shall be designed to protect the key components from windthrow;

(e) During the critical period of use, operations shall be designed and conducted so as not to disturb great blue herons using the key components. From February 15 through July 31, forest operations shall not be permitted within one-quarter (1/4) mile of the active nest tree(s) unless the State Forester determines that the operations will not cause the birds to flush from these trees. The critical period of use may be modified by the State Forester after the resource site is evaluated following OAR 629-665-0020.

(3) Structural exceptions for the resource site may be approved by the State Forester when addressed in a plan for an alternate practice. The State Forester may approve such a plan when these criteria are met:

(a) The site contains five nests or fewer;

(b) The State Forester determines that the loss of the site will not adversely affect the local population; and

(c) There are no economically feasible alternatives that maintain the key components.

(4) Factors considered by the State Forester before approving a structural exception to protection of a great blue heron resource site shall include, but are not limited to:

(a) The size of the site (number of nests);

(b) The size of the breeding population in the local area;

(c) The productivity of great blue herons in the local area;

(d) The contribution of the site to local productivity;

(e) The probability that protection measures will be successful;

(f) Available alternate nesting sites; and

(g) Whether alternatives that protect the site are economically feasible.

(5) Temporal exceptions to protection of a great blue heron resource site may be approved by the State Forester when addressed in a plan for an alternate practice. The State Forester may approve such a plan when:

(a) The State Forester determines that nest disruption or failure for a season or site abandonment will not adversely affect the local population; and

(b) There are no economically feasible alternatives that will not disturb the birds during the critical period of use.

(6) Factors considered by the State Forester before approving a temporal exception shall include, but are not limited to:

(a) The size of the site (number of nests);

(b) The size of the breeding population in the local area;

(c) The productivity of great blue herons in the local area;

(d) The contribution of the site to local productivity; and

(e) Whether alternatives that protect the site are economically feasible.

629-665-0200

Resource Sites Used By Threatened and Endangered Species

The following resource sites used by threatened or endangered species are sensitive to forest practices:

(1) Northern spotted owl nesting sites.

(2) Bald eagle nesting sites.

(3) Bald eagle roosting sites.

(4) Bald eagle foraging perches.

629-665-0210

Interim Requirements for Northern Spotted Owl Nesting Sites

(1) Whenever the State Forester determines that an operation will conflict with protection of a nesting site of the northern spotted owl (Strix occidentalis caurina), the operator must submit to the State Forester a written plan

before commencing the operation. The written plan, at a minimum, must address how the operation will be conducted to provide for the following:

(a) A 70 acre area of suitable spotted owl habitat encompassing the nest site, to be maintained as suitable spotted owl habitat;

(b) Prevention of disturbances resulting from operation activities which cause owls to flush from the nesting site. Such disturbances must be prevented during the critical period of use for nesting. The critical period of use is the time period between March 1 and September 30, each year.

(2) For the purposes of this rule, nesting site means and includes the tree, when known, containing a spotted owl nest; or when not specifically known, includes an activity center of a pair of adult spotted owls. An activity center is a location determined by the State Forester to have been reliably identified as being occupied by an adult pair of spotted owls, capable of breeding. Such determination must be supported by repeated observation of the owls in close proximity or observation of nesting behavior.

(3) (a) For the purposes of this rule, suitable spotted owl habitat means and includes:

(A) A stand of trees with moderate to high canopy closure (60 to 80%); a multi-layered, multi-species canopy dominated by large overstory trees (greater than 30 inches in diameter at breast height); a high incidence of large trees with various deformities (e.g., large cavities, broken tops, and other evidence of decadence); numerous large snags; large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for owls to fly; or

(B) In the absence of habitat which exhibits all the characteristics listed above, the available forested habitat which comes closest to approximating the listed conditions.

(b) Stands which do not exhibit at least two of the characteristics listed in paragraph (a)(A) of this section are not suitable habitat.

(4) (For information only) Federal law prohibits a person from taking northern spotted owls. Taking under the federal law may include significant alteration of owl habitat on any class of land ownership. Compliance with subsection (1) of this rule is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act.

(5) Exceptions to the requirements for protecting northern spotted owl nesting sites are allowed if the operator is in compliance with, and has on file with the State Forester, an applicable incidental take permit issued by federal authorities under the Endangered Species Act.

629-665-0220

Bald Eagle Nesting Sites; Key Components; Protection Requirements; and Exceptions

(1) For bald eagle nesting sites, the resource site is the active nest tree and all identified key components:

(a) An active nest tree is one in which a bald eagle has nested in the past, and that the State Forester determines to be structurally capable of successful future use, whether or not the tree still contains a nest.

(b) An active nest tree may fall down or may become structurally incapable of supporting a bald eagle nest site. When this happens the nest resource site shall be considered active and shall be protected for an additional five (5) years only if the site contains suitable nesting sites. In this case, if a nesting resource site is not used during this five-year period, the site shall be considered abandoned and no protection will be required.

(c) The key components associated with a bald eagle nesting site are perching and fledging trees, replacement nest trees, and a forested buffer around the nest tree. Factors to consider when identifying key components:

(A) Actual observation data when available.

(B) Perching and fledging trees should be tall enough to provide maximum visibility of the surrounding area. Perching and fledging trees are often snags or decadent live trees with exposed, strong, lateral branches high in the crown.

(C) Replacement nest trees should provide maximum visibility of the surrounding terrain, and be large enough to support a bald eagle nest. Bald eagles prefer to nest in large, tall trees that are alive, with large limbs, broken tops, or irregular growth patterns with open structure.

(D) Areas of high winds may require that additional trees be retained to protect the active nest tree(s) and identified key components from damage.

before commencing the operation. The written plan, at a minimum, must address how the operation will be conducted to provide for the following:

(a) A 70 acre area of suitable spotted owl habitat encompassing the nest site, to be maintained as suitable spotted owl habitat;

(b) Prevention of disturbances resulting from operation activities which cause owls to flush from the nesting site. Such disturbances must be prevented during the critical period of use for nesting. The critical period of use is the time period between March 1 and September 30, each year.

(2) For the purposes of this rule, nesting site means and includes the tree, when known, containing a spotted owl nest; or when not specifically known, includes an activity center of a pair of adult spotted owls. An activity center is a location determined by the State Forester to have been reliably identified as being occupied by an adult pair of spotted owls, capable of breeding. Such determination must be supported by repeated observation of the owls in close proximity or observation of nesting behavior.

(3) (a) For the purposes of this rule, suitable spotted owl habitat means and includes:

(A) A stand of trees with moderate to high canopy closure (60 to 80%); a multi-layered, multi-species canopy dominated by large overstory trees (greater than 30 inches in diameter at breast height); a high incidence of large trees with various deformities (e.g., large cavities, broken tops, and other evidence of decadence); numerous large snags; large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for owls to fly; or

(B) In the absence of habitat which exhibits all the characteristics listed above, the available forested habitat which comes closest to approximating the listed conditions.

(b) Stands which do not exhibit at least two of the characteristics listed in paragraph (a)(A) of this section are not suitable habitat.

(4) (For information only) Federal law prohibits a person from taking northern spotted owls. Taking under the federal law may include significant alteration of owl habitat on any class of land ownership. Compliance with subsection (1) of this rule is not in lieu of compliance with any federal requirements related to the federal Endangered Species Act.

(5) Exceptions to the requirements for protecting northern spotted owl nesting sites are allowed if the operator is in compliance with, and has on file with the State Forester, an applicable incidental take permit issued by federal authorities under the Endangered Species Act.

629-665-0220

Bald Eagle Nesting Sites; Key Components; Protection Requirements; and Exceptions

(1) For bald eagle nesting sites, the resource site is the active nest tree and all identified key components:

(a) An active nest tree is one in which a bald eagle has nested in the past, and that the State Forester determines to be structurally capable of successful future use, whether or not the tree still contains a nest.

(b) An active nest tree may fall down or may become structurally incapable of supporting a bald eagle nest site. When this happens the nest resource site shall be considered active and shall be protected for an additional five (5) years only if the site contains suitable nesting sites. In this case, if a nesting resource site is not used during this five-year period, the site shall be considered abandoned and no protection will be required.

(c) The key components associated with a bald eagle nesting site are perching and fledging trees, replacement nest trees, and a forested buffer around the nest tree. Factors to consider when identifying key components:

(A) Actual observation data when available.

(B) Perching and fledging trees should be tall enough to provide maximum visibility of the surrounding area. Perching and fledging trees are often snags or decadent live trees with exposed, strong, lateral branches high in the crown.

(C) Replacement nest trees should provide maximum visibility of the surrounding terrain, and be large enough to support a bald eagle nest. Bald eagles prefer to nest in large, tall trees that are alive, with large limbs, broken tops, or irregular growth patterns with open structure.

(D) Areas of high winds may require that additional trees be retained to protect the active nest tree(s) and identified key components from damage.

(2) The operator shall provide the following protection measures when operating within or near a bald eagle nesting site:
  (a) During and after forest operations, the resource site shall be protected from damage. The operation shall be designed to protect the trees from windthrow;
  (b) Retain the active nest tree.
  (c) Retain a forested buffer not less than 330 feet around the active nest tree as a key component that includes perching, fledging, and replacement tree(s).
  (d) During the critical period of use, operations shall be designed and conducted to not disturb bald eagles using the resource site:
    (A) Except as provided in paragraph (B) of this subsection, during the critical period of use, operations shall not be permitted within one-quarter (1/4) mile of the active nest tree or perch trees. If the eagles have line-of-sight vision from these trees to the operation, the distance is one-half (1/2) mile.
    (B) If the State Forester determines through review of the written plan that the operations will not cause the birds to flush from the trees identified in paragraph (A) of this section, then there is no conflict and the distance restrictions in paragraph (A) of this section may be modified.
    (C) The critical period of use is January 1 through August 31. The specific critical period of use for individual nesting resource sites may be modified in writing by the State Forester depending upon the actual dates that bald eagles are present at the resource site and are susceptible to disturbance.
(3) Structural or temporal exceptions for the resource site are allowed if the operator is in compliance with, and has on file with the State Forester, an applicable incidental take permit issued by federal authorities under the Endangered Species Act.

629-665-0230
Bald Eagle Roosting Sites; Key Components; Protection Requirements; and Exceptions
(1) For bald eagle roosting sites, the resource site is the active roost trees, probable roost trees as identified by the State Forester, and all identified key components:
  (a) An active roosting site is one that has been used within the past 5 years for roosting by bald eagles. No protection is required for an abandoned bald eagle roosting site.
  (b) The key components associated with a bald eagle roosting site are staging trees, probable roost trees as identified by the State Forester, and a forested buffer around the roost trees. Factors to consider when identifying key components:
    (A) Actual observation data when available.
    (B) Roost sites frequently occur in mature forests. Roost trees are often significantly larger than the rest of the stand.
    (C) Staging trees are often large, dead-top or dominant trees or snags where one or more eagles can perch and have direct access to the roosting site.
    (D) The surrounding forested buffer must be adequate to maintain a suitable microclimate around the roost trees.
    (E) Areas of high winds may require that additional trees be retained to protect the active roost tree(s) and identified key components from damage.
(2) The operator shall provide the following protection measures when operating within or near a bald eagle roosting site:
  (a) During and after forest operations, the resource site shall be retained and protected from damage. The operation shall be designed to protect the trees from windthrow.
  (b) Retain the active roost tree(s).
  (c) Retain a forested buffer not less than 300 feet around the outermost active roost trees as a key component that includes probable roost trees.
  (d) Retain staging trees.
  (e) During the critical period of use, operations shall be designed and conducted to not disturb bald eagles using the resource site:
    (A) Except as provided in paragraph (B) of this subsection, during the critical period of use, operations shall not be permitted within one-quarter (1/4) mile of the active roost trees. If the eagles have line-of-sight vision from these trees to the operation, the distance is one-half (1/2) mile.

(B) If the State Forester determines through review of the written plan that the operations will not cause the birds to flush from trees identified in paragraph (A) of this subsection, then there is no conflict and the distance restrictions in paragraph (A) of this subsection may be modified.

(C) The critical period of use for bald eagle roosting sites in the Klamath Basin is October 31 through March 31. In other areas of Oregon the critical period of use is November 15 through March 15. The specific critical period of use for individual roosting resource sites may be modified in writing by the State Forester depending upon the actual dates that bald eagles are present at the resource site and are susceptible to disturbance.

(3) Structural or temporal exceptions for the resource site are allowed if the operator is in compliance with, and has on file with the State Forester, an applicable incidental take permit issued by federal authorities under the Endangered Species Act.

629-665-0240

Bald Eagle Foraging Perches; Key Components; Protection Requirements; and Exceptions

(1) For bald eagle foraging perches, the resource site is the active foraging perch. An active foraging perch is one that is habitually used by eagles as a vantage point while hunting. No protection is required for abandoned bald eagle foraging perches. The presence or absence of foraging perches within or near a foraging area shall be determined by the State Forester when the forester conducts an operation inspection. Factors to consider when identifying key components:

(a) Actual observation data when available.

(b) Bald eagles usually perch in the tallest trees on the edge of forest stands overlooking the hunting area. Snags and dead-top trees are often used.

(c) Areas of high winds may require that additional trees be retained to protect the active foraging perch from damage.

(2) The operator shall provide the following protection measures when operating near a bald eagle foraging perch:

(a) During and after forest operations, the foraging perch shall be retained and protected from damage. The operation shall be designed to protect the foraging perch from windthrow.

(b) During the critical period of use, operations shall be designed and conducted so they do not cause excessive disturbance to bald eagles using the foraging area. The critical period of use shall be determined on a site specific basis. The critical period of use varies for each bald eagle foraging area, depending on whether the foraging area is used by nesting, wintering, or migrating bald eagles.

(3) Temporal exceptions for the entire foraging areas shall not be permitted by the State Forester. Temporal protection is determined by evaluating the potential disturbance to the entire foraging area used by a breeding pair or wintering population of bald eagles. Disturbance at a single foraging perch in a foraging area may be determined by the State Forester to not cause a conflict. This evaluation shall be based on the number of alternative foraging perches in the bald eagle foraging area.

(4) Structural exceptions for an active foraging perch may be permitted if the State Forester determines that adequate replacement foraging perches will remain in the vicinity after completion of the forest operation.

Appendix I
Wildlife Habitat Mitigation Plan

Jordan Cove Energy Project

Wildlife Habitat Mitigation Plan in accordance with OAR 635-415-0000 through 0025

Prepared for:

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1. INTRODUCTION

The Jordan Cove Energy Project (JCEP) is comprised of three components that fall under the jurisdiction of the Federal Energy Regulatory Commission (FERC): the Jordan Cove Liquefied Natural Gas (LNG) Terminal Project, the Pacific Connector Gas Pipeline Project (PCGP), and the Slip and Access Channel Project. Jordan Cove Energy Project, L.P. (JCEP L.P.), the Oregon International Port of Coos Bay (Port), and Pacific Connector Gas Pipeline, L.P. (Pacific Connector) are seeking to construct, operate, and maintain these three project components. Figure 1, Project Vicinity, shows the primary elements of the JCEP discussed in this plan. The PCGP is not shown on Figure 1 because this plan does not cover the PCGP as mitigation for the PCGP will be addressed separately by Pacific Connector.

Natural gas will be delivered to the LNG terminal site (via the gas pipeline, which will connect the terminal with existing Pacific Gas and Electric Company intrastate pipeline and interstate natural gas pipeline systems), where it will be conditioned, cooled into a liquid, stored in two full-containment 160,000 m3 LNG storage tanks, and loaded on to LNG carriers for export at newly constructed marine facilities.

Such marine facilities include an access channel and a slip that the Port will seek authorization to construct, operate, and maintain. The Slip and Access Channel will connect the existing Coos Bay Navigation Channel and the Jordan Cove LNG Terminal Project site at approximately Coos Bay Navigation Channel Mile 7.3. Based on the estimated size of the LNG carriers expected to call upon the terminal, it is anticipated that approximately 90 ships per year will be required to transport the LNG from the terminal. The Project footprint is defined as the area that will be both temporarily and permanently impacted by the Jordan Cove LNG Terminal Project and the Slip and Access Channel Project.

Impacts resulting from the Jordan Cove LNG Terminal Project and the Slip and Access Channel Project have been minimized, to the greatest extent practicable, as discussed in the Federal Energy Regulatory Commission (FERC) Resource Reports available on line at the Jordan Cove Energy Project, L.P. FERC website. Please refer to the FERC Resource Reports for additional information on how the Project design was evaluated and selected as proposed.

A fourth component of the JCEP project, the South Dunes Power Plant (SDPP), falls under the jurisdiction of the Oregon Department of Energy's (ODOE) Energy Facility Siting Council (EFCS). Thus, habitat impacts specific to the SDPP are discussed separately in this document and are addressed in detail in Exhibits P and Q of the EFSC Application for Site Certificate (ASC). In order to clarify which portions of mitigation fall under which agency jurisdiction, mitigation for the FERC-related portions of the JCEP project is described first, followed by mitigation for impacts from the EFSC-related SDPP.

JCEP L.P. contracted with David Evans and Associates, Inc. (DEA) to develop a plan to mitigate unavoidable impacts to wildlife habitat. This mitigation plan is intended to thoroughly describe the manner in which the impacts of the project will be reduced or eliminated over time, avoided and/or minimized; and how the affected environment, including fish and wildlife habitat, will be

monitored, restored, rehabilitated, repaired and/or replaced, or otherwise compensated for in accordance with Oregon Administrative Rule (OAR) 635-415-0000 through 0025.

Meetings with three Oregon Department of Fish and Wildlife (ODFW) representatives and three JCEP team members took place in Coos Bay on July 23 and August 26, 2013. The purpose of these meetings was to discuss habitat mapping for the Jordan Cove LNG Terminal Project and the Slip and Access Channel Project components, and formulate an overall mitigation strategy that meets the ODFW Habitat Mitigation Policy. DEA presented a summary of existing conditions and unavoidable impacts to habitat resulting from proposed project development.

The group reviewed and edited the draft ODFW habitat categorization for the project, discussed potential strategies and locations for mitigating impacts, and visited potential mitigation sites to further refine these concepts. The results of these discussions are included in this document.

ODFW concurred with the habitat mapping within project elements described in the Final ODFW Habitat Categorization Technical Memo (dated September 10, 2013) on October 30, 2013. This mitigation plan was reviewed by ODFW and their input has been incorporated.

The acreage and location of mitigation areas for the overall JCEP project are provided in Table 3 and Figure 5 of Appendix B. The acreage and location of mitigation areas specific to EFSC jurisdiction of the SDPP are provided in Table 4 and the figures in Appendix D. Although the mitigation areas shown in Appendix D are specific to EFSC jurisdiction, they will be managed and maintained as a part of the overall JCEP mitigation portfolio, and subject to the performance criteria outlined in this document for the overall JCEP project.

2. ALTERNATIVES

The alternatives to the proposed development action are provided in detail in Resource Report10 (Docket No. CP13-483), which was produced by SHN Consulting Engineers & Geologists (SHN) in May 2013 and is available online. The SDPP was included in the project components that were assessed for alternatives as part of the overall JCEP project described in Resource Report 10.

3. AVOIDANCE AND MININIMIZATION MEASURES

3.1 IMPACT AVOIDANCE

Avoidance of wildlife habitat and species has been incorporated into the design of the project to the extent possible given the acreage requirements of the project. The majority of the SDPP Site (Figure 1) lies atop the former Weyerhaeuser Mill Site, which contains abandoned, previously developed areas and waste dumping areas as well as a currently permitted landfill. These highly degraded areas will be capped as part of the approved site cleanup process for the project.

Similarly, the North Point Workforce Housing Project has been sited atop level dredge spoils, much of which has been used as a log deck and for storage. Siting much of the project on dredge spoils and a disturbed former mill site and current landfill site has minimized habitat disturbance and avoided impacts to higher value, previously undisturbed habitat.

3.2 IMPACT MINIMIZATION

In addition to the minimization measures discussed in the following sections, JCEP proposes 1:1 mitigation for unavoidable short-term and long-term impacts to wildlife habitat. Implementation and monitoring of the habitat protection and enhancement proposed as mitigation for unavoidable impacts is described beginning in Section 6.

3.2.1 Best Management Practices (BMPs)

In addition to mitigating for all direct impacts to wildlife habitat, numerous BMPs will be used during construction, operation, and retirement of all components of the JCEP project, including the SDPP, to minimize impacts to wildlife and habitat both inside and outside the areas that will be directly impacted by the project. Additional BMPs will continue to be developed, however, examples of planned BMPs are found in the following documents:

- The EFSC ASC, specifically Exhibits J, P, Q, R, and X
- The JCEP Biological Assessment (BA) and appendices, specifically Appendices F and N
- FERC Resource Reports, primarily Resource Report 3

3.2.2 Environmental Monitoring

Environmental monitoring will be conducted in order to minimize impacts during construction and retirement of the project, including the SDPP. Environmental inspectors (EIs) will provide oversight for implementation of all BMPs. Their role is described in the latest version of the JCEP Biological Assessment, and is summarized in Exhibit P and below.

JCEP will employ a lead Environmental Inspector (EI) and multiple EIs as appropriate. The lead EI will be responsible for agency notifications and reporting requirements and will have oversight and ultimate authority over assistant EIs. The lead EI will also conduct routine meetings and maintain communications to uphold consistencies and compliance with the appropriate federal, state, and local regulations and permit requirements.

EIs will be on-site during active construction and will have peer status with all other activity inspectors. The EIs will have authority to stop activities that violate the measures set forth in the permits and authorizations and will have the authority to order corrective action. At a minimum, each EI will be responsible for:

- Ensuring compliance with the measures set forth in environmental permits and approvals;
- Identifying, documenting, and overseeing corrective actions, as necessary, to bring an activity back into compliance;
- Verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;
- Verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;
- Identifying erosion/sediment control and stabilization needs in all areas;

- Determining the need for and ensuring that erosion controls are properly installed, as necessary, to prevent sediment flow into wetlands, waterbodies, sensitive areas, and onto roads. This would include evaluating controls prior to a predicted storm event whenever possible and installing additional measures as needed to control storm water and sediment;
- Inspecting and ensuring the maintenance of temporary erosion control measures at least daily in areas of active construction or equipment operation, on a weekly basis in areas with no construction or equipment operation and within 24 hours of each 0.5 inch or greater rainfall. Inspections will be recorded and records maintained for review upon request;
- Ensuring the repair of all ineffective temporary erosion control measures as soon as possible but not longer than 24 hours after identification;
- Keeping records of compliance with conditions of all environmental permits and approvals during active construction and restoration;
- Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase.

During construction and restoration, JCEP would also utilize additional personnel as needed to support the EIs to ensure that the EIs' responsibilities are appropriately addressed. Support personnel may include, among others: biologists, wetland scientists, soil scientists, agronomists, foresters, reclamation specialists, visual resource specialists, or geologists, who have the appropriate, education, training, and expertise to effectively address the EI's responsibilities.

3.2.3 Noxious Weed Control

In addition to avoidance and minimization measures outlined in the documents listed in Section 3.2.1, noxious weed control activities will help minimize potential impacts by preventing the spread of noxious weeds during construction, operation, and retirement of the Facility.

The following specific strategies to reduce the spread of noxious weeds have been adapted from the JCEP Biological Assessment (April 2014), Appendix F, Erosion Control and Revegetation Plan (available online). Although these strategies were designed specifically for the pipeline portion of the project, they were developed in consultation with ODFW and are the most specific strategies currently documented, and were therefore used to represent strategies to be used for the overall JCEP project (including the SDPP). As outlined in the JCEP Biological Assessment, Environmental Inspectors (EIs) will provide oversight for implementation of all noxious weed control methods.

3.2.3.1 Pretreatment

Pretreatment will primarily be accomplished by mechanical operations by mowing to the ground level, if appropriate for the targeted weed species. Other appropriate mechanical methods may include disking, ripping, or chopping. Hand pulling methods may also be utilized if the area of infestation is small or where mechanical methods are not feasible. Infested areas will be cleared in a manner to minimize transport of weed seed, roots, and rhizomes or other vegetative materials and soil from the site.

Spot treatments with appropriate herbicides will also be conducted where applicable depending on the specific weed and site-specific conditions using integrated weed management principles. Spot herbicide treatment would only be utilized when it could be effective (i.e., plant phenology and effective herbicide treatment windows coincide) prior to construction. Any herbicide treatment would be conducted by a licensed applicator using herbicides labeled for the targeted species and registered for the use.

3.2.3.2 Equipment Inspection

Prior to transporting construction equipment to the construction right-of-way, all equipment will be inspected to ensure that it is clean and free of potential weed seed or sources (i.e., soil, roots or rhizomes) and power washed, if necessary, as determined by the EI. In addition, inspections of all project inspector vehicles and construction contractor vehicles will also be performed prior to being allowed on the construction right-of-way. This does not apply to local service vehicles that will stay on the existing roadway, traveling frequently in and out of the project area. The EI or JCEP's authorized representative will be responsible for performing inspections and registering or tagging the equipment prior to being transported or moved to the right-of-way.

3.2.3.3 Clearing and Grading

In areas where infestations have been identified, the contractor will stockpile cleared vegetation and salvage topsoil or graded material adjacent to the area from which they are stripped to eliminate the transport of soil-born noxious weed seeds, roots, or rhizomes. Where practical and feasible, grading activities will occur toward any known areas of infestation to minimize the potential spread of noxious weeds.

3.2.3.4 Weed-Free Materials

JCEP will use certified weed-free materials such as seed, mulch, and sediment barriers. The EI or JCEP's authorized representative will be responsible for ensuring that all materials will be certified weed-free following Oregon Department of Agriculture (ODA) standards, if available. If this certification process is not formalized at the time of construction, the certification process can be documentation from producers/vendors that materials were produced from certified weed-free fields, or materials can be inspected by the county extension agent or qualified conservation district personnel.

3.2.3.5 Weed Control

Where weed control is necessary, JCEP will employ hand and mechanical methods (pulling, mowing, disking, etc.) to prevent the spread of potential weed infestations. Decisions will be made based on whether other methods or combinations of methods are known to be effective on the species in similar habitats. The choice of herbicides will be based on the invasive species, how it reproduces, its seed viability, the size of its population, site conditions, known effectiveness under similar site conditions, and the ability to mitigate effects on non-target species.

In most cases, if an herbicide is used for control, it would be used in combination with other methods. For example, initial treatment of an invasive species may be done with an herbicide, but then manual or mechanical methods may be implemented as maintenance treatments over the

long-term. If herbicides are used to control noxious weed infestations, JCEP will employ a state or federally-licensed herbicide applicator to ensure that the appropriate herbicides are utilized for the targeted weed species during its proper phenological period and at the specified rate. The applicator will ensure that the herbicides are used according to the labeling restrictions and according to all applicable laws and restrictions.

The applicator will confirm that the herbicides are used under the proper seasonal and weather conditions to ensure effectiveness and to minimize drift to non-targeted areas. Herbicides will not be applied during precipitation events or when precipitation is expected within 24 hours or as specified on the label. Prior to herbicide application, JCEP and/or their contractor will obtain all required permits from the local jurisdictions/authorities and land managing agency.

3.2.3.6 Weed Control near Sensitive Areas and Habitats

Herbicides will not be used within 100 feet of a wetland or waterbody, unless allowed by the appropriate agency. If noxious weed infestations occur in the vicinity of sensitive sites, the proper treatment buffers will be applied to avoid potential adverse impacts to non-targeted species. In these areas site-specific control will be designed (e.g., application rate and method, timing, wind speed and direction, nozzle type and size, buffers, etc.) to mitigate the potential for adverse disturbance and/or contaminant exposure.

3.2.3.7 Revegetation and Seeding

As outlined in the JCEP BA, JCEP has consulted with various agencies regarding recommended seed mixtures for the project area. However, no seed mix specific to sandy areas on the North Spit was included. Therefore Steve Langenstein, the BLM Noxious Weed Coordinator for the area was consulted in October 2014, and has provided a native seed mix for use in sandy areas on the North Spit that conforms with Bureau of Land Management (BLM) policy and will provide a suitable native mix for non-BLM lands (Table 1). Disturbed areas will be seeded within six working days of final grading, weather and soil conditions permitting.

Table 1: Recommended Seed Mixtures for Sandy Soils on the North Spit of Coos Bay

Common Name	Scientific Name	Percent of Mix
California brome	*Bromus carinatus*	20%
Blue wildrye	*Elymus glaucus*	20%
Red fescue	*Festuca rubra*	20%
Tufted hairgrass	*Deschampsia caespitosa*	10%
Sterile wheat *	*Triticum aestivum*	30%

* The use of native seed mix is preferred; however, in sandy soils mixing sterile perennials such as sterile wheat will help ensure that erosion control is achieved quickly.

Seeding will be conducted using a mechanical broadcast seeder, hydroseeder, or seed drill, as appropriate. The seed application rates will be as specified for drilling rates and doubled if using broadcast seeding. Fertilizer, lime, or mulch will not be used in wetlands.

Broadcast seeding will be the preferred seeding method on steep slopes or other areas that cannot be accessed with other seeding equipment; areas that will be covered with erosion control fabric; and other areas determined appropriate for broadcast seeding by the EI. Seed will be broadcast with a mechanical seeder immediately after the seedbed has been prepared and the soil is loose. This will allow the seeds to be lightly covered as the soil settles. The seeding will be lightly dragged with chains or other appropriate harrows to lightly cover the seed in areas where it is possible, as determined by the EI. Broadcast seeding will occur immediately prior to installation of erosion control fabric or application of mulch (straw or wood).

Hydroseeding will be used in upland areas that can be safely accessed with hydroseeding equipment and other areas that are determined appropriate by the EI. Hydroseeding equipment shall be equipped with sufficient tanks, pumps, nozzles, and other devices required for mixing and hydraulically applying the seed, wood fiber mulch, and tackifier mix in slurry form onto the prepared ground. The hydroseeding equipment shall have built-in agitators which will keep the seed, mulch, tackifier, and water mixed homogeneously until pumped from the tank. Fertilizer may be included in the hydroseeder slurry for hydroseeded areas that are difficult to access for fertilizer application and incorporation, as determined by the EI. Hydroseeding and hydromulching will occur in one application unless the EI specifies that they occur as two separate applications.

Where hydroseeding and hydromulching occur as two applications, the hydroseeding slurry will contain tackifier at 25 percent of the manufacturer's recommended rate and 300 pounds of wood fiber mulch to mark the seeded locations and the evenness of the application. The hydromulching will occur immediately following hydroseeding on the same day, where feasible. Hydroseeding and hydromulching will be done from two directions (e.g., left and right or up and down), where possible, to ensure maximum coverage of the soil. Hydroseeding rates will be at the rates specified for broadcast seeding plus any adjustment the hydroseeding company recommends based on their equipment specifications.

3.2.3.8 Monitoring

During the first and second year post-construction JCEP will monitor for infestation of noxious weeds. Monitoring will occur in the areas where noxious weeds were identified prior to construction and were previously mapped to ensure that potential infestations do not reestablish and spread. JCEP's operational staff or their contractors will be responsible for these monitoring efforts. If infestations occur, JCEP would make an assessment of the source of the infestation, the potential of the infestation to spread to other adjacent areas, and develop a treatment plan to control the infestation. The treatment plan would be developed using integrated weed management principles, and if herbicides are used, all applicable approvals would be obtained prior to their use including landowner approvals. JCEP will consult with the Oregon Department of Agriculture Noxious Weed Control Program/ or local County Weed Program for additional support regarding noxious weed control issues that may occur during operation of the Facility.

JCEP will conduct follow-up inspections of all disturbed areas after the first and second growing seasons to determine the success of revegetation. Revegetation shall be considered successful in upland areas, if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. If vegetative cover and density are not similar

or there are excessive weeds after two full growing seasons, a professional shall determine the need for additional restoration measures. JCEP will continue revegetation efforts until revegetation is successful, and when the site is stabilized, temporary erosion control measures will be removed. Once again, it should be noted that these BMPs to minimize impacts will be carried out in addition to the habitat mitigation and monitoring that is described in the following sections.

4. HABITAT IMPACTS

4.1 HABITAT IMPACTS SUMMARY FOR FERC-JURISDICTIONAL PROJECT COMPONENTS

The location, physical and operational characteristics, and duration of the proposed development action and wetland impacts are described in the permit applications submitted to the Oregon Department of State Lands (DSL) on March 20, 2014 and the US Army Corps of Engineers (USACE) on June 11, 2013 with recent updates sent on March 20, 2014. These documents are available on DSL's website:
http://www.statelandsonline.com/index.cfm?fuseaction=Comments.AppListLF&county=Coos

The DSL permit application (#54908-RF) was deemed complete by DSL on April 18, 2014. Since mitigation for wetland and estuarine resources is overseen by DSL and USACE, and is covered under the wetland mitigation plan for the project (available online). It is not covered in this document. The remainder of this document focuses on upland habitat mitigation.

The upland habitat types that may be affected by the proposed development action are shown in Figure 2 of Appendix B. They are described in the following sections and in detail in FERC Resource Report 3 (RR3), which is available online and is summarized below:

> The Project is not expected to have a long-term significant impact to vegetation resources, as the areas that will be graded and cleared for construction are relatively common and widespread throughout the North Spit and the Project vicinity. The Project footprint was selected on the basis of avoiding, to the extent practical, unique vegetation communities and higher value wetlands. Selection of temporary construction staging sites was primarily restricted to upland areas to avoid impacting wetlands. The fish and wildlife species which will be affected are described in detail in RR3, as summarized below:
>
> The Project site, comprised of the western LNG Terminal parcel, eastern SDPP parcel and utility corridor connecting the parcels, contains a number of habitats that support a variety of wildlife species as temporary or permanent residents. Approximately 178 tetrapod species (amphibians, reptiles, birds, and mammals) were recorded on or adjacent to the Project site during surveys conducted in October 2012 and during previous surveys from June to December 2005 and in early 2006. Terrestrial species include approximately 115 species. Approximately 151 seasonal or year-round resident bird species occur in the vicinity of the Project site, and a variety of habitats suitable for migratory birds exists within the Project site boundaries. Species types and densities are directly related to season of year, preferred habitats, food resources, and protective cover.

> The proposed Project site provides suitable habitat for a number of wildlife species associated with the coastal, mid-coastal, interior foothills, and mountain terrains that construction and operation of the proposed Project could affect. The majority of wildlife species detected on or adjacent to the Project site during the 2005/2006 and 2012 surveys were birds.

Although these species potentially occur, the Resource Report 3 goes on to say that, based on available knowledge, consultation with agencies, and focused surveys for particular species, no listed terrestrial species are known or expected to occur within the Project site boundary. Please refer to RR3 for greater detail.

The nature, extent, and duration of impacts expected to result from the proposed development actions are described in detail in RR3. These impacts have been incorporated into Figure 3, which shows post-construction habitat categories.

4.2 HABITAT IMPACT SUMMARY FOR THE EFSC-JURISDICTIONAL SDPP

Anticipated impacts to wildlife habitat within the EFSC SDPP site boundary are shown in Figure P-4 of Appendix D. To determine habitat impacts from development of the SDPP, state sensitive species that occur, or have the potential to occur within the site boundary and surrounding ½-mile analysis area were evaluated. Detailed analysis of impacts to state sensitive species is provided in Exhibit P of the EFSC ASC.

Impacts to threatened and endangered species, and associated habitat, were also evaluated and are described in detail in Exhibit Q of the EFSC ASC. Twenty three state-listed and 26 federally-listed threatened, endangered, and candidate species, as well as federal species of concern occur, or have the potential to occur, within the 5-mile radius analysis area used to evaluate threated and endangered species.

Habitats within the site boundary and the ½-mile analysis area include a variety of upland, wetland, and estuarine habitat types typical of the Coast Range ecoregion, as well as large areas of previously developed habitat within the site boundary. No irreplaceable habitat types were found during habitat surveys, which were conducted within the overall JCEP project footprint and the EFSC site boundary as part of the overall JCEP project

Table 2 outlines the number of acres expected to be impacted by the overall JCEP project. These acreages are subsequently broken out to highlight impacts associated with the EFSC-jurisdictional SDPP and those associated with FERC-jurisdictional components of the Project.

Table 2: Overall JCEP and SDPP Impacts, in Acres

Habitat Type and Category	Total JCEP Project Impacts	SDPP Impacts	Non-SDPP Impacts
Coastal Dune Forest (3)	102.9	10.0	92.9
Riparian Forest (3)	1.4	1.4	0.0
Shrub (4)	10.1	2.5	7.6
Herbaceous Shrub (4)	55.9	34.2	21.7
Herbaceous (4)	89.9	12.7	77.2
Unvegetated Sand (3)	3.5	3.5	0.0
Non-Jurisdictional Wetland (3)	1.0	1.0	0.0
Non-Jurisdictional Open Water (3)	1.0	0.8	0.2
TOTAL	**265.7**	**66.1**	**199.6**

4.3 EXISTING HABITAT FUNCTION

4.3.1 Category 2 and 3 Habitats

As indicated by their assigned number, Category 2 and 3 habitats currently function at a high level for wildlife. Category 2 habitats are limited to wetland and estuarine resources. Category 3 habitats include dune forest, un-vegetated sand, and riparian forest. The mitigation goal for Habitat Category 2 is: "if impacts are unavoidable, [mitigation] is no net loss of either habitat quantity **or** quality **and** to provide a net benefit of habitat quantity **or** quality". The mitigation goal for Habitat Category 3 is: "if impacts are unavoidable, [mitigation] is no net loss of either habitat quantity **or** quality" (OAR 635-415-0015).

4.3.2 Category 4 Habitats

Category 4 habitats, on the other hand, are not currently functioning at a high level for wildlife (compared to less-disturbed habitats in the vicinity). The vast majority of Category 4 habitats that would be impacted by the project lie on dredge spoils covered by very weedy herbaceous and shrub habitat (Photos 1-8, Appendix A). The mitigation goal for Habitat Category 4 is: "if impacts are unavoidable, [mitigation] is no net loss of either habitat quantity **or** quality" (OAR 635-415-0015). These habitats have been degraded extensively historically, and only provide habitat for generalist species such as deer, small mammals, and a limited suite of songbirds. No sensitive species are known to use these habitats, as discussed in RR3. In fact, at the Mill Site, much of the Category 4 habitat lies on top of historic development and waste dumping areas and on top of currently permitted landfills, all of which are required to be capped in the future as part of the Oregon Department of Environmental Quality (DEQ) approved site cleanup process.

Photos representing typical Category 4 habitat have been provided in Appendix A to inform the discussion. As shown, the herbaceous habitat type is found primarily on historically leveled areas (and to a lesser degree on recently colonized dunes) where pioneering species (mainly European beachgrass, [*Ammophila arenaria]*) have established themselves. Dominant species include European beachgrass, tall fescue (*Schedonorus arundinaceus*), sweet vernal grass (*Anthoxanthum odoratum*), Queen Ann's lace (*Daucus carota*), and hedgehog dogtail grass (*Cynosurus echinatus*).

Other species include velvet grass (*Holcus lanatus*), English plantain (*Plantago lanceolata*), tall orchardgrass (*Dactylis glomerata*), colonial bentgrass (*Agrostis capillaris*), hairy catsear (*Hypochaeris radicata*), small-head clover (*Trifolium microcephalum*), hop clover (*T. dubium*), and red and white clover (*T. pratense and repens*). Some of these areas were planted with pasture species. Native species are generally limited to yarrow (*Achillea millefolium*) and pearly everlasting (*Anaphalis margaritacea*), with American dunegrass (*Elymus mollis*) present in very limited areas. Himalayan blackberry (*Rubus armeniacus*) and scattered trees and shrubs (cultivated as well as native) are present in some places along the edges of the habitat near developed areas, and have been included in this habitat type due to their low cover overall. Some of these areas were planted with pasture species.

In Herbaceous/Shrub and Shrub habitat, several species of shrub, primarily Scotch broom (*Cytisus scoparius*), and Himalayan blackberry, as well as some native shrub species and trailing blackberry (*Rubus ursinus*) provided greater cover, but understory species were similar to Herbaceous habitat. In many places, Scotch broom has formed dense thickets, excluding most other species, as is the case in most of the Shrub habitat. Nearly all Category 4 habitats within the project footprint have been re-contoured historically.

The least-disturbed Category 4 habitats within the project footprint occur in the leveled area along the western edge of the project. This area is used by a variety of generalist species, and also by elk. Species such as peregrine falcon are known to forage over the habitat, and human disturbance is generally limited to occasional foot traffic and vehicles. The habitat at the western portion of the North Point Workforce Housing Project site is similarly little-disturbed (the eastern portion has been used as a log deck), but similarly dominated by non-native species, and less accessible to species such as elk due to its geographic isolation.

The remaining Category 4 areas are more frequently disturbed, occurring at the edge of Roseburg forest industrial property, and at the Mill Site interspersed with paved and gravel lots. As mentioned, active (but covered) landfill occupies the western edge of the Mill Site (west of the two ponds near the center of the site). In addition, the Mill Site contains large quantities of buried hazardous materials left over from mill activities, which don't directly affect existing wildlife function, but limit potential for restoration activities. Vehicular and foot traffic from property management activities is present at times, but the areas retain some function for wildlife due to their position adjacent to Jordan Cove. These habitats would be converted to herbaceous habitat post-construction, and would be mitigated for at a 1:1 ratio.

No Category 5 habitats were present within the study area. Category 6 habitats require avoidance and minimization, but no mitigation, and were not included in mitigation calculations.

4.4 DIRECT IMPACTS AND HABITAT FUNCTION POST-CONSTRUCTION

Project impacts include both long-term and short-term impacts. Although these terms do not correspond exactly with permanent and temporary disturbance, they are used interchangeably in this document in order to remain consistent with the other EFSC documents created for the project (specifically Exhibit C). Long-term impacts include portions of the landscape that are converted to structures, pavement, or gravel, result in steep slopes, or are surrounded by active industrial project components, rendering the habitat essentially useless to wildlife. Short-term impacts include activities such as grading and re-vegetation of dune habitats, which would occur for several weeks or months in duration, but would then be returned to pre-project or better condition. These impacts are shown in Figure 3, with long-term impacts in orange and short-term impacts in yellow. Areas that were mapped as Category 6 (pink cross-hatch) prior to project impacts were not included in mitigation calculations.

Only areas that were mapped in orange and yellow (with no pink cross-hatch) in Figure 3 were included in mitigation calculations. For instance, placement of underground water lines along the Trans Pacific Parkway was not mapped, and was not included in impact calculations for several reasons. First, the existing habitat although classified as Category 4, is extremely degraded by weeds and disturbance due to its location between the Trans Pacific Parkway and the railroad. Second, impacts would be extremely short-term (require approximately one week in duration, with impacts occurring along each portion of the water line for only several hours at a time). Finally, since the waterline area would be re-vegetated with native species following installation, condition of impacted areas would be improved over existing condition, resulting in in-situ mitigation for impacts. Similarly, since wetland impacts are dealt with in the joint permit application and wetland mitigation process, they were not included in impact calculations for this plan, since that would mean that mitigation would occur twice for the same impact.

During the July 23, 2013 meeting, ODFW indicated that OAR 615-415-000 through 0025 does not differentiate between short-term and long-term impacts. Instead, ODFW considers the magnitude, duration, and geographic size of proposed mitigation in context with the magnitude, duration, and geographic size of the proposed impacts and with the specific mitigation goals defined for each Habitat Category. The project specific short-term impact areas, (which would be graded and re-vegetated) may retain minimal function for a few species of wildlife and would therefore typically be considered Category 4. However, these areas would lose nearly all of their function for wildlife due to re-contouring of ground surfaces and disturbance from proximity to project elements (compared to existing conditions). Therefore, for simplicity, JCEP has assumed conservatively that all habitats that are impacted, whether short-term or long-term (post-construction Habitat Category 4 or Category 6) would be considered to have no function post-construction (zero percent function), and would be mitigated for at a 1:1 ratio.

Since all habitats shown to be impacted in Figure 3 would be considered to have no function post-construction, and since JCEP will provide 1:1 mitigation for all these impacted areas, it is assumed that no additional future mitigation would be required for subsequent project activities within habitats shown to be impacted in Figure 3.

As mentioned previously, wetland impacts and mitigation are overseen by DSL and USACE, and are not addressed in this document. However, as shown in Figure 3, impacts to non-jurisdictional

wetlands would occur (shown in purple), which are not included in the wetland mitigation plan. Therefore, mitigation for 2.0 acres of non-jurisdictional wetland impacts will be provided under this plan, as discussed in Section 7.

4.5 INDIRECT IMPACTS

Regarding indirect impacts, the July 2013 meeting attendees agreed that JCEP would not initially attempt to quantify mitigation for indirect impacts, and that ODFW would discuss the issue internally and comment on indirect impacts as the permitting process evolves. However, it should be assumed that some form of additional mitigation may be required for indirect impacts outside the project footprint, especially for indirect impacts to less-disturbed wildlife areas near the project. To that end, JCEP has acquired additional acreage within the parcels identified for mitigation.

4.6 TEMPORAL LOSS

It is assumed that preservation and at least the first phases of ecological uplift at the mitigation sites would occur prior to or concurrent with construction, which would result in no temporal loss of function for wildlife habitat. If this were to become impossible due to timing of financing or implementation, additional mitigation would be required to offset temporal loss of function.

5. WILDLIFE SALVAGE

As mentioned, in order to minimize impacts to wildlife from construction, ODFW has provided wildlife capture, holding, transport, and relocation (e.g., wildlife salvage) guidance, which is provided in Appendix C. These salvage actions are in the process of being coordinated with ODFW, and they and other stakeholders are invited to comment and provide additional on-site guidance as the project nears initiation.

As prescribed in that guidance:

> "In order to avoid or minimize disturbance, injury and mortality to individual wildlife species, the ODFW has developed a technical guidance series with recommended Best Management Practices (BMPs). Incorporation and implementation of BMPs into various project activities is expected to prevent or minimize negative impacts to wildlife, as well as help project proponents comply with wildlife protection laws.
>
> It is ODFW's intent that BMPs be considered during the planning, design and budgeting phases of project development. Selected BMPs are then to be implemented during project construction and maintenance phases to achieve the goal of preventing and minimizing negative impacts to wildlife and their habitats.
>
> Wildlife capture and relocation is described as the following:
>
> > *"The capture of live wildlife from a site and relocation of those wildlife to nearby suitable habitat to ameliorate negative impacts, such as disturbance, injury and/or mortality, that otherwise would be expected to result from project activities if the wildlife were not removed from the site."*

Under this definition, the goal is to relocate captured wildlife to the nearest suitable habitat within the same watershed (HUC6) and preferably on the same property. If suitable habitat within the same watershed is unavailable or is deemed fully occupied, or if relocation is determined by ODFW to not be in the best interest of the wildlife for whatever reason, ODFW will determine final disposition (e.g., release at an alternative relocation site, transfer to temporary holding facility, etc..)".

"The process of wildlife capture and relocation involves a number of components including the following:

1) Applying for and obtaining a Wildlife Capture, Holding, Transport, Relocation Permit / Letter of Authorization from ODFW prior to project implementation.
2) Determining what species are likely to be encountered where based on habitat types present, known occurrence information (if any), species ecology, and time of year.
3) Educating project staff in identification of wildlife species.
4) Establishing a communication plan for project staff to report wildlife observed / encountered.
5) Procedures to be followed for capture and relocation of wildlife, including identification of relocation sites and preparation of needed equipment.
6) Contingency planning for non-native invasive species, injured or diseased wildlife.
7) Employment of a professional wildlife biologist or other trained personnel to implement the wildlife capture and relocation protocol, including final reporting to ODFW."

Capture, holding, transport, and relocation techniques differ according to wildlife species or grouping of wildlife species. At this time, ODFW has developed protocols for turtles and amphibians. Protocols for other species groups are currently being developed, and will be incorporated as they become available.

6. HABITAT MITIGATION SITE SELECTION

In order to meet the fish and wildlife habitat mitigation goals for the project, DEA worked with ODFW to identify essential wildlife habitat to be protected from future disturbance and development, and to be enhanced to provide improved wildlife habitat function. Figure 4 provides an overview of parcels investigated, which are discussed in detail below and shown in Figure 5. Table 3 provides a summary of opportunities and constraints for all parcels that were investigated.

Table 3: Jordan Cove Energy Project Mitigation Opportunities/ Constraints by Parcel

Map ID	Taxlot	Owner/ Site Name	Site Acres	Comments
A-D	Various-see Figure 4	Sand Hills Gun Club, Inc.	>100	Good opportunites, but owner not interested.
E-H	Various-see Figure 4	McKeown, Joseph, et al.	>100	Good opportunites, but owner not interested..
I	24S13W28TL0030000	U.S.A	39	Federal parcel surrounded by private lands. Unlikely opportunity for mitigation due to ownership.
J	24S13W03TL0030000	Coos County	84	Split by USFS-designated main OHV route North-South which limits suitability.
K	23S13W14TL0020000	Coos County	58	A designated main OHV route runs through the center of parcel, but western portions may provide protection for unique wildlife habitats. ODFW verified suitability.
L	23S13W22TL0010000	Coos County	22	Contains unique wildlife habitats along Tenmile Creek. ODFW verified suitability of habitat for mitigation.
M	24S13W02BBTL009000	Coos County	28	Good opportunity for protection from development which is occurring north and south of parcel. Potential wildlife corridor to east from ODNRA.
N	24S13W02TL0040000	Coos County	86	Portions of the parcel could provide opportunities for protection and enhancement.
O	24S13W11TL0040000	Coos County	17	Good potential conservation opportunity. Potential wildlife corridor to east from ODNRA.
P	24S13W32TL0020000	Panhandle Site	105	Parcel connects public trailhead to ODNRA lands and and contains high quality wetland and upland habitats. Good opportunity.
Q	24S13W16TL00100, 200	Adamek Property	68	Parcel is primarily suitable only for out-of-kind mitigation and therefore not as desirable for the project.
R	21121700400, 21121700700	Roseburg North and South	150	Dune forest logged 5-15 yrs ago, located north of the Umpqua River. Confirmed suitable by ODFW, but sold before it could be acquired.

Map ID	Taxlot	Owner/ Site Name	Site Acres	Comments
S	26S14W09T L0010000	North Bank Site	161	Dune forest located on the north bank of the Coquille River, adjacent to the Bandon Marsh National Wildlife Refuge, with opportunities for complementary mitigation.
W	25S13W06T L0010100, 25S13W07T L0010100	Weyerhauser Lagoon Site	315	Located on the North Spit between Coos Bay and the ocean. Heavily used by wildlife and recreationists, and therefore a good mitigation opportunity, though primarily out-of-kind.

DEA investigated numerous potential mitigation strategies, beginning in 2007. The first effort identified possible habitat enhancement projects on Bureau of Land Management (BLM) land on the North Spit. These ideas were developed for several months, but abandoned due to lack of support from BLM management. The next strategy was to provide funding for protection of U.S. Forest Service (USFS) lands threatened by off-highway vehicle (OHV) use within the Oregon Dunes National Recreation Area (ODNRA). However, this plan was not possible due to USFS administrative restrictions.

In 2010 and 2011, DEA investigated the opportunities and constraints involved in mitigation on private lands adjacent to the ODNRA. Research was based on aerial photography interpretation, and site visits and conversations with Stuart Love, ODFW Wildlife Biologist, and Chris Claire, ODFW Fish Biologist. Numerous sites were investigated, but with no success because no private landowners within suitable parcels were willing to sell their property (Table 2, Parcels A-H). Several suitable Coos County parcels were found (Parcels L-O), but it was uncertain whether the County would commit to selling the parcels. JCEP was able to obtain two large parcels suitable for some portions of the mitigation plan (Parcels P and W), but sufficient acreage for in-kind mitigation for forested habitats was still lacking.

In 2013 and 2014, investigation of private and Coos County parcels was renewed, and coordination with ODFW continued, but neither Coos County nor private landowners in the vicinity were willing to sell, and the search was widened to include areas further north and south of the project. Parcel R, located 22 miles north of the project, was deemed suitable but was sold before it could be acquired. In April, 2014, a parcel containing forested dune habitat located on the north bank of the Coquille River adjacent to the Bandon Marsh National Wildlife Refuge was found (Parcel S). Upon review by ODFW, it was deemed suitable for in-kind mitigation for forested habitats. JCEP has taken steps to acquire Parcel S, which combined with Parcel P and W, will provide more than the required mitigation acreage for the project.

7. HABITAT MITIGATION SITE BASELINE CONDITIONS AND MITIGATION CONCEPTS

This section provides a detailed description of mitigation site conditions and mitigation concepts for parcels P, S, and W. The parcels that were selected were chosen based on their suitability for

mitigation, availability, and composition of habitats that could meet the in-kind and out-of-kind mitigation needs of the project. Habitat types and categories in each of these parcels were mapped using the same methodology used for other project elements, as shown in Figure 5.

In addition to permanent preservation of each mitigation parcel through implementation of a conservation easement, an ecological enhancement (uplift) is required, but no specific uplift type or ratio is prescribed by statute. In order to document uplift (thereby making the parcels eligible as mitigation under OAR 635-415-0000 through 0025), some combination of uplift alternatives that results in measurable functional uplift at each proposed mitigation parcel would be required. Several ecological uplift concepts (covering all the proposed sites) were discussed with ODFW during numerous meetings and site visits to discuss project mitigation. The uplift concepts discussed for each site have been vetted by ODFW as acceptable forms of uplift for the project. Performance standards related to these actions are provided in Section 8.

JCEP L.P. has entered negotiations with the Coos Watershed Association (CWA), a local non-profit organization established in 1993 meeting the requirements of ORS 271.715(3)(b), to provide long-term management and maintenance of all mitigation sites associated with the JCEP (including estuarine and freshwater wetland mitigation). JCEP L.P. would endow CWA to provide these services through the life of the Project (estimated approximately 30 years post construction). In doing so, JCEP LP, via CWA, can steer the mitigation sites toward substantial compliance with permit conditions and provide the required ecological uplift. In addition, a long-term maintenance plan, which would be in place prior to JCEP L.P. issuing Notice to Proceed for construction of the Jordan Cove Energy Project, is being written to provide guidance for the land manager.

If negotiations with CWA fail, JCEP L.P. would create and endow another land manager meeting the requirements of ORS 271.715(3)(b) to provide management and maintenance services for the mitigation projects for the life of the Project.

7.1 THE PANHANDLE SITE (PARCEL P)

The Panhandle Site (Figure 5, Sheet 1) lies north of the Trans Pacific Parkway and is part of a larger natural area that extends north into the ODNRA. The area has exceptional ecological features that are difficult to replace. For this reason, it was purchased in 2012 to be used for mitigation. The site is used by hikers from the Weyerhaeuser North Spit Overlook trailhead west of the site, and such use, which is supported by ODFW, would be allowed to continue.

7.1.1 Existing Conditions

The site is approximately 133 acres in size and contains several upland vegetation communities, as shown in Figure 5 and described below.

7.1.1.1 Coastal Dune Forest Habitat

Coastal dune forest habitat consists of forest areas established on fully stabilized sand dunes in the region. It is found throughout the study area in various successional stages. Dominant species include Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), shore pine (*Pinus contorta spp. contorta*), and Port Orford cedar (*Chamaecyparis lawsoniana*), with

scattered Sitka spruce (*Picea sitchensis*). In some places, patchy canopy promotes vigorous shrub growth and cover, ranging from dense to nearly impenetrable.

Dominant shrubs are evergreen huckleberry (*Vaccinium ovatum*), salal (*Gaultheria shallon*), bearberry (*Arctostaphylos uva-ursi*), and Pacific rhododendron (*Rhododendron macrophyllum)* with scattered California wax myrtle (*Myrica californica*) and hairy Manzanita (*Arctostaphylos columbiana*). The understory is generally lacking herbaceous species due to dense canopy cover, although portions of the forest are less dense than others.

Project specific coastal dune forest habitat parcels would be considered Category 3, due to the essential function they provide (based on ODFW policy definition). Species such as American marten, bats, and some songbirds depend upon it for species survival, and loss of the habitat could result in depletion of some of these species on a local scale. However, the habitat is not limited since similar habitats are found north and east of the project and provide alternate functional habitat for these relatively mobile species.

7.1.1.2 Herbaceous Habitat

The herbaceous habitat type is found on recently colonized dunes where pioneering species have established themselves. Dominant species include European beachgrass and colonial bentgrass, tall fescue, sweet vernal grass, and other non-native species, with some cover by native species such as seashore lupine (*Lupinus littoralis*), small-head clover, and beach strawberry (*Trifolium microcephalum*). Scotch broom is present in places, but is fairly limited.

This habitat type would not be considered essential (based on ODFW policy definition) because no species are known to depend upon it exclusively for their survival, and loss of the habitat would not likely result in depletion of any species. The habitat is not limited since similar habitats are found in the vicinity. Therefore the habitat is classified as Category 4 because it is not essential, or limited, but is important to wildlife.

7.1.1.3 Shrub Habitat

This habitat type is located on more stabilized dunes and has been colonized by shrubs and young trees, primarily Scotch broom and young shore pine. Overall shrub cover is 25% or more in this habitat type. The herbaceous species include mainly the non-native species described above such as European beachgrass, sweet vernal grass, and colonial bentgrass. The habitat is classified as Category 4 because it is not essential, or limited, but is important to wildlife.

7.1.1.4 Un-vegetated Sand Habitat

This habitat type includes areas of moving sand that have not been colonized by vegetation, except for very scattered herbaceous pioneer species such as European beachgrass. Although the habitat formed by these dunes is generally devoid of vegetation, it provides important habitat for a variety of wildlife, including songbirds that forage on seeds blown into this habitat, and raptors and small mammals that use the edges for foraging. ODFW considers the habitat to be limited on a local scale, since it is present only on a small strip of land between Highway 101 and the ocean. By ODFW definition, it is non-essential, but important to wildlife and limited, and would therefore be classified as Category 3.

7.1.1.5 Forested Wetland

The forested wetland habitat type consists of wetlands that have remained undisturbed long enough to develop a consistent tree canopy. It is dominated primarily by shore pine with some areas of tree-sized Hooker willow (*Salix hookeriana*). Mature red alder (*Alnus rubra*) and Sitka spruce also occurs in places, typically at the wetland boundary or on upland hummocks within the wetlands. The shrub layer is dominated by common coastal wetland species such as Pacific crabapple (*Malus fusca*), Hooker willow, Douglas' spirea (*Spirea douglasii)* and twinberry (*Lonicera involucrata*) in places. The herbaceous layer is typically dominated by slough sedge (*Carex obnupta*). The habitat is classified as Category 2 because it is essential for wildlife, and limited, but can be replaced through mitigation.

7.1.1.6 Scrub-Shrub Wetland

This habitat type is commonly dominated by Hooker willow, with salmonberry and other common coastal wetland species such as slough sedge and skunk cabbage (*Lysichiton americanus*). Pacific crabapple was also a dominant shrub species in some areas. The habitat is classified as Category 2 because it is essential for wildlife, and limited, but can be replaced through mitigation.

7.1.1.7 Emergent Wetland

This habitat type is typically dominated by slough sedge. In places, other typical species include spreading rush (*Juncus patens*), water parsley (*Oenanthe sarmentosa*), Pacific silverweed (*Potentilla anserina*), and salt grass (*Distichlis spicata*), among others. Wetter portions of this habitat type consisted of aquatic floating and emergent plants in relatively shallow seasonally or perennially inundated areas, including pond lily (*Nuphar polysephalum*), water parsley, cattail (*Typha latifolia*), and small-fruited bulrush (*Scirpus microcarpus*). The emergent wetland habitat is classified as Category 2 because it is essential for wildlife, and limited, but can be replaced through mitigation.

7.1.1.8 Open Water

Open water habitat is present in steep-sided interdunal areas and within deeper portions of wetland areas, where no vegetation was present. This habitat is classified as Category 2 because it is essential to wildlife and limited.

7.1.1.9 Unique Habitats Present

The Panhandle site contains unique qualities determined to be of significant importance to the State of Oregon, in the Coast Range Ecosystem. Information regarding the presence of these qualities has been gathered from resources found in the Oregon Conservation Strategy (ODFW, 2006) and from information provided by the Oregon Biodiversity Information Center (ORBIC) website. Important qualities observed at the mitigation site include the following:

1. Significant populations of rare plants or animals;
2. Rare wetland type;
3. Native, mature forest wetland and;
4. Preserves a wetland type disproportionally lost

1. Significant populations of the rare amphibian Northern red-legged frog (*Rana aurora*) have been observed in multiple locations throughout and adjacent to the site. Northern red-legged frogs are listed by the ODFW as "Sensitive – Vulnerable," federally as a "Species of Concern" and listed by ORBIC as "List 4."

2. Two rare wetland types based on rare plant associations have been observed at the site. Rare plant associations are listed on the Oregon Wetlands Explorer National Resources Digital Library (http://oregonexplorer.info/wetlands/AtriskWetlandPlantAssociations).

The first plant association at the site includes *Salix hookeriana* - (*Malus fusca*) / *Carex obnupta* - *Lysichiton americanus* (coast willow - (crabapple) / slough sedge - skunk cabbage shrub swamp). This plant association has a state rank of S2, defined as imperiled because of rarity or because other factors demonstrably make it very vulnerable to extinction (extirpation), typically with 6-20 occurrences. This wetland type was observed in patchy distribution throughout the area defined in the 2013 DEA wetland delineation as scrub-shrub wetland. This includes approximately 6.4 acres wetlands.

The second at-risk plant association observed at the site is shore pine / slough sedge. This plant association has a state rank of S1, defined as critically imperiled because of extreme rarity or because it is somehow especially vulnerable to extinction or extirpation, typically with 5 or fewer occurrences. This wetland type was observed in the majority of forested portions of the site defined in the wetland delineation as forested wetland. This includes approximately 3.2 acres of wetlands.

3. A mature forested wetland is defined as a wetland in which mean diameter of trees (d.b.h., FACW and FAC species only) exceeds 18 inches, and/or the average age of trees exceeds 80 years, or there are >5 trees/acre with diameter >32 inches. Although no data has been collected, the site appears to meet this criterion.

4. Historical evidence suggests that this site is a remaining portion of a much larger complex of interdunal wetlands that once occurred on the North Spit. Interdunal wetlands are considered by the state to be an area of "special areas of concern". An interdunal wetland is defined as a seasonally inundated wetland, usually without a naturally-occurring inlet or outlet, located between sand dunes where wind has scoured the sand down to the water table (deflation plain), and often with significant cover of native species.

7.1.2 Mitigation Concept

Approximately 55 and 80 acres of habitat at the Panhandle Site will be used for in-kind and out of kind mitigation, respectively (mitigation calculations are provided in Section 8 and Table 3). Since the parcel is accessed by sand trail leading from the Weyerhaeuser parking lot trailhead across USFS land, uplift actions at the Panhandle Site would most likely need to be accomplished by hand rather than with mechanical means. Therefore the proposed uplift would include the following:

- Removing Scotch broom from selected portions of the parcel.
- Continuing to allow the public to cross the parcel and access USFS lands to the north.
- Providing stewardship of the entire parcel for the life of the project.

As shown in Figure 5, Sheet 2, two proposed uplift areas (A and B) have been outlined in red. Scotch broom is currently present in patches in these areas (Photo 9). Given the proximity to the Weyerhaeuser parking lot trailhead (which lies to the southwest of the parcel across USFS lands) the land manager would likely focus on Area A first, followed by Area B as time and budget allows. Minimum uplift requirements for each site are provided in Section 8.

In addition to weed removal, native species could be seeded or transplanted into weed removal areas. However, given that manual (backpack) watering would be required as a result of access limitations; this may not be the best use of resources. In any case, if native plantings are deemed feasible, the approach would be to use best available science to conduct restoration in small areas, followed by monitoring and adaptive management. Although native plantings may occur, they are not included as performance criteria.

Techniques for disposal of removed Scotch broom may include the following or similar techniques. The Scotch broom could be:

- Removed from the site and disposed of (labor intensive).
- Piled and left to dry, then burned in open sand areas during the appropriate season.
- Deposited on the eastern face of the steep forested area east of the uplift site.

7.2 THE LAGOON SITE (PARCEL W)

7.2.1 Existing Conditions

Parcel W lies on the North Spit just west of the Trans Pacific Parkway near the project area. It is an approximately 319-acre parcel composed primarily of Category 2 wetland habitats, with Category 4 upland habitats up slope of the wetlands (Figure 5, Sheet 4). Otherwise known as the Weyerhaeuser lagoons, the site is used heavily by songbirds and water birds, as well as by recreationists and birdwatchers, who access the lagoons and the beach by gated gravel roads on the north side of the parcel. Similar to the Panhandle, JCEP intends to allow for public use and enjoyment of the site, while enhancing portions of the site for wildlife. The North Spit sand road runs along the southern edge of the parcel and provides additional recreational and education opportunities.

7.2.2 Mitigation Concept

Approximately 40 and 30 acres of habitat at the Lagoon Site will be used for in-kind and out of kind mitigation, respectively. Two separate activities are proposed for the Lagoon Site: the required uplift associated with the approximately 70 acres of mitigation, and additional, in-kind mitigation for impacts to 1.9 acres of Un-vegetated Sand (US) habitat. This section addresses the uplift action, while the following section addresses US mitigation.

7.2.2.1 Lagoon Site Uplift Action

The proposed uplift area at the Lagoon Site is shown in red on Figure 5, Sheet 5. The proposed uplift is to maintain the area free from Scotch broom and Himalayan blackberry (Photo 12). This area was chosen because it would improve wildlife habitat between the wetlands and the access road, which would improve wildlife habitat as well as provide a better visitor experience for birdwatchers and other recreationists. In addition, the area in red is separated from larger

populations of weeds by the wetland areas, which may make it more feasible to reduce weed cover in the area over the long term.

An additional uplift action is to build an educational kiosk at the location of the asterisk (or elsewhere as deemed appropriate) to invite the public to enjoy the site and to provide some educational information.

Therefore the proposed uplift would include the following:

- Removing Scotch broom and Himalayan blackberry from the area marked in red.
- Continuing to allow the public to use the parcel for recreation, and constructing an education kiosk to guide the experience.
- Providing stewardship of the entire parcel for the life of the project.

7.2.2.2 Lagoon Site Mitigation Action

As mentioned previously, in-kind mitigation for impacts to 3.5 acres of Un-vegetated Sand (US) is required by ODFW policy. Preservation of 1.6 acres of US is to be provided at the Panhandle Site, but since mechanical access at the Panhandle is limited, it was deemed unfeasible to create an additional 1.9 acres of US at the Panhandle. Since no opportunities are apparent at the North Bank site, US mitigation is proposed at the Lagoon Site.

The proposed 1.9 acres of mitigation is shown in green on Figure 5, sheet 5. The mitigation concept is to create an open sand area (which is limited on the North Spit due to invasion of European beachgrass) by burying areas of primarily European beachgrass-dominated herbaceous habitat with sand. The sand would likely consist of material sourced from the JCEP project site, and would be brought in by truck and compacted in lifts to a depth of 5 or 6 feet. A 10-foot buffer would be maintained between the compacted sand and the wetland boundary to the east in order to reduce movement of sand into the wetland, and existing signs and trails would be avoided or replaced. Since the mitigation area lies on the leeward side of the steep foredune, excessive wind erosion is not anticipated following placement of sand. Performance criteria would state that the sand would be monitored and would contain at least 95% bare sand during the 5-year monitoring period.

Dave Lauten, Research Assistant with the Oregon Biodiversity Information Center (ORBIC) has worked on European beachgrass control for western snowy plover restoration on the North Spit for more than a decade. Per ODFW suggestion, he was consulted in June 2014 to determine appropriate removal methods and discuss potential conflicts with plover from creation of US at the Lagoon Site. He has not seen plover using areas as far north as the mitigation site, and in his opinion, there is only a fraction of a percent chance that the plover might use the mitigation site, for the following reasons:

- Narrow width of the mitigation area, combined with the adjacent steep-sided dune and shrub wetland areas make the habitat unattractive to plover because they are more susceptible to predators.
- Lack of direct, open sand access to the shore, and distance from the existing plover areas combined with site fidelity of plover in those established areas, make it unlikely they would visit the site, and less likely that they would remain within it.

Mr. Lauten recommended avoiding using sand material with shell hash in it, since shell hash is attractive to the plover. He also acknowledged the difficulty of controlling beachgrass over the long term, but felt that for a smaller site the mitigation concept could work. He felt the biggest threat to keeping sand areas from invading beachgrass was vegetative creep from the edges of the mitigation area, especially the steep upslope side, where the grass (and seeds) would tend to invade from.

The following discussion of European beachgrass biology would inform the mitigation action. It was excerpted from the California Invasive Plant Council Invasive Plants of California's Wildland website, with sources (present in online article) removed for brevity (http://www.cal-ipc.org/ip/management/ipcw/pages/detailreport.cfm@usernumber=5&surveynumber=182.php):

> European beachgrass has changed beach topography, creating steep foredunes where none were present prior to its introduction. European beachgrass forms a dense cover that appears to exclude many native taxa. Dunes dominated by European beachgrass also have lower arthropod species diversity, and fewer rare arthropod species than dunes dominated by native species. European beachgrass is able to withstand up to 3.3 feet a year of sand burial.
>
> **Mechanical control methods:** Some attempts have been made at Oregon Dunes National Recreation Area to remove European beachgrass with heavy machinery. In the most ambitious attempt, European beachgrass was removed to a depth of approximately one meter (3.3 feet). The removed material was buried and capped with up to one meter of sand.
>
> **Chemical control methods:** In experimental trials conducted in northern California from 1991 to 1994, using a variety of herbicides, the only foliar treatment that consistently reduced live European beachgrass cover by 90 percent or more was glyphosate (as RoundupÂ®), applied at concentrations of 4 percent or 10 percent and mixed with 0.5 percent added surfactant (CitowettÂ® or Silwet L-77Â® were used) applied at 200 gallons per acre.

Given the prodigious growth rates of the species, JCEP proposes to apply herbicide to the European beachgrass as described above prior to depositing sand. Dave Lauten felt that this approach was as effective as any other method that has been used on the North Spit. Native plant species present within the fill area would be salvaged and replanted in nearby areas to the extent practicable prior to application of herbicide, and herbicide would be applied as required by law to avoid effects to the adjacent wetland areas.

7.3 THE NORTH BANK SITE (PARCEL S)

7.3.1 Existing Conditions

Parcel S (approximately161 acres) lies on the north bank of the Coquille River adjacent to the Bandon Marsh National Wildlife Refuge (NWR- Figure 5, Sheet 7). It is currently owned by Roseburg Forest Products, and contains primarily conifer forest atop stabilized sand dunes (Category 3) that was harvested between 14 and 58 years ago, and is scheduled to be harvested at 40-50 year rotations. Scrub-shrub wetlands (Category 2) lie along the eastern edge of the parcel, and a small drainage mapped as scrub-shrub wetland runs through the center of the parcel.

Timber roads that have been reclaimed by vegetation run throughout the parcel, and in places contain populations of noxious weeds.

7.3.2 Mitigation Concept

The forested areas surrounding the North Bank Site consist primarily of industrially logged forest, which provides little habitat diversity. The proposed uplift area at the North Bank Site is to provide diversity in the landscape by conducting forestry activities that would put the uplift area on a trajectory toward creating mature forest. To that end, JCEP is developing a forestry plan to guide management of the parcel.

The North Bank Site is large and almost entirely forested. As shown in Figure 5, sheet 8, the proposed uplift area would occur on 71.2 acres, and stewardship would occur for the life of the project. During forestry activities, removal of weeds, including Scotch broom, gorse, and blackberry (Photo 11) would occur to the extent practicable. Of the 71.2 acres preserved and enhanced at the North Bank, 1.4 acres of riparian forest habitat would be included as in-kind mitigation for impacts to riparian forest.

In addition to these actions, the proximity of the parcel to Bandon Marsh NWR provides opportunities for complementary uses between the two areas. Bandon Marsh consists primarily of wetlands and contains relatively little upland, forested habitat. Enhancement of Parcel S for wildlife could increase use of the parcel by wildlife. If suitable, educational opportunities for human visitors could be coordinated as well. Coordination between JCEP and Bandon Marsh NWR would be considered voluntary, and is not included in the performance criteria.

Therefore the proposed uplift would include the following:

- Documentation of forestry activities that put the uplift area on a trajectory toward creating mature forest
- Allowing the public to cross the parcel if deemed compatible with wildlife habitat uplift activities.
- Providing stewardship of the entire parcel for the life of the project

8. HABITAT MITIGATION CALCULATIONS

8.1 HABITAT MITIGATION CALCULATIONS FOR FERC-JURISDICTIONAL PROJECT COMPONENTS

The number of acres required for mitigation for each habitat type within the FERC project boundary and the number of acres to be used for 1:1 mitigation are shown in Table 4 below. As described in the ODFW habitat mitigation policy, in-kind, in-proximity mitigation is required for Category 2 and 3 habitats. Therefore, impacted Category 2 and 3 habitats are mitigated by protecting and enhancing the same kind of habitat that was impacted. Other habitats may be mitigated by preserving habitats other than those that were impacted.

Acreage requirements for the project as a whole were determined by comparing existing habitat mapping (Figure 2) with the post-construction mapping provided in Figures 3 and 4. Since all areas to be either temporarily or permanently impacted by the project would be considered to

retain zero function post-construction, this resulted in a requirement of 263.7 acres of mitigation for upland impacts.

In addition to the 263.7 acres of upland habitat, 1.8 acres of impacts to non-jurisdictional wetland at the Mill Site and 0.2 acres of impacts to non-jurisdictional wetland at the North Point Workforce Housing Project will be offset with 1.8 acres of in-kind mitigation at the Panhandle Site and 0.2 acres at the Lagoon Site. Thus, a total of 265.7 acres of habitat will be mitigated as a result of development impacts from the JCEP project. As mentioned previously, wetland impacts and mitigation are overseen by DSL and USACE, and are not covered in this document.

In-kind mitigation would occur at all three mitigation sites. Out-of-kind mitigation would also occur at the Panhandle and Lagoon sites (Parcels P and W), preserving and enhancing wetlands as mitigation for impacts to Category 4 herbaceous and shrub habitats. Wetland types used for out-of-kind mitigation include Category 2 freshwater wetlands and open water.

In order to mitigate in-kind for a total of 3.5 acres of impacts to un-vegetated sand, at least 1.9 acres of herbaceous habitat covered by European beachgrass at the Lagoon Site (Parcel W) would be returned to un-vegetated sand (dune) condition, in addition to the 1.6 acres of existing sand being used for in-kind mitigation at the Panhandle Site (Parcel P).

Table 4 outlines the number of acres required to mitigate for impacts to FERC-jurisdictional project components, which total 215.2 acres.

Table 4: Mitigation Calculations for FERC-Jurisdictional Project Impacts, in Acres

FERC Impacted Habitat Type	Total JCEP Mitigation Required	In-Kind Mitigation			Out-of Kind Mitigation*			FERC Mitigation Provided
		Parcel P	Parcel W	Parcel S	Parcel P	Parcel W	Parcel S	
Coastal Dune Forest	102.9	23.1		69.8				92.9
Riparian Forest	1.4							0.0
Shrub	10.1	3.8	5.1		1.2			10.1
Herbaceous Shrub	55.9	0.4			21.7			22.1
Herbaceous	89.9	14.1	9.9		44.0	21.9		89.9
Un-Vegetated Sand	3.5							0.0
Emergent Wetland	1.0							0.0
Open Water	1.0					0.2		0.2
Total	**265.7**	**41.4**	**15.0**	**69.8**	**66.9**	**22.1**	**0.0**	**215.2**

8.2 HABITAT MITIGATION CALCULATIONS FOR EFCS-JURISDICTIONAL PROJECT COMPONENTS

The number of acres required for mitigation for each habitat type within the EFSC project boundary and the number of acres to be used for 1:1 mitigation are shown in Table 5 below and illustrated in the figures in Appendix D. Although the mitigation areas in Appendix D are specific to the SDPP, both the EFSC- and FERC-jurisdictional portions of the Project will be managed and maintained together as a part of an overall JCEP mitigation portfolio and subject to the performance criteria outlined in this document for the entire JCEP project.

Table 5: Mitigation Calculations for EFSC-Jurisdictional Project Impacts, in Acres

EFSC Impacted Habitat Type	Total JCEP Mitigation Required	In-Kind Mitigation			Out-of Kind Mitigation*			EFSC Mitigation Provided
		Parcel P	Parcel W	Parcel S	Parcel P	Parcel W	Parcel S	
Coastal Dune Forest	102.9	10.0						10.0
Riparian Forest*	1.4			1.4				1.4
Shrub	10.1							0.0
Herbaceous Shrub	55.9		22.9		10.9			33.8
Herbaceous	89.9							0.0
Un-Vegetated Sand	3.5	1.6	1.9					3.5
Emergent Wetland	1.0	1.0						1.0
Open Water	1.0	0.8						0.8
Total	**265.7**	**13.4**	**24.8**	**1.4**	**10.9**	**0.0**	**0.0**	**50.5**

9. COMPLEMENTARY MITIGATION

As required by the OARs, all these actions complement and do not diminish mitigation provided for previous development actions. This is especially true at the Panhandle Site, where previous wetland mitigation on adjacent Weyerhaeuser property will be augmented by upland habitat mitigation, and at the North Bank Site, where complementary mitigation could occur in coordination with Bandon Marsh. Mitigation at the Panhandle Site would also expand existing protection of the adjacent ODNRA lands.

10. HABITAT MITIGATION MONITORING PLAN

Per OARs, monitoring efforts shall continue for the duration and at a frequency needed to ensure that the goals and standards in OAR 635-415-0025 are met, unless the Department determines that no significant benefit would result from such monitoring. Monitoring efforts should include protocols and methods, and a reporting schedule for monitoring the effectiveness of mitigation measures. This plan proposes a monitoring period of no more than five years. Monitoring Year 1 shall begin upon substantial completion of mitigation construction/implementation.

10.1 AS-BUILT SURVEY (YEAR 1)

An as-built survey will be conducted to document appropriate contours have been attained (where grading may be proposed) and plantings were installed as designed. An as-built report will be prepared including the as-built survey, photos, and a brief synopsis of work completed including any design changes.

10.2 PHOTO DOCUMENTATION (YEARS 1 THROUGH 5)

Photo locations will be established as appropriate within the mitigation sites to document conditions within the first five years. Supplemental photos will be taken as appropriate to document enhancement and any problem areas.

10.3 PERFORMANCE STANDARDS

As previously mentioned, mitigation for impacts from EFSC- and FERC-jurisdictional development actions will be managed and maintained as a part of the overall JCEP mitigation portfolio and subject to the performance criteria outlined in this document for the overall JCEP project. Objectives and performance standards common to all mitigation sites are as follows:

Objective 1: Permanent preservation of parcel.

- **Performance Standard 1.1:** A legal protection instrument is in place in the form of a conservation easement.

Objective 2: The portion of the parcel preserved for mitigation purposes is demonstrably managed for conservation for the life of the project.

- **Performance Standard 2.1:** A land manager will be endowed to monitor and maintain the parcels, demonstrate that an ecological uplift has been provided at each site, provide monitoring reports for the first five years after implementation of proposed mitigation measures, and maintain the sites throughout the life of the Project.

- **Performance Standard 2.2:** A long-term maintenance plan will be developed in coordination with the appropriate agencies to guide long-term stewardship for each mitigation site.

Objective 3: An ecological uplift has been provided at each mitigation site.

The specific performance standards by site are as follows:

Panhandle Site (Parcel P)

- **Performance Standard 3.1**: Ecological uplift (in the form of Scotch broom removal over a minimum of 5.8 acres) has been completed and is reflected in monitoring reports for five years.

North Bank Site (Parcel S)

- **Performance Standard 3.2:** Ecological uplift (forestry activities designed to encourage succession to mature forest within a minimum of 71.2 acres) has been completed for five years based on annual monitoring reports.

Lagoon Site (Parcel W)

- **Performance Standard 3.3:** Ecological uplift (in the form of Scotch broom and Himalayan blackberry removal within a minimum of 10.2 acres, and construction of an educational kiosk) has been completed and maintained for five years based on annual monitoring reports.

- **Performance Standard 3.4:** Placement and compaction of sand to an approximate depth of 6 feet has been completed and maintained over an area of at least 1.9 acres to provide at least 95% open sand cover for five years based on annual monitoring reports.

10.4 CONTINGENCY PLAN

Contingency plans will be developed by the endowed conservation entity and coordinated with ODFW should the performance standards not be met. The nature of the contingency plan will depend on the problems that arise and would likely be related to weed control and potential vandalism or effects from natural disasters.

11. LONG-TERM PROTECTION AND FINANCIAL SECURITY INSTRUMENTS

11.1 PROTECTION INSTRUMENT

JCEP L.P. will prepare a conservation easement to provide long term protection for the mitigation sites for the life of the project. The conservation easement will be reviewed by the project stakeholders, and will be in place prior to JCEP L.P.'s issuing Notice to Proceed for construction of the Jordan Cove Energy Project.

11.2 LONG-TERM MAINTENANCE PLAN

11.2.1 Anticipated Ownership

The mitigation sites will be owned by Fort Chicago LNG II U.S. L.P. (a wholly owned and controlled subsidiary of JCEP L.P.'s parent company Veresen, Inc.).

11.2.2 Anticipated Long-term Maintenance Actions

Long-term maintenance will include the activities described for each site above. Other activities may include garbage/debris removal and installation of protective signage and/or other deterrents

if vandalism or inappropriate activities are found to occur. In addition, a long-term maintenance plan will be in place prior to JCEP L.P.'s issuing Notice to Proceed.

11.2.3 Entity Responsible for Maintenance

JCEP L.P. will be responsible for maintenance of the mitigation sites, and some or all of the long-term maintenance will be performed by the land manager endowed by JCEP L.P.

11.2.4 Anticipated Funding Source

JCEP L.P. will create an endowment to fund long term maintenance of the mitigation sites by the land manager.

12. PREPARERS AND CONTRIBUTORS

Phil Rickus, DEA Ecologist, authored this report. Ethan Rosenthal, Ecologist, and Art Martin, Energy Coordinator, Wildlife Division, Oregon Department of Fish and Wildlife, and Sean Sullivan, DEA Project Manager, provided the quality reviews. Dawn Afman, DEA Project Assistant, prepared the report drafts, and Sara Gilbert, DEA GIS Project Manager, provided graphics.

13. APPENDICES

APPENDIX A: Photographs



Photo 1: Looking south along the eastern edge of the Mill Site at weedy herbaceous shrub habitat.



Photo 2: Looking north along the eastern edge of the Mill Site at weedy herbaceous habitat.



Photo 3: Looking west from the south-central portion of the Mill Site at weedy herbaceous habitat.



Photo 4: Weedy herbaceous habitat atop the landfill at the Mill Site.



Photo 5: Weedy shrub habitat on the north side of the Mill Site.



Photo 6: Looking south at weedy herbaceous habitat west of Ingram Yard.



Photo 7: Looking northwest from the west side of the North Point Workforce Housing Project property at weedy herbaceous and shrub habitat.



Photo 8: Typical upland conditions on top of fill pad in the eastern portion of the North Point Workforce Housing Project. Photo from center of site looking north.



Photo 9: Panhandle Site. Looking east at the eastern edge of Uplift Area A at Scotch broom that that can be removed to provide uplift.



Photo 10: Looking north at habitats to be preserved in the northern portion of the Panhandle Site.

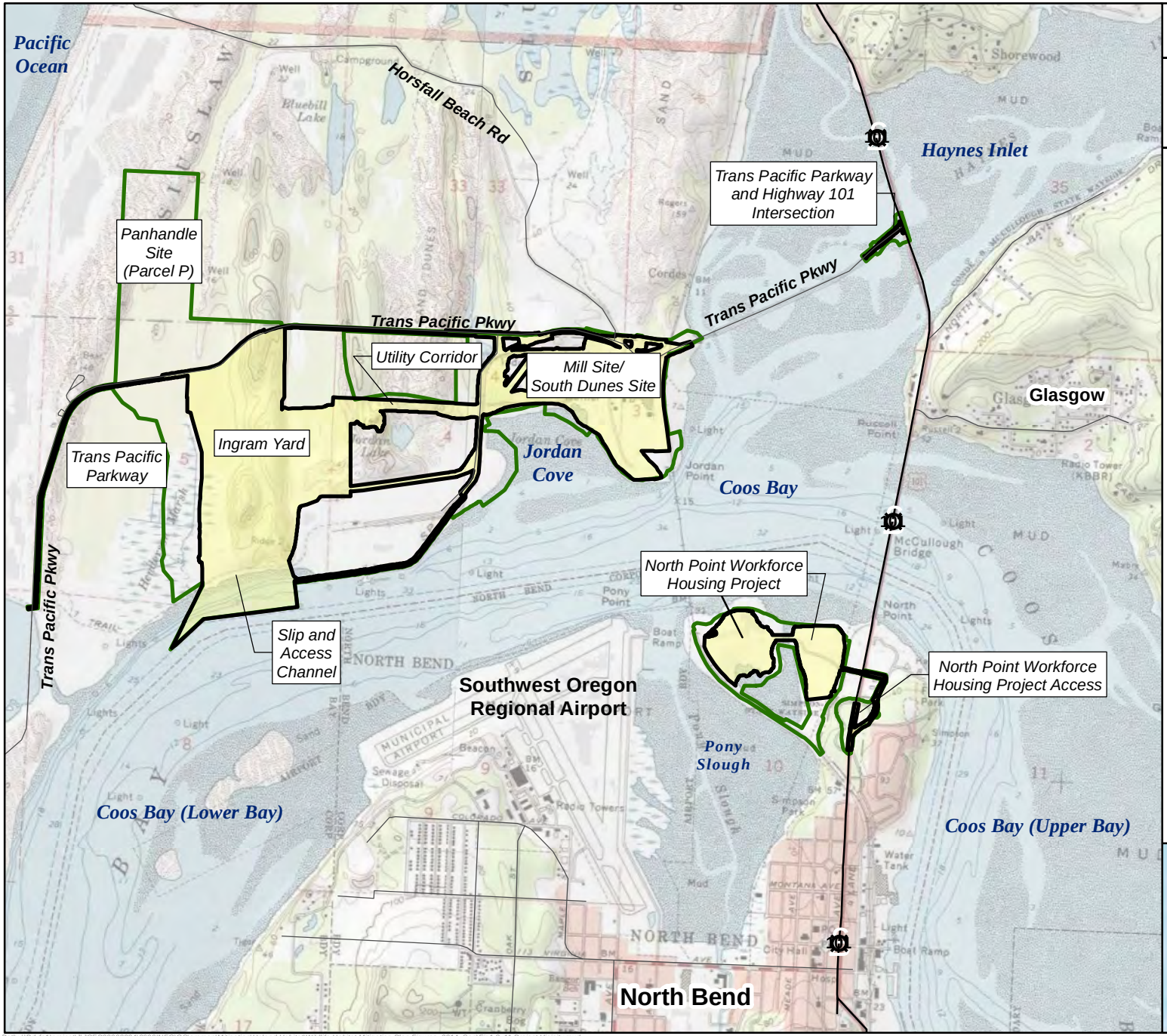


Photo 11: North Bank Site. Looking northwest from North Bank Lane at habitat that will be put on a trajectory toward mature forest to provide uplift, as well as patches of gorse that can be removed during forestry activities.



Photo 12: Lagoon Site. Looking west toward the ocean from the south side of the access road at Scotch broom that can be removed to provide uplift. Photo taken near area where an educational kiosk is to be constructed.

APPENDIX B: Figures



Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Figure 1
Project Vicinity

Legend

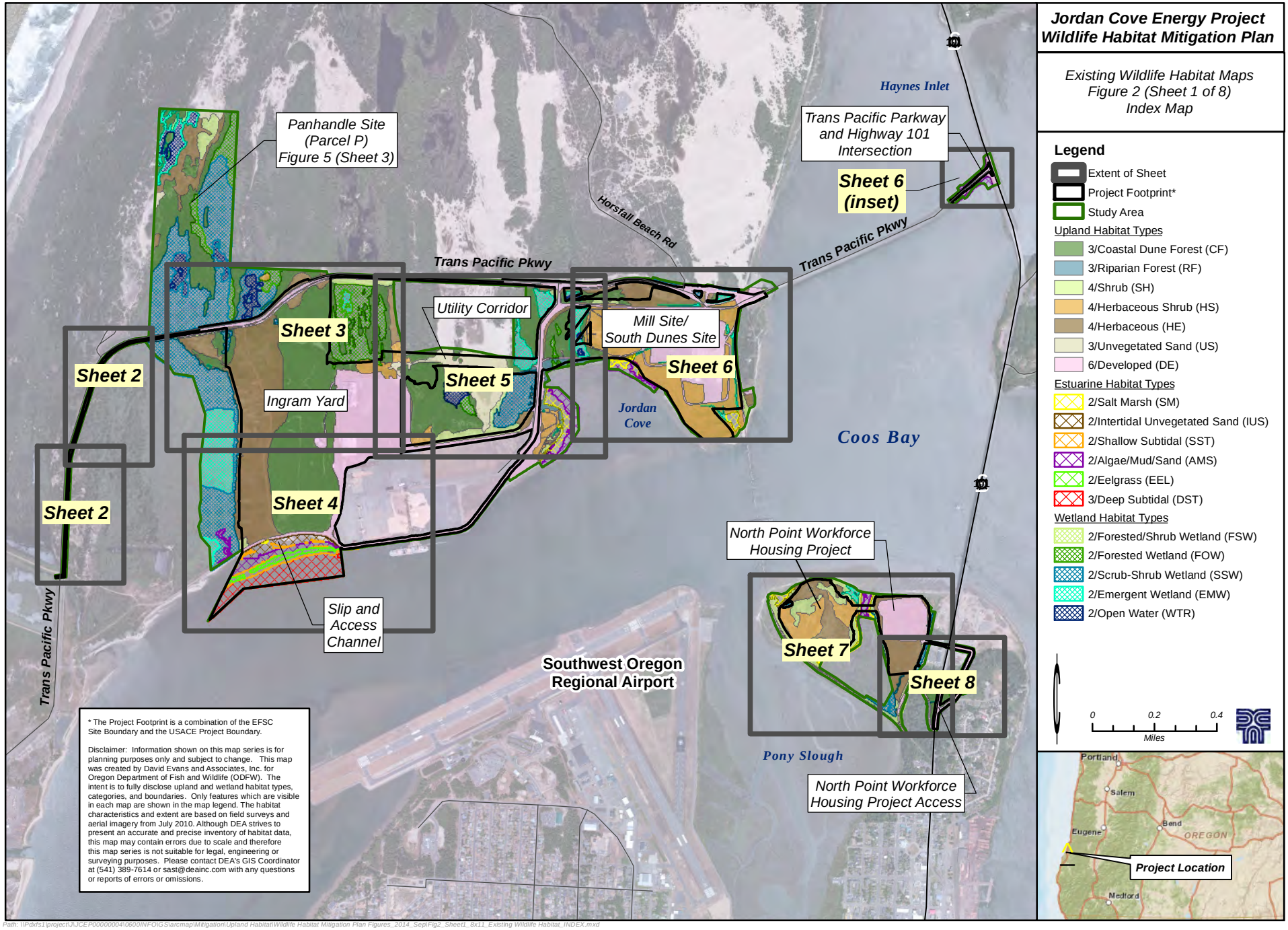
- Project Footprint
- Wetland Delineation Study Area

0 0.25 0.5
Miles

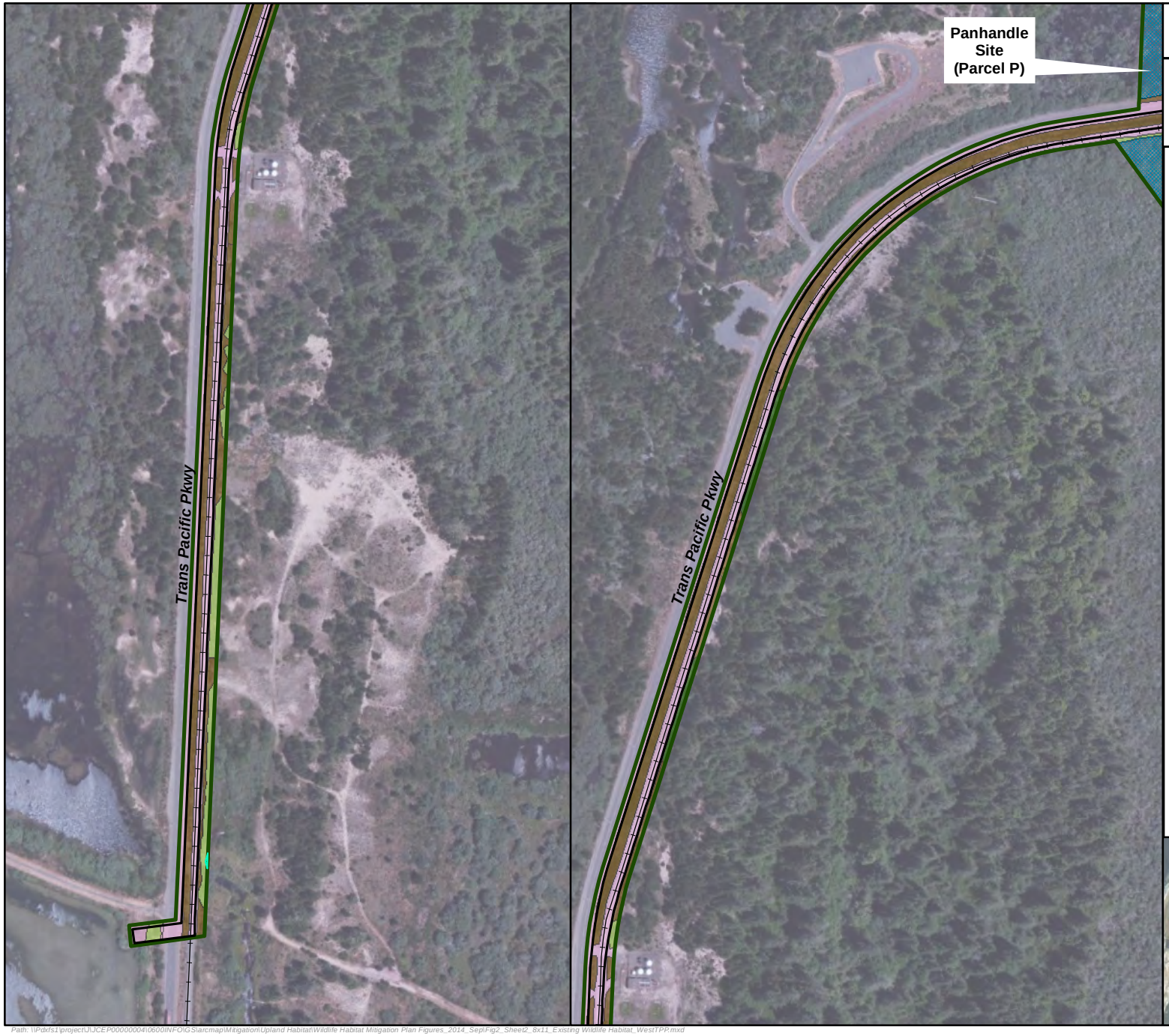
Disclaimer: Information shown on this map series is for planning purposes only and subject to change. This map was created by David Evans and Associates, Inc. for Oregon Department of Fish and Wildlife (ODFW). The intent is to fully disclose upland and wetland habitat types, categories, and boundaries. Only features which are visible in each map are shown in the map legend. The habitat characteristics and extent are based on field surveys and aerial imagery from July 2010. Although DEA strives to present an accurate and precise inventory of habitat data, this map may contain errors due to scale and therefore this map series is not suitable for legal, engineering or surveying purposes. Please contact DEA's GIS Coordinator at (541) 389-7614 or sast@deainc.com with any questions or reports of errors or omissions.



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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Existing Wildlife Habitat Maps
Figure 2 (Sheet 2 of 8)
Trans Pacific Parkway

Legend

- Wetland Delineation Study Area
- Project Footprint

Upland Habitat Categories and Types

- 4/Shrub (SH)
- 4/Herbaceous (HE)
- 6/Developed (DE)

Wetland Habitat Categories and Types

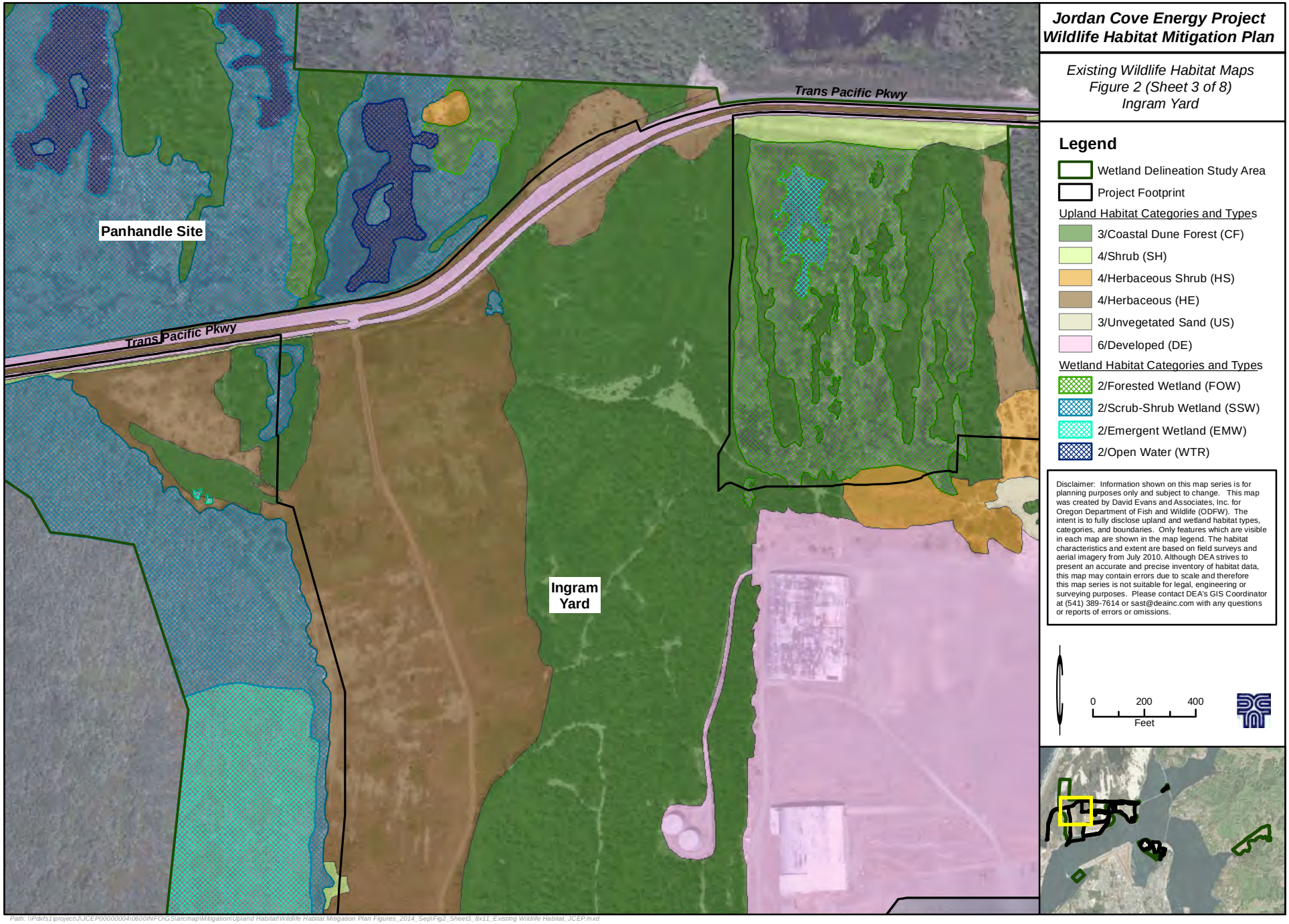
- 2/Emergent Wetland (EMW)
- 2/Scrub-Shrub Wetland (SSW)

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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Existing Wildlife Habitat Maps
Figure 2 (Sheet 3 of 8)
Ingram Yard

Legend

- Wetland Delineation Study Area
- Project Footprint

Upland Habitat Categories and Types

- 3/Coastal Dune Forest (CF)
- 4/Shrub (SH)
- 4/Herbaceous Shrub (HS)
- 4/Herbaceous (HE)
- 3/Unvegetated Sand (US)
- 6/Developed (DE)

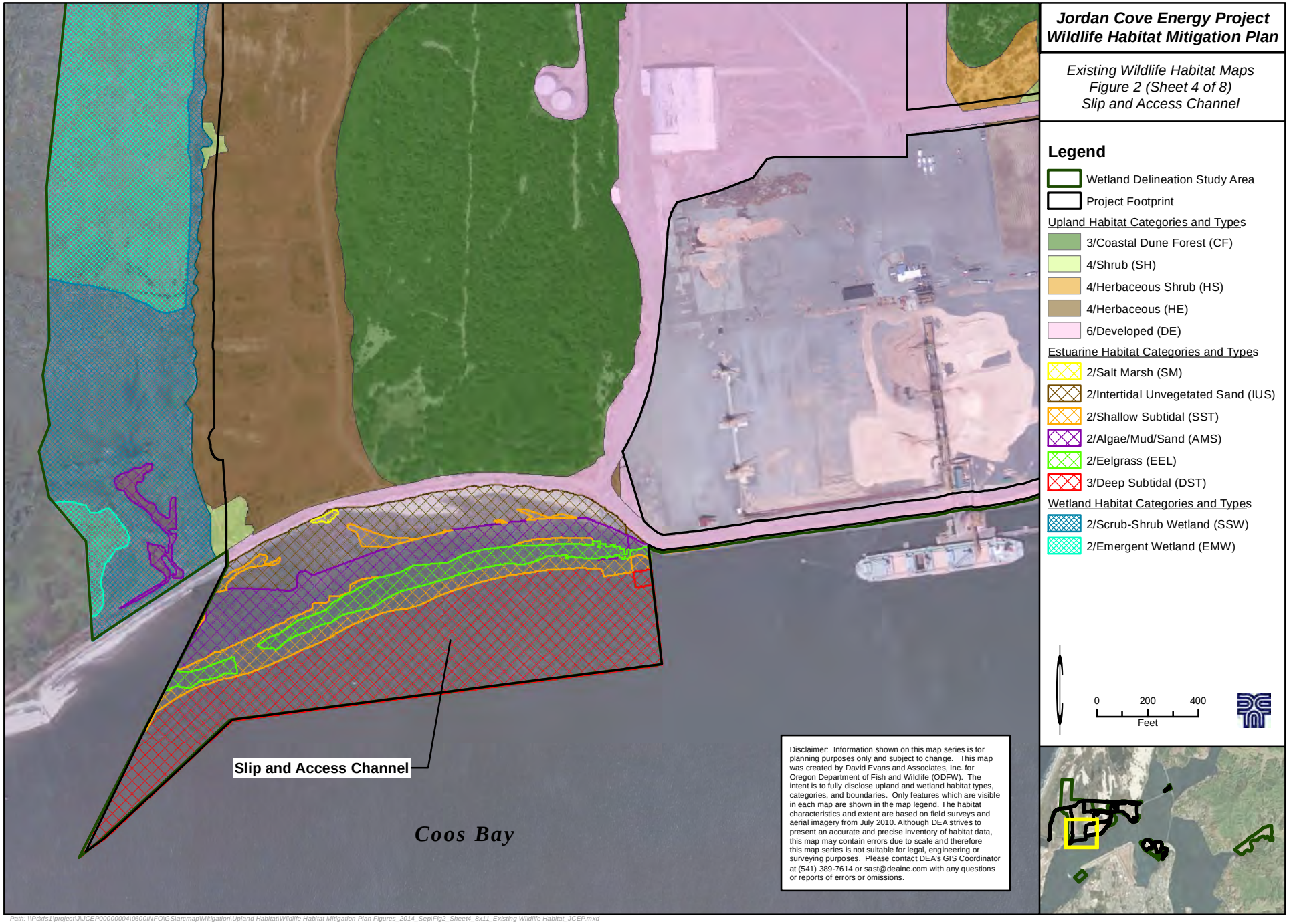
Wetland Habitat Categories and Types

- 2/Forested Wetland (FOW)
- 2/Scrub-Shrub Wetland (SSW)
- 2/Emergent Wetland (EMW)
- 2/Open Water (WTR)

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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Existing Wildlife Habitat Maps
Figure 2 (Sheet 4 of 8)
Slip and Access Channel

Legend

- Wetland Delineation Study Area
- Project Footprint

Upland Habitat Categories and Types
- 3/Coastal Dune Forest (CF)
- 4/Shrub (SH)
- 4/Herbaceous Shrub (HS)
- 4/Herbaceous (HE)
- 6/Developed (DE)

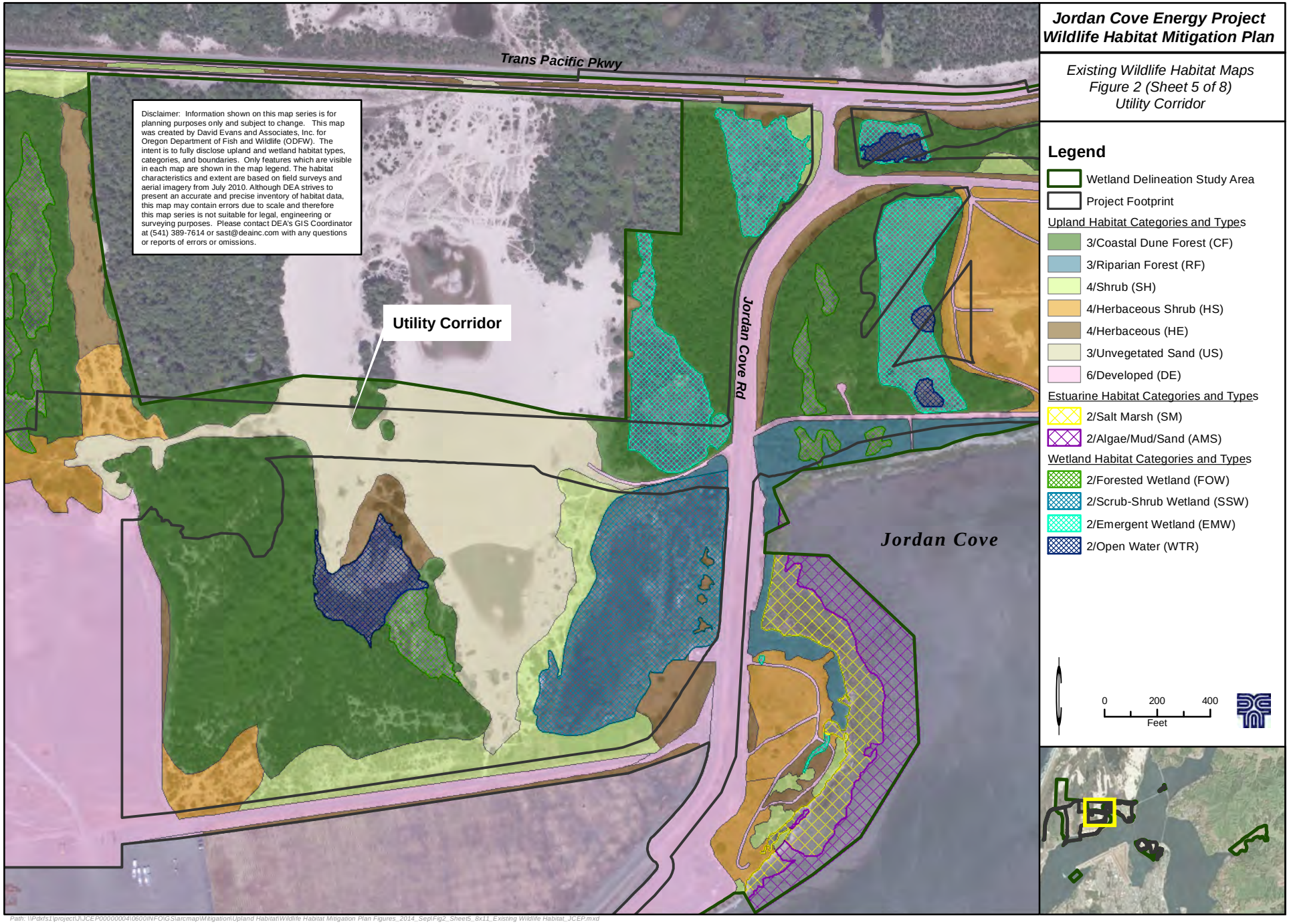
Estuarine Habitat Categories and Types
- 2/Salt Marsh (SM)
- 2/Intertidal Unvegetated Sand (IUS)
- 2/Shallow Subtidal (SST)
- 2/Algae/Mud/Sand (AMS)
- 2/Eelgrass (EEL)
- 3/Deep Subtidal (DST)

Wetland Habitat Categories and Types
- 2/Scrub-Shrub Wetland (SSW)
- 2/Emergent Wetland (EMW)

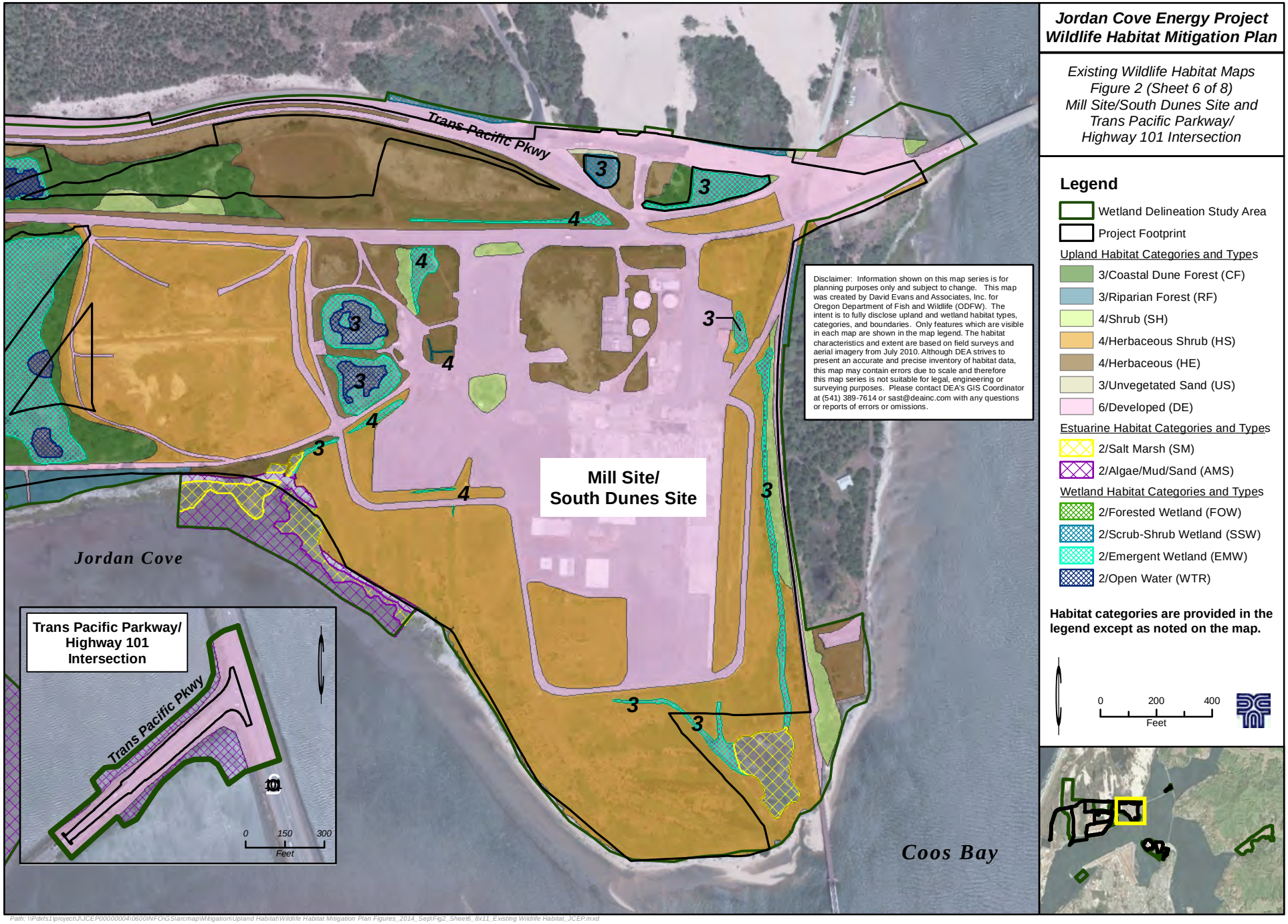
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Feet

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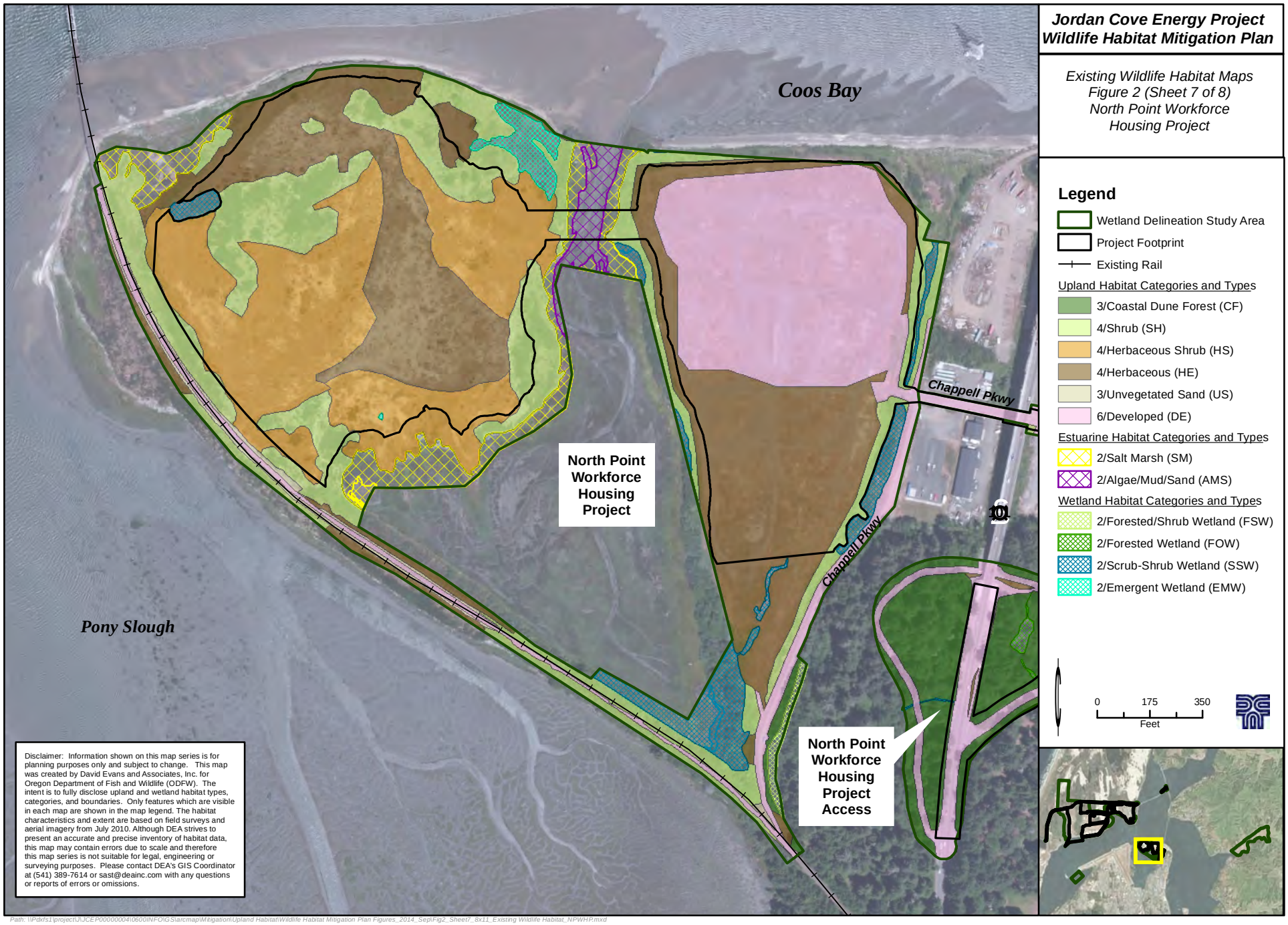
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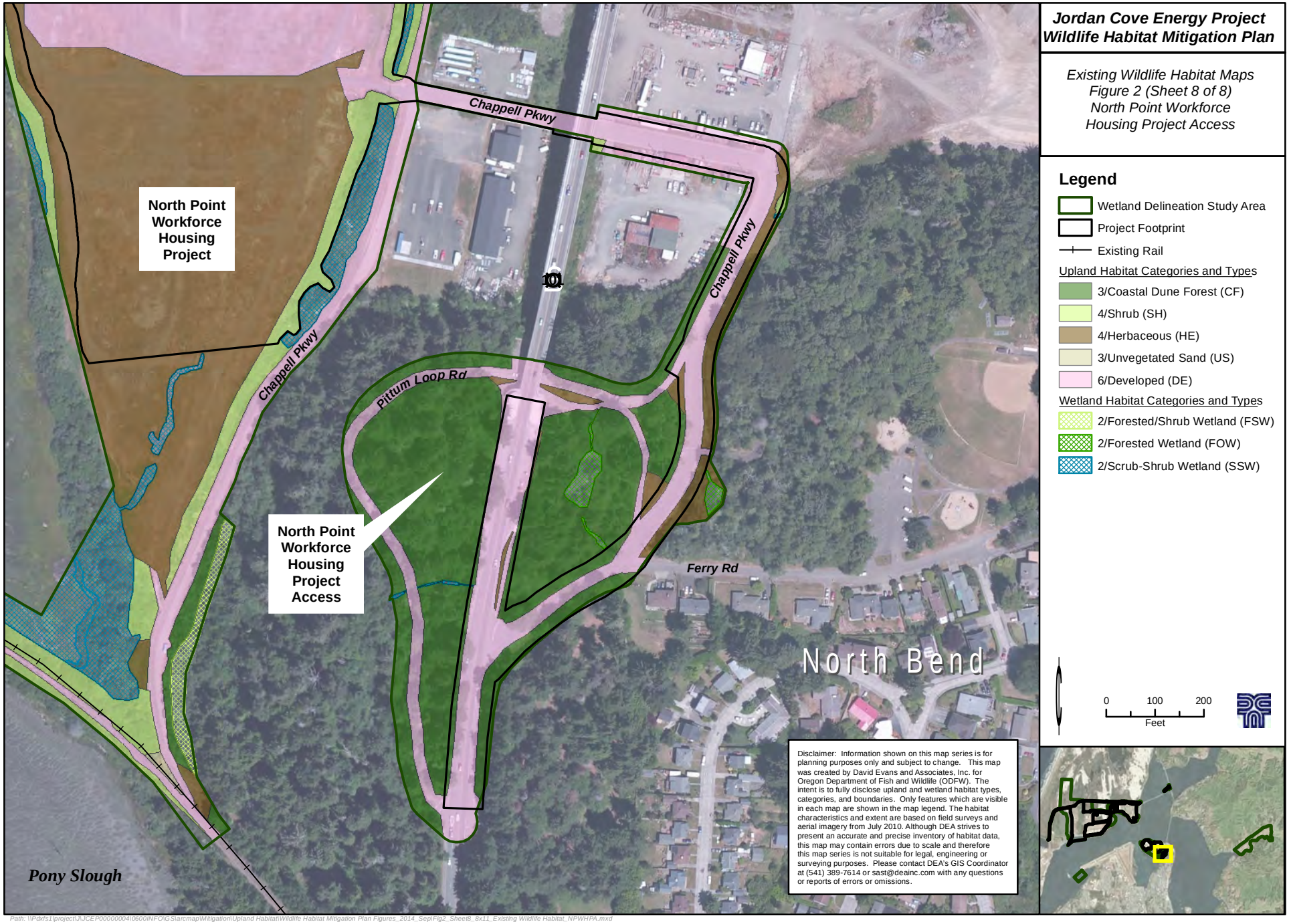
Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Existing Wildlife Habitat Maps
Figure 2 (Sheet 6 of 8)
Mill Site/South Dunes Site and
Trans Pacific Parkway/
Highway 101 Intersection

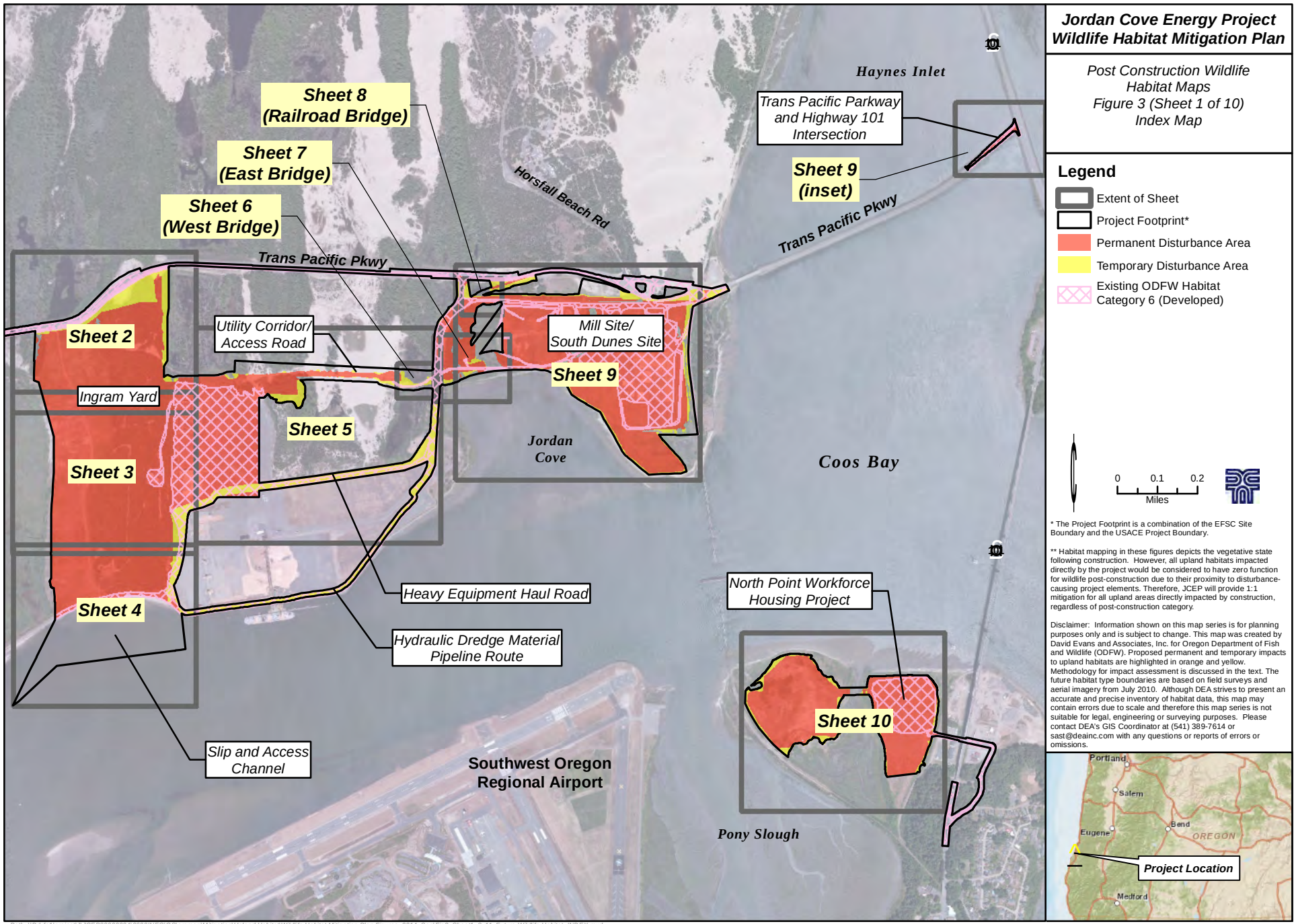
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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 1 of 10)
Index Map

Legend

- Extent of Sheet
- Project Footprint*
- Permanent Disturbance Area
- Temporary Disturbance Area
- Existing ODFW Habitat Category 6 (Developed)

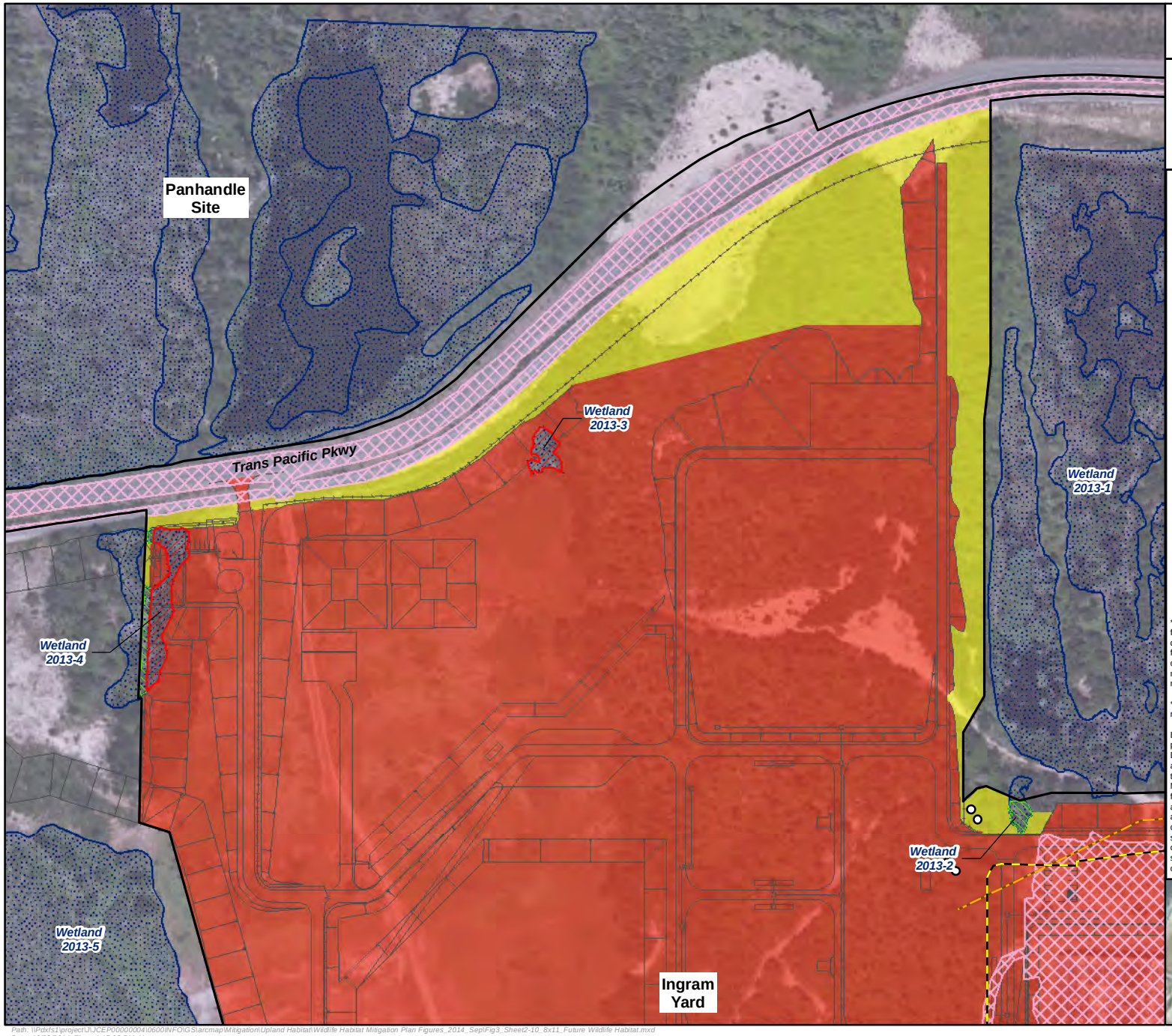
0 0.1 0.2
Miles

* The Project Footprint is a combination of the EFSC Site Boundary and the USACE Project Boundary.

** Habitat mapping in these figures depicts the vegetative state following construction. However, all upland habitats impacted directly by the project would be considered to have zero function for wildlife post-construction due to their proximity to disturbance-causing project elements. Therefore, JCEP will provide 1:1 mitigation for all upland areas directly impacted by construction, regardless of post-construction category.

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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 2 of 10)
Ingram Yard

Legend

- Project Footprint
- Permanent Disturbance Area*
- Temporary Disturbance Area*
- Permanent Wetland/Estuarine Impact
- Temporary Wetland/Estuarine Impact
- Delineated Wetland
- Non-jurisdictional Wetland**
- Existing ODFW Habitat Category 6 (Developed)
- Gas Pipeline
- Overhead Power Transmission Line (115kV)
- Approximate Power Pole Location

0 125 250
Feet

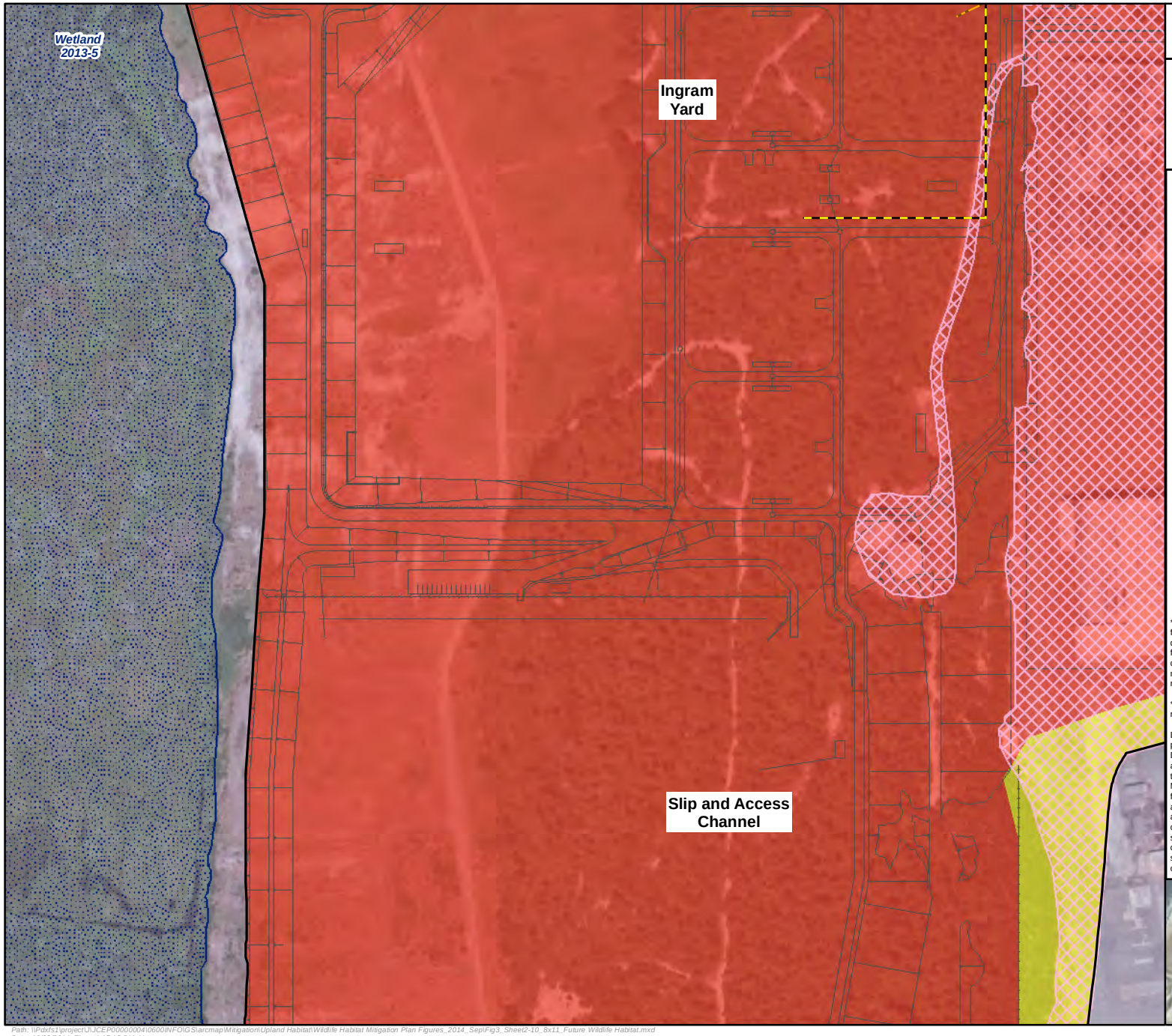
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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 3 of 10)
South Ingram Yard/Slip

Legend

- Project Footprint
- Permanent Disturbance Area*
- Temporary Disturbance Area*
- Permanent Wetland/Estuarine Impact
- Temporary Wetland/Estuarine Impact
- Delineated Wetland
- Non-jurisdictional Wetland**
- Existing ODFW Habitat Category 6 (Developed)
- Gas Pipeline
- Overhead Power Transmission Line (115kV)

0 125 250
Feet

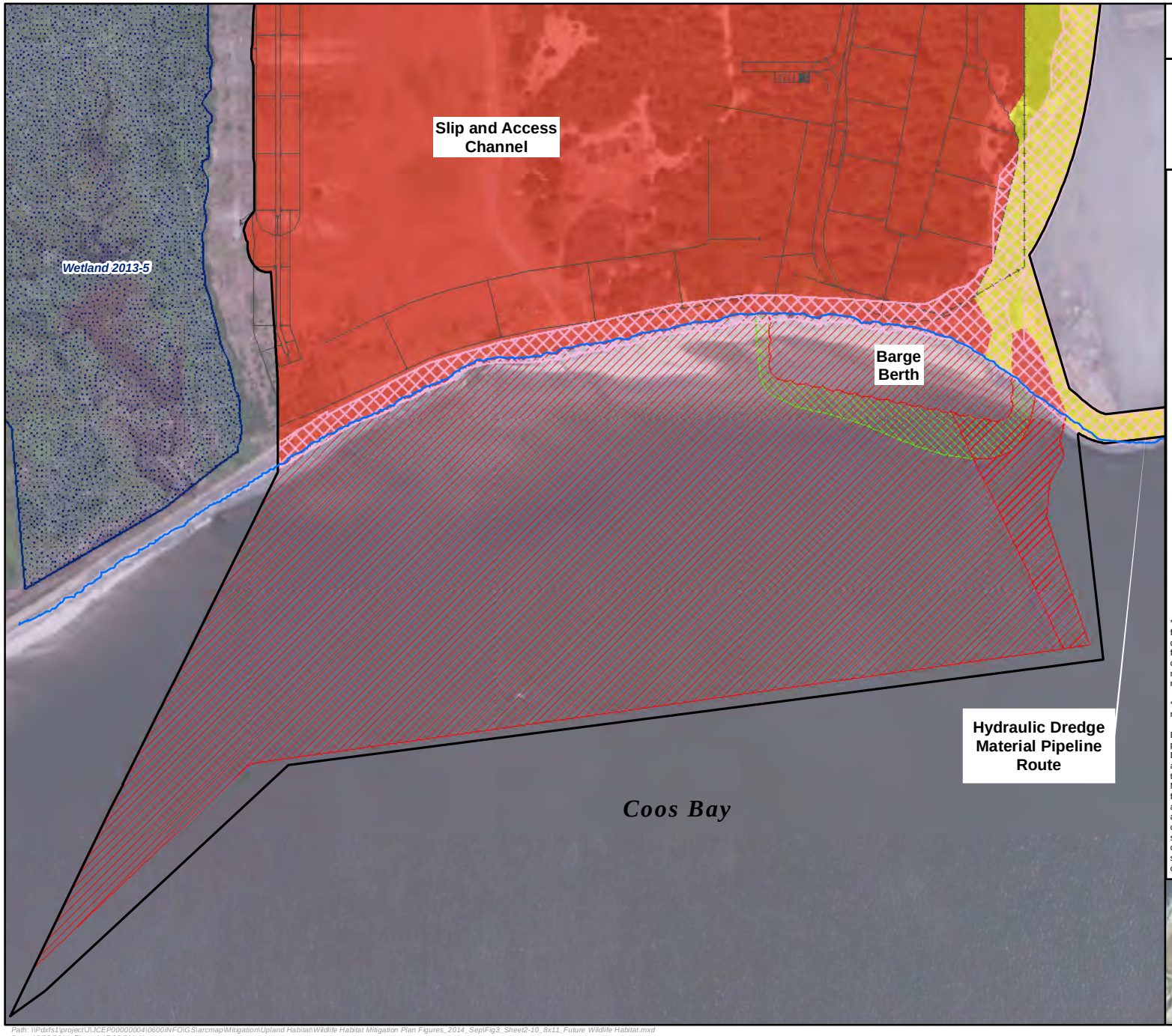
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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 4 of 10)
Slip and Access Channel

Legend

- Project Footprint
- Permanent Disturbance Area*
- Temporary Disturbance Area*
- Permanent Wetland/Estuarine Impact
- Temporary Wetland/Estuarine Impact
- Delineated Wetland
- Non-jurisdictional Wetland**
- Existing ODFW Habitat Category 6 (Developed)
- Highest Measured Tide (HMT) (10.26 ft NAVD88)

0 125 250
Feet

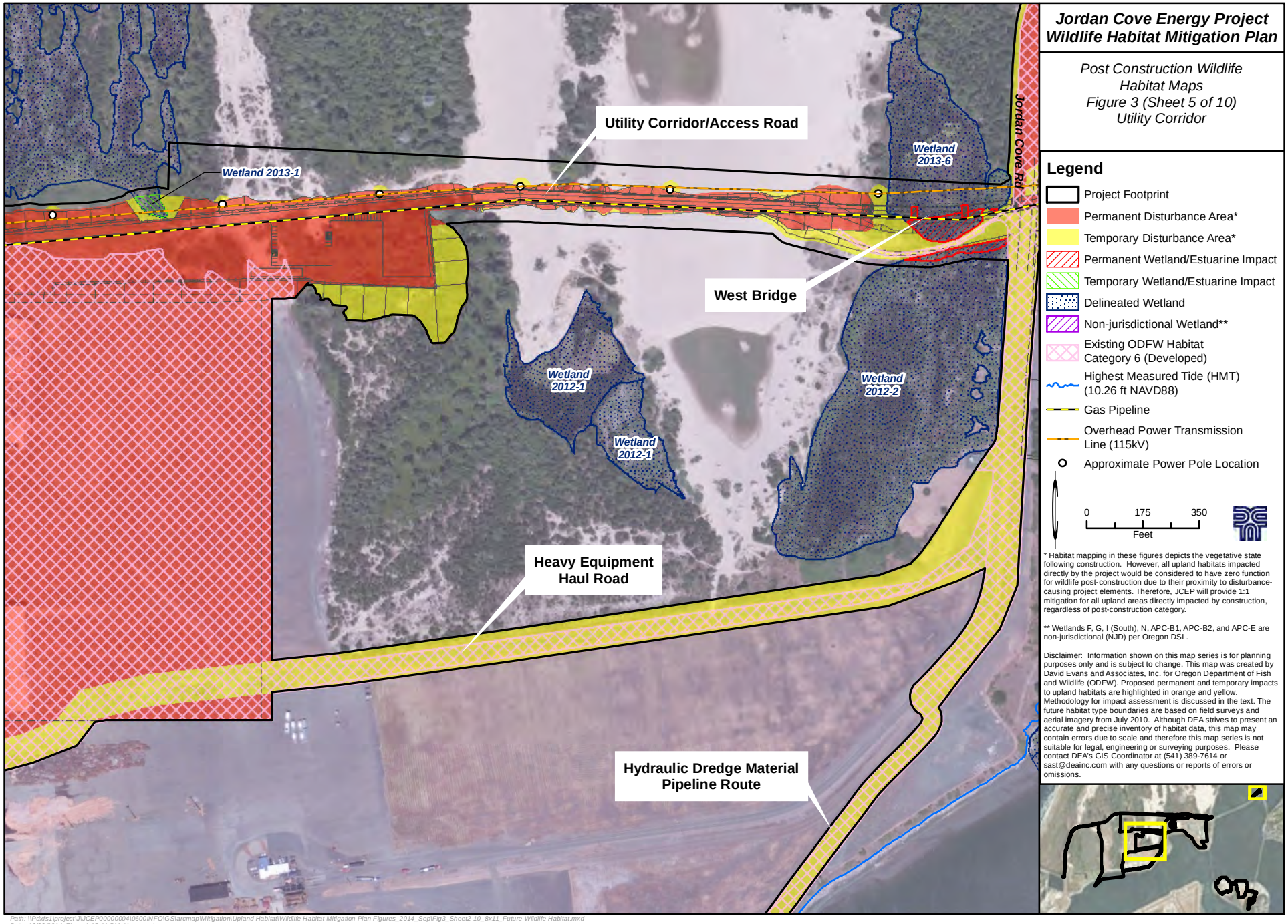
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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 5 of 10)
Utility Corridor

Legend

- Project Footprint
- Permanent Disturbance Area*
- Temporary Disturbance Area*
- Permanent Wetland/Estuarine Impact
- Temporary Wetland/Estuarine Impact
- Delineated Wetland
- Non-jurisdictional Wetland**
- Existing ODFW Habitat Category 6 (Developed)
- Highest Measured Tide (HMT) (10.26 ft NAVD88)
- Gas Pipeline
- Overhead Power Transmission Line (115kV)
- Approximate Power Pole Location

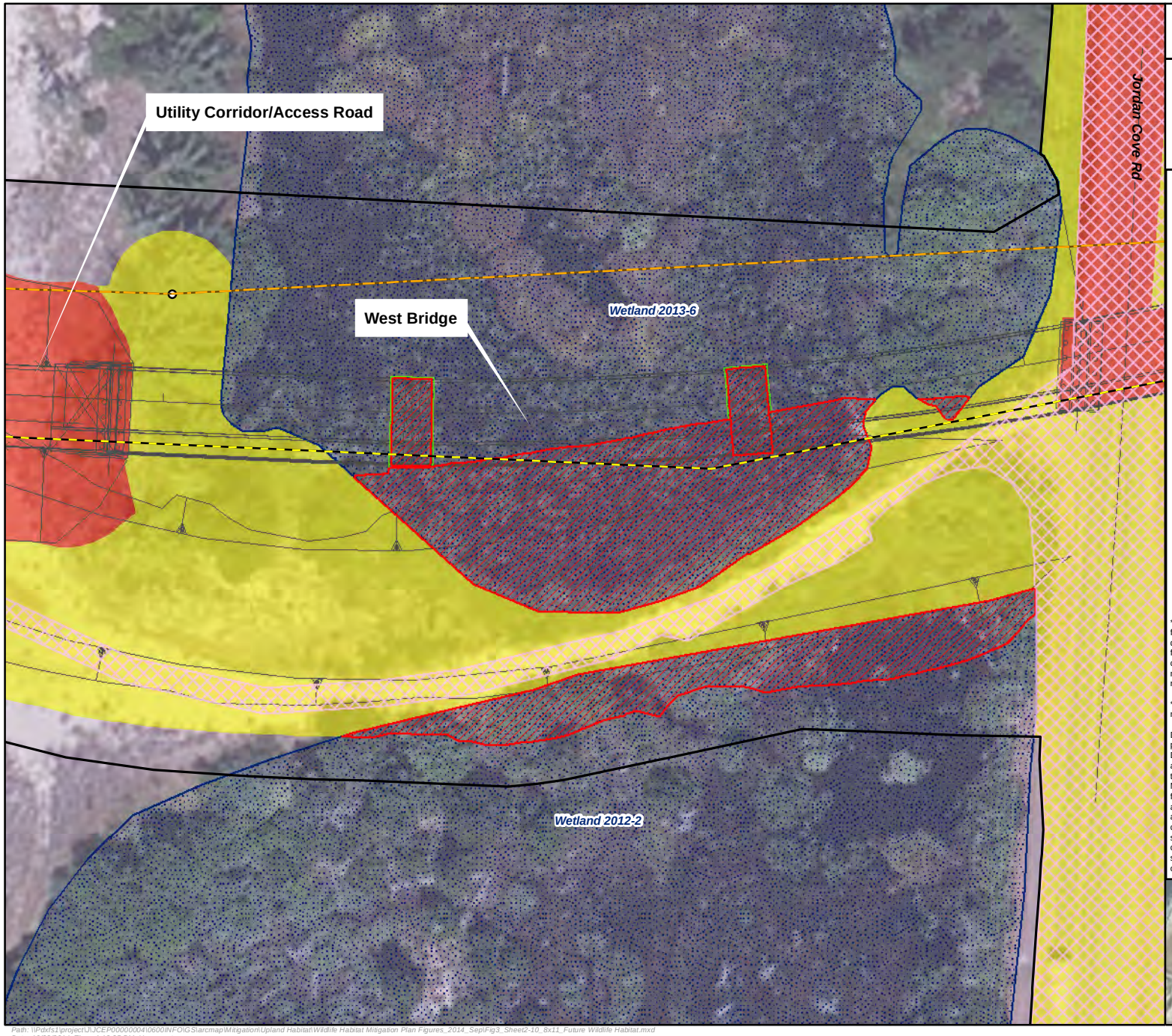
0 175 350
Feet

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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 6 of 10)
West Utility Corridor Bridge

Legend

- Project Footprint
- Permanent Disturbance Area*
- Temporary Disturbance Area*
- Permanent Wetland/Estuarine Impact
- Temporary Wetland/Estuarine Impact
- Delineated Wetland
- Non-jurisdictional Wetland**
- Existing ODFW Habitat Category 6 (Developed)
- Gas Pipeline
- Overhead Power Transmission Line (115kV)
- Approximate Power Pole Location

0 30 60
Feet

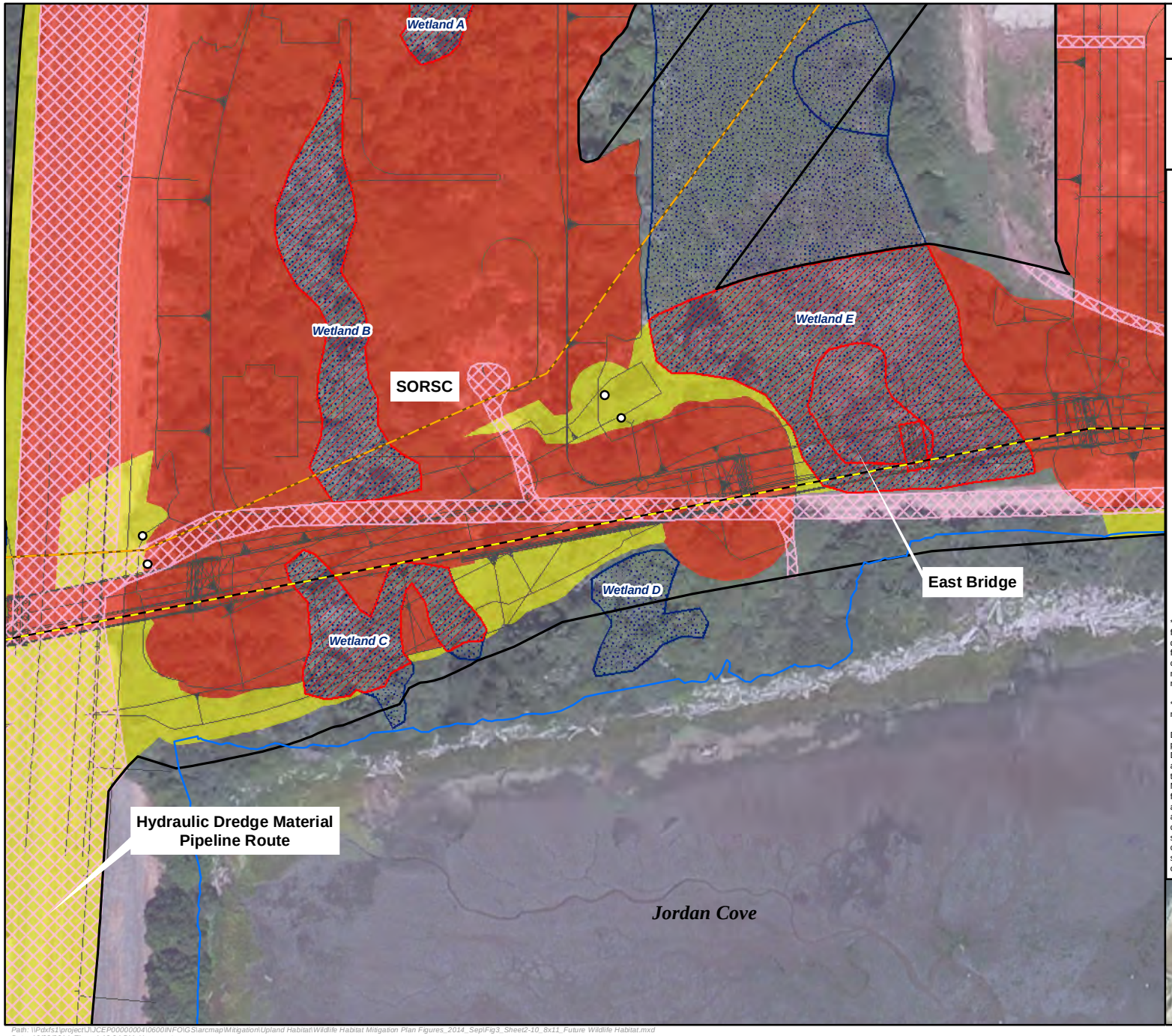
* Habitat mapping in these figures depicts the vegetative state following construction. However, all upland habitats impacted directly by the project would be considered to have zero function for wildlife post-construction due to their proximity to disturbance-causing project elements. Therefore, JCEP will provide 1:1 mitigation for all upland areas directly impacted by construction, regardless of post-construction category.

** Wetlands F, G, I (South), N, APC-B1, APC-B2, and APC-E are non-jurisdictional (NJD) per Oregon DSL.

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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 7 of 10)
East Utility Corridor Bridge

Legend

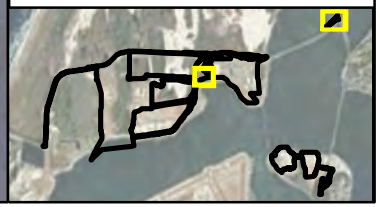
- Project Footprint
- Permanent Disturbance Area*
- Temporary Disturbance Area*
- Permanent Wetland/Estuarine Impact
- Temporary Wetland/Estuarine Impact
- Delineated Wetland
- Non-jurisdictional Wetland**
- Existing ODFW Habitat Category 6 (Developed)
- Highest Measured Tide (HMT) (10.26 ft NAVD88)
- Gas Pipeline
- Overhead Power Transmission Line (115kV)
- Approximate Power Pole Location

0 50 100
Feet

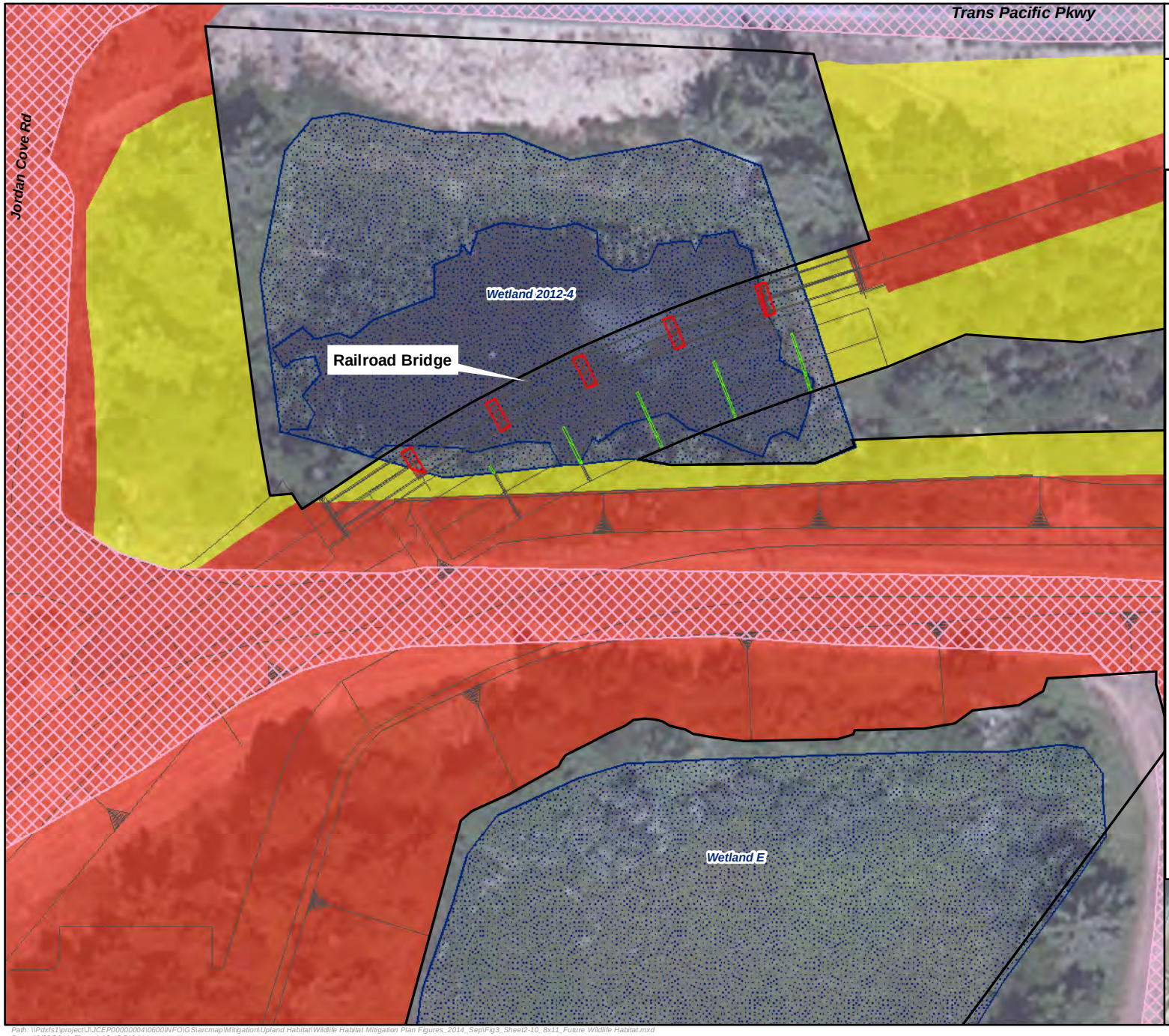
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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 8 of 10)
Railroad Bridge

Legend

- Project Footprint
- Permanent Disturbance Area*
- Temporary Disturbance Area*
- Permanent Wetland/Estuarine Impact
- Temporary Wetland/Estuarine Impact
- Delineated Wetland
- Non-jurisdictional Wetland**
- Existing ODFW Habitat Category 6 (Developed)
- Overhead Power Transmission Line (115kV)

0 30 60
Feet

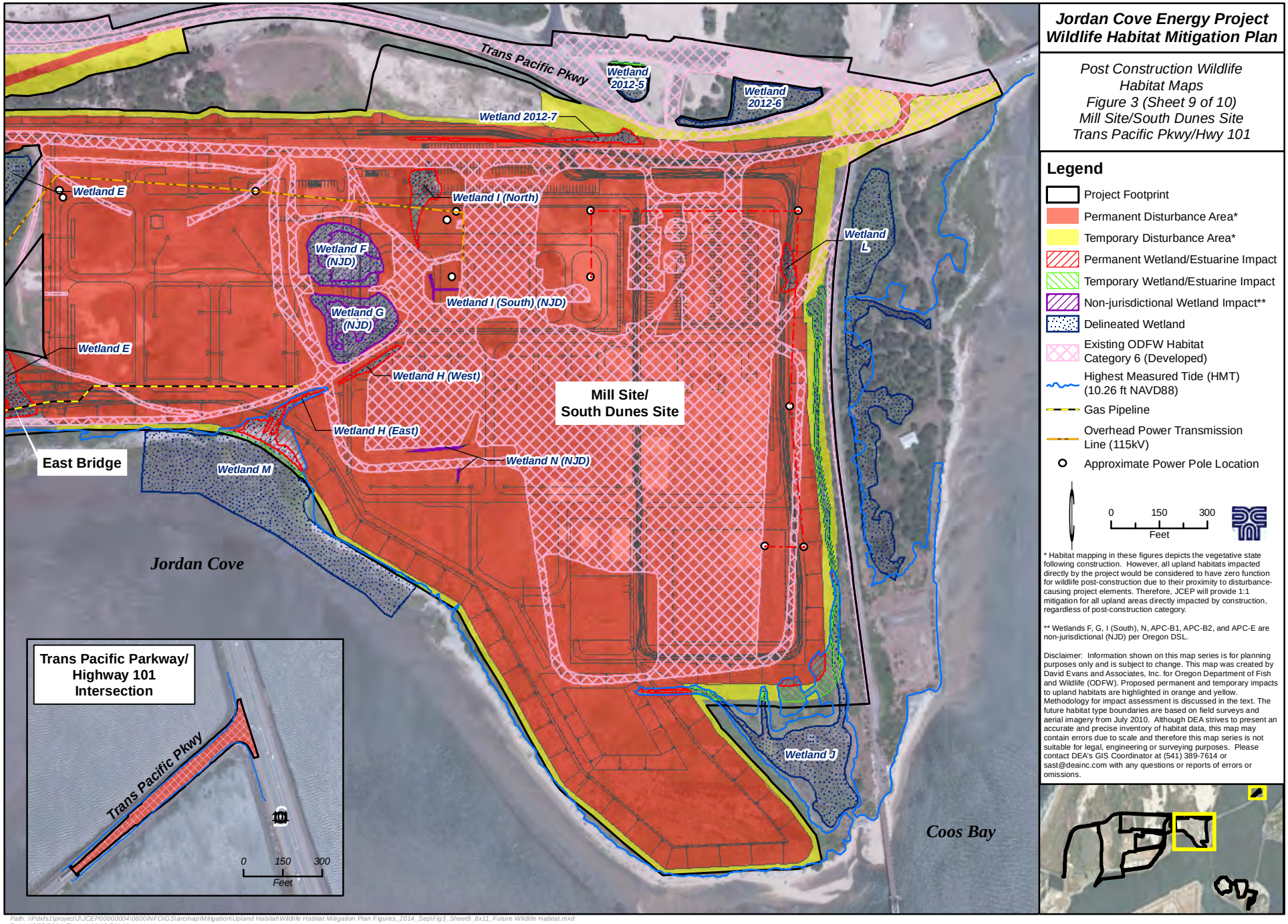
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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 9 of 10)
Mill Site/South Dunes Site
Trans Pacific Pkwy/Hwy 101

Legend

- Project Footprint
- Permanent Disturbance Area*
- Temporary Disturbance Area*
- Permanent Wetland/Estuarine Impact
- Temporary Wetland/Estuarine Impact
- Non-jurisdictional Wetland Impact**
- Delineated Wetland
- Existing ODFW Habitat Category 6 (Developed)
- Highest Measured Tide (HMT) (10.26 ft NAVD88)
- Gas Pipeline
- Overhead Power Transmission Line (115kV)
- Approximate Power Pole Location

0 150 300
Feet

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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan

Post Construction Wildlife Habitat Maps
Figure 3 (Sheet 10 of 10)
North Point Workforce Housing Project

Legend

- Project Footprint
- Permanent Disturbance Area*
- Temporary Disturbance Area*
- Permanent Wetland/Estuarine Impact
- Temporary Wetland/Estuarine Impact
- Delineated Wetland
- Non-jurisdictional Wetland**
- Existing ODFW Habitat Category 6 (Developed)
- Highest Measured Tide (HMT) (10.26 ft NAVD88)

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Feet

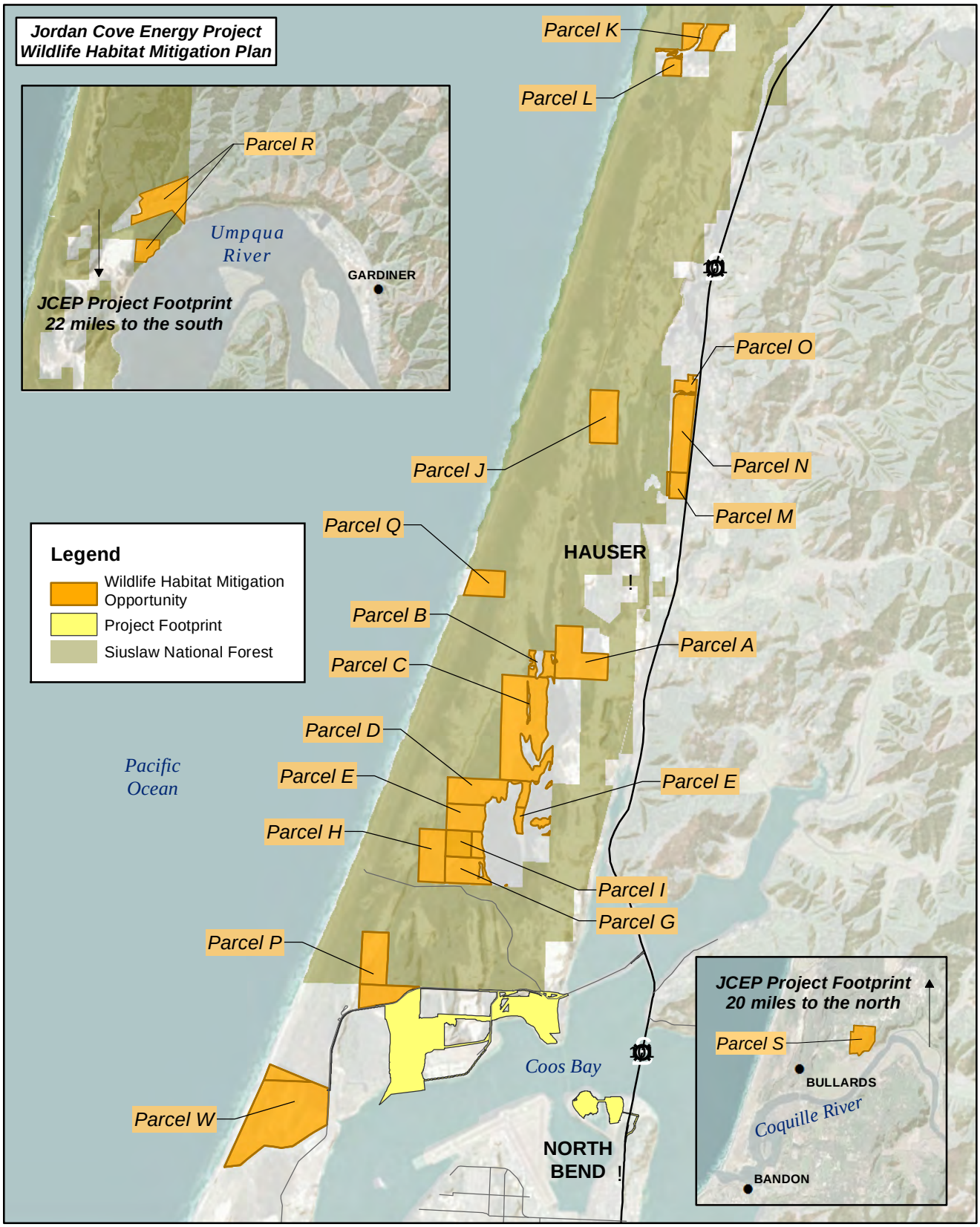
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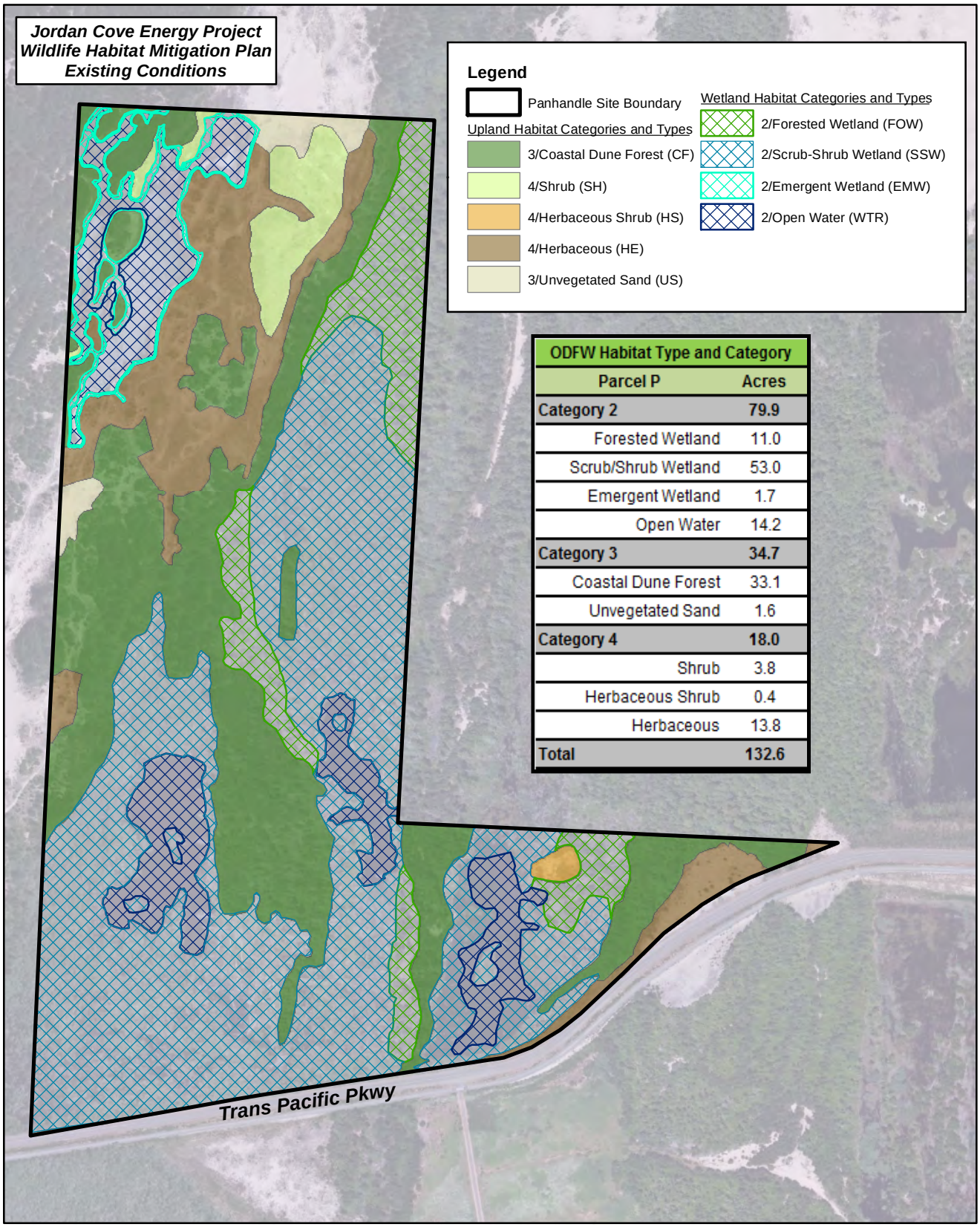
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Wildlife Habitat Mitigation Site Maps
Figure 4
Wildlife Habitat Parcels Investigated

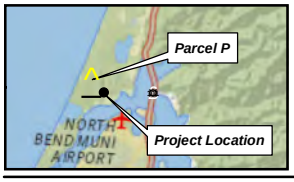
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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan
Existing Conditions



ODFW Habitat Type and Category	
Parcel P	**Acres**
Category 2	**79.9**
Forested Wetland	11.0
Scrub/Shrub Wetland	53.0
Emergent Wetland	1.7
Open Water	14.2
Category 3	**34.7**
Coastal Dune Forest	33.1
Unvegetated Sand	1.6
Category 4	**18.0**
Shrub	3.8
Herbaceous Shrub	0.4
Herbaceous	13.8
Total	**132.6**

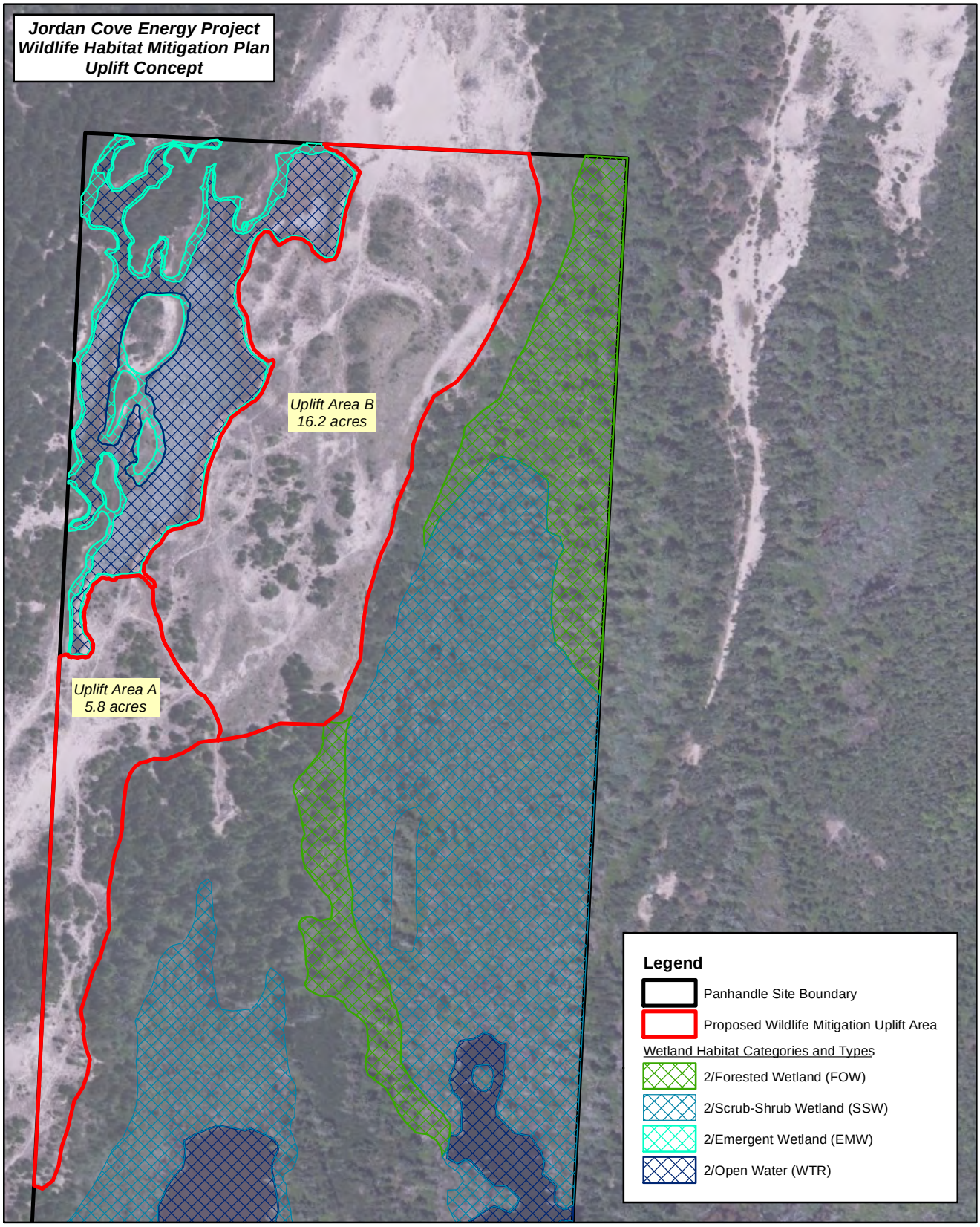


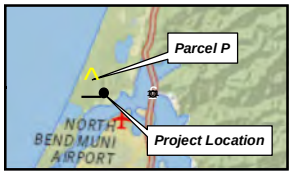
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Wildlife Habitat Mitigation Site Maps
Figure 5 (Sheet 1 of 9)
Panhandle Site (Parcel P)

0 250 500
Feet

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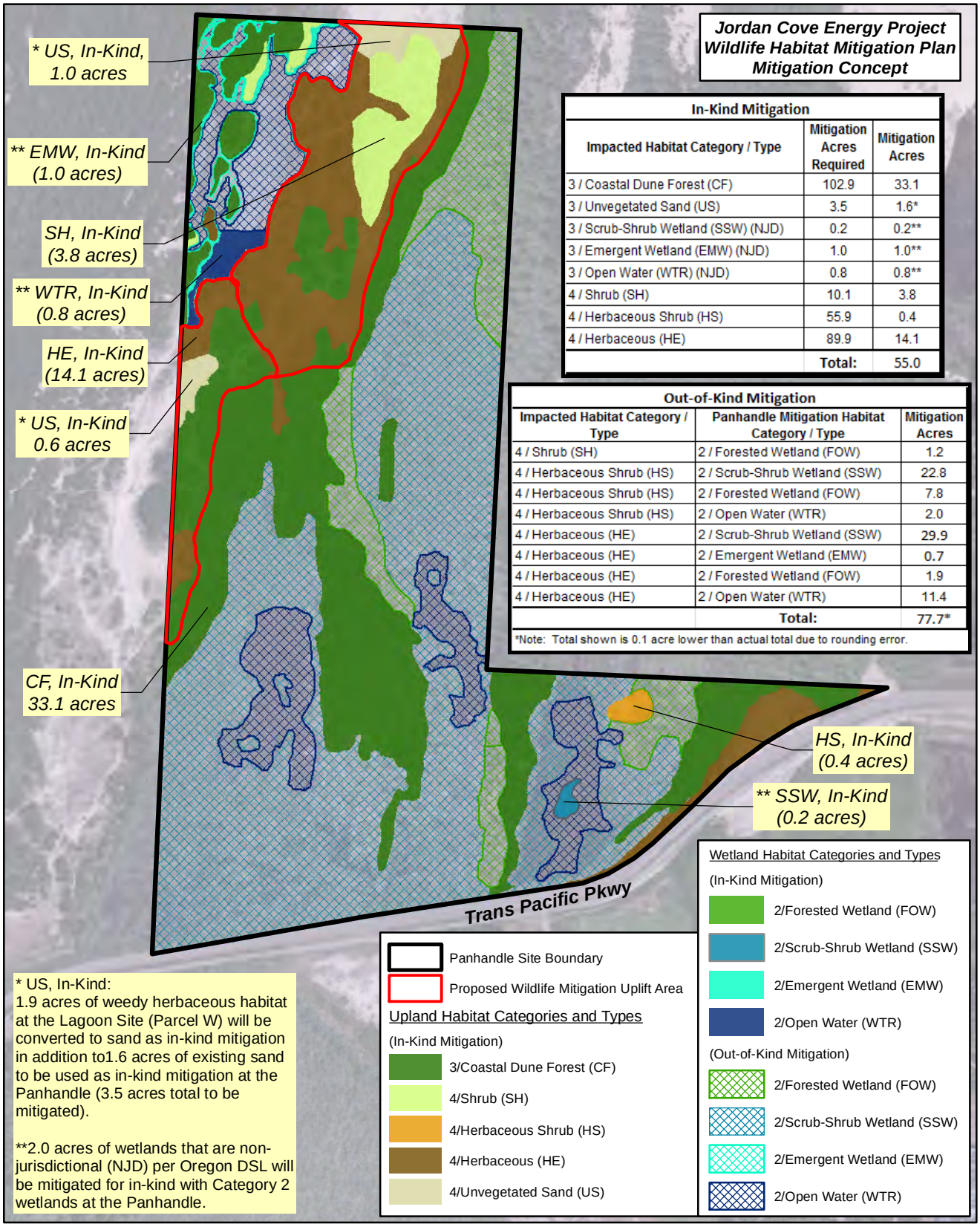


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Wildlife Habitat Mitigation Site Maps
Figure 5 (Sheet 2 of 9)
Panhandle Site (Parcel P)

0 150 300
Feet

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Jordan Cove Energy Project
Wildlife Habitat Mitigation Plan
Mitigation Concept

In-Kind Mitigation

Impacted Habitat Category / Type	Mitigation Acres Required	Mitigation Acres
3 / Coastal Dune Forest (CF)	102.9	33.1
3 / Unvegetated Sand (US)	3.5	1.6*
3 / Scrub-Shrub Wetland (SSW) (NJD)	0.2	0.2**
3 / Emergent Wetland (EMW) (NJD)	1.0	1.0**
3 / Open Water (WTR) (NJD)	0.8	0.8**
4 / Shrub (SH)	10.1	3.8
4 / Herbaceous Shrub (HS)	55.9	0.4
4 / Herbaceous (HE)	89.9	14.1
	Total:	55.0

Out-of-Kind Mitigation

Impacted Habitat Category / Type	Panhandle Mitigation Habitat Category / Type	Mitigation Acres
4 / Shrub (SH)	2 / Forested Wetland (FOW)	1.2
4 / Herbaceous Shrub (HS)	2 / Scrub-Shrub Wetland (SSW)	22.8
4 / Herbaceous Shrub (HS)	2 / Forested Wetland (FOW)	7.8
4 / Herbaceous Shrub (HS)	2 / Open Water (WTR)	2.0
4 / Herbaceous (HE)	2 / Scrub-Shrub Wetland (SSW)	29.9
4 / Herbaceous (HE)	2 / Emergent Wetland (EMW)	0.7
4 / Herbaceous (HE)	2 / Forested Wetland (FOW)	1.9
4 / Herbaceous (HE)	2 / Open Water (WTR)	11.4
	Total:	77.7*

*Note: Total shown is 0.1 acre lower than actual total due to rounding error.

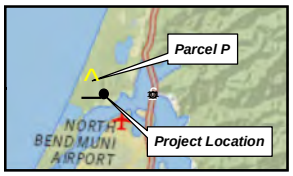
* US, In-Kind:
1.9 acres of weedy herbaceous habitat at the Lagoon Site (Parcel W) will be converted to sand as in-kind mitigation in addition to1.6 acres of existing sand to be used as in-kind mitigation at the Panhandle (3.5 acres total to be mitigated).

**2.0 acres of wetlands that are non-jurisdictional (NJD) per Oregon DSL will be mitigated for in-kind with Category 2 wetlands at the Panhandle.

Panhandle Site Boundary
Proposed Wildlife Mitigation Uplift Area

Upland Habitat Categories and Types
(In-Kind Mitigation)
3/Coastal Dune Forest (CF)
4/Shrub (SH)
4/Herbaceous Shrub (HS)
4/Herbaceous (HE)
4/Unvegetated Sand (US)

Wetland Habitat Categories and Types
(In-Kind Mitigation)
2/Forested Wetland (FOW)
2/Scrub-Shrub Wetland (SSW)
2/Emergent Wetland (EMW)
2/Open Water (WTR)
(Out-of-Kind Mitigation)
2/Forested Wetland (FOW)
2/Scrub-Shrub Wetland (SSW)
2/Emergent Wetland (EMW)
2/Open Water (WTR)

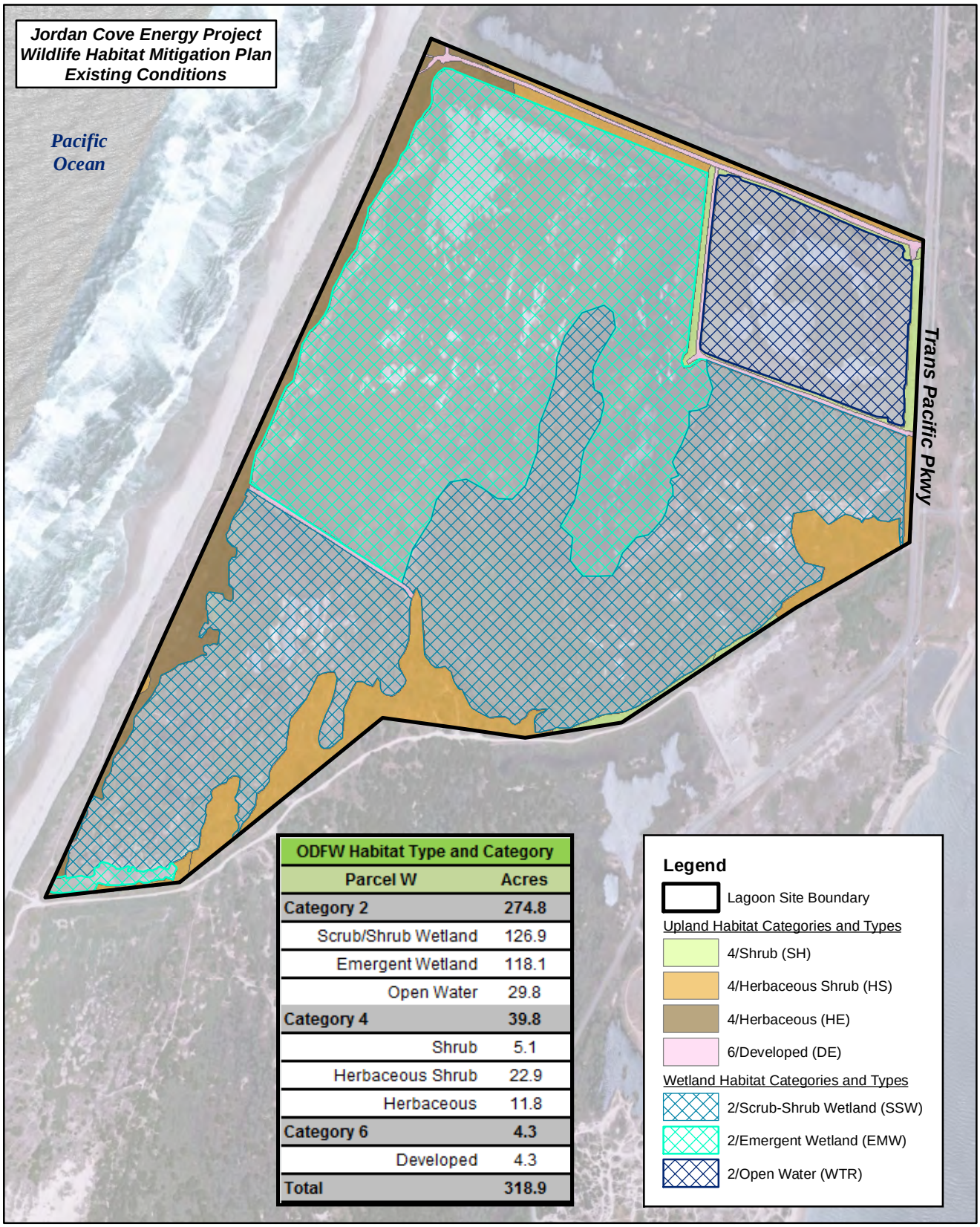


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Wildlife Habitat Mitigation Site Maps
Figure 5 (Sheet 3 of 9)
Panhandle Site (Parcel P)

0 250 500
Feet

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ODFW Habitat Type and Category	
Parcel W	Acres
Category 2	274.8
Scrub/Shrub Wetland	126.9
Emergent Wetland	118.1
Open Water	29.8
Category 4	39.8
Shrub	5.1
Herbaceous Shrub	22.9
Herbaceous	11.8
Category 6	4.3
Developed	4.3
Total	318.9

Legend

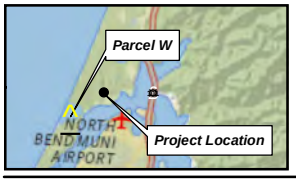
- Lagoon Site Boundary

Upland Habitat Categories and Types

- 4/Shrub (SH)
- 4/Herbaceous Shrub (HS)
- 4/Herbaceous (HE)
- 6/Developed (DE)

Wetland Habitat Categories and Types

- 2/Scrub-Shrub Wetland (SSW)
- 2/Emergent Wetland (EMW)
- 2/Open Water (WTR)

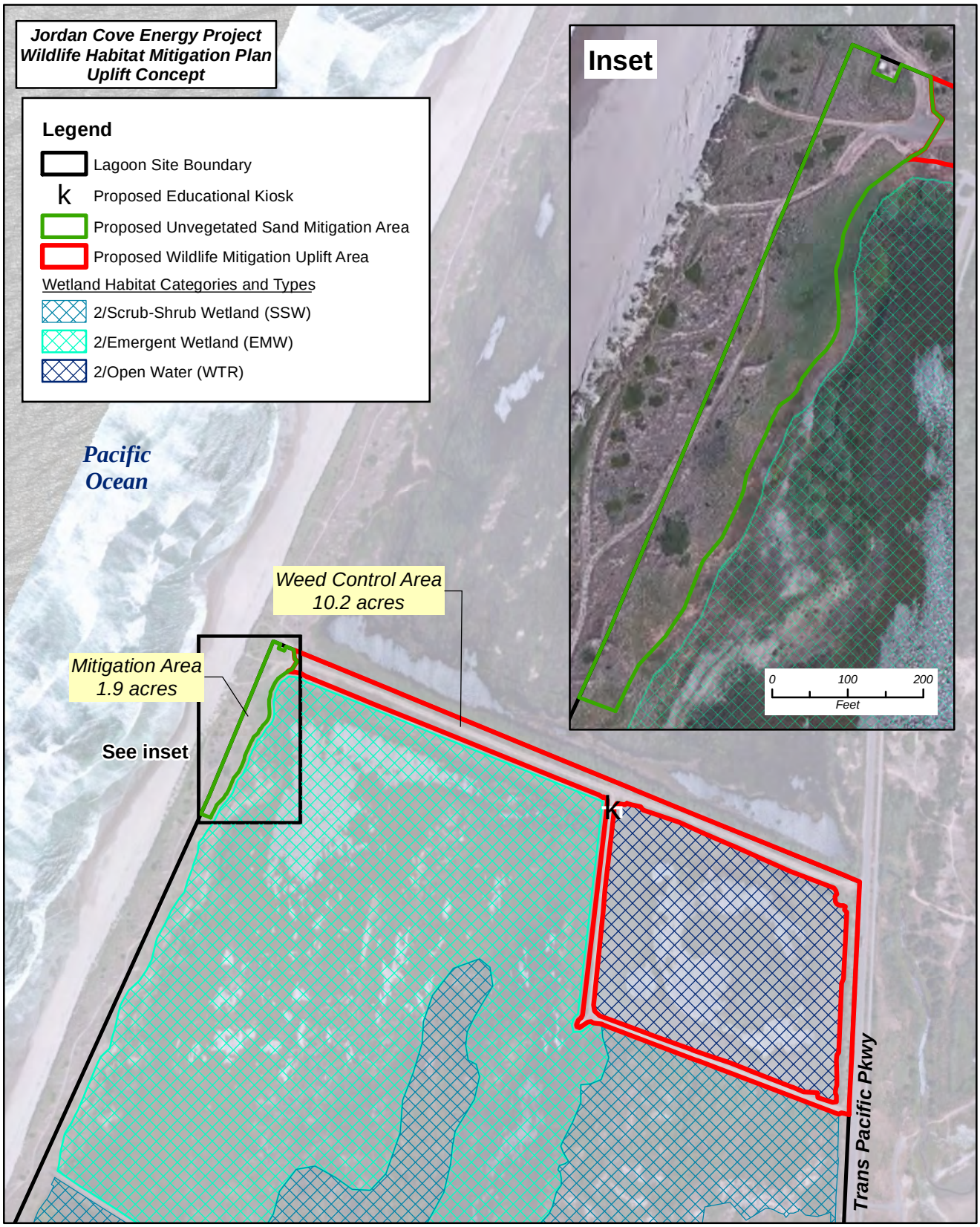


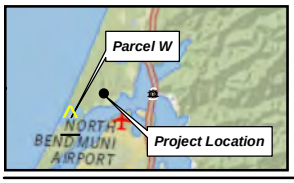
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Wildlife Habitat Mitigation Site Maps
Figure 5 (Sheet 4 of 9)
Lagoon Site (Parcel W)

0 500 1,000
Feet

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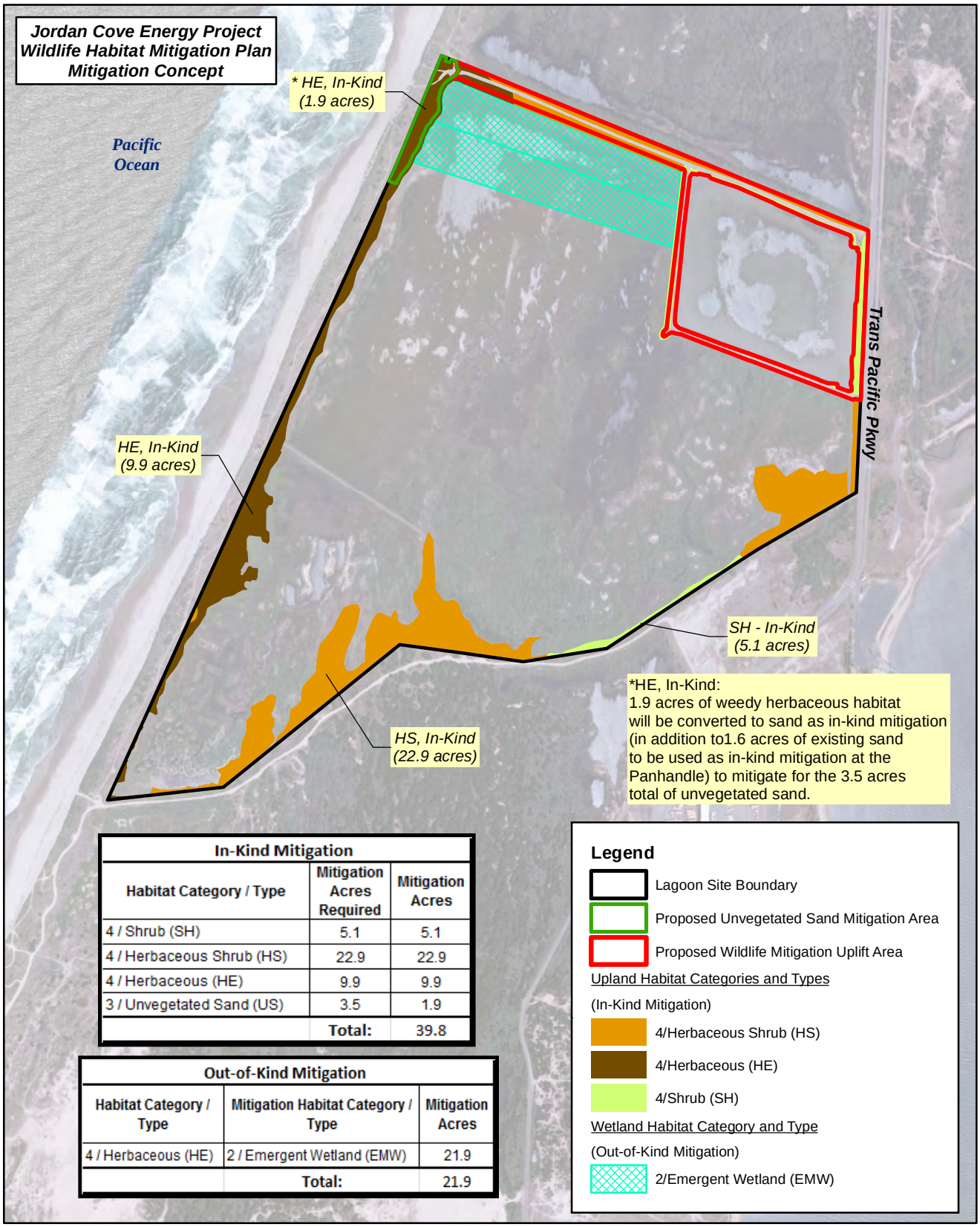


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Wildlife Habitat Mitigation Site Maps
Figure 5 (Sheet 5 of 9)
Lagoon Site (Parcel W)

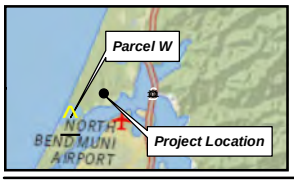
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In-Kind Mitigation		
Habitat Category / Type	Mitigation Acres Required	Mitigation Acres
4 / Shrub (SH)	5.1	5.1
4 / Herbaceous Shrub (HS)	22.9	22.9
4 / Herbaceous (HE)	9.9	9.9
3 / Unvegetated Sand (US)	3.5	1.9
	Total:	39.8

Out-of-Kind Mitigation		
Habitat Category / Type	Mitigation Habitat Category / Type	Mitigation Acres
4 / Herbaceous (HE)	2 / Emergent Wetland (EMW)	21.9
	Total:	21.9

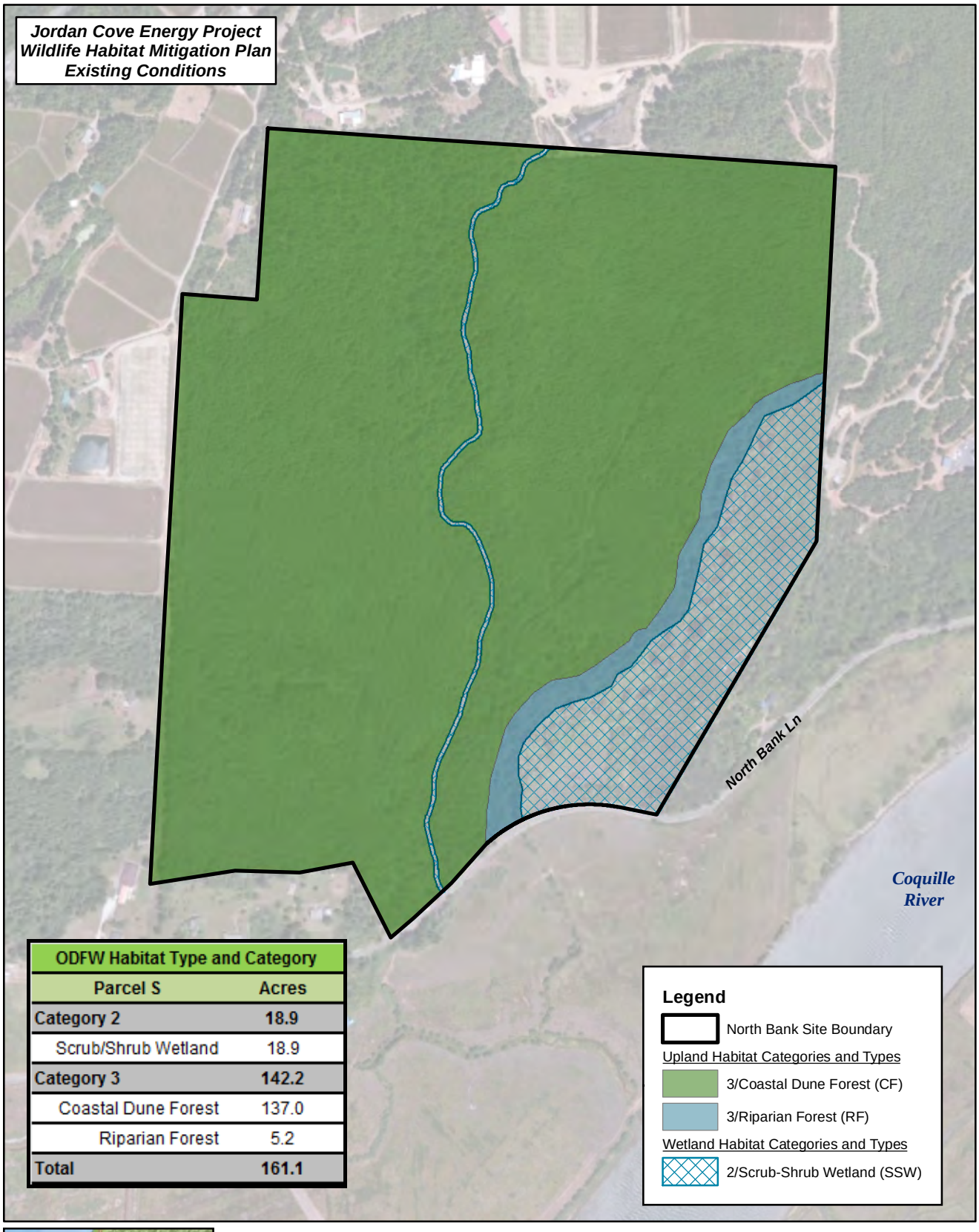


Disclaimer: Information shown on this map series is for planning purposes only and subject to change. This map was created by David Evans and Associates, Inc. for Oregon Department of Fish and Wildlife (ODFW). The intent is to fully disclose upland and wetland habitat types, categories, and boundaries. Only features which are visible in each map are shown in the map legend. The habitat characteristics and extent are based on field surveys and aerial imagery from July 2010. Although DEA strives to present an accurate and precise inventory of habitat data, this map may contain errors due to scale and therefore this map series is not suitable for legal, engineering or surveying purposes. Please contact DEA's GIS Coordinator at (541) 389-7614 or sast@deainc.com with any questions or reports of errors or omissions.

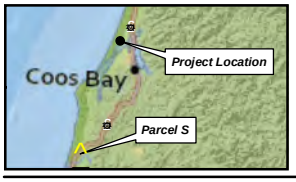
Wildlife Habitat Mitigation Site Maps
Figure 5 (Sheet 6 of 9)
Lagoon Site (Parcel W)

0 500 1,000
Feet

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ODFW Habitat Type and Category	
Parcel S	Acres
Category 2	18.9
Scrub/Shrub Wetland	18.9
Category 3	142.2
Coastal Dune Forest	137.0
Riparian Forest	5.2
Total	161.1

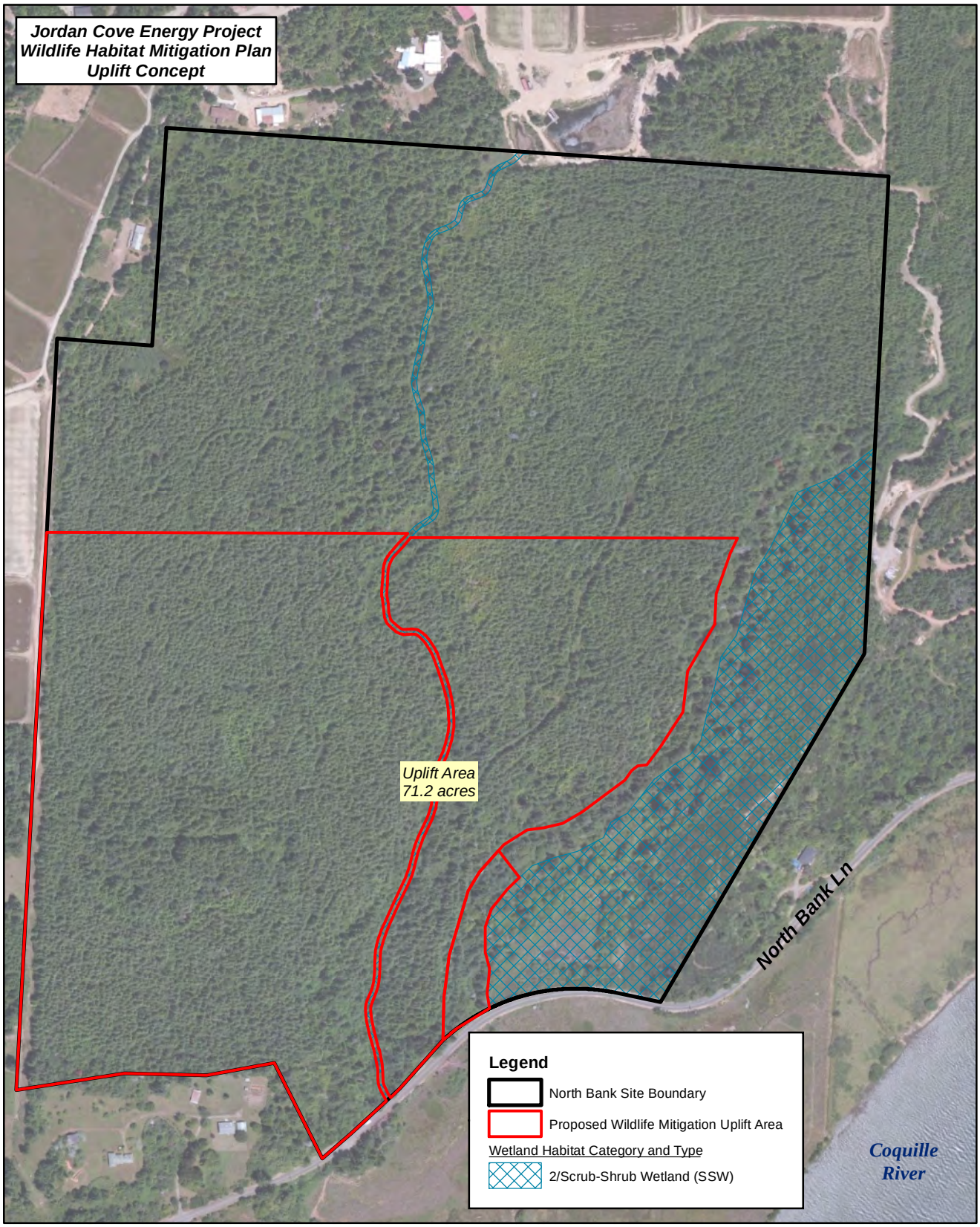


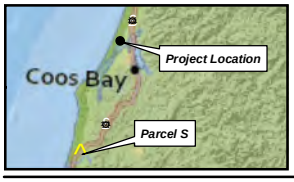
Disclaimer: Information shown on this map series is for planning purposes only and subject to change. This map was created by David Evans and Associates, Inc. for Oregon Department of Fish and Wildlife (ODFW). The intent is to fully disclose upland and wetland habitat types, categories, and boundaries. Only features which are visible in each map are shown in the map legend. The habitat characteristics and extent are based on field surveys and aerial imagery from July 2010. Although DEA strives to present an accurate and precise inventory of habitat data, this map may contain errors due to scale and therefore this map series is not suitable for legal, engineering or surveying purposes. Please contact DEA's GIS Coordinator at (541) 389-7614 or sast@deainc.com with any questions or reports of errors or omissions.

Wildlife Habitat Mitigation Site Maps
Figure 5 (Sheet 7 of 9)
North Bank Site (Parcel S)

0 250 500
Feet

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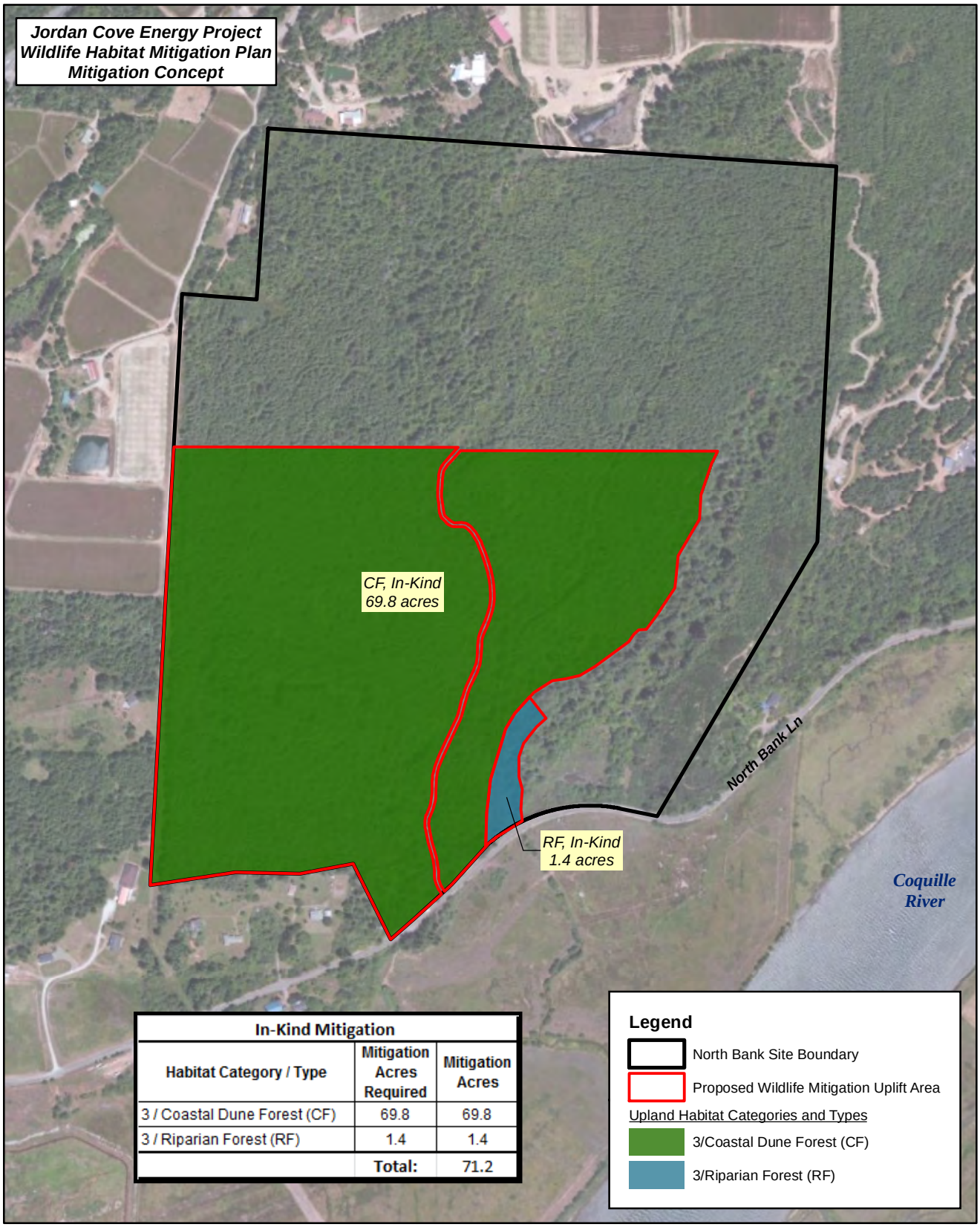


Disclaimer: Information shown on this map series is for planning purposes only and subject to change. This map was created by David Evans and Associates, Inc. for Oregon Department of Fish and Wildlife (ODFW). The intent is to fully disclose upland and wetland habitat types, categories, and boundaries. Only features which are visible in each map are shown in the map legend. The habitat characteristics and extent are based on field surveys and aerial imagery from July 2010. Although DEA strives to present an accurate and precise inventory of habitat data, this map may contain errors due to scale and therefore this map series is not suitable for legal, engineering or surveying purposes. Please contact DEA's GIS Coordinator at (541) 389-7614 or sast@deainc.com with any questions or reports of errors or omissions.

Wildlife Habitat Mitigation Site Maps
Figure 5 (Sheet 8 of 9)
North Bank Site (Parcel S)

0 250 500
Feet

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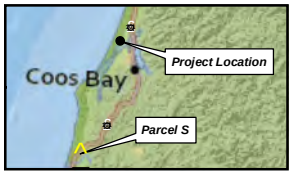
In-Kind Mitigation		
Habitat Category / Type	Mitigation Acres Required	Mitigation Acres
3 / Coastal Dune Forest (CF)	69.8	69.8
3 / Riparian Forest (RF)	1.4	1.4
	Total:	71.2

Legend

- North Bank Site Boundary
- Proposed Wildlife Mitigation Uplift Area

Upland Habitat Categories and Types

- 3/Coastal Dune Forest (CF)
- 3/Riparian Forest (RF)



Disclaimer: Information shown on this map series is for planning purposes only and subject to change. This map was created by David Evans and Associates, Inc. for Oregon Department of Fish and Wildlife (ODFW). The intent is to fully disclose upland and wetland habitat types, categories, and boundaries. Only features which are visible in each map are shown in the map legend. The habitat characteristics and extent are based on field surveys and aerial imagery from July 2010. Although DEA strives to present an accurate and precise inventory of habitat data, this map may contain errors due to scale and therefore this map series is not suitable for legal, engineering or surveying purposes. Please contact DEA's GIS Coordinator at (541) 389-7614 or sast@deainc.com with any questions or reports of errors or omissions.

Wildlife Habitat Mitigation Site Maps
Figure 5 (Sheet 9 of 9)
North Bank Site (Parcel S)

0 250 500
Feet

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Appendix J
Photo and Visual Simulation at Horsfall Beach Camping/ Parking/Staging Area



Existing view from Horsfall Beach Campground/Parking/Staging area in Oregon Dunes National Recreation Area



Visual Simulation of Stacks/HRSG Units 1-6

Jordan Cove Energy Project, L.P.	Figure 6-1: Existing View and Visual Simulation Horsfall Beach Campground/Parking/Staging Area	Exhibit R Appendix 6 Photos by SHN Consulting 03.22.2013

Appendix K
Lighting Methods and Proposed Site Lighting Plan

BLACK & VEATCH
Building a world of difference.

MEMORANDUM

Jordan Cove Energy Project — B&V Project 17884
Project Name: Jordan Cove Energy Project — B&V File 36.1018
South Dunes Power Plant Lighting Memorandum — 30 September 2014

To: Project File

From: Kent Hessler, Lighting Section Lead

I am an electrical engineer currently employed by Black & Veatch. I have been employed at Black & Veatch for 32 years and have been involved with lighting design for 25 of those years. My training and experience as an engineer doing lighting design provides expertise with respect to the type of lighting and lighting fixtures required for a power plant facility. This expertise enables me to select, locate and choose shielding to divert excessive illumination from sensitive areas.

The exterior lighting for the South Dunes Power Plant will be designed to mitigate light emissions from the facility. The illumination levels will be in accordance with Illuminating Engineering Society (IES) handbook recommendations and the perimeter fence will be illuminated in accordance with US Coast Guard security requirements. Various methods will be used, including utilization of low-emission light fixtures, using lighting fixtures only when required for safety and security, and shielding the illumination source on light fixtures in order to limit light emissions to the specific area requiring illumination. The exterior lighting will use LEDs as a lamp source.

Many of the active operational areas at the South Dunes Power Plant will be located indoors. These operational areas include the control room, water treatment facilities, maintenance shops, and administrative offices. As such, the only exterior lighting that will be required for the facility will be for vehicular traffic areas, safe personnel passage, monitoring of the perimeter fence and areas requiring visual inspection. The South Dunes Power Plant is expected to have exterior lighting at the plant entrance, the corridor to the plant and the service road around the facility, perimeter fence, the parking areas at the administration/maintenance building, at pedestrian entrances to the various facility buildings and along walkways between the buildings, and the stairs and platforms on the turbine generators, heat recovery steam generators (HRSG) and air-cooled condensers.

The entrance, facility service road, perimeter fence and parking area will be illuminated with roadway lighting fixtures on 30-foot tall poles. These fixtures will have a cobra head appearance and cutoff optics. The cutoff fixtures are designed such that the light source is not visible until near the fixture. Use of this type of fixture will ensure that roadway lighting at the South Dunes Power Plant will be less obtrusive than typical urban roadway lighting. The building pedestrian entrances will be illuminated with fully shielded fixtures mounted directly above the doors. These fixtures will only provide illumination in a downward direction at the door location. The IES has developed a rating system for backlight, uplight, and glare (BUG). The fixtures used for illuminating walkways or ground level equipment will be provided with fixtures that have an uplight rating of near zero, which indicates the light will be projected below the horizontal plane of the fixture. Any floodlights that

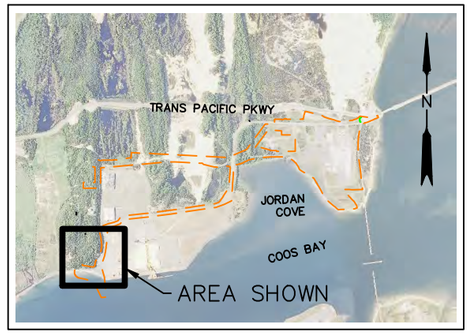
are required will be directed inward toward the facility and will be provided with top and side shields.

Exterior lighting that is required for safe passage around the facility will be photocell controlled. Exterior lighting that is only required for periodic maintenance will be switch controlled and normally turned off. This will include many higher elevation areas that may be visible from offsite such as the upper platforms of the air-cooled condensers, HRSG and pipe racks. Selected roadway and parking area lighting may also be able to be switched off unless required for maintenance use.

Although the Federal Aviation Administration will make the final decision regarding aviation obstruction lighting on the facility exhaust stacks, it is not anticipated that they will be required. If they are required, they would consist of the flashing and steady burning red lights typically seen on taller communications towers.

A preliminary lighting analysis was performed using AGi32, a lighting analysis software, to evaluate the impacts of lighting from the power plant. The results of the lighting analysis demonstrate there will be little wasted illumination spilled on adjacent properties from the facility or into the water at the shoreline. While this is a preliminary lighting design, based upon the planned light fixtures and illumination modelling, we anticipate minimal to no levels of light beyond 80 feet from the light sources along roadways and the fence line. The attached Figures 1 – 3, illustrate the results of the model and show the projected distances to 0.0 foot-candles.





KEY MAP

FIXTURE LIST				
QUANTITY	SYMBOL	FIXTURE TYPE	LAMP WATTS	MTG EL
9	SLEDA	LED ROADWAY 13KLUMEN, NARROW DIST	LED	35'-0"

NOTE:

1. This drawing is for information only and is not for construction.

2. Lighting design shown is based on data provided by Black and Veatch. For original design drawing see Black and Veatch drawing no. 182962-SE-E2605 dated 9/12/14.

DAVID EVANS AND ASSOCIATES, INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

JORDAN COVE ENERGY PROJECT
SOUTH DUNES POWER PLANT

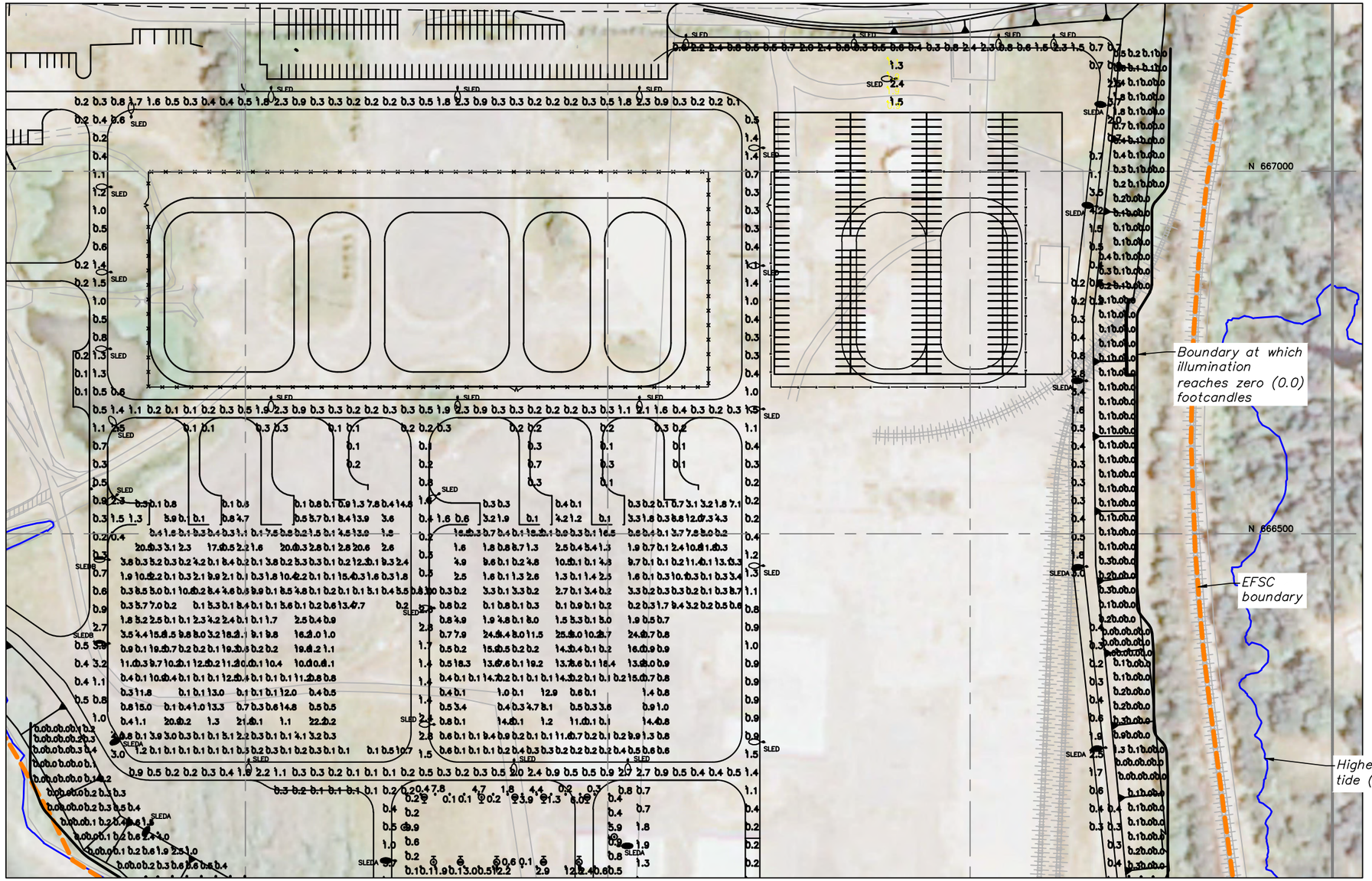
COOS COUNTY

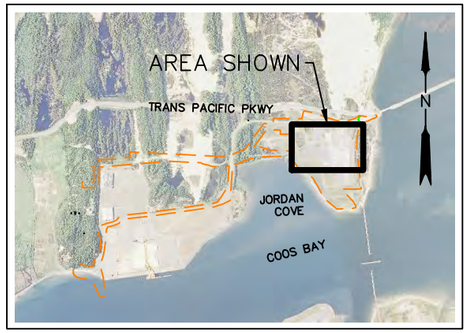
Reviewed By – SPS
Designed By – Black and Veatch
Drafted By – JND

BARGE BERTH
PRELIM. LIGHTING ANALYSIS
1 OF 3

SHEET NO. 1

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KEY MAP

FIXTURE LIST				
QUANTITY	SYMBOL	FIXTURE TYPE	LAMP WATTS	MTG EL
6	BBV	BRACKET MOUNTED LED	LED	7'–6" ABOVE FLOOR
2	FL	FLOOD LIGHT LED	LED	7'–6" ABOVE FLOOR
4	G	OUTDOOR WALL MOUNTED LED	LED	8" ABOVE DOOR FRAME
33	SLED	LED ROADWAY 7000LUMEN, NARROW DIST	LED	35'–0"
23	SLEDA	LED ROADWAY 13KLUMEN, NARROW DIST	LED	35'–0"
2	SLEDB	LED ROADWAY 20KLUMEN, NARROW DIST	LED	35'–0"

0 80 160 320

NOTE:

1. This drawing is for information only and is not for construction.

2. Lighting design shown is based on data provided by Black and Veatch. For original design drawing see Black and Veatch drawing no. 182962–SE–E2604 dated 9/12/14.

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2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

JORDAN COVE ENERGY PROJECT
SOUTH DUNES POWER PLANT

COOS COUNTY

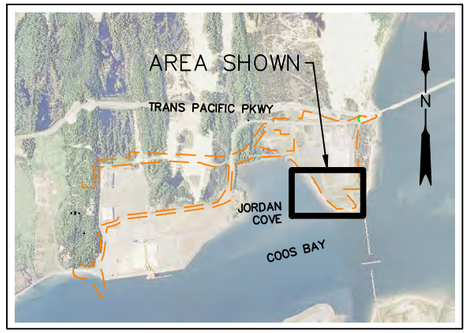
Reviewed By – SPS
Designed By – Black and Veatch
Drafted By – JND

SDPP NORTH
PRELIM. LIGHTING ANALYSIS
2 OF 3

SHEET NO. 2

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KEY MAP

FIXTURE LIST				
QUANTITY	SYMBOL	FIXTURE TYPE	LAMP WATTS	MTG EL
6	BBV	BRACKET MOUNTED LED	LED	7'-6" ABOVE FLOOR
2	FL	FLOOD LIGHT LED	LED	7'-6" ABOVE FLOOR
4	G	OUTDOOR WALL MOUNTED LED	LED	8" ABOVE DOOR FRAME
33	SLED	LED ROADWAY 7000LUMEN, NARROW DIST	LED	35'-0"
23	SLEDA	LED ROADWAY 13KLUMEN, NARROW DIST	LED	35'-0"
2	SLEDB	LED ROADWAY 20KLUMEN, NARROW DIST	LED	35'-0"

NOTE:

1. This drawing is for information only and is not for construction.

2. Lighting design shown is based on data provided by Black and Veatch. For original design drawing see Black and Veatch drawing no. 182962-SE-E2604 dated 9/12/14.

0 80 160 320

DAVID EVANS AND ASSOCIATES, INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

JORDAN COVE ENERGY PROJECT
SOUTH DUNES POWER PLANT

COOS COUNTY

Reviewed By – SPS
Designed By – Black and Veatch
Drafted By – JND

SDPP SOUTH
PRELIM. LIGHTING ANALYSIS
3 OF 3

SHEET NO. 3

KENT A. HESSLER

Lighting and Communications Section Lead

Various Electrical Systems, including Auxiliary Power, Lighting, Communication, and Security Systems.

Education
Bachelor of Science, Electrical Engineering, University of Kansas, 1982

Professional Registration
1991, Kansas, Engineer-in-Training

Total Years Experience
30

Joined Black & Veatch
1982

Language Capabilities
English

Kent A. Hessler is Lighting and Communications Section Lead for Black & Veatch (B&V) Energy. His primary responsibilities involve the design processes and methods used by B&V Energy personnel to execute lighting and communication engineering. This includes development and enforcement of practices, specifications, guides, and standards that drive a consistent work product. He also provides technical consulting and support for various areas of plant lighting philosophy and supervises other members within the section. Hessler previously served as Electrical Engineer on B&V energy projects.

Representative Project Experience

Lighting and Communications Section Lead/Process Owner
2011-Present
Electrical Engineer. Functions as the section leader in B&V Energy's Electrical Department for lighting and communications. Manage a five member staff by setting daily work tasks, schedules, budgets, as well as performance management and annual evaluations. Responsible for the upkeep and maintenance of approximately 5 company guides as well as 1 standard used throughout energy division worldwide. Provides conceptual design and estimating of lighting/communications systems to support B&V energy proposals.

Kusile Power Station; Eskom; Sunning Hill, South Africa
2009-2010
Electrical Engineer. Working in the South Africa engineering office in a liaison role between the design team and client. Electrical team member for the turbine, miscellaneous structures, and building management system (BMS) contracts. Administrator for the electrical construction contract, which involves preparing and presenting a multidiscipline review for the electrical construction contract and assisting in the preparation of prequalification and tender documents.

Applegate Energy Center; University of Kansas Medical Center; Kansas City, Kansas
2008-2009
Electrical Engineer. Assisted in generating a construction package for the upgrade of normal and emergency distribution systems. This included new diesel generators, transformers, switchboards, medium voltage gas switches, and motor control centers. Also performed cable sizing, motor control center layout, panelboard breaker assignments, and specification work.

Wood Gasification Steam Plant; Johnson Controls, Inc.; Oak Ridge, Tennessee
2008
Electrical Engineer. Assisted in developing conceptual design documents for a biomass boiler. This included design work on a small steam turbine generator, fuel handling facility, and existing plant electrical upgrades.

Computer Data Center; Pilgrim's Pride Corporation; Richardson, Texas
2007-2008

Electrical Engineer. Assisted in generating a construction package for data center rooms that totaled approximately 14,000 square feet. Design included three 480 volt switchgear buses, uninterruptible power supply, chillers, and standby diesel generation. Detailed design also included lighting with motion sensor control; heating, ventilating, and air conditioning (HVAC) starters; and receptacles.

Lowman Power Plant Air Quality Control System (AQCS) Additions; 600 MW Coal Fired Power Station; Alabama Electric Cooperative (AEC); Leroy, Alabama
2005-2007
Electrical Engineer. Responsible for administering the contracts for 4.16 kV switchgear, secondary unit substations, motor control centers, medium voltage variable frequency drives, power transformers, and cable bus. Also performed cable sizing, motor control center layout, and panelboard breaker assignments and supervised lighting design. Performed factory surveillance of electrical equipment buildings that housed switchgear, batteries, and motor control centers. Spent some time onsite overseeing data gathering being done by the local architect-engineer.

Louisville District Indefinite Delivery Contract - Military and Civil Works; Various Locations: C-5 Squadron Operations Facility, Alter Maintenance Shops, Alter Flight Simulator, Wright-Patterson Air Force Base; US Army Corps of Engineers Louisville District; Dayton, Ohio
2004-2005
Lead Electrical Engineer. Responsible for the complete electrical design of the project. This included overhead and underground primary distribution, interior distribution, lighting, grounding, lightning protection, communications, and security. Provided design to meet LEED (Leadership in Energy and Environmental Design) and latest UFGS (Unified Facilities Guide Specifications) requirements. Communications included a mass notification system to meet UFCS requirements.

Turkey Point Nuclear Generating Station; Florida Power & Light Company (FPL); Miami, Florida
2004
Electrical Engineer. Conducted the security design for the nuclear power plant. Responsibilities included overseeing the Intelli-field perimeter protection system, coordinating with procurement staff, attending daily project summary meetings, and providing input on the client's plant change modification packages.

Various Projects
2000-2004
Electrical Engineer. Functioned as the section leader in B&V Energy's Electrical Department for lighting and communications. Provided oversight for a seven-member staff that produced drawings, specifications, procurement packages, and department standards for the lighting and communications needs of power projects.

Tuas Power Project; Tuas Power Company; Singapore

1999-2000
Electrical Engineer. Designed the telephone, paging, card access, and closed-circuit television systems for the station.

Hidd Power Project; ABB SAE Sadelmi; Bahrain
1997-1998
Electrical Engineer. Designed the communications, lighting, security, and clock systems for the station.

Hopewell Pagbilao, Units 1 and 2; Mitsubishi Heavy Industries Ltd.; Pagbilao, Philippines
1994-1995
Electrical Engineer. Designed the communications system for the station.

Power Building Addition; Black & Veatch; Overland Park, Kansas
1994-1995
Electrical Engineer. Responsible for the electrical design of the office addition.

Tenaska Ferndale Cogeneration Station; Tenaska; Ferndale, Washington
1993-1994
Electrical Engineer. Designed the lighting and communications systems for the project.

Clover Power Station; Old Dominion Electric Cooperative; Clover, Virginia
1990-1992
Electrical Engineer. Designed the communications system for the project.

Sherco; Northern States Power Company; Becker, Minnesota
1989-1990
Electrical Engineer. Designed the personnel warning system for the project.

FPL; Juno Beach, Florida
1988
Field Engineer. Worked in the FPL home office. Reviewed consultant's drawings for support buildings and prepared plant change packages for Turkey Point Nuclear Station.

Office Building; Empire District Electric Company; Joplin, Missouri
1986-1987
Electrical Engineer. Responsible for the electrical design of the office addition.

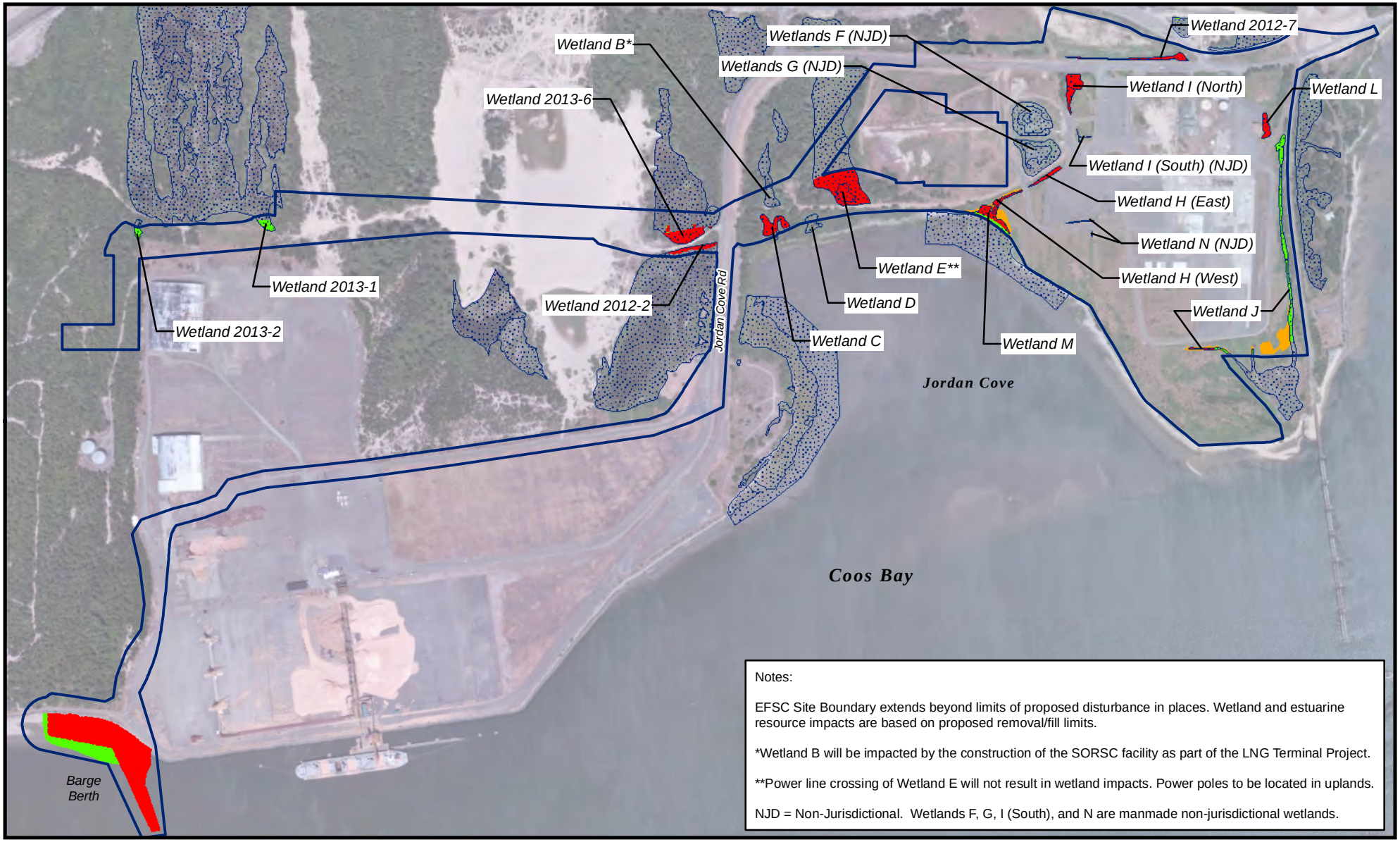
Salt River Project; Coronado Generating Station; St. Johns, Arizona
1986-1987
Electrical Engineer. Designed the communications system for the project.

Intermountain Power Project; Intermountain Power Agency; Delta, Utah

1983-1984
Electrical Engineer. Planned the communications system and various lighting systems for the project.

Rawhide Power Station; Platte River Power Authority; Fort Collins, Colorado
1982
Electrical Engineer. Ensured functionality for the lighting design project.

Appendix L
Wetland Impacts



N

0 400 800 Feet

1 inch = 800 feet

EFSC Site Boundary
Delineated Wetland
Permanent Jurisdictional Wetland Impact
Temporary Jurisdictional Wetland Impact
Estuarine Habitat Impact below HMT

South Dunes Power Plant Project

EFSC Application

EXHIBIT J
Figure J-1
Wetland Impacts

Date: 10/8/2014
Reviewed By EJRO
Designed By SAST

Appendix M
Compensatory Wetland Mitigation Plan

Jordan Cove LNG Terminal Project
South Dunes Power Plant Project

Compensatory Wetland Mitigation Plan

Overview

Prepared for:

Jordan Cove Energy Project, L.P.

125 Central Avenue, Suite 380

Coos Bay, OR 97420

Prepared by:

DAVID EVANS AND ASSOCIATES INC.

2100 SW River Parkway

Portland, OR 97201

October 2014

TABLE OF CONTENTS

1. COMPENSATORY WETLAND MITIGATION PLAN OVERVIEW 1

Tables

Table 1 Summary of Impacts by Project and Primary Resource Type 2
Table 2. Mitigation Plan Parts, Project Features, Impacts, and Mitigation Acreage Summary 3

Figures

Figure 1: Impact and Mitigation Location Overview 5

Attachments

CWM Part A – Freshwater Impacts and Mitigation
CWM Part B – Estuarine Impacts and Mitigation

1. COMPENSATORY WETLAND MITIGATION PLAN OVERVIEW

This Compensatory Wetland Mitigation (CWM) Plan covers impacts associated with the Jordan Cove Liquefied Natural Gas (LNG) Terminal Project (LNG Terminal) and the South Dunes Power Plant Project (SDPP), collectively referred to as the "Projects." The Projects, which are located along the North Spit of Coos Bay, Oregon, will be carried out by Jordan Cove Energy Project, L.P. (JCEP L.P.). The Projects will result in freshwater and estuarine wetland impacts. These resources provide important ecological functions and are regulated by state and federal agencies. Permanent impacts to these resources will therefore need to be mitigated.

At the state level and as it relates to wetlands, the Projects are being permitted under two different permitting processes. The SDPP is being permitted via the State of Oregon Energy Facility Siting Certificate (EFSC) process, while the LNG Terminal related wetland impacts are being permitted directly via the Oregon Department of State Lands (DSL) Removal-Fill permitting process. Although separate processes, both Projects require compliance with Oregon Removal-Fill law and review by DSL.

This Compensatory Wetland Mitigation (CWM) Plan covers impacts associated with both Projects and therefore serves both permitting processes described above. In this manner, mitigation is provided in a more holistic manner than if broken up into pieces. This CWM specifically covers the following proposed development features/locations that result in wetland impacts:

- LNG Plant
- Rail Spur Bridge Re-Location
- Southwest Oregon Regional Safety Center (SORSC)
- Utility Corridor
- LNG Access Channel
- Barge Berth
- Mill Site/South Dunes Power Plant (SDPP)
- North Point Workforce Housing Project (NPWHP)
- Transpacific Parkway/Highway 101 Intersection (TPP)

Impact details are provided in the Project permit applications. A summary of impacts for the Project, broken out by sub-project (SDPP and LNG Terminal) and primary resource type (estuarine and freshwater) is provided in Table 1.

Table 1 Summary of Impacts by Project and Primary Resource Type

	Permanent Impacts (acres)[2]
South Dunes Power Plant Project	
Total Estuarine[1]	3.03
Total Freshwater	2.43
LNG Terminal Project	
Total Estuarine[1]	0.05
Total Freshwater	1.01
Total for the Projects	
Total Estuarine[1]	3.08
Total Freshwater	3.44

[1] Total estuarine impacts excludes deep subtidal impacts, since no mitigation is proposed for this habitat type.

[2] Incidental impacts at Kentuck Mitigation Site are not included in this table, but have been accounted for in the Part B Estuarine CWM Plan and in the mitigation requirements shown in Table 2 of this overview. Impacts shown in this table match the summary table provided in the DSL JPA impacts table.

The plan for wetland and estuarine mitigation activities for the Project has been divided into two parts: The first, Part A, covers all proposed freshwater resource impacts, and the second, Part B, covers all proposed estuarine resource impacts. Table 2 provides a summary of the two mitigation plan parts along with the impacts covered by each. Each plan part goes into additional detail about impacts and mitigation components. Figure 1 provides a summary overview of impact and mitigation areas.

This proposed CWM Plan has been prepared in accordance with the DSL rules. It is also supportive of EFSC requirements, along with federal and local regulatory permitting requirements.

Table 2. Mitigation Plan Parts, Project Features, Impacts, and Mitigation Acreage Summary

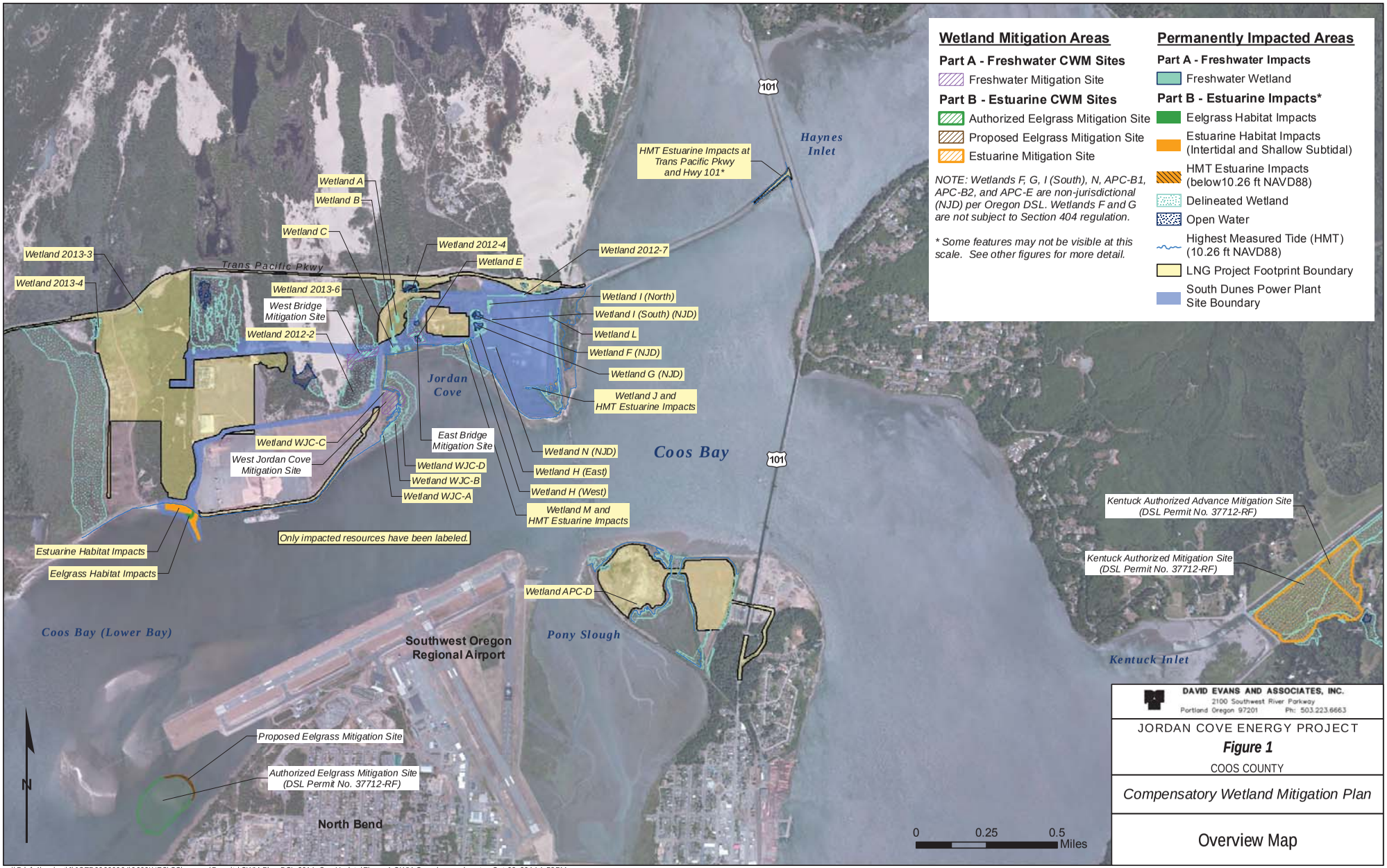
Mitigation Plan Part	Project Element	Mitigation Methods	Resource IDs Impacted[1]	Impact Acres[2]	Mitigation Acreage[3]
Part A - Freshwater Resource CWM	LNG Terminal Mill Site/SDPP NPWHP Rail Spur Bridge Re-Location SORSC Utility Corridor	Restoration, Creation, Enhancement	2013-3, 2013-4, 2012-7, Wetland H (East), Wetland I (North), Wetland J, Wetland L, Wetland APC-D, 2012-4, Wetland A, Wetland B, 2012-2, Wetland C, Wetland E, and 2013-6	3.44	4.65
Part B - Estuarine Resource CWM	LNG Access Channel Barge Berth Mill Site/South Dunes Site TPP	Enhancement	Access triangle intertidal, eelgrass, and shallow subtidal Barge shallow subtidal Mill-Dunes intertidal below HMT adjacent to Wetlands J and M Wetlands M and H (West) TPP intertidal below HMT	3.08	13.03
			Total	**6.52**	**17.68**

[1] Resource IDs follow general naming conventions provided in permit application impact table.

[2] Refers to permanent impacts. Excludes deep subtidal estuarine impacts for which mitigation is not being proposed. Incidental impacts at Kentuck Mitigation Site not included in these impacts.

3 Mitigation acreage for Part B-Estuarine Resource CWM includes acreage to cover incidental impacts at Kentuck Slough. See Part B CWM plan for details.

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JORDAN COVE ENERGY PROJECT

Figure 1

COOS COUNTY

Compensatory Wetland Mitigation Plan

Overview Map

\\Pdxfs1\project\J\JCEP00000004\0600INFO\GS\arcmap\Permits\CWM Plan DSL 2014_Sep Update\Figure 1 CWM Overview.mxd sast Oct 08, 2014 1:58PM

Jordan Cove LNG Terminal Project
South Dunes Power Plant Project

Compensatory Wetland Mitigation Plan

Part A: Freshwater Impacts

Prepared for

Jordan Cove Energy Project, L.P.

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October 2014

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1. COMPENSATORY WETLAND MITIGATION PLAN OVERVIEW

1.1 INTRODUCTION

The Jordan Cove LNG Terminal Project (LNG Terminal) and South Dunes Power Plant Project (SDPP) (collectively referred to as the Projects), situated along the North Spit of Coos Bay, Oregon, will result in freshwater wetland and estuarine resource impacts. These resources provide important ecological functions and are regulated by state and federal agencies. Permanent impacts to these resources will therefore need to be mitigated.

This Compensatory Wetland Mitigation (CWM) Plan Part A specifically covers freshwater impacts for the following proposed development features:

- LNG plant
- Mill Site/South Dunes Site
- North Point Workforce Housing Project (NRWHP)
- Rail Spur Bridge Re-Location
- Southwest Oregon Regional Safety Center (SORSC)
- Utility Corridor

Total freshwater wetland impacts are approximately 3.44 acres and will be offset by 5.91 acres (4.29 credits) of mitigation. This represents an excess of 0.85 credits above standard required DSL ratios, which is intended to serve as a buffer should design modifications be required through the review process or should issues in meeting success criteria occur during the monitoring period. Mitigation goals and performance criteria have been written to specifically meet the minimum number of required credits (3.44 credits) based on DSL ratios, which amounts to 4.65 acres of mitigation.

Figure 1 of Appendix A shows the location of development areas, freshwater wetland impacts, and the proposed mitigation sites. Proposed mitigation would entail a combination of wetland restoration, creation, and enhancement at three locations on the North Spit, in proximity to proposed impacts. The three site names are:

- West Jordan Cove Mitigation Site (tax ID #25S13W04TL0040000)
- West Bridge Mitigation Site (tax ID #25S13W04TL00101 and 25S13W04TL00300)
- East Bridge Mitigation Site (tax ID #25S13W04TL0010000)

This proposed CWM Plan has been prepared in accordance with the Oregon Department of State Lands (DSL) rules. It is also supportive of State Energy Facility Siting Council (EFSC) requirements, along with federal and local regulatory permitting requirements.

1.2 ECOLOGICAL GOALS AND OBJECTIVES

The goals and objectives of this mitigation plan seek to offset the loss of acreage and functions provided by the wetland resources that would be impacted by the Project. Goals and objectives are provided below. Monitoring protocols associated with these goals are provided in Section 7 of this document. Site locations and design drawings are provided in Figures 1 through 4 (including multiple sheets) of Appendix A.

1.2.1 West Jordan Cove Mitigation Site

Mitigation Goal 1: Create 1.67 acres of salt marsh wetlands at the West Jordan Cove Mitigation Site. To achieve this goal, the following objectives will be carried out:

- **Objective 1.1:** Create salt marsh wetland by excavating 1.67 acres of upland down to elevations suitable for supporting salt marsh (i.e., elevation of adjacent salt marsh). Average elevation will be between approximately 7 and 8 feet NAVD88 (North American Vertical Datum of 1988).
- **Objective 1.2:** Establish suitable hydrologic connection between created salt marsh and existing estuary. This will entail grading a fringe of existing salt marsh along the existing salt marsh/upland boundary to allow tidal connection between the estuary and the newly created salt marsh area. This will result in approximately 0.48 acres of temporary salt marsh vegetation loss that will be restored as described under Objective 1.3.
- **Objective 1.3:** Establishment and survival of a self-sustaining native salt marsh plant community similar to those in surrounding salt marsh. This will entail 1.67 and 0.48 acres of salt marsh community establishment within the creation area (Objective 1.1) and temporary disturbance area (Objective 1.2) respectively. A minimum of three different native salt marsh species shall occur within the mitigation site.
- **Objective 1.4:** The mitigation area (2.15 acres), including creation area and temporary disturbance area, will meet all three wetland parameters.

1.2.2 West Bridge Mitigation Site

Mitigation Goal 2: Create, enhance, and restore 1.19 acres, 0.38 acres, and 0.46 acre, respectively, of scrub-shrub and emergent wetlands at the West Bridge Mitigation Site. To achieve this goal, the following objectives will be carried out:

- **Objective 2.1**: Create wetland by excavating 1.19 acres of upland sand dune down to elevations suitable for wetland establishment (i.e., elevation of adjacent wetlands).
- **Objective 2.2**: Enhance wetland by excavating 0.38 acres down to elevations that provide more consistent wetland hydrology conditions.
- **Objective 2.3**: Restore wetland by excavating 0.46 acre of upland sandy fill material (i.e., Project-related construction haul road) down to elevations suitable for wetland establishment (i.e., elevation of adjacent wetlands).
- **Objective 2.4:** Establishment and survival of robust, self-sustaining, and diverse native wetland plant communities similar to those in surrounding wetlands so that approximately 1.19 acres of the planted mitigation site consists of scrub-shrub communities and 0.84 acre consists of emergent communities.
- **Objective 2.5:** Improve habitat structure by placing large wood (downed logs) to serve as habitat and nurse log potential.
- **Objective 2.6:** The mitigation area (2.03 acres) will continue to meet all three wetland parameters (i.e., soils, vegetation, and hydrology), as defined in the *Corps of Engineers Wetland Delineation Manual*, 1987.

1.2.3 East Bridge Mitigation Site

Mitigation Goal 3: Restore 0.96 acres of palustrine aquatic bed and palustrine unconsolidated bottom wetland at the East Bridge Mitigation Site. To achieve this goal, the following objectives will be carried out:

- **Objective 3.1**: Restore wetland by excavating 0.96 acres of upland sandy fill material (i.e., project-related construction haul road) down to pre-haul road elevations.
- **Objective 3.2:** Establishment and survival of self-sustaining wetland plant community dominated by yellow pond lily (*Nuphar polysepalum*), approximately 0.81 acres. Approximately 0.15 acres of the site may remain as open water, which is consistent with pre-project conditions.
- **Objective 3.3:** Improve habitat structure by placing large wood (downed logs) to serve as habitat.
- **Objective 3.4:** The mitigation area (0.96 acres) will continue to meet all three wetland parameters (i.e., soils, vegetation, and hydrology), as defined in the *Corps of Engineers Wetland Delineation Manual*, 1987.

1.3 OVERVIEW OF CWM CONCEPT AND FUNCTIONS AND VALUES REPLACEMENT

The CWM will entail mitigation work at three distinct mitigation sites – West Jordan Cove, West Bridge, and East Bridge Mitigation Sites – which together address all wetland impacts defined in Section 1.4 of this plan. Location information is provided in Section 2 of this report. Functions will be replaced through in-kind and out-of-kind mitigation. The rational for out-of-kind mitigation is provided in Section 1.3.1 West Jordan Cove Mitigation Site. Additional discussion of functional replacement is provided in Section 5 of this report. An overview of the CWM concept at each proposed site is provided below.

1.3.1 West Jordan Cove Mitigation Site

The West Jordan Cove Mitigation Site primarily consists of upland that is vegetated with a mix of native and non-native shrubs and herbs. The mitigation goal for this site would be to convert upland habitat to salt marsh (i.e., wetland creation). This activity may be considered to be out of kind mitigation, as the impacted wetlands are freshwater wetlands. However, the freshwater impact wetlands occur on what is presumed to be fill placed over historic salt marsh (See Figure 5 of Appendix A, 1950's aerial photo). This along with the considerable amount of salt marsh that has been lost historically throughout the estuary provides the justification for using salt marsh creation as a suitable form of mitigation for freshwater wetland impacts.

Existing salt marsh occurs along the east side of the upland area, with mudflats east of the salt marsh. Salt marsh occurs between approximately elevation nine and five feet (NAVD 88). Mudflats generally occur below elevation five feet. Typical species found within the existing salt marsh include: tufted hairgrass (*Deschampsia cespitosa*), meadow barley (*Hordeum brachyantherum*), saltgrass (*Distichlis spicata*), Lyngbye's sedge (*Carex lyngbyei*), and pickleweed (*Salicornia virginica*). Point Reyes bird's-beak (*Cordylanthus maritimus*) has also been observed in the area. Existing conditions at the site are shown in Figure A2-1 of Appendix A.

The majority of the upland area would be excavated down to elevations seven and eight feet to match the elevation of robust salt marsh that occurs on-site (see Figures A2 of Appendix A). Impacts to existing wetland would be kept to the minimum practicable; however, some temporary impacts (i.e., grading) will

be necessary in order to provide a suitable hydrologic connection between the created salt marsh and the adjacent estuary. The temporary impact would consist of grading the highest elevation of the existing salt marsh (i.e., along the upland/salt marsh edge) down to the same elevation as the created salt marsh area and adjacent existing robust salt marsh community.

Salt marsh vegetation is anticipated to establish by natural recruitment of tide born propagules. Experience of South Slough National Estuarine Research Reserve (SSNER) suggests that natural recruitment is an appropriate means of establishing salt marsh vegetation at mitigation and restoration sites and that planting should not be needed (Personal communications, Craig Cornu. SSNER. 2014). Mr. Cornu also noted that non-native annual salt marsh species, such as brass buttons (*Cotula coronopifolia*), often colonize a newly established salt marsh site during the first few years, but then are typically outcompeted beginning within the third year post-implementation. Although natural recruitment is the proposed method of salt marsh plant establishment, supplemental planting will be provided if monitoring determines that natural recruitment by native species is occurring too slowly.

1.3.2 West Bridge Mitigation Site

The West Bridge Mitigation Site consists of wetland creation and restoration activities, which will happen in conjunction with one another as described below. These activities are shown in Figures A3-2 through A3-4 of Appendix A.

There is currently an upland sand berm (believed to be natural) located between two wetlands within the utility corridor that currently functions as an access road through the site, and is the alignment of the industrial waste water line that will be relocated as part of the Project. The two wetlands are identified as Wetlands 2012-2 and 2013-6 in the recently submitted wetland delineation report prepared by SHN Consulting Engineers and Geologists, Inc. (SHN). Mitigation efforts would remove the sand berm access road between the two wetlands, thus creating new wetland connecting the two existing wetlands. New ground surface elevations would match those of the existing wetlands. Removed material (i.e., sand) would be disposed of on-site, within the utility corridor. Therefore, no import or export of fill material is anticipated.

The recontoured mitigation area will be planted and seeded with a mix of native wetland shrub and emergent plant species similar to plant communities in adjacent and nearby wetlands. Nesting boxes, suitable for use by purple martin, will be installed. Excavated upland areas will also be re-vegetated with a native herbaceous plant community.

A temporary construction access haul road will be installed as part of construction of the Project. This road will result in impacts to Wetlands 2012-2 and 2013-6. Because the temporary road will be in place for more than two years, these impacts are considered to be permanent impacts by the State of Oregon. Mitigation efforts will remove the associated fill material once the road is no longer needed for construction (approximately two to three years after road installation), lowering elevations to roughly pre-construction conditions. Final elevations will be set to support an emergent wetland plant community.

Grading of the wetland creation and restoration areas will occur concurrently. Planting of these areas will also occur concurrently during the first appropriate planting window upon acceptance of final grades.

1.3.3 East Bridge Mitigation Site

The East Bridge Mitigation Site consists of wetland restoration activities. These activities are shown in the A4 Series of Figures in Appendix A.

A temporary construction access haul road will be installed as part of construction of the Project. This road will result in impacts to Wetland E. Because the temporary road will be in place for more than two years, these impacts are considered to be permanent impacts by the State of Oregon. Mitigation efforts will remove the associated fill material once the road is no longer needed for construction (approximately two to three years after road installation), lowering elevations to pre-haul road construction conditions.

Current pre-haul road conditions support a palustrine aquatic bed wetland plant community dominated by yellow pond lily (*Nuphar polysepalum*), as well as an area of open water. Post-haul road mitigation conditions will seek to restore the yellow pond lily community, with a minor component of open water. Planting of the site will occur during the first appropriate planting window upon acceptance of final restored grades.

1.4 SUMMARY OF IMPACT AND CWM ACREAGE/CREDITS

Table 1 provides a summary of wetland impacts covered by this CWM Plan, all of which occur to freshwater wetlands. Table 2 provides a summary of mitigation acreage by type (i.e., enhancement, creation, restoration) at each site. As shown in these two tables, total wetland impacts will be 3.44 acres and mitigation will total 5.91 acres (4.29 credits). This represents an excess of 0.85 credits above standard required DSL ratios, which is intended to serve as a buffer should design modifications be required through the review process or should issues in meeting success criteria occur during the monitoring period. Mitigation goals and performance criteria have been written to specifically meet the minimum number of required credits (3.44 credits) based on DSL ratios.

Table 1. Project Impacts

Wetland ID	Cowardin Class	Hydrogeomorphic (HGM) Class	Impact Acres/Debits
2013-3	PSSC	Flat	0.100
2013-4	PUBH	Depressional	0.287
2012-7	PEMA	Slope	0.200
Wetland H (east)	PEMA	Depressional	0.087
Wetland I (north)	PEMA	Depressional	0.266
Wetland J	PEMA	Slope	0.033
Wetland L	PEMA	Depressional	0.114
Wetland APC-D	PEMA	Depressional	0.005
2012-4	PEMA	Depressional	0.008
Wetland A	PFOC	Depressional	0.202
Wetland B	PFOC	Depressional	0.412
2012-2	PSSC, PEMF	Flat	0.150
Wetland C	PFOC	Depressional	0.256

Wetland ID	Cowardin Class	Hydrogeomorphic (HGM) Class	Impact Acres/Debits
Wetland E	PABH, PUBH	Depressional	0.976
2013-6	PEMF	Flat	0.346
Total			**3.44**

Table 2. Mitigation Summary [1, 2]

Mitigation Site	Mitigation Type	Cowardin Class	HGM Class	Mitigation Acres[2]	Mitigation Credits[2]
West Jordan Cove	Creation	E2EM	Estuarine	2.92	1.95
			Subtotal	**2.92**	**1.95**
West Bridge	Creation	PSS	Depressional	1.19	0.79
	Enhancement	PSS, PEM	Depressional	0.38	0.13
	Restoration	PEM	Depressional	0.46	0.46
			Subtotal	**2.03**	**1.38**
East Bridge	Restoration	PABH, PUBH	Depressional	0.96	0.96
			Subtotal	**0.96**	**0.96**
Total				**5.91**	**4.29**

[1] See design sheets in Appendix A for detailed breakdown of site acreages.

[2] See mitigation goals and performance standards sections for acreages specifically called out as needing to be met to meet DSL mitigation ratios.

1.5 SUMMARY OF NET GAINS AND LOSSES OF FUNCTIONS AND VALUES

Table 3 provides a summary of functional change achieved at the proposed mitigation sites based on the Oregon Rapid Wetland Assessment Protocol (ORWAP).

Table 3: Summary of Net Function and Value Changes

GROUPED SERVICES		CWM SITE			Impact Sites	CWM minus Impact Site
		Existing	Predicted	Change	Predicted Loss	Net Change
Hydrologic	Function	0	1	1	3	-2
	Value	0	2	2	2	0
Water Quality Support	Function	0	7	7	10	-3
	Value	0	6	6	6	0
Fish Support	Function	0	5	5	5	0
	Value	0	8	8	7	1
Aquatic Support	Function	0	7	7	7	0
	Value	1	10	9	10	-1

GROUPED SERVICES		CWM SITE			Impact Sites	CWM minus Impact Site
		Existing	Predicted	Change	Predicted Loss	Net Change
Terrestrial Support	Function	0	6	6	6	0
	Value	1	10	9	10	-1
Average Net Functions and Values Change						**-1**

Based on *Guidance for Using the Oregon Rapid Wetland Assessment Protocol (ORWAP) in the State and Federal Permit Programs* (DSL, USACE, and EPA 2010), impacts to functions and values are assumed to be adequately offset or replaced if the net function and value scores for a grouped service at the CWM sites are within one whole number of the grouped service scores at the impact sites. As seen in Table 3, this is the case for most grouped services. On average, as judged by ORWAP (which considers a change of +/- 1 to equal no net loss), there will be no net loss of overall functions and values. Additional detailed discussion of functions and values is provided in Section 5 Functions and Values.

Importantly, because mitigation proposes to result in a net increase in acreage of all impacted habitats and because mitigation habitats will function in an equivalent manner as those habitats being impacted, there will be a net gain in overall functions and values across the landscape once the sites achieve the performance standards outlined in this plan.

2. CWM SITE INFORMATION

2.1 CWM SITE OWNER NAME AND CONTACT INFORMATION

The West Bridge Mitigation Site is partially owned by Fort Chicago LNG II U.S. L.P. (a wholly owned and controlled subsidiary of JCEP L.P.'s parent company Veresen, Inc.) and partially owned by Roseburg Forest Products (RFP). JCEP L.P. holds an option to acquire the portion owned by RFP. The East Bridge Mitigation Site and West Jordan Cove Mitigation Site is owned by Fort Chicago LNG II U.S. L.P.

Project contact information is provided below:

Attention: Bob Braddock,
Vice President-Project Manager
Jordan Cove Energy Project, L.P.
125 Central Avenue, Suite 380
Coos Bay, Oregon 97420
Phone: (541) 266-7510, (303) 748-3746 mobile

2.2 LEGAL AGREEMENT FOR PROPERTY USE AND LONG-TERM PROTECTION IF SITE IS NOT APPLICANT-OWNED

JCEP L.P. holds an option to acquire the portion of the West Bridge Mitigation Site that is currently owned by RFP. JCEP L.P. will acquire the RFP portion of the site, assuming the Project is authorized. Therefore, a legal agreement for the use and long-term protection of the West Bridge Mitigation Site is not proposed. JCEP L.P. owns the East Bridge Mitigation Site and the West Jordan Cove Mitigation Site.

2.3 LOCATION INFORMATION

The location of proposed mitigation sites and associated wetland impact areas are shown in Figure 1 of Appendix A.

2.3.1 West Jordan Cove Mitigation Site

The West Jordan Cove Mitigation Site is located along the west side of the geographic feature named Jordan Cove. It is situated east of where Jordan Cove Road enters the RFP wood chip facility property. The West Jordan Cove Mitigation Site is located in township 25 south, range 13 west, section 4, tax lot 40000.

2.3.2 West Bridge Mitigation Site

The West Bridge Mitigation Site is situated along the upper North Spit of Coos Bay, adjacent to the west side of Jordan Cove Road. The site is located in township 25 south, range 13 west, section 4, tax lot 101.

2.3.3 East Bridge Mitigation Site

The East Bridge Mitigation Site is situated along the upper North Spit of Coos Bay, due east of Jordan Cove Road. The site is located in township 25 south, range 13 west, section 4, tax lot 10000.

3. CWM SITE SELECTION AND DESIGN PRINCIPLES

3.1 REPLACEMENT

The proposed CWM will replace impacted functions and values through in-kind mitigation and out-of-kind mitigation (for historic loss of salt marsh), utilizing a combination of enhancement, creation, and restoration. This will result in a net increase in wetland acreage and function compared to current conditions.

3.2 PROVIDES LOCAL REPLACEMENT FOR LOCALLY IMPORTANT FUNCTIONS AND VALUES LOST, IF APPLICABLE

CWM will take place very close to the proposed impact sites, thereby providing local replacement of lost functions and values. Impact and mitigation sites are all located on the North Spit of Coos Bay.

3.3 CWM IS SELF-SUSTAINING AND MINIMIZES MAINTENANCE NEEDS

Each mitigation site has been designed to be self-sustaining. No site requires the use of water control structures to maintain wetland hydrology. At the West Bridge and East Bridge Mitigation Sites hydrology will be provided by interception of the groundwater table, as is the case for adjacent existing wetlands. At the West Jordan Cove Mitigation Site hydrology will be provided by tidal inundation from Coos Bay. Extensive maintenance needs are not anticipated beyond the initial plant establishment period.

3.4 SITING CONSIDERATIONS FOR ECOLOGICAL SUITABILITY

Mitigation sites will be located in landscape settings that currently support wetlands and have connections to adjacent wetland and upland habitats.

3.5 MINIMIZES TEMPORAL LOSS

Project construction will take approximately 42 months. Construction of the West Jordan Cove Mitigation Site will begin early within the project construction window to minimize temporal loss. The West Bridge and East Bridge Mitigation Sites cannot begin until later in the overall construction, because these sites are located in the temporary haul route corridor, which will remain in place for two to three years.

4. CWM EXISTING SITE CONDITIONS (BASELINE INFORMATION)

4.1 WETLAND DELINEATION OR DETERMINATION

4.1.1 West Jordan Cove Mitigation Site

David Evans and Associates, Inc. (DEA) performed a wetland delineation for the West Jordan Cove Mitigation Site during January of 2014 (DEA 2014). The report received concurrence from DSL on August 12, 2014.

4.1.2 West Bridge Mitigation Site

SHN prepared a wetland delineation reports that cover the area of the West Bridge Mitigation Site (DSL WD# 2012-0313 and #2013-0116. The reports received DSL concurrence on April 15 and November 8, 2013 respectively.

4.1.3 East Bridge Mitigation Site

DEA prepared a wetland delineation report for the Mill Site, which included the East Bridge Mitigation Site (DSL WD#2013-0218). The report received DSL concurrence on February 13, 2014.

4.2 HGM AND COWARDIN CLASSES/SUBCLASSES AT CWM SITE

4.2.1 West Jordan Cove Mitigation Site

The Cowardin class of wetlands at the West Jordan Cove Mitigation Site is palustrine scrub-shrub/emergent (PSS/EM) and estuarine, intertidal, emergent (E2EM). Currently, portions of the mitigation site are also upland. The HGM class is estuarine.

4.2.2 West Bridge Mitigation Site

The Cowardin classes of wetlands at the West Bridge Mitigation Site are palustrine emergent (PEM) and palustrine scrub-shrub (PSS). However, existing wetland at the CWM site will be converted to upland as a result of installation of the project haul road.

Currently, portions of the mitigation site are also upland. The HGM class is flat; however, it may also be viewed as a depressional wetland.

4.2.3 East Bridge Mitigation Site

The Cowardin classes of existing wetland at the East Bridge Mitigation Site are palustrine aquatic bed permanently flooded (PABH) and palustrine unconsolidated bottom permanently flooded (PUBH). The HGM class is depressional. However, existing wetland at the CWM site will be converted to upland as a result of installation of the project haul road.

4.3 EXISTING AND PROPOSED HYDROLOGY

4.3.1 Existing Hydrology – All Mitigation Sites

4.3.1.1 East and West Bridge Mitigation Sites

Wetlands adjacent to the proposed mitigation sites receive hydrology from groundwater. Groundwater is released into the depressional wetlands, which results in surface ponding ranging from several inches to several feet deep.

Conditions at the West Bridge Mitigation Site are currently too dry to support a hydrophytic plant community (i.e., upland areas), or will be made too dry due to installation of the construction haul road. Conditions at the East Bridge site will also be made too dry to support wetland conditions due to installation of the construction haul road.

4.3.1.2 West Jordan Cove Mitigation Site

Hydrologic conditions at most of the proposed West Jordan Cove Mitigation Site are currently too dry to support hydrophytic plant communities. Hydrology in the adjacent salt marsh occurs in the form of once to twice daily inundation from the estuary.

4.3.2 Proposed Hydrology

4.3.2.1 East and West Bridge Mitigation Sites

Site hydrology will be provided by groundwater as is the case for the existing adjacent wetlands. Recontouring of the West Bridge and East Bridge mitigation sites will result in interception of the groundwater table at an elevation suitable to establish a hydrophytic plant community.

4.3.3 West Jordan Cove Mitigation Site

Site hydrology will be provided by tidal inundation, similar to adjacent salt marshes.

4.4 EXISTING PLANT COMMUNITY DISTRIBUTIONS AND ABUNDANCE OF EXOTIC SPECIES

4.4.1 West Jordan Cove Mitigation Site

Upland habitats are dominated by a mix of native and non-native trees, shrubs, and herbaceous species. The predominant habitat type is a weedy shrub dune habitat dominated by Scotch broom (*Cytisus scoparius*), common velvetgrass (*Holcus lanatus*), and European beachgrass (*Ammophila arenaria*). Scattered shorepine (*Pinus contortus*) and sitka spruce (*Picea sitchensis*) are also present.

Existing freshwater wetland plant communities are dominated by shore pine, Hooker willow (*Salix hookeriana*), and slough sedge (*Carex obnupta*).

Existing salt marsh is dominated by tufted hairgrass, meadow barley, saltgrass, Lyngbye's sedge, and pickleweed. Point Reyes bird's-beak has also been observed in the area.

Exotic species were not observed in wetland areas. Most of the shrub and herb species found within the uplands are exotic species (i.e., non-native species) common to the area.

4.4.2 West Bridge Mitigation Site

The upland sand berm/access road consists primarily of open sand areas. Where vegetation is present, it is similar to upland areas described for the West Jordan Cove Mitigation Site.

Existing adjacent wetland vegetation is dominated by Hooker willow and slough sedge, and salt rush. Exotic species were not observed in wetland areas.

4.4.3 East Bridge Mitigation Site

Existing wetland vegetation is dominated by yellow pond lily. Invasive submerged aquatics such as species of water milfoil (*Myriophyllum* sp.) may be present.

4.5 SITE CONSTRAINTS OR LIMITATIONS

4.5.1 West Jordan Cove Mitigation Site

The West Jordan Cove Mitigation Site will need to limit disturbance to existing wetlands, as well as limit disturbance to population of Point Reyes Bird's-Beak, to the greatest extent practicable. However, some degree of temporary impact will be required in order to provide a suitable hydrologic connection between the estuary and proposed new salt marsh area. Protection of adjacent property and infrastructure from increased exposure to estuarine forces (i.e, wave action) will be important.

4.5.2 West Bridge Mitigation Site

Mitigation work at the West Bridge Mitigation Site cannot begin until the construction haul road is no longer needed and it is removed. It is estimated that the haul road could be in place for two to three years. New plantings will require protection against elk browsing.

4.5.3 East Bridge Mitigation Site

Mitigation work at the East Bridge Mitigation Site cannot begin until the construction haul road is no longer needed and it is removed. It is estimated that the haul road could be in place for two to three years. If non-native invasive submerged aquatics are present in Wetland E outside of the mitigation site, it will be infeasible to prevent these species from entering the mitigation site and limiting their presence.

4.6 RESTORATION PROJECTS

4.6.1 Data Supporting Existence of Former Wetland and Current Non-wetland Status

Restoration will occur at the West Bridge and East Bridge Mitigation Sites at locations that are currently wetland. These areas will be filled to construct a construction haul road needed to move large volumes of sand, modular equipment, and infrastructure components from the LNG terminal site (Ingram Yard) to the Mill Site/South Dunes Site. Because this road will be in place for more than two years, it is considered to be a permanent impact. The Project will remove this permanent impact once the haul road is no longer needed, thus restoring the areas to wetland.

5. FUNCTIONS AND VALUES ASSESSMENT

5.1 ASSESSMENT METHODS USED

ORWAP was used to perform the functional assessment for this mitigation plan. Based on agency guidance (USACE, EPA, and DSL 2010), compensatory mitigation evaluation has been based on the ORWAP grouped services, and all scores have been rounded to the nearest whole number.

5.2 FUNCTIONS AND VALUES ASSESSMENT

5.2.1 Impact Sites

A summary of group service function and value impacts is provided in Table 3, under the column heading "Impact Sites, Predicted Loss." These scores reflect an acreage weighted average of scores for each individual wetland, with acreage reflecting the portion of the wetlands to be impacted. Appendix B provides a summary spreadsheet including ORWAP scores for each individual wetland.

Most grouped services scored moderate to high for functions and values, with the exception of the hydrologic group service, which score relatively low. Impacted wetlands tend to be of moderate quality; however, ORWAP scoring includes considerable weighting to surrounding landscape conditions, which tended to raise scores across most of the group functions. That is, a considerable portion of the high scores are as much a function of what is located well outside of the wetland as they are a function of what occurs within the wetlands. Also, many of the impact wetlands are depressional wetlands with no surface outlet. ORWAP automatically prescribes the maximum functional score for water quality function for these types of wetlands. This results in an awkward comparison to mitigation sites that are not depressional, such as the out of kind West Jordan Cove Mitigation Site that resides in an estuarine hydrogeomorphic position.

Some factors leading to the moderate to high scores include a combination of high percent cover by native plant species relative to non-native species, presence of surface water with multiple depth classes, diverse habitat structure in some wetlands, and location within relatively undeveloped surroundings

(i.e., presence of large areas of protected lands versus location in a highly urbanized setting). Factors limiting scores include generally disturbed upland buffers dominated by non-native species, adjacent roadways, and past and current industrial uses.

5.2.2 MITIGATION SITES PRE- AND POST-MITIGATION

5.2.2.1 West Jordan Cove Mitigation Site – Pre-Mitigation

The West Jordan Cove Mitigation Site consists of salt marsh creation. No wetland services are currently provided in the creation area at this site. Existing adjacent salt marsh does provide wetland services, which are similar to the services that would be provided at the salt marsh creation area post-mitigation. ORWAP group service function and value scores for these adjacent wetlands generally rated as moderate to high, with the exception of the hydrologic group service and water quality group functions, which scored relatively low.

Some factors leading to the moderate to high scores include the high organic matter export function, which helps drive the aquatic foodweb, and the high score for carbon sequestration function. Hydrologic function score was very low due to the estuarine nature of the site, which results in low opportunity for associated water storage and delay function.

5.2.2.2 West Jordan Cove Mitigation Site – Post-Mitigation

Post-mitigation wetland services will have functions and values similar to the existing adjacent salt marsh, as described above. Expansion of salt marsh through creation will result in a net uplift to surrounding estuarine resources.

5.2.2.3 West Bridge Mitigation Site – Pre-Mitigation

The West Bridge Mitigation Site consists of creation and restoration activities. No wetland services are currently provided in the creation areas at this site. As a point of clarification, wetland services are currently provided in the restoration areas, but these wetlands will be impacted by the construction of a temporary haul route that will be in place for two to three years. Because of the duration of the temporary impact, these impacts are being permitted as permanent, and then the restoration of these same wetlands is being proposed as mitigation. Thus, at the time mitigation construction begins in the restoration areas, these areas will be upland, and will provide no wetland services. However, adjacent existing wetlands do provide wetland services. ORWAP group service function and value scores for these adjacent wetlands generally rated as moderate to high, with the exception of the hydrologic group service, which scored relatively low.

Some factors leading to the moderate to high scores include a combination of dominance of native plant species with limited presence of non-native species, presence of surface water with multiple depth classes, and moderate habitat structure. Factors limiting the scores include adjacency to an industrial access road and upland buffers dominated by non-native species.

5.2.2.4 West Bridge Site – Post-Mitigation

Post-mitigation wetland services will have functions and values similar to the existing adjacent wetlands, as described above. Additional uplift will be achieved by expanding the overall wetland size and including habitat features, including large wood. Detailed scoring of the West Bridge site post-mitigation is provided in Appendix B.

5.2.2.5 East Bridge Mitigation Site – Pre-Mitigation

The East Bridge Mitigation Site consists of restoration activities. As a point of clarification, wetland services are currently provided in the restoration areas, but these wetlands will be impacted by the construction of a temporary haul route that will be in place for two to three years. Because of the duration of the temporary impact, these impacts are being permitted as permanent, and then the restoration of these same wetlands is being proposed as mitigation. Thus, at the time mitigation construction begins in the restoration areas, these areas will be upland, and will provide no wetland services. However, adjacent existing wetlands do provide wetland services. ORWAP group service function and value scores for these adjacent wetlands generally rated as moderate to high, with the exception of the hydrologic group service, which scored relatively low.

Some factors leading to the moderate to high scores include a combination of dominance of native plant species with limited presence of non-native species, presence of surface water with multiple depth classes, and moderate habitat structure. Factors limiting the scores include adjacency to industrial areas.

5.2.2.6 East Bridge Site – Post-Mitigation

Post-mitigation wetland services will have functions and values similar to the existing adjacent wetlands, as described above. Additional uplift will be achieved by including habitat features, specifically large wood. Scoring of the East Bridge site post-mitigation is assumed to be the same as the site during pre-project conditions.

6. MAPS, DRAWINGS, AND CONSTRUCTION SPECIFICATIONS

6.1 SCALED SITE PLAN AND CROSS SECTIONS

Scaled site plans and cross sections for each mitigation site are provided in Appendix A. It is not practicable to provide construction access, staging areas, and certain other detailed information at this time for all mitigation sites. The applicant anticipates that providing this information will be a permit condition of approval required by the agencies.

6.2 CONSTRUCTION SCHEDULE

Construction is anticipated to begin in the end of third quarter of 2014. Resource impacts resulting from construction will begin in the fourth quarter of 2014, concurrent with the in-water work window. Mitigation construction will occur prior to (when feasible) or concurrently with resource impacts. Planting would occur during the dormant season (approximately November 1 to March 15).

6.3 SCHEMATIC OF WATER CONTROL STRUCTURES

Water control structures will not be utilized for the proposed mitigation.

6.4 PLANTINGS LISTS BY HGM/COWARDIN CLASS

Planting lists by HGM and Cowardin class are provided in Appendix A. Proposed species are those typically observed in adjacent and nearby wetlands situated in similar landscape and hydrologic settings.

7. MONITORING PLAN

7.1 PERFORMANCE STANDARDS

Performance standards for each objective are presented below. Project objectives have been restated for the sake of convenience. Vegetation success criteria are based on the DSL routine performance standards for vegetation provided in (DSL 2009), with minor modifications to suit site conditions.

7.1.1 West Jordan Cove Mitigation Site

Mitigation Goal 1: Create 1.67 acres of salt marsh wetlands at the West Jordan Cove Mitigation Site. To achieve this goal, the following objectives will be carried out:

- **Objective 1.1:** Create salt marsh wetland by excavating 1.67 acres of upland down to elevations suitable for supporting salt marsh (i.e., elevation of adjacent salt marsh). Average elevation will be between approximately 7 and 8 feet NAVD88 (North American Vertical Datum of 1988).

  ***Performance Standard**: An as-built survey will show that approximately 1.67 acres have been graded to match adjacent salt marsh elevations. Average elevation will be between approximately 7 and 8 feet (NAVD88).*

- **Objective 1.2:** Establish suitable hydrologic connection between created salt marsh and existing estuary. This will entail grading a fringe of existing salt marsh along the existing salt marsh/upland boundary to allow tidal connection between the estuary and the newly created salt marsh area. This will result in approximately 0.48 acres of temporary salt marsh vegetation loss that will be restored as described under Objective 1.3.

  ***Performance Standard**: An as-built survey will show that approximately 0.48 acres have been graded in order to provide suitable tidal connection to the creation area described in Objective 1.3.*

- **Objective 1.3:** Establishment and survival of a self-sustaining native salt marsh plant community similar to those in surrounding salt marsh. This will entail 1.67 and 0.48 acres of salt marsh community establishment within the creation area (Objective 1.1) and temporary disturbance area (Objective 1.2) respectively. A minimum of three different native salt marsh species shall occur within the mitigation site.

  ***Performance Standard:** Vegetation monitoring shall show that 2.15 acres of salt marsh dominated by native species has become established at the West Jordan Cove Mitigation site at the end of the five years monitoring period.*

  ***Performance Standard:** At the end of Year 5 [vegetation monitoring], the following percent cover objectives will be met, as determined through vegetation sample plots. Noxious weeds would include those species designated as "A" or "B" by the Oregon Department of Agriculture Noxious Weed Control Program, as well as non-native Spartina species.*

  1. *The cover of native herbaceous species is at least 80%.*
  2. *The cover of invasive species is no more than 20%.*
  3. *Bare substrate represents no more than 20% cover.*

4. *By Year 3 and thereafter, there are at least three different native species. To qualify, a species must have at least 5% average cover in the habitat class, and occur in at least 10% of the plots sampled.*
5. *Prevalence Index total for all strata is less than 3.0.*

- **Objective 1.4:** The mitigation area (2.15 acres), including creation area and temporary disturbance area, will meet all three wetland parameters.

  Performance Standard: *The mitigation area (2.15 acres) will meet all three wetland parameters as determine by a "Lite" delineation during the spring of a year when precipitation has been near normal, after Year 4 and before submission of the final monitoring report.*

7.1.2 West Bridge Mitigation Site

Mitigation Goal 1: Create, enhance, and restore 1.19 acres, 0.38 acres, and 0.46 acres, respectively, of scrub-shrub and emergent wetlands at the West Bridge Mitigation Site. To achieve this goal, the following objectives will be carried out:

- **Objective 2.1:** Create wetland by excavating 1.19 acres of upland sand dune down to elevations suitable for wetland establishment (i.e., elevation of adjacent wetlands).

  Performance Standard: *An as-built survey will show that approximately 1.19 acres have been graded to match adjacent wetland elevations.*

- **Objective 2.2:** Enhance wetland by excavating 0.38 acres down to elevations that provide more consistent wetland hydrology conditions.

Performance Standard: *An as-built survey will show that approximately 0.38 acre has been graded to match adjacent wetland elevations that support consistent wetland hydrology conditions.*

- **Objective 2.3**: Restore wetland by excavating 0.46 acre of upland sandy fill material (i.e., Project-related construction haul road) down to elevations suitable for wetland establishment (i.e., elevation of adjacent wetlands).

  Performance Standard: *An as-built survey will show that approximately 0.46 acre has been graded to match adjacent wetland elevations.*

- **Objective 2.4:** Establishment and survival of robust, self-sustaining, and diverse native wetland plant communities similar to those in surrounding wetlands, so that approximately 1.19 acres of the planted mitigation site consists of scrub-shrub communities and 0.84 acre consists of emergent communities.

  Performance Standard: *At the end of Year 5 the following percent cover objectives will be met, as determined through vegetation sample plots. Noxious weeds would include those species designated as "A" or "B" by the Oregon Department of Agriculture Noxious Weed Control Program.*

  1. *The cover of native herbaceous species is at least 60%.*

2. *The cover of invasive herbaceous species is no more than 10%. After the site has matured to the stage when desirable canopy species reach 50% cover, the cover of invasive understory species may increase but may not exceed 30%.*
3. *The cover of invasive shrub or tree species is no more than 10%.*
4. *Bare substrate represents no more than 20% cover.*
5. *By Year 3 and thereafter, there are at least six different native species. To qualify, a species must have at least 5% average cover in the habitat class, and occur in at least 10% of the plots sampled.*
6. *Prevalence Index total for all strata is less than 3.0.*
7. *The density of woody vegetation is at least 1,600 native plants (shrubs) and/or stems (trees) per acre, or the cover of native woody vegetation on the site is at least 50% in the scrub-shrub community. Native species volunteering on the site may be included; dead plants do not count. Woody vegetation standards should be met for two successive years without irrigation.*

- **Objective 2.5:** Improve habitat structure by placing large wood (downed logs and snags) to serve as habitat and nurse log potential.

  Performance Standard: *A minimum of four pieces of wood will be installed on-site.*

- **Objective 2.6:** The mitigation area (2.03 acres) will continue to meet all three wetland parameters (i.e., soils, vegetation, and hydrology), as defined in the *Corps of Engineers Wetland Delineation Manual*, 1987.

  Performance Standard: *The mitigation area (2.03 acres) will meet all three wetland parameters as determined by a "Lite" delineation during spring of a year when precipitation has been near normal, after Year 4 and before submission of the final monitoring report.*

7.1.3 East Bridge Mitigation Site

Mitigation Goal 3: Restore 0.96 acres of palustrine aquatic bed and palustrine unconsolidated bottom wetland at the East Bridge Mitigation Site. To achieve this goal, the following objectives will be carried out:

- **Objective 3.1**: Restore wetland by excavating 0.96 acres of upland sandy fill material (i.e., project-related construction haul road) down to pre-haul road elevations.

  Performance Standard: *An as-built survey will show that approximately 0.96 acres have been graded to match pre-haul road elevations.*

- **Objective 3.2:** Establishment and survival of self-sustaining wetland plant community dominated by yellow pond lily (*Nuphar polysepalum*), approximately 0.81 acres. Approximately 0.15 acres of the site may remain as open water, which is consistent with pre-project conditions.

  Performance Standard: *At the end of Year 5 the following percent cover objectives will be met, as determined through vegetation sample plots. Noxious weeds would include those species designated as "A" or "B" by the Oregon Department of Agriculture Noxious Weed Control Program, excluding any submerged aquatic invasives found in adjacent portions of Wetland E.*

1. *The cover of native herbaceous species [in the vegetated portions of the site, approximately 0.81 acres] is at least 60%.*
2. *The cover of invasive herbaceous species is no more than 20%.*
3. *The cover of invasive shrub or tree species is no more than 10%.*
4. *Prevalence Index total for all strata is less than 3.0.*

- **Objective 3.3:** Improve habitat structure by placing large wood (downed logs) to serve as habitat.

  Performance Standard: *A minimum of four pieces of wood will be installed on-site.*

- **Objective 3.4:** The mitigation area will continue to meet all three wetland parameters (i.e., soils, vegetation, and hydrology), as defined in the *Corps of Engineers Wetland Delineation Manual*, 1987.

  Performance Standard: *The mitigation area will meet all three wetland parameters as determined by a "Lite" delineation during spring of a year when precipitation has been near normal, after Year 4 and before submission of the final monitoring report.*

7.2 MONITORING PLAN

The purpose of the mitigation monitoring requirement is to provide information for the agency to: (a) determine whether the mitigation project complies with the conditions of the authorization; (b) evaluate whether the mitigation project meets the goals, objectives, and performance standards of the mitigation plan; and (c) provide information for removal-fill program monitoring.

JCEP L.P. will monitor the mitigation sites and provide a post-construction report and annual written monitoring report(s) to the agencies. Monitoring report(s) will include all data necessary to document compliance with goals, objectives, and performance standards associated with the CWM. This data may include photographs, topographic surveys, plant survival data, hydrologic data, and other information as required to demonstrate compliance.

The report(s) shall include the following sections:

a. Introduction
b. Goals, objectives, and performance standards
c. Methods
d. Results
e. Summary and recommendations
f. Figures
g. Appendices with data and photographs

7.2.1 Schedule

Monitoring shall be conducted for five years unless otherwise specified by the aagencies.

7.2.2 Methods

Monitoring of grading and structural components (i.e., large wood installation) will occur during a post-construction site review and as-built survey for grading activities. This will occur shortly after completion of the proposed work. Site conditions will be documented with photographs and summarized in a report or technical memorandum (i.e., as-built report). Post-construction monitoring will occur for a period of five years.

Vegetation monitoring methods will be based on DSL Routine Monitoring Guidance for Vegetation (DSL 2009) or the most current DSL guidance document available when monitoring first starts. Methods are as follows: Monitoring at the mitigation site will begin in the first complete growing season upon installation of plant materials and seeding. Semi-annual visits (late spring and early fall) will occur in the first two monitoring years, and annual visits (early fall) will occur thereafter. Field measurements will be taken and compared against the performance standards to evaluate the success of the CWM.

7.2.3 Plot and Photo Documentation Locations

Sample plot and photo point locations are shown on the planting plan design sheet for each mitigation site, provided in Appendix A.

7.3 CONTINGENCY/ADAPTIVE MANAGEMENT PLAN

Contingency plans will be implemented should the performance standards not be met in any monitoring year. The nature of the contingency plan will depend on the problems that arise, as anticipated below.

7.3.1.1 Plant Establishment

In general, the contingency plan for low plant survival would be to first ascertain the reason for the mortality to the extent possible and then take actions appropriate to the cause of mortality. If certain species have high mortality, growing conditions including hydrology and exposure will be reviewed, and a better-adapted species could be identified and substituted. If excessive browsing or predation prevents meeting the performance standards, additional browse protection will be installed.

7.3.1.2 Weed Control

Weed control needs will be assessed during the annual monitoring. Weed control efforts will be triggered if percent cover by invasive species reaches 10% or possibly lower if the monitoring ecologist determines that control is necessary in order to achieve the success criteria by the end of the proposed monitoring period. Weed control may consist of a combination of hand pulling and spot application of herbicide suitable for use in/near aquatic resources.

Control of invasive submerged aquatic plant species such as water milfoil (*Myriophyllum* sp.) is not proposed due to the likely presence of these species in portions of the wetland located outside of the mitigation site foot print.

8. LONG-TERM PROTECTION AND FINANCIAL SECURITY INSTRUMENTS

8.1 PROTECTION INSTRUMENT

JCEP L.P. will prepare a deed restriction to ensure protection of the mitigation sites. A sample deed restriction including language describing DSL and other agency access as appropriate for compliance monitoring is provided in Appendix C.

8.2 PROPOSED FINANCIAL SECURITY INSTRUMENT

JCEP L.P. will provide a surety bond specifically for the purpose of guaranteeing CWM site performance. The bond amount will be based on guidelines in Oregon Administrative Rule (OAR) 141-085-700(6). Because there is not a mitigation bank within a service area covering the project's removal-fill site, JCEP L.P. will post a bond amount equal to the current cost of payment in-lieu mitigation, and based on the project's amount of removal-fill acreage. Based on the most recent published DSL calculation (July 1, 2013), the rate of payment for Payment In-lieu mitigation is $75,000 per acre. The project proposes to permanently impact 10.19 acres of estuarine and freshwater wetlands; therefore, the proposed bond amount is estimated to be$764,250.

In addition, JCEP L.P. will provide personal guarantees or other appropriate sureties (e.g., a letter of credit from the managing partner of the Limited Partnership or its parent company) that secures compliance with mitigation obligations and promises to make all reasonable efforts to maintain the business entity in an active status until all mitigation obligations have been satisfied.

8.3 LONG-TERM MAINTENANCE PLAN (POST-MONITORING PERIOD)

8.3.1 Anticipated Ownership

The West Jordan Cove Mitigation Site, East Bridge Mitigation Site, and West Bridge Mitigation Site will continue to be owned by Fort Chicago LNG II U.S. L.P., a wholly owned and controlled subsidiary of JCEP L.P.'s parent company, Veresen, Inc. JCEP L.P. will be responsible for the construction and long-term success of the mitigation sites.

8.3.2 Anticipated Long-term Maintenance Actions

Long-term maintenance actions would take effect after the permit monitoring period has ended, which assumes that performance criteria have been met. Long-term maintenance actions may include the following, on an as-needed basis:

- Invasive/noxious weed control
- Garbage/debris removal
- Installation of protective signage and/or other deterrents if vandalism or inappropriate activities occur
- Installation of new native plantings and/or habitat features

A long-term management plan, which incorporates principals of adaptive management, will be prepared as a permit condition of approval. The plan will discuss long term management goals, general monitoring and maintenance guidance, reporting requirements, and roles and responsibilities. In line with the principals of adaptive management, the long-term management plan will be considered a living document that may be revised over time in an effort to best serve conservation needs and on the ground realities.

8.3.3 Entity Responsible for Maintenance

JCEP L.P. has entered negotiations with the Coos Watershed Association (CWA), a local non-profit organization established in 1993 meeting the requirements of ORS 271.715(3)(b) to provide long-term management and maintenance of all mitigation sites associated with the Jordan Cove Energy Project (including estuarine mitigation proposed at Kentuck Slough and authorized via Permit 37712-RF, and freshwater mitigation proposed by Pacific Connector Gas Pipeline L.P. at Kentuck Slough via Application 54484-RF). CWA would also provide similar services during the permit monitoring period. JCEP L.P. would endow CWA to provide these services upon substantial completion of mitigation construction through the life of the Projects (estimated approximately 30 years post construction). If negotiations with CWA fail, JCEP L.P. would create and endow a third party entity meeting the requirements of ORS 271.715(3)(b) to provide management and maintenance services for the mitigation projects from substantial completion of mitigation construction through the life of the Projects.

8.3.4 Anticipated Funding Source

JCEP L.P. will create an endowment to fund CWA and long-term maintenance of the mitigation sites.

9. PREPARERS AND CONTRIBUTORS

Ethan Rosenthal, DEA Ecologist, authored this report. Brynn Reimann, DEA Landscape Architect, and Justin DeMello, DEA Designer, developed site design drawings. Sean Sullivan, DEA Senior Project Manager, provided the quality review. Dawn Afman, DEA Project Assistant, prepared the report drafts. Sara Gilbert, DEA GIS Specialist, provided non-design graphics.

10. REFERENCES

David Evans and Associates, Inc. (DEA). 2014. Jordan Cove Energy Project wetland delineation report, West Jordan Cove Mitigation Site. March 2014.

DSL (Oregon Department of State Lands). 2012. Chapter 8: Compensatory Mitigation Planning for Wetlands and Tidal Waters.

DSL. 2009. Routine Monitoring Guidance for Vegetation. A Companion Document to the Compensatory Mitigation for Non-Tidal Wetlands and Tidal Waters and Compensatory Non-Wetland Mitigation. September 23, 2009. Interim review draft version 1.0.

DSL, USACE, and EPA. 2010. Guidance for using the Oregon Rapid Wetland Assessment Protocol (ORWAP) in the State and Federal Permit Programs.

Oregon Department of Fish and Wildlife (ODFW). 2006. The Oregon Conservation Strategy. Oregon Department of Fish and Wildlife, Salem, Oregon.

Personal Communications:

Cornu, Craig. South Slough National Estuarine Research Reserve (SSNER). Personal communication with Ethan Rosenthal (DEA Ecologist). February 24, 2014.

11. APPENDICES

APPENDIX A – FIGURES

Figure 1: Vicinity Maps of Impact and Mitigation Sites

Sheet 1 – Part A –Permanently Impacted Freshwater Wetlands

Sheet 2 – Part A – Freshwater CWM Sites

Figure 2: West Jordan Cove Mitigation Site Design Sheets

Sheet A2-1 – West Jordan Cove Mitigation Site Existing Conditions

Sheet A2-2A – West Jordan Cove Mitigation Site Plan

Sheet A2-2B – West Jordan Cove Mitigation Site Cross-Sections

Sheet A2-3 – West Jordan Cove Mitigation Site Planting List

Figure 3: West Bridge Mitigation Site Design Sheets

Sheet A3-1 – West Bridge Mitigation Site Existing Conditions

Sheet A3-1A – West Bridge Mitigation Site Intermediate Conditions

Sheet A3-2 – West Bridge Mitigation Site Conceptual Grading Plan

Sheet A3-3 – West Bridge Mitigation Site Cross-Sections

Sheet A3-4 – West Bridge Mitigation Site Conceptual Planting Plan

Sheet A3-5 – West Bridge Mitigation Planting List

Figure 4: East Bridge Mitigation Site Design Sheets

Sheet A4-1 – East Bridge Mitigation Site Existing Conditions

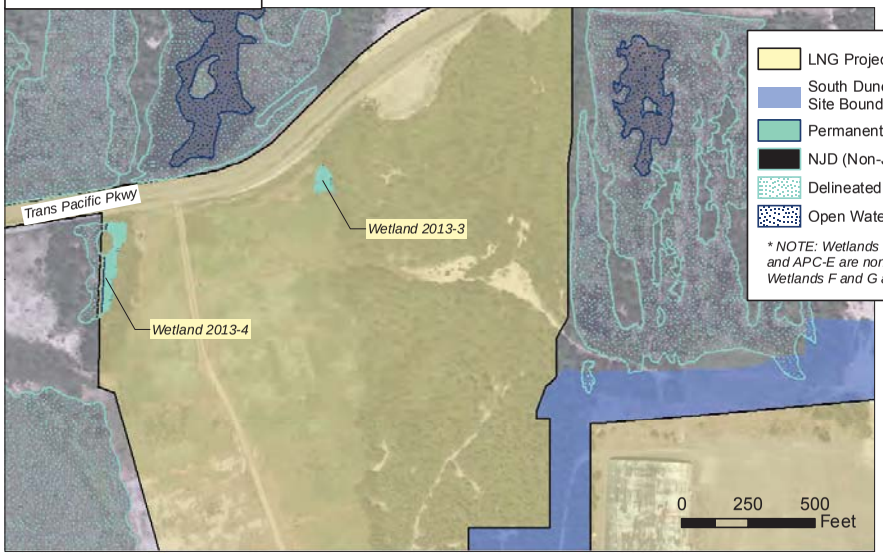
Sheet A4-2 – East Bridge Mitigation Site Intermediate Conditions

Sheet A4-3 – East Bridge Mitigation Conceptual Grading and Planting Plan

Sheet A4-4 – East Bridge Mitigation Grading Cross-Sections

Figure 5: 1950’s Aerial Photograph of Jordan Cove

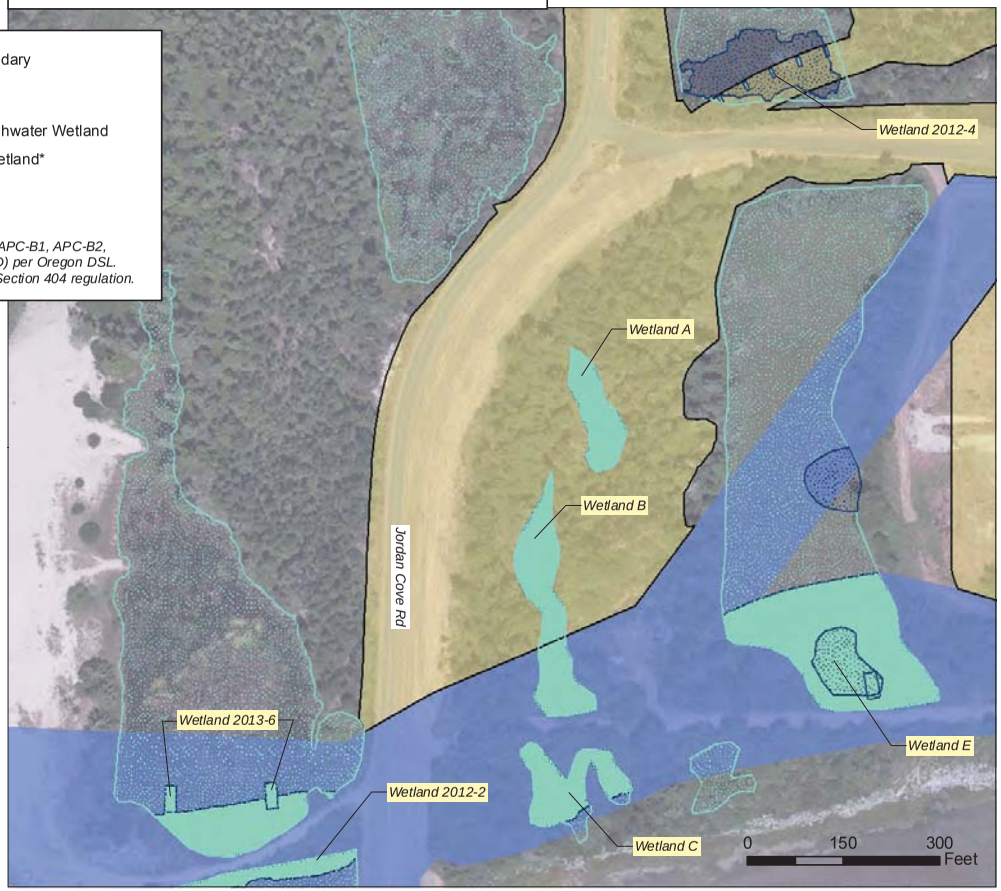
Wetlands 2013-3, -4



LNG Project Footprint Boundary
South Dunes Power Plant Site Boundary
Permanently Impacted Freshwater Wetland
NJD (Non-Jurisdictional) Wetland*
Delineated Wetland
Open Water

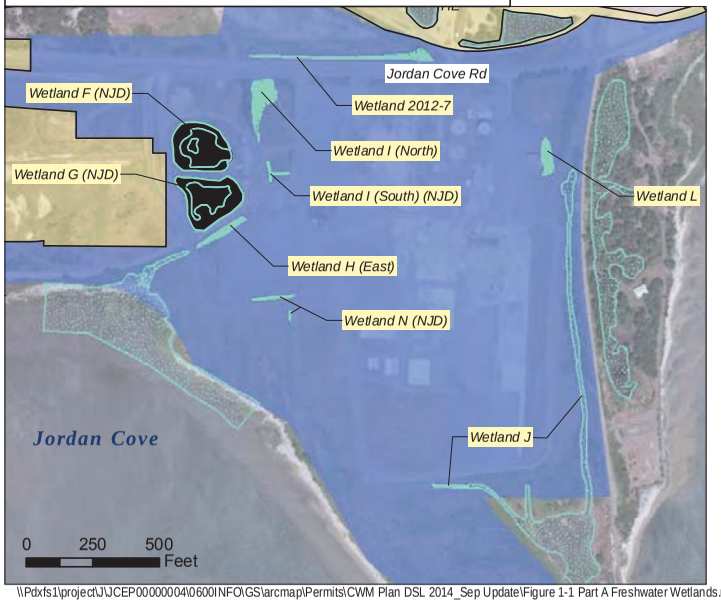
** NOTE: Wetlands F, G, I (South), N, APC-B1, APC-B2, and APC-E are non-jurisdictional (NJD) per Oregon DSL. Wetlands F and G are not subject to Section 404 regulation.*

Wetlands 2012-2, 2012-4, 2013-6, A, B, C, E

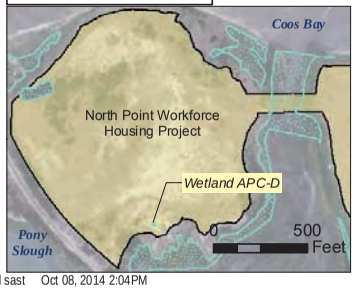


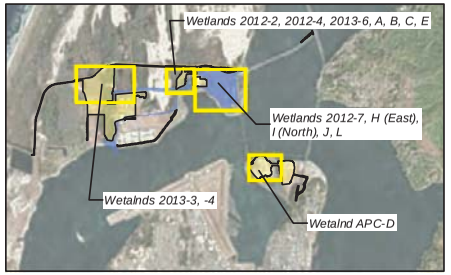
N

Wetlands 2012-7, H (East), I (North), J, L



Wetland APC-D





DAVID EVANS AND ASSOCIATES, INC.
2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

JORDAN COVE LNG TERMINAL PROJECT

Figure 1, Sheet 1

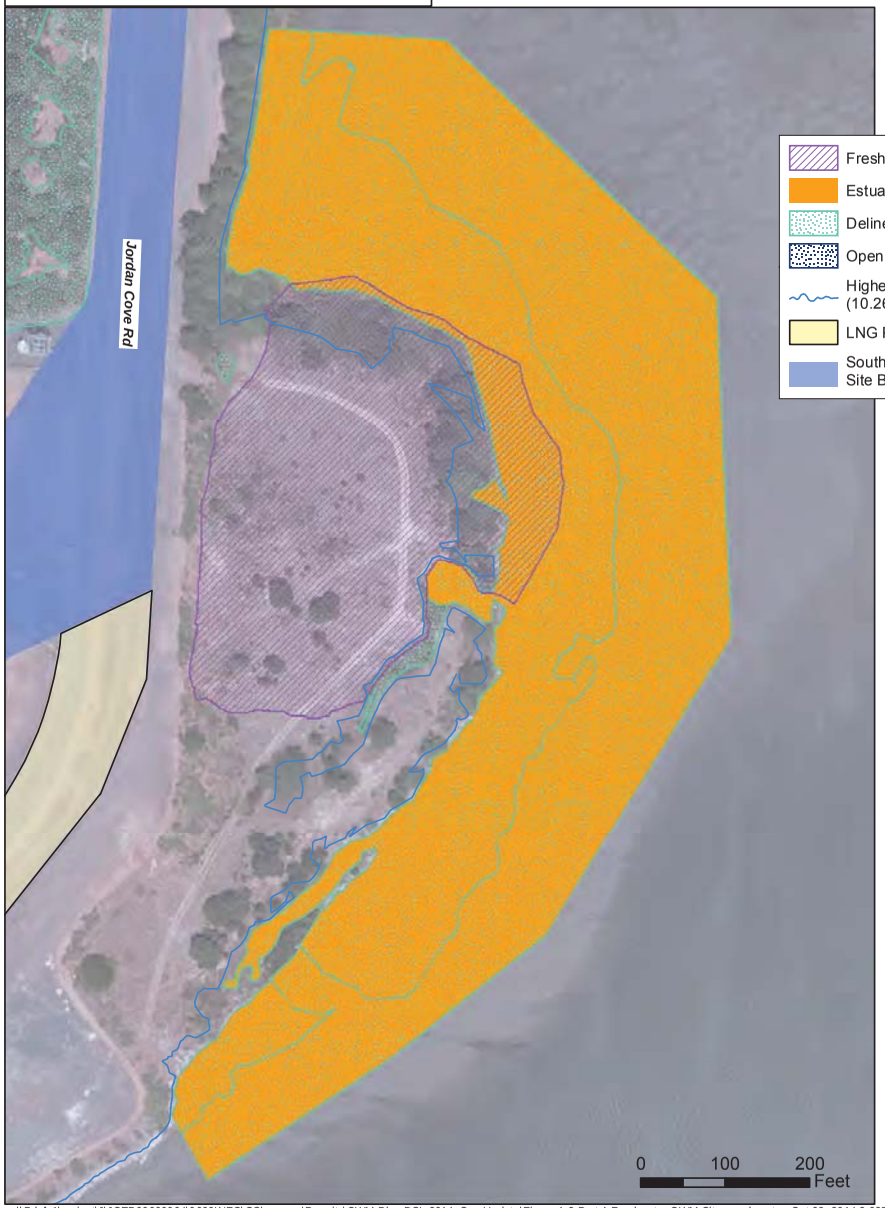
COOS COUNTY

Compensatory Wetland Mitigation Plan

Part A - Permanently Impacted Freshwater Wetlands

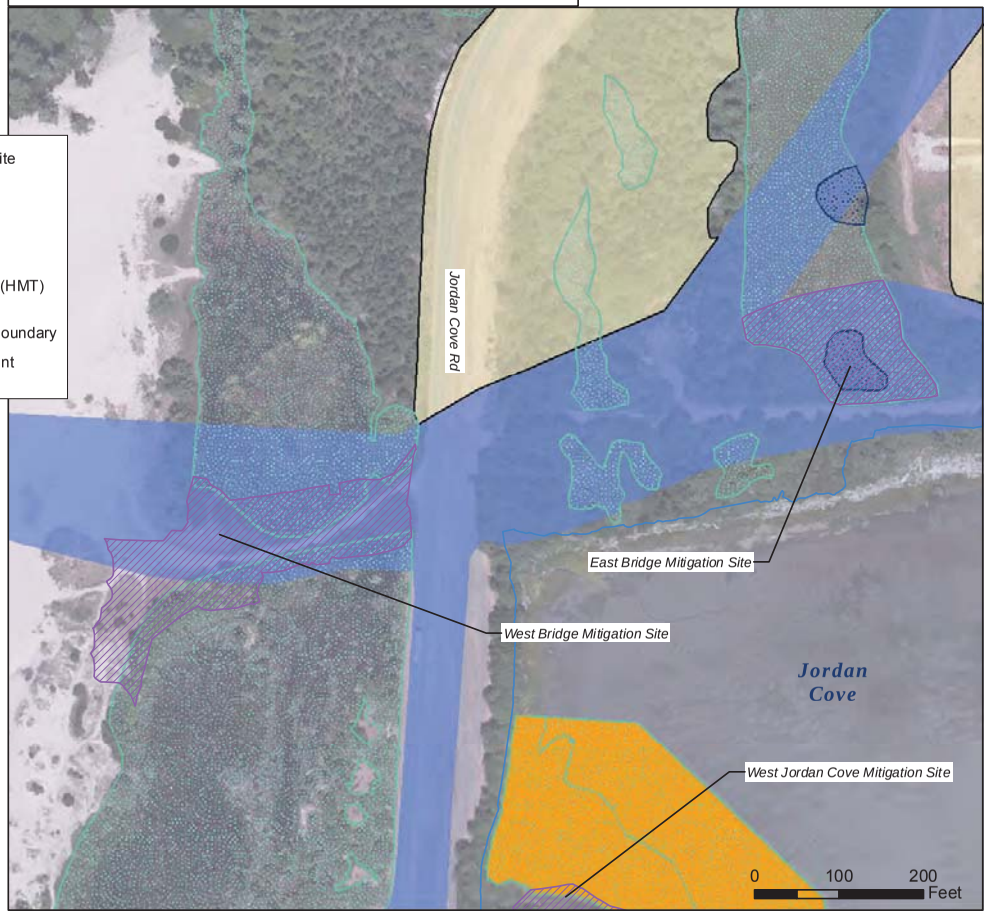
\\Pdxfs1\project\J\JCEP00000004\0600INFO\GS\arcmap\Permits\CWM Plan DSL 2014_Sep Update\Figure 1-1 Part A Freshwater Wetlands.mxd sast Oct 08, 2014 2:04PM

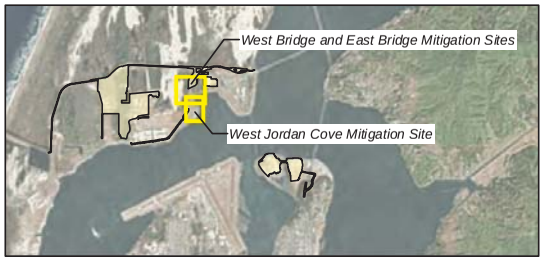
West Jordan Cove Mitigation Site



\\Pdxfs1\project\J\JCEP00000004\0600INFO\GS\arcmap\Permits\CWM Plan DSL 2014_Sep Update\Figure 1-2 Part A Freshwater CWM Sites.mxd sast Oct 08, 2014 2:03PM

West Bridge and East Bridge Mitigation Sites





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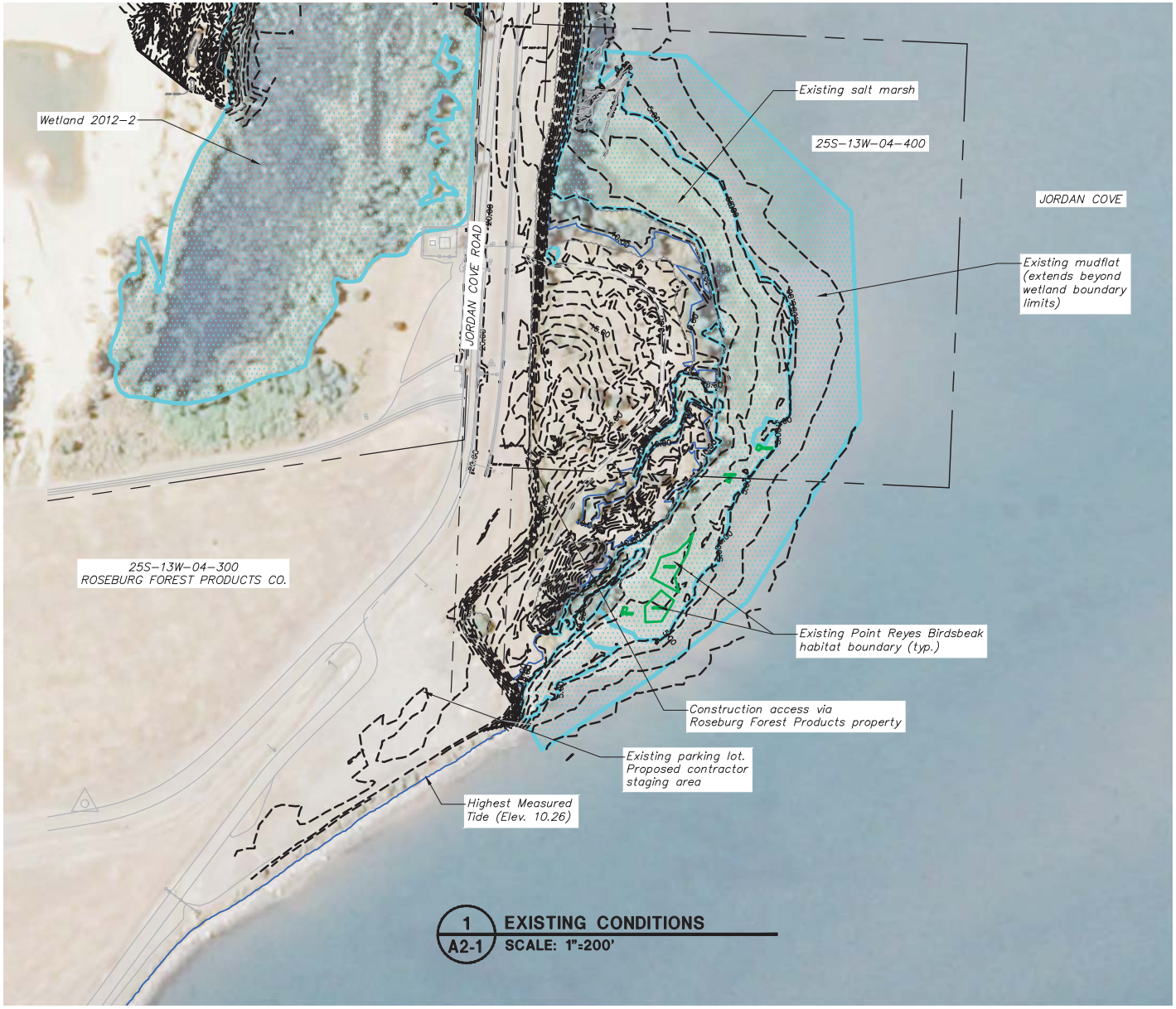
JORDAN COVE LNG TERMINAL PROJECT

Figure 1, Sheet 2

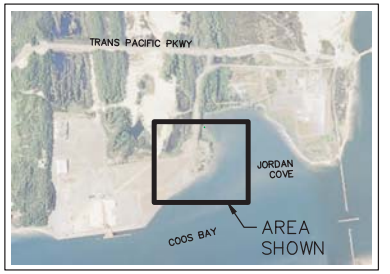
COOS COUNTY

Compensatory Wetland Mitigation Plan

Part A - Freshwater CWM Sites



1 / A2-1 **EXISTING CONDITIONS**
SCALE: 1"=200'



2 / A2-1 **KEY MAP**
SCALE: 1"=3000'

LEGEND:

- *Highest Measured Tide (HMT)*
- *Wetland boundary*
- *Existing contour*
- *Property line*

0 100 200 400

NOTES:

1. *Contours and HMT shown are from professional land survey performed 2-17-14 through 2-24-14. (NAVD88)*
2. *Utility information not available.*

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JORDAN COVE LNG TERMINAL PROJECT AND SOUTH DUNES POWER PLANT PROJECT

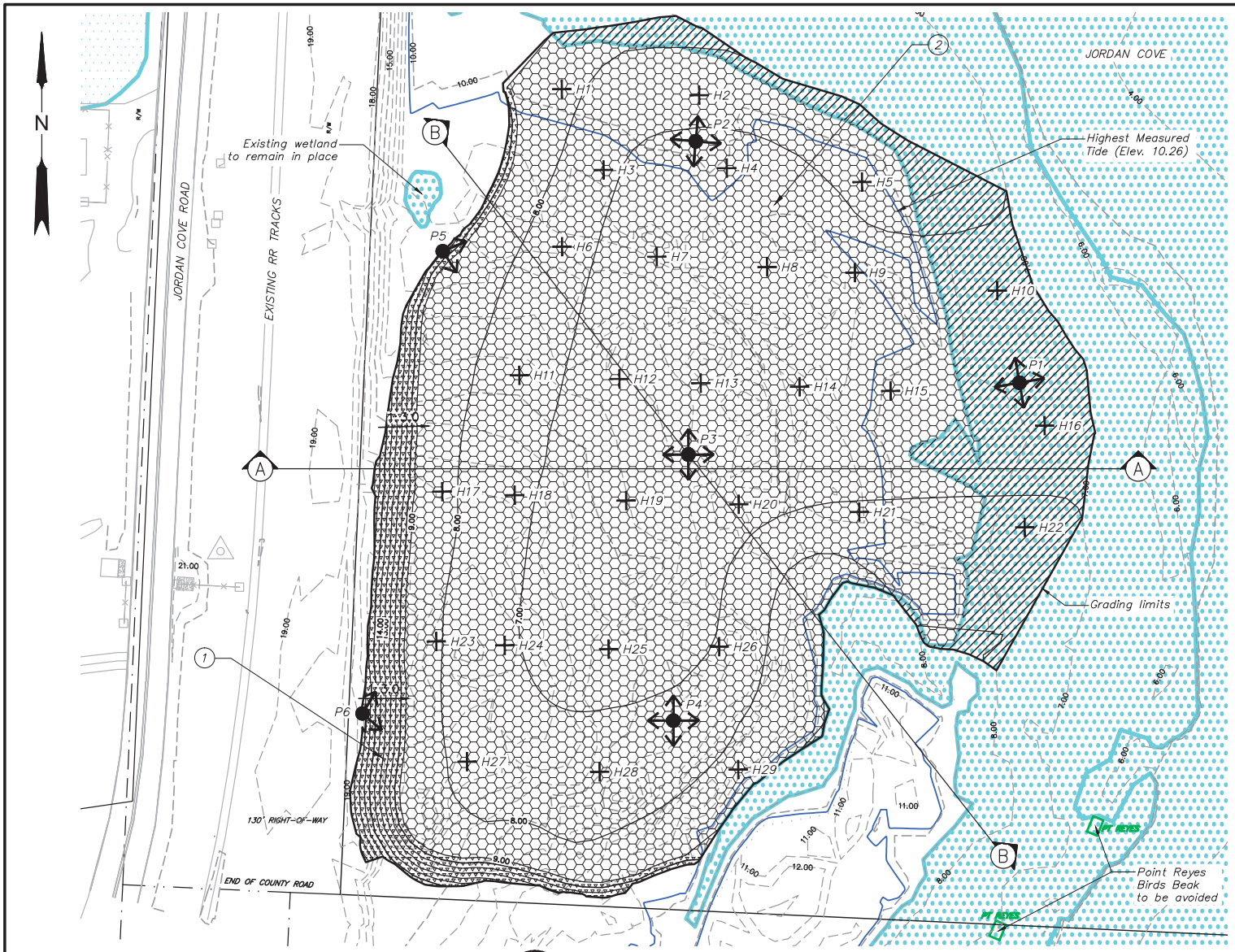
COOS COUNTY

Reviewed By – SPS
Designed By – JND
Drafted By – JND

WEST JORDAN COVE MITIGATION SITE - EXISTING CONDITIONS

SHEET NO. A2-1

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1 A2-2A **MITIGATION PLAN**
SCALE: 1"=60'

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CONSTRUCTION NOTES:

1. Install Upland Mix to slopes excavated during grading activities, above elev. 9 and extending to limits of disturbance
2. Salt Marsh Community to self establish. See Planting List for contingency plantings.

LEGEND:

- Created Salt Marsh Community extents (2.92 acres)
- Temporary disturbed Salt Marsh (0.48 acres)
- Upland Community extents (0.23 acres)

LEGEND:

- Wetland boundary
- Existing contour
- Property line
- Herbaceous Plot
- Photo Point and Direction

0 30 60 120

NOTES:

1. Contours and HMT shown are from professional land survey performed 2-17-14 through 2-24-14. (NAVD88)
2. Utility information not available.

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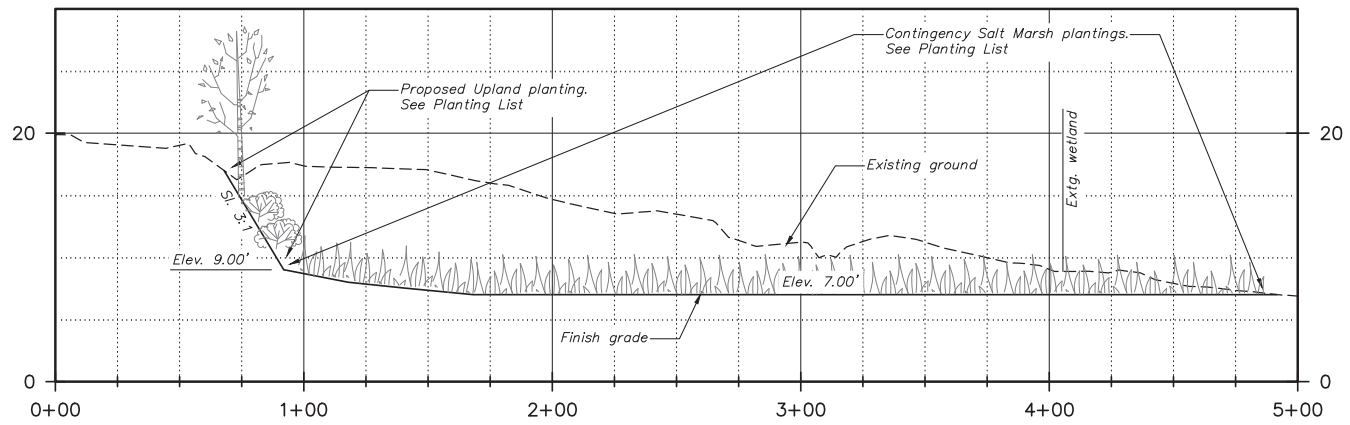
JORDAN COVE LNG TERMINAL PROJECT AND SOUTH DUNES POWER PLANT PROJECT

COOS COUNTY

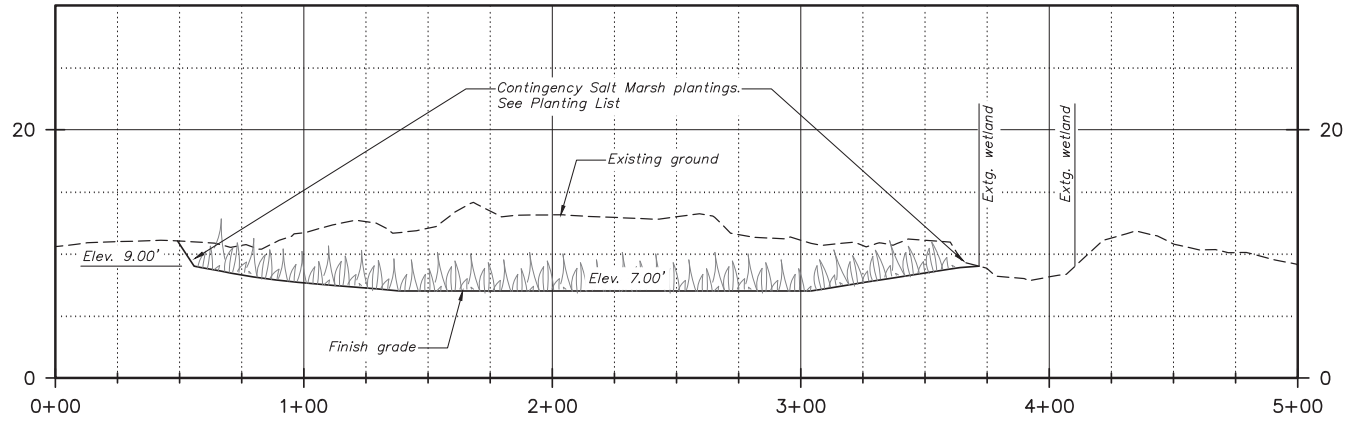
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WEST JORDAN COVE MITIGATION SITE - PLAN

SHEET NO. A2-2A



1 / A2-2B **SECTION A-A**
SCALE: H: 1"=50' V: 1"=10'



2 / A2-2B **SECTION B-B**
SCALE: H: 1"=50' V: 1"=10'

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WEST JORDAN COVE MITIGATION SITE - CROSS SECTIONS

SHEET NO. A2–2B

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WEST JORDAN COVE MITIGATION SITE PLANTING LIST:

	Botanical name	Common name	Indicator Status	Condition
Proposed Upland Plantings				
	*Pinus contorta*	Shore pine	FAC	Bare root
	Picea sitchensis	Sitka spruce	FAC	Bare root
	Alnus rubra	Red alder	FAC	Bare root
	Poa macrantha	Seashore bluegrass	FACU	Seed mix
	Fragaria chiloensis	Beach strawberry	UPL	
	Anaphalis margaritacea	Western pearly everlasting	UPL	
	Lupinus littoralis	Seashore lupine	UPL	
	Cardionema ramosissimum	Sandcarpet	UPL	
	Leymus mallis	American dunegrass	UPL	

NOTE: Seed mix shall be applied to cover 100% of the upland planting area site. Contractor shall evenly mix and space woody species in quantities sufficient to meet the stem density criteria provided in the CWM plan.

	Botanical name	Common name	Indicator Status	Condition
Contingency Salt Marsh Plantings				
	*Hordeum brachyantherum*	Meadow barley	FACW	Seed mix
	Deschampsia cespitosa	Tufted hairgrass	FACW	
	Grindelia integrifolia	Gumweed	FACW	
	Carex lyngbyei	Lyngby sedge	OBL	
	Distichlis spicata	Salt grass	FACW	

NOTE: Salt marsh vegetation to establish via natural recruitment. Contingency plantings to occur if deemed necessary by end of second year of monitoring.

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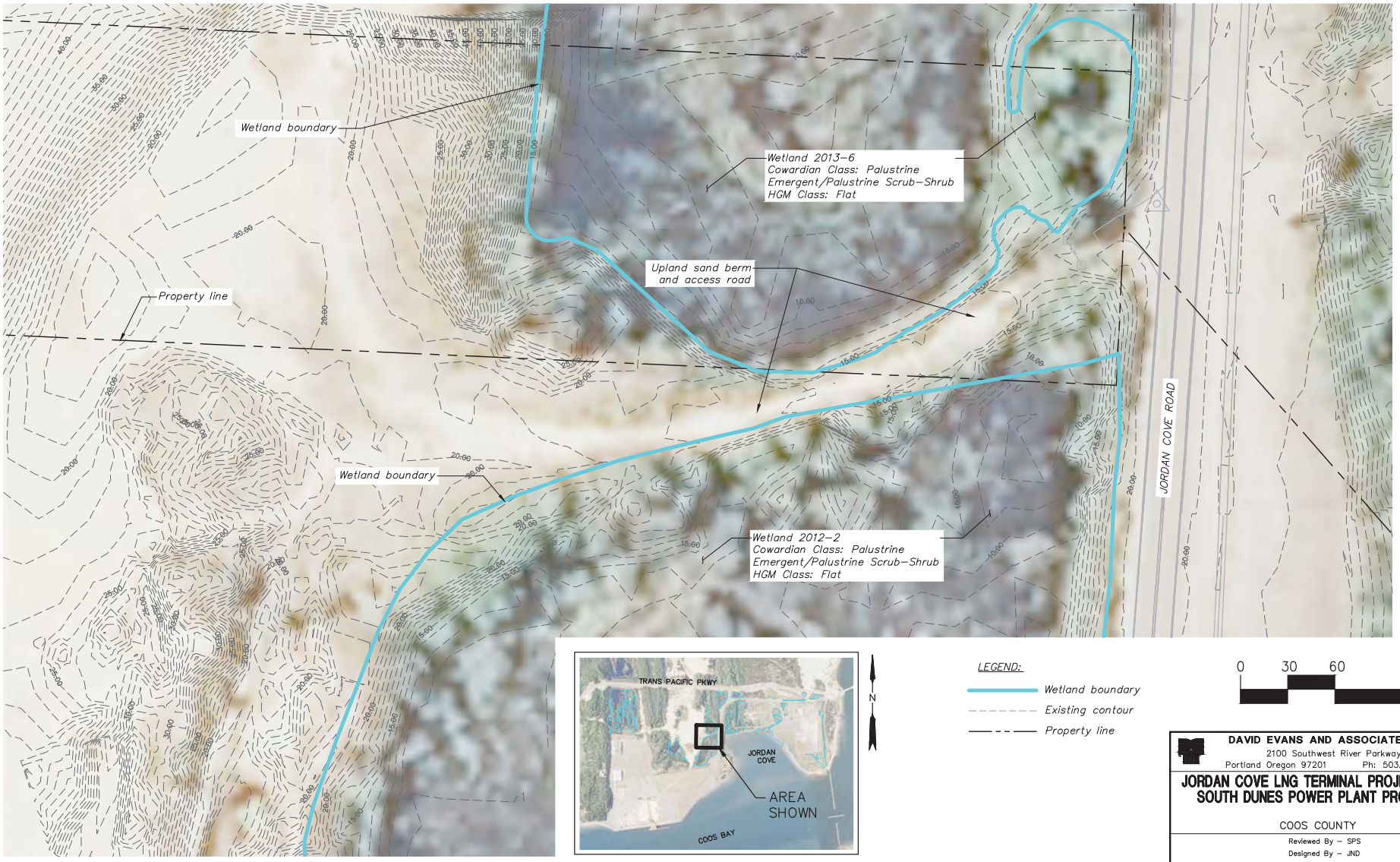
JORDAN COVE LNG TERMINAL PROJECT AND SOUTH DUNES POWER PLANT PROJECT

COOS COUNTY

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Designed By – JND
Drafted By – JND

WEST JORDAN COVE MITIGATION SITE - PLANTING LIST

SHEET NO. A2–3



LEGEND:

- Wetland boundary
- Existing contour
- Property line

0 30 60 120

1 / A3-1 EXISTING CONDITIONS
SCALE: 1"=60'

2 / A3-1 KEY MAP
SCALE: 1"=3000'

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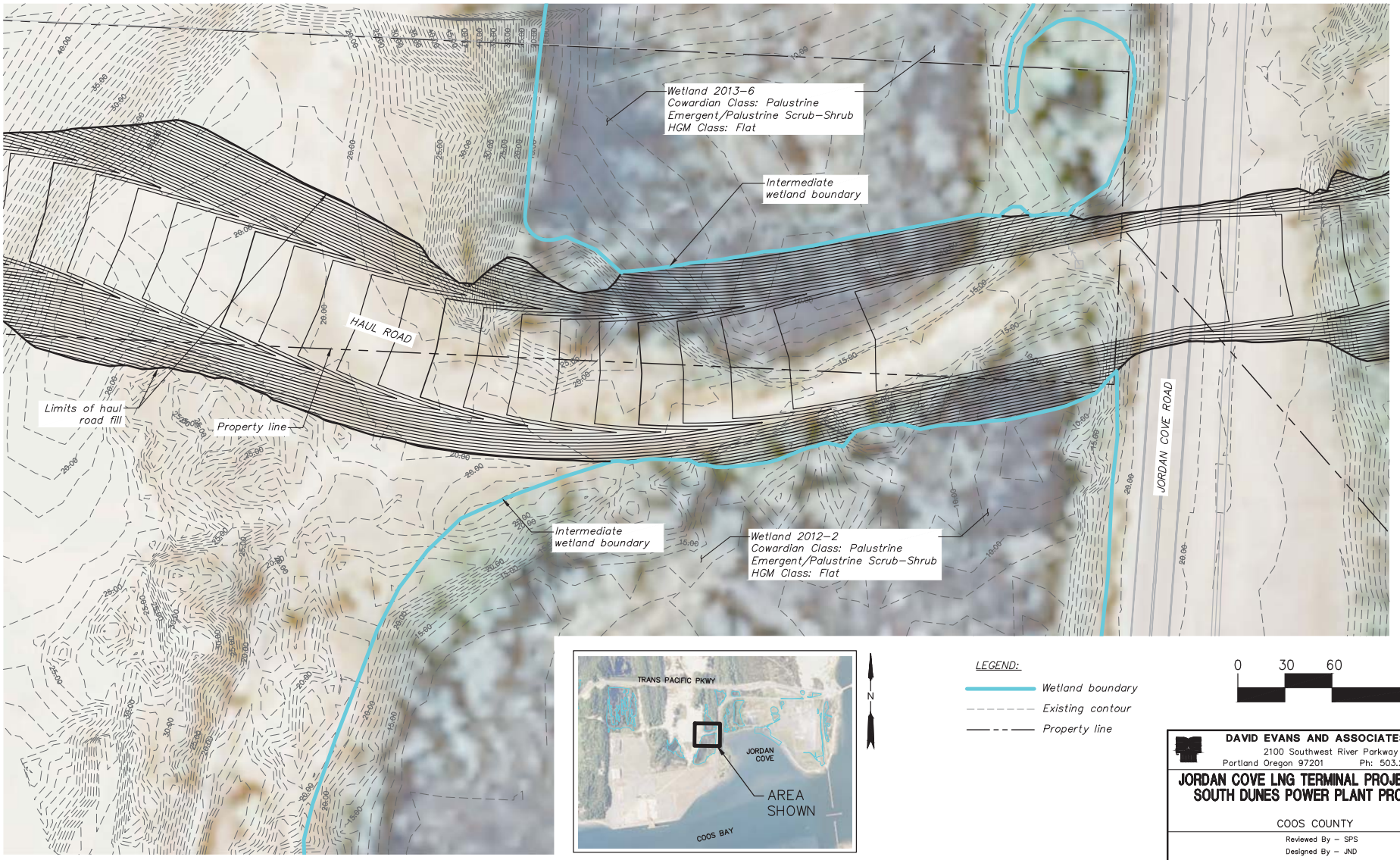
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WEST BRIDGE MITIGATION SITE EXISTING CONDITIONS

SHEET NO. A3–1

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1 A3-1 **EXISTING CONDITIONS**
SCALE: 1"=60'

2 A3-1 **KEY MAP**
SCALE: 1"=3000'

LEGEND:
- *Wetland boundary*
- *Existing contour*
- *Property line*

0 30 60 120

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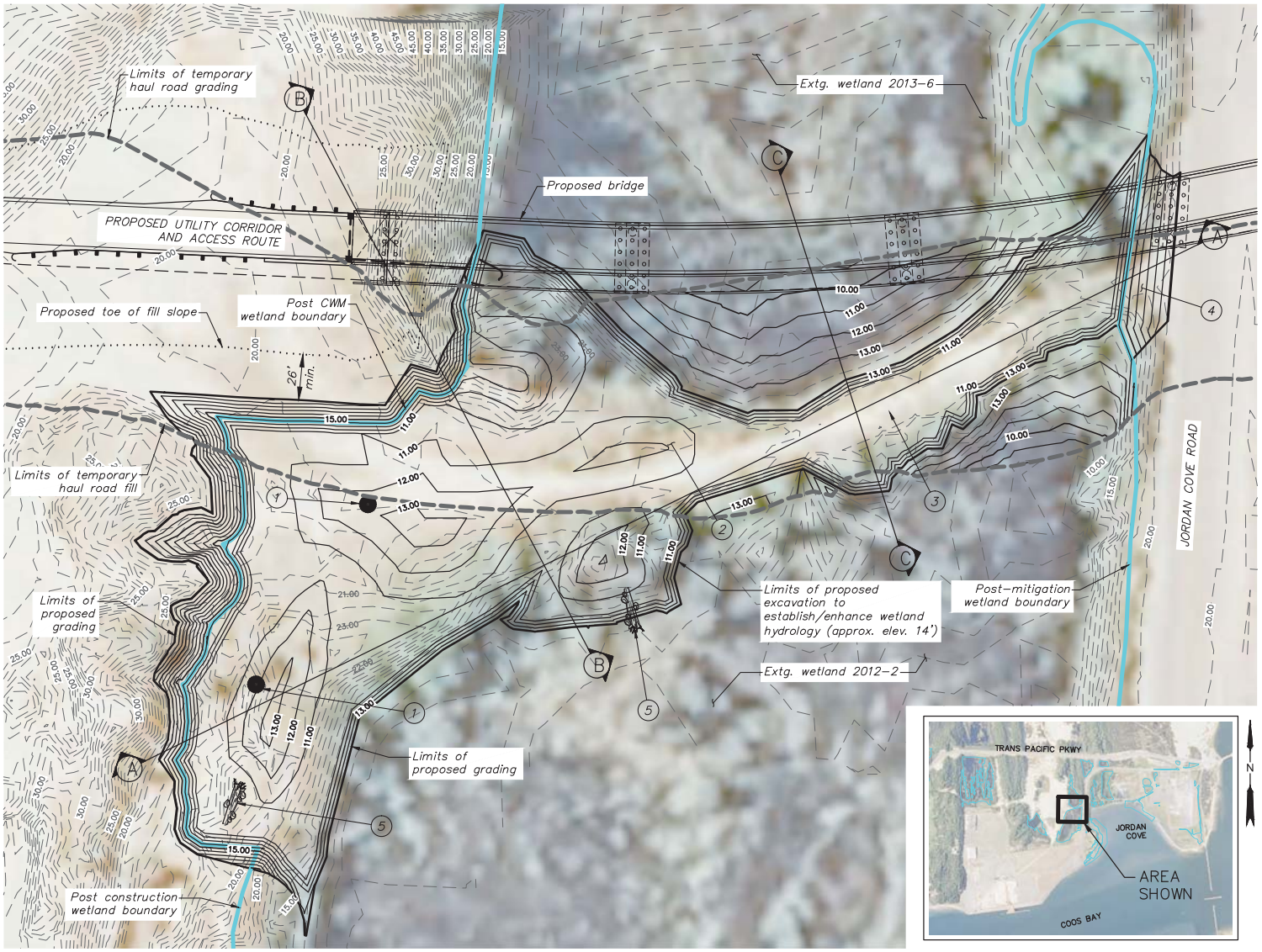
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Drafted By – JND

WEST BRIDGE MITIGATION SITE INTERMEDIATE CONDITIONS

SHEET NO. A3–1A

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CONSTRUCTION NOTES:

1. Install wildlife snag (2)
2. Excavate material between existing wetlands.
3. Remove vegetation as required to remove temporary haul road and berm as directed in the field.
4. Construct roadway fill slope.
5. Install large woody debris (2)

Wetland Mitigation Areas	Acres	Credits
Upland to Wetland (Creation)	1.19	0.79
Previously Wetland to Wetland (Restoration)	0.46	0.46
Current Wetland to Wetland (Enhancement)	0.38	0.13

LEGEND:

- Existing contour (1' interval)
- Proposed contour (1' interval)

0 30 60 120

1 A3-2 CONCEPTUAL MITIGATION GRADING PLAN
SCALE: 1"=60'

2 A3-2 KEY MAP
SCALE: 1"=3000'

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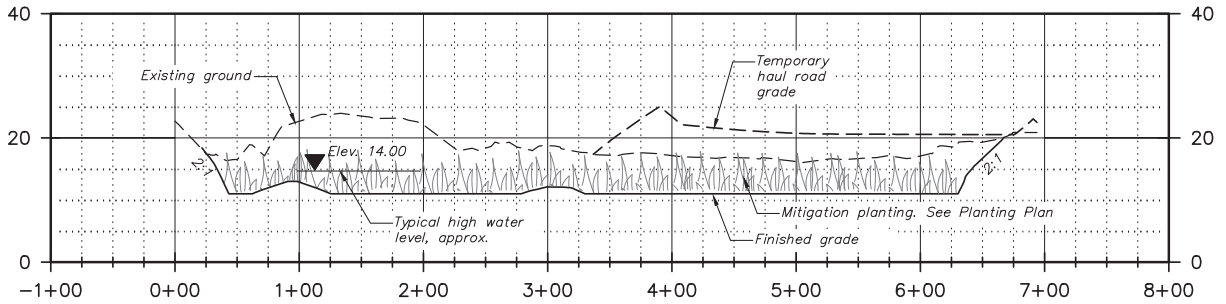
COOS COUNTY

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Drafted By – JND

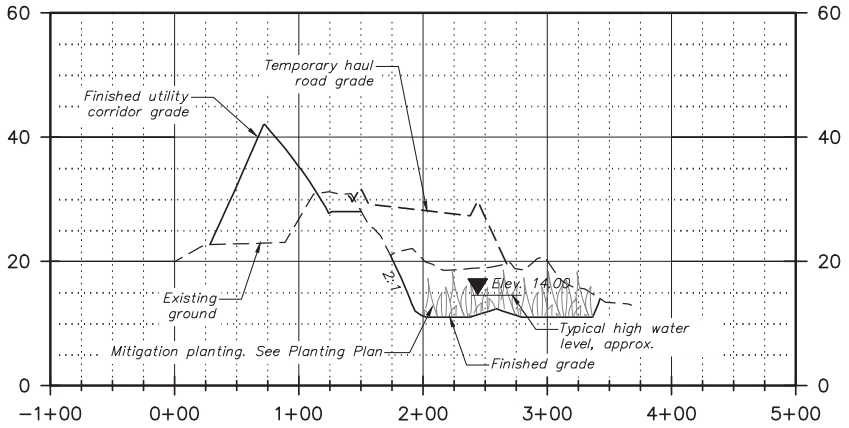
WEST BRIDGE MITIGATION CONCEPTUAL GRADING PLAN

SHEET NO. A3–2

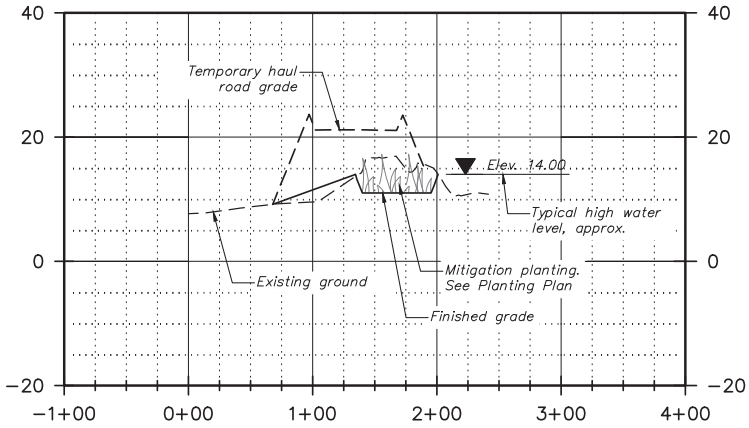
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1 A3-3 **SECTION A-A**
SCALE: H:1"=100' V:1"20'



2 A3-3 **SECTION B-B**
SCALE: H:1"=100' V:1"20'



3 A3-3 **SECTION C-C**
SCALE: H:1"=100' V:1"20'

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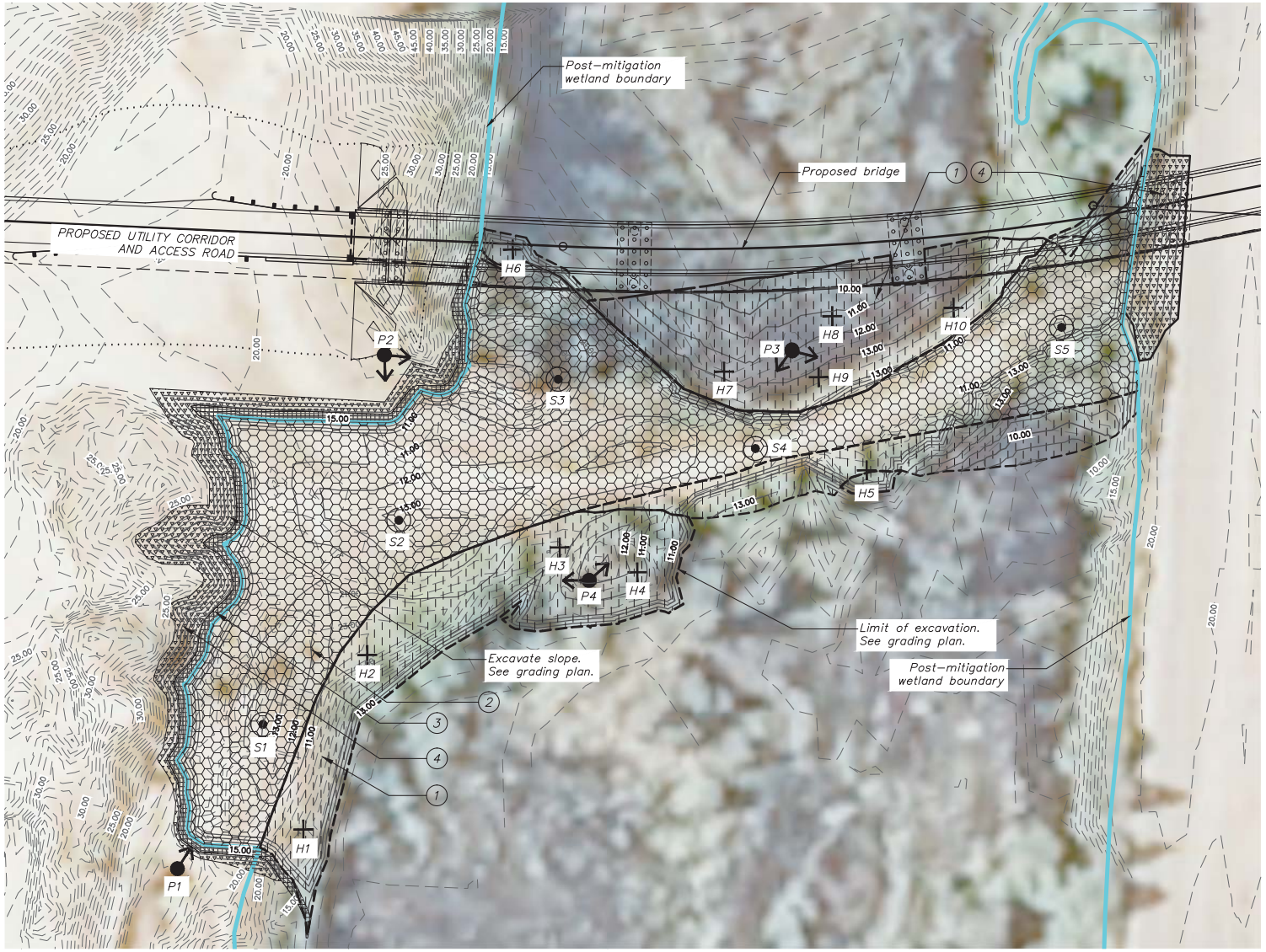
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WEST BRIDGE MITIGATION GRADING CROSS SECTIONS

SHEET NO. A3–3

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CONSTRUCTION NOTES:

1. Install Emergent Communtiy. See Planting List
2. Install Scrub-Shrub Community. See Planting List
3. Install Transitional Zone Mix along toe of slopes disturbed during grading activities
4. Install Upland Mix to slopes excavated during grading activities, above elev. 16 and extending to limits of disturbance

LEGEND:

- Palustrine Scrub-Shrub community extents (1.19 Ac)
- Palustrine Emergent Community extents (Totaling 0.84 Ac)
- Transitional Zone Mix
- Upland Mix

Monitoring Locations:

- Shrub + 2 Herbaceous Plots
- Herbaceous Plot
- Photo Point and Direction

Note: Minimum required plots and photo points are shown. Additional plots and photo points may be added and/or locations adjusted as identified in the field during monitoring.

0 30 60 120

1 / A3-4 CONCEPTUAL PLANTING PLAN
SCALE:1"=60'

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JORDAN COVE LNG TERMINAL PROJECT AND SOUTH DUNES POWER PLANT PROJECT

COOS COUNTY

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Designed By – BAR
Drafted By – BAR

WEST BRIDGE MITIGATION CONCEPTUAL PLANTING PLAN

SHEET NO. A3-4

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WEST BRIDGE MITIGATION SITE PLANTING LIST:

	Botanical name	Common name	Indicator Status	Condition
Palustrine Scrub–Shrub community (HGM class = depressional closed)				
	Salix hookeriana	Hooker willow	FACW	Live stake
	Myrica californica	California wax myrtle	FACW	Bare root or No. 1
	Lonicera involucrata	Twinberry	FAC	Bare root
	Spiraea douglasii	Douglas spiraea	FACW	Bare root
Palustrine Scrub–Shrub and Emergent Community (HGM class = depressional closed)				
	Carex obnupta	Slough sedge	OBL	0.04 gal. tubeling
	Carex obnupta	Slough sedge	OBL	Seed mix
	Juncus falcatus	Sickle–leaved rush	FACW	
	Juncus lesuerii	Salt rush	FACW	
	Potentilla anserina	Silverweed cinquefoil	OBL	
	Gentiana spectrum	King's gentian	OBL	
Transition zone				
	Deschampsia cespitosa	Tufted hairgrass	FACW	0.04 gal. tubeling
	Salix hookeriana	Hooker willow	FACW	Live stakes
	Juncus lesueurii	Salt rush	FACW	Seed mix
	Grindelia integrifolia	gumweed	FACW	
	Deschampsia cespitosa	tufted hairgrass	FACW	
	Trifolium wormskioldii	cows clover	FACW	
Upland Mix				
	Poa macrantha	seashore bluegrass	FACU	Seed mix
	Fragaria chiloensis	beach strawberry	UPL	
	Anaphalis margaritacea	western pearly everlasting	UPL	
	Lupinus littoralis	seashore lupine	UPL	
	Cardionema ramosissimum	sandcarpet	UPL	
	Leymus mollis	American dunegrass	UPL	

NOTE: Seed mix shall be applied to cover 100% of the CWM site. Contractor shall evenly mix and space woody species in quantities sufficient to meet the stem density criteria provided in the CWM plan.

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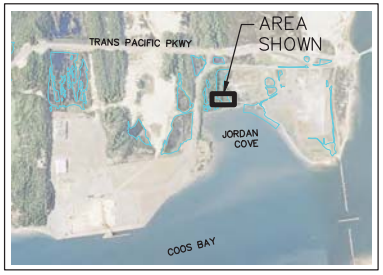
COOS COUNTY

Reviewed By – SPS
Designed By – BAR
Drafted By – BAR

WEST BRIDGE MITIGATION PLANTING LIST

SHEET NO. A3–5





2 / A4-1 **KEY MAP**
SCALE: 1"=3000'

1 / A4-1 **EXISTING CONDITIONS**
SCALE: 1"=30'

0 20 40 80

LEGEND:
- Wetland boundary
- Existing contour
- Property line

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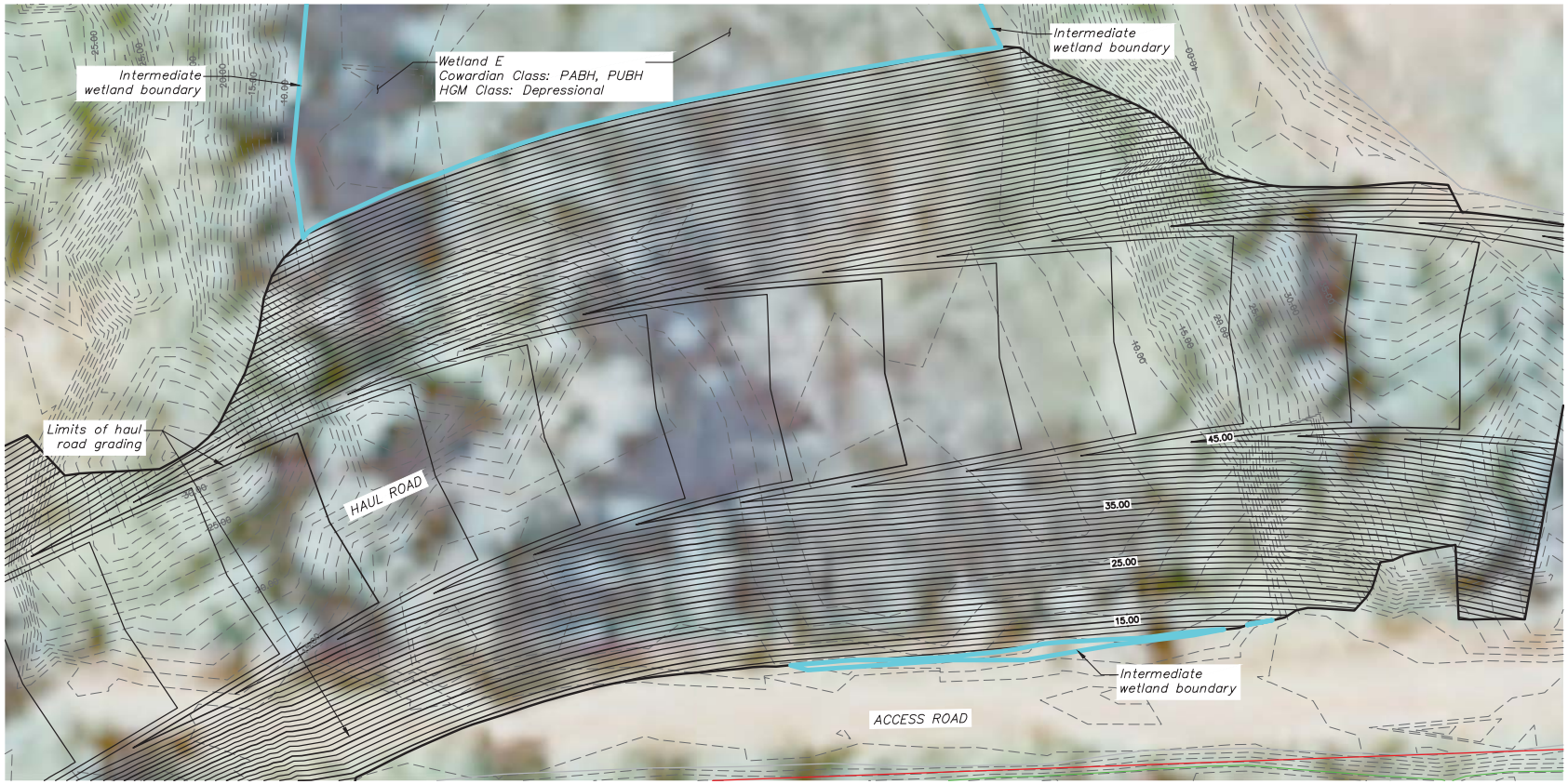
COOS COUNTY

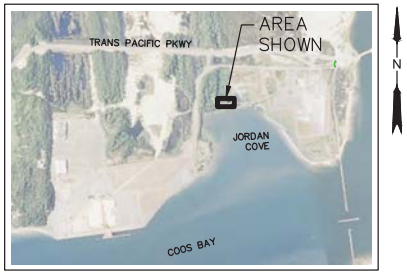
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Drafted By – JND

EAST BRIDGE MITIGATION SITE EXISTING CONDITIONS

SHEET NO. A4–1

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2 / A4-2 KEY MAP
SCALE: 1"=3000'

1 / A4-2 INTERMEDIATE CONDITIONS
SCALE: 1"=40'

0 20 40 80

LEGEND:

- Wetland boundary
- Existing contour
- Property line
- Intermediate contour

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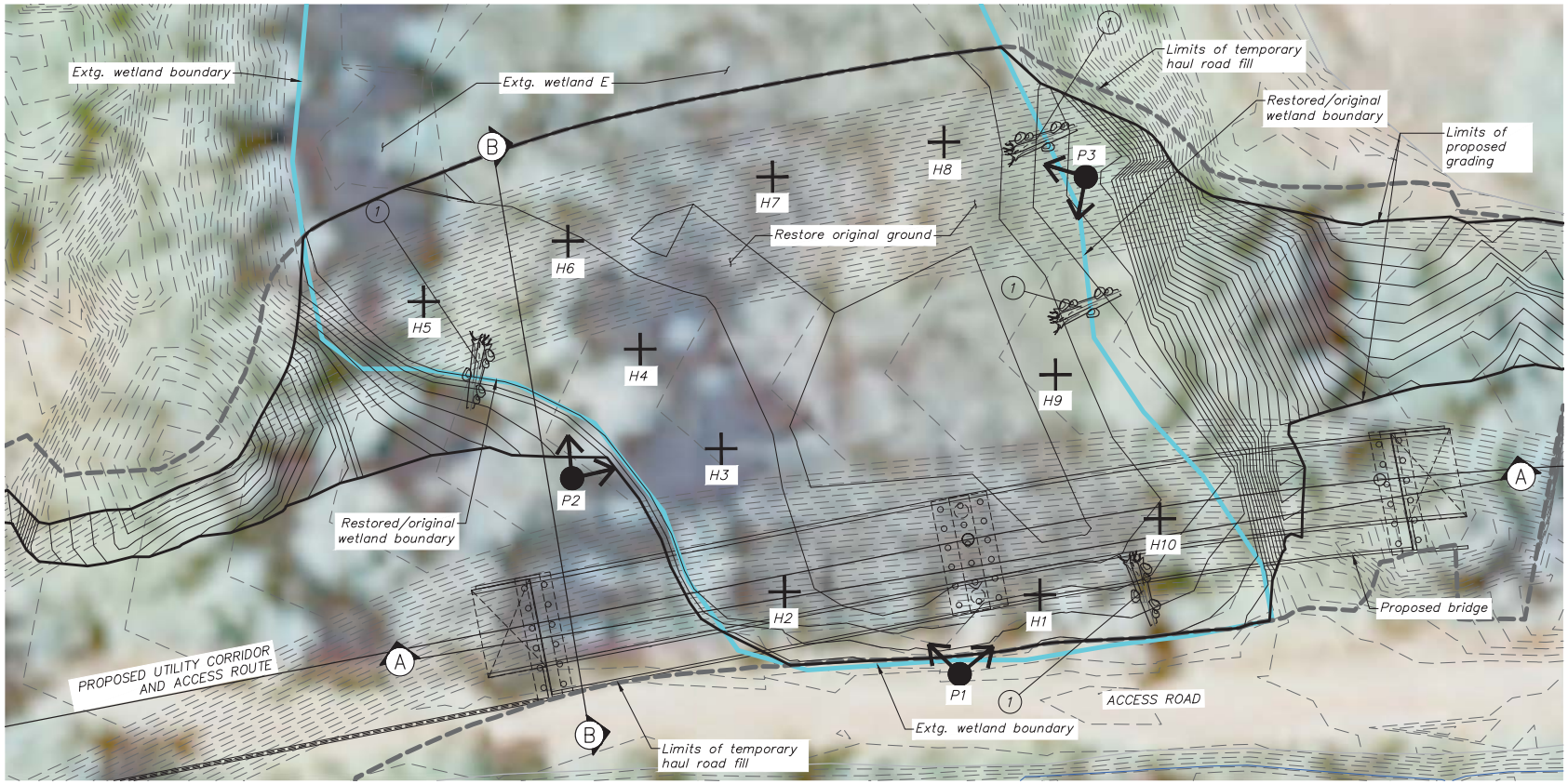
COOS COUNTY

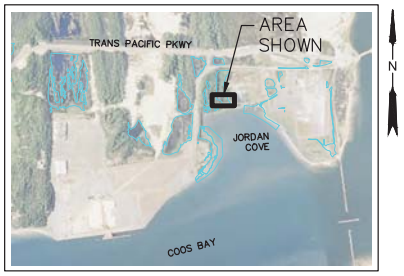
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EAST BRIDGE MITIGATION SITE INTERMEDIATE CONDITIONS

SHEET NO. A4–2

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2 / A4-3 **KEY MAP**
SCALE: 1"=3000'

1 / A4-3 **CONCEPTUAL MITIGATION GRADING AND PLANTING PLAN**
SCALE: 1"=40'

0 20 40 80

CONSTRUCTION NOTES:

(1) Install large woody debris (4)

PLANTING PLAN:

0.79 acres of site to be planted with yellow pond lily (nuphar polsepalum)

Remaining deepest portion of site to remain as open water

LEGEND:

— — — — Intermediate contour (1' interval)

———— Proposed/restored contour (1' interval)

Monitoring Plots:

+ Herbaceous Plot

Photo Point and direction

Note: Minimum required plots and photo points are shown. Additional plots and photo points will be added and/or locations adjusted as identified in the field during monitoring.

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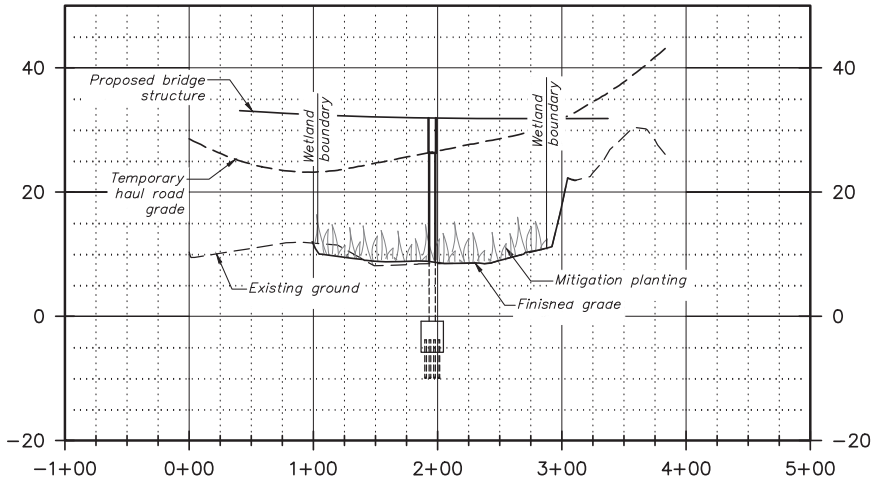
COOS COUNTY

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Drafted By – JND

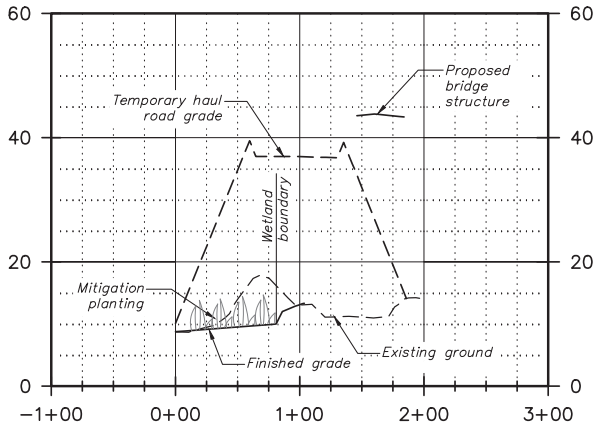
EAST BRIDGE MITIGATION CONCEPTUAL GRADING & PLANTING PLAN

SHEET NO. A4–3

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1 A4-4 **SECTION A-A**
SCALE: H:1"=100' V:1"20'



2 A4-4 **SECTION B-B**
SCALE: H:1"=100' V:1"20'

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COOS COUNTY

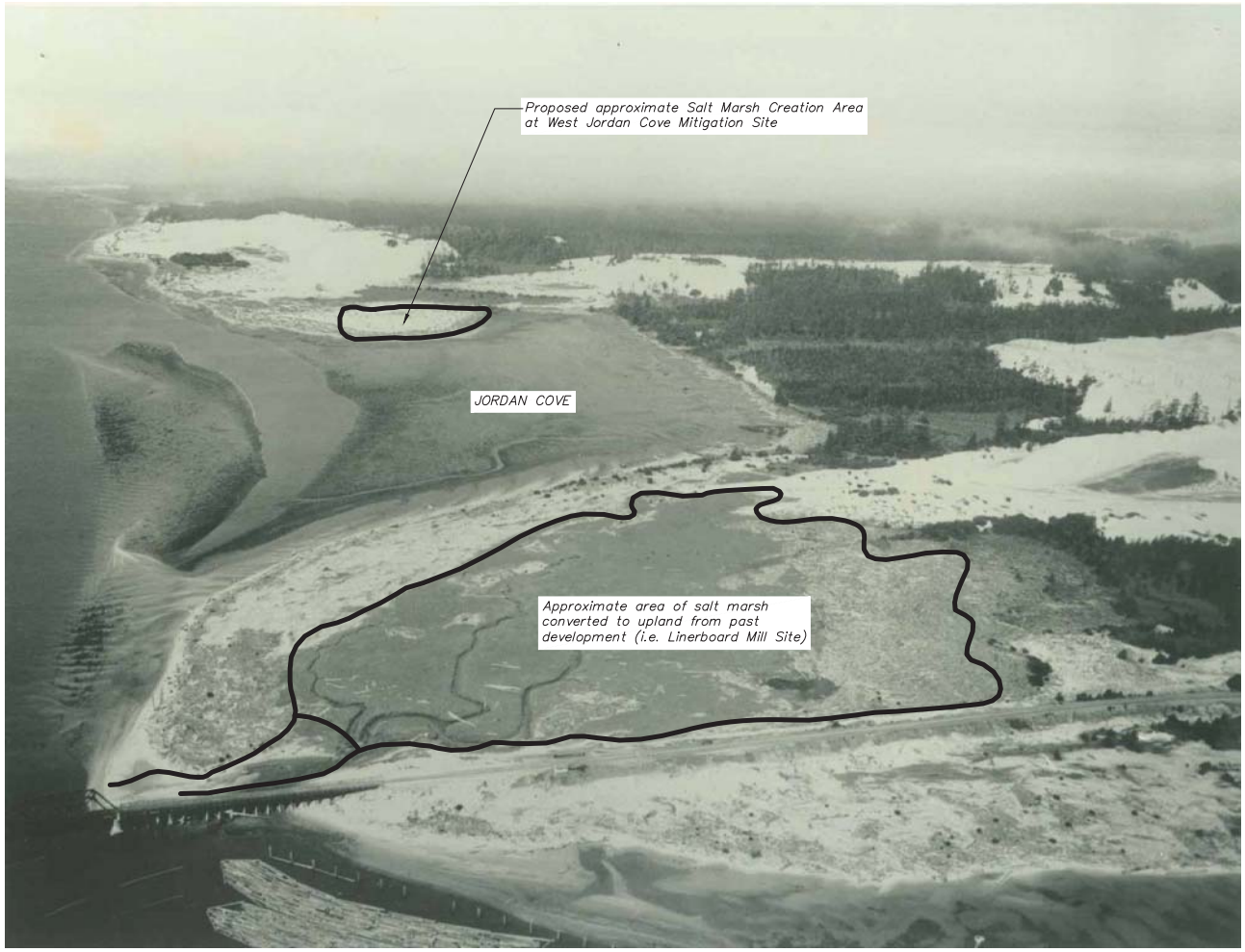
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Drafted By – JND

EAST BRIDGE MITIGATION GRADING CROSS SECTIONS

SHEET NO. A4–4

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2100 Southwest River Parkway
Portland Oregon 97201 Ph: 503.223.6663

JORDAN COVE LNG TERMINAL PROJECT AND SOUTH DUNES POWER PLANT PROJECT

COOS COUNTY

Reviewed By – SPS
Designed By – JND
Drafted By – JND

WEST JORDAN COVE MITIGATION SITE - AERIAL PHOTO FROM 1950'S

SHEET NO. FIG. 5

P:\JJCEP00000004\0400CAD\EC\Exhibits\CWM-West Jordan Cove\West Jordan Cove Historical Photo.dwg jnd Mar 06, 2014 2:47pm

APPENDIX B – ORWAP FUNCTIONAL ASSESSMENT RESULTS FOR INDIVIDUAL SITES (IMPACT AND MITIGATION)

Impacted Wetland Functions

	Wetlands A, B, C, and 2012-4		Wetland E		Wetland 2013-3		Wetland 2013-4		Wetlands 2013-6 and 2012-2		Wetlands 2012-7, H (East), I (North), J, and L	
SPECIFIC FUNCTIONS	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**
Water Storage & Delay (WS)	4.50	2.17	2.00	2.17	4.75	2.33	4.75	2.33	0.33	3.17		
Sediment Retention & Stabilization (SR)	10.00	5.00	10.00	5.13	10.00	5.31	10.00	5.35	6.67	4.64		
Phosphorus Retention (PR)	10.00	5.47	10.00	5.47	10.00	5.64	10.00	5.89	5.96	5.97		
Nitrate Removal & Retention (NR)	10.00	3.56	10.00	3.56	10.00	3.89	10.00	3.89	4.00	3.06		
Thermoregulation (T)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Carbon Sequestration (CS)	2.21		1.83		2.63		2.61		4.27			
Organic Matter Export (OE)	0.00		0.00		0.00		0.00		0.00			
Aquatic Invertebrate Habitat (INV)	7.37	7.49	5.49	6.96	6.82	7.25	7.08	7.27	7.00	6.00		
Anadromous Fish Habitat (FA)	0.00	5.50	0.00	4.37	0.00	4.64	0.00	5.74	0.00	4.63		
Non-anadromous Fish Habitat (FR)	4.03	6.67	6.96	6.67	1.17	6.67	3.16	6.67	4.17	6.67		
Amphibian & Reptile Habitat (AM)	7.49	4.00	3.00	4.00	7.25	4.00	7.27	4.00	5.21	4.00		
Waterbird Feeding Habitat (WBF)	5.50	10.00	4.37	10.00	4.64	10.00	5.74	10.00	4.63	10.00		
Waterbird Nesting Habitat (WBN)	0.00	6.67	4.49	6.67	0.00	6.67	0.00	6.67	0.00	6.67		
Songbird, Raptor, & Mammal Habitat (SBM)	6.38	7.33	3.06	7.33	6.00	7.33	6.10	7.33	4.54	7.33		
Pollinator Habitat (POL)	5.58	0.00	2.22	0.00	6.14	0.83	5.87	1.94	2.77	0.00		
Native Plant Diversity (PD)	4.85	10.00	4.89	10.00	5.30	6.67	5.12	6.67	5.32	10.00		

GROUPED FUNCTIONS	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**
Hydrologic Function (WS)	4.50	2.17	2.00	2.17	4.75	2.33	4.75	2.33	0.33	3.17	4.50	2.00
Water Quality Group (WQ)	10.00	5.47	10.00	5.47	10.00	5.64	10.00	5.89	6.67	5.97	10.00	5.50
Carbon Sequestration (CS)	2.21		1.83		2.63		2.61		4.27		2.00	
Fish Support Group (FISH)	4.03	6.67	6.96	6.67	1.17	6.67	3.16	6.67	4.17	6.67	6.00	7.00
Aquatic Support Group (AQ)	7.49	10.00	5.49	10.00	7.25	10.00	7.27	10.00	7.00	10.00	9.00	10.00
Terrestrial Support Group (TERR)	6.38	10.00	4.89	10.00	6.14	7.33	6.10	7.33	5.32	10.00	7.50	10.00
Public Use & Recognition (PU)		0.48		0.48		1.19		0.00		0.00		10.00
Provisioning Services (PS)		0.00		0.00		0.00		0.00		0.00		0.00

Acres	0.88		0.98		0.10		0.29		0.50		0.70	

Acreage Weighted Average Scores for All Wetlands Combined		
GROUPED FUNCTIONS	**Group Scores (functions)**	**Group Scores (values)**
Hydrologic Function (WS)	3.21	2.30
Water Quality Group (WQ)	9.52	5.59
Carbon Sequestration (CS)	2.40	
Fish Support Group (FISH)	5.13	6.73
Aquatic Support Group (AQ)	7.13	10.00
Terrestrial Support Group (TERR)	6.00	9.70
Public Use & Recognition (PU)		2.32
Provisioning Services (PS)		0.00

Scores Rounded to Nearest Whole Number	
Group Scores (functions)	**Group Scores (values)**
3	2
10	6
2	
5	7
7	10
6	10
	2
	0

Existing Pre-Mitigation Site Wetland Functions

	West Bridge Creation		West Bridge Restoration		West Bridge Enhancement		East Bridge Restoration		West Jordan Cove Creation	
SPECIFIC FUNCTIONS	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**
Water Storage & Delay (WS)	0.00	0.00	0.00	0.00	0.33	3.17	0.00	0.00	0.00	0.00
Sediment Retention & Stabilization (SR)	0.00	0.00	0.00	0.00	6.67	4.64	0.00	0.00	0.00	0.00
Phosphorus Retention (PR)	0.00	0.00	0.00	0.00	5.96	5.97	0.00	0.00	0.00	0.00
Nitrate Removal & Retention (NR)	0.00	0.00	0.00	0.00	4.00	3.06	0.00	0.00	0.00	0.00
Thermoregulation (T)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carbon Sequestration (CS)	0.00		0.00		4.27		0.00		0.00	
Organic Matter Export (OE)	0.00		0.00		0.00		0.00		0.00	
Aquatic Invertebrate Habitat (INV)	0.00	0.00	0.00	0.00	7.00	6.00	0.00	0.00	0.00	0.00
Anadromous Fish Habitat (FA)	0.00	0.00	0.00	0.00	0.00	4.63	0.00	0.00	0.00	0.00
Non-anadromous Fish Habitat (FR)	0.00	0.00	0.00	0.00	4.17	6.67	0.00	0.00	0.00	0.00
Amphibian & Reptile Habitat (AM)	0.00	0.00	0.00	0.00	5.21	4.00	0.00	0.00	0.00	0.00
Waterbird Feeding Habitat (WBF)	0.00	0.00	0.00	0.00	4.63	10.00	0.00	0.00	0.00	0.00
Waterbird Nesting Habitat (WBN)	0.00	0.00	0.00	0.00	0.00	6.67	0.00	0.00	0.00	0.00
Songbird, Raptor, & Mammal Habitat (SBM)	0.00	0.00	0.00	0.00	4.54	7.33	0.00	0.00	0.00	0.00
Pollinator Habitat (POL)	0.00	0.00	0.00	0.00	2.77	0.00	0.00	0.00	0.00	0.00
Native Plant Diversity (PD)	0.00	0.00	0.00	0.00	5.32	10.00	0.00	0.00	0.00	0.00

GROUPED FUNCTIONS	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**
Hydrologic Function (WS)	0.00	0.00	0.00	0.00	0.33	3.17	0.00	0.00	0.00	0.00
Water Quality Group (WQ)	0.00	0.00	0.00	0.00	6.67	5.97	0.00	0.00	0.00	0.00
Carbon Sequestration (CS)	0.00		0.00		4.27		0.00		0.00	
Fish Support Group (FISH)	0.00	0.00	0.00	0.00	4.17	6.67	0.00	0.00	0.00	0.00
Aquatic Support Group (AQ)	0.00	0.00	0.00	0.00	7.00	10.00	0.00	0.00	0.00	0.00
Terrestrial Support Group (TERR)	0.00	0.00	0.00	0.00	5.32	10.00	0.00	0.00	0.00	0.00
Public Use & Recognition (PU)		0.00		0.00		0.00		0.00		0.00
Provisioning Services (PS)		0.00		0.00		0.00		0.00		0.00

Acres	1.19	0.46	0.38	0.96	2.92

Acreage Weighted Average Scores for All Wetlands Combined		
GROUPED FUNCTIONS	**Group Scores (functions)**	**Group Scores (values)**
Hydrologic Function (WS)	0.02	0.20
Water Quality Group (WQ)	0.43	0.38
Carbon Sequestration (CS)	0.27	
Fish Support Group (FISH)	0.27	0.43
Aquatic Support Group (AQ)	0.45	0.64
Terrestrial Support Group (TERR)	0.34	0.64
Public Use & Recognition (PU)		0.00
Provisioning Services (PS)		0.00

Scores Rounded to Nearest Whole Number	
Group Scores (functions)	**Group Scores (values)**
0	0
0	0
0	
0	0
0	1
0	1
	0
	0

Post Mitigation Wetland Functions

	West Bridge Creation, Enhancement, and Restoration		East Bridge Restoration		West Jordan Cove Creation	
SPECIFIC FUNCTIONS	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**	**Relative Effectiveness of the Function**	**Relative Values of the Function**
Water Storage & Delay (WS)	3.25	3.17	2.00	2.17	0.00	1.50
Sediment Retention & Stabilization (SR)	10.00	4.83	10.00	5.13	3.23	5.09
Phosphorus Retention (PR)	10.00	5.97	10.00	5.47	0.79	5.03
Nitrate Removal & Retention (NR)	10.00	3.06	10.00	3.56	2.96	3.64
Thermoregulation (T)	0.00	0.00	0.00	0.00	0.00	6.67
Carbon Sequestration (CS)	2.06		1.83		7.81	
Organic Matter Export (OE)	0.00		0.00		8.41	
Aquatic Invertebrate Habitat (INV)	6.56	6.41	5.49	6.96	3.75	6.00
Anadromous Fish Habitat (FA)	0.00	5.50	0.00	4.37	3.80	10.00
Non-anadromous Fish Habitat (FR)	6.41	6.67	6.96	6.67	4.29	10.00
Amphibian & Reptile Habitat (AM)	4.16	4.00	3.00	4.00	0.00	7.33
Waterbird Feeding Habitat (WBF)	5.50	10.00	4.37	10.00	4.93	10.00
Waterbird Nesting Habitat (WBN)	6.19	6.67	4.49	6.67	0.00	5.50
Songbird, Raptor, & Mammal Habitat (SBM)	5.47	7.33	3.06	7.33	4.75	7.33
Pollinator Habitat (POL)	5.74	0.00	2.22	0.00	5.16	5.00
Native Plant Diversity (PD)	7.42	10.00	4.89	10.00	6.13	10.00

GROUPED FUNCTIONS	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**	**Group Scores (functions)**	**Group Scores (values)**
Hydrologic Function (WS)	3.25	3.17	2.00	2.17	0.00	1.50
Water Quality Group (WQ)	10.00	5.97	10.00	5.47	3.23	6.67
Carbon Sequestration (CS)	2.06		1.83		7.81	
Fish Support Group (FISH)	6.41	6.67	6.96	6.67	4.29	10.00
Aquatic Support Group (AQ)	6.56	10.00	5.49	10.00	8.41	10.00
Terrestrial Support Group (TERR)	7.42	10.00	4.89	10.00	6.13	10.00
Public Use & Recognition (PU)		0.00		0.48		1.79
Provisioning Services (PS)		0.00		0.00		0.00

Acres	2.03	0.96	2.92

Acreage Weighted Average Scores for All Wetlands Combined		
GROUPED FUNCTIONS	**Group Scores (functions)**	**Group Scores (values)**
Hydrologic Function (WS)	1.44	2.18
Water Quality Group (WQ)	6.65	6.23
Carbon Sequestration (CS)	4.87	
Fish Support Group (FISH)	5.45	8.31
Aquatic Support Group (AQ)	7.30	10.00
Terrestrial Support Group (TERR)	6.37	10.00
Public Use & Recognition (PU)		0.96
Provisioning Services (PS)		0.00

Scores Rounded to Nearest Whole Number	
Group Scores (functions)	**Group Scores (values)**
1	2
7	6
5	
5	8
7	10
6	10
	1
	0

APPENDIX C – DRAFT DEED RESTRICTIONS

After recording return to:	This space reserved for recorder's use.
Permit Holder: Jordan Cove Energy Project, L.P. 125 Central Avenue, Suite 380 Coos Bay, OR 97420 Attention: Bob Braddock	

DECLARATION OF COVENANTS, RESTRICTIONS, AND ACCESS EASEMENT FOR THE JORDAN COVE ENERGY PROJECT

DSL PERMIT NO. 54908-RF AND 54909-RF

DRAFT

THIS DECLARATION OF COVENANTS AND RESTRICTIONS (this "Declaration") is made this ____ day of _____, 2014, by the JORDAN COVE ENERGY PROJECT, L.P. (JCEP LP), a limited partnership of the State of Oregon ("Declarant").

RECITALS

WHEREAS, Declarant is developing a portion of its property for a liquefied natural gas export facility, power plant, and appurtenant facilities (the "Project").

WHEREAS, construction of the Project will result in approximately 5.89 acres of unavoidable impact to freshwater and estuarine wetlands.

WHEREAS, pursuant to Oregon Department of State Lands ("DSL") Permits No. 54908-RF and 54909-RF (the " Permits"), JCEP LP has been required to perform certain compensatory mitigation for impacts to wetlands resulting from the construction of the Project.

WHEREAS, a portion of the compensatory mitigation will be performed on property owned by Declarant (as more particularly depicted and described on Exhibit A attached hereto, the "Mitigation Site").

WHEREAS, Declarant desires and intends to provide for the perpetual protection and conservation of the wetland and/or waterway functions and values of the Property and for the management of the Property and improvements thereon, and to this end desires to subject the Property to the covenants, restrictions, easements and other encumbrances hereinafter set forth, each and all of which is and are for the benefit of the Property;

WHEREAS, the compensatory mitigation for impacts to wetlands resulting from the construction of the Project is described in that certain Compensatory Wetland Mitigation Plan prepared by David Evans and Associates, Inc. and dated January, 2014 (as it may be amended from time to time with the approval of DSL, the "Mitigation Plan").

WHEREAS, as a condition on issuance of the Permit, Declarant has been required to provide for the protection of the Mitigation Site.

WHEREAS, Declarant desires to provide for such protection by subjecting the Mitigation Sites to the covenants and restrictions set forth herein.

COVENANTS

NOW, THEREFORE, Declarant hereby declares and covenants that the Mitigation Site shall be held, sold and conveyed subject to the following covenants, which are intended to and shall run with the land, continue in perpetuity and shall be binding upon all parties having or acquiring any right, title or interest in the Mitigation Site and shall inure to the benefit of each owner and subsequent owners:

1. The Mitigation Site shall be used and managed for wetland mitigation purposes in accordance with the Permit.

2. There shall be no removal, destruction, cutting, trimming, mowing, alteration or spraying with biocides of any vegetation in the Mitigation Site, nor any disturbance or change in the natural habitat of the Mitigation Site. This provision shall not apply to the control, elimination, or management of nonnative, exotic, or invasive vegetation or any activities permitted or required under the Permit or the Mitigation Plan.

3. There shall be no agricultural, commercial, or industrial activity undertaken in the Mitigation Site; nor shall any right of passage across or upon the Mitigation Site be granted if that right of passage is used in conjunction with agricultural, commercial or industrial activity.

4. There shall be no filling, excavating, dredging, mining or drilling; no removal of topsoil, sand, gravel, rock minerals or other materials, nor any dumping of ashes, trash, garbage, or of any other material, and no changing of the topography of the land in the Mitigation Site, except as provided in the Permit or the Mitigation Plan.

5. This Declaration shall not be interpreted as in any way conveying or granting to the public any right to enter or use the Mitigation Site.

6. An access easement granted by the US Forest Service shall be established for the purpose of success and compliance monitoring shall be maintained for the life of the project.

7. Declarant grants to the Department an easement and right of entry on the Property for the purpose of physically accessing the Property at all reasonable times to inspect the Property in order to monitor and to ascertain whether there has been compliance with this Declaration and the Removal-Fill Permit. In the event that the mitigation site lacks access via a public road or

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other common area, Declarant grants to the Department an easement over and across any other property of Declarant, if any, the use of which is necessary to access the Property.

8. In the event of any conflict between the terms and conditions of this Declaration and the terms and conditions of the Permit, as it may be modified from time to time, the terms and conditions of the Permit shall control over this Declaration.

9. This Declaration is made for the benefit of the State of Oregon, acting by and through the DSL, and the US Army Corps of Engineers (the "USACE") only and it may only be enforced by DSL and the USACE. This Declaration may be modified or terminated by written agreement with DSL and the USACE. No other party or individual shall have any right to object to its modification or termination. The rights of DSL and the USACE hereunder may only be assigned to another agency of the State of Oregon or to another agency or division of the U.S. Federal Government.

IN WITNESS WHEREOF, the undersigned being Declarant herein, has executed this instrument this ___ day of _____, 201_.

DECLARANT

JORDAN COVE ENERGY PROJECT, L.P.,
a limited partnership of the State of Oregon

By: _____

Name: _____

Its: _____

STATE OF OREGON)
) ss.
County of _____)

The foregoing instrument was acknowledged before me this ___ day of_____, 201__ by _____, as _____ of JORDAN COVE ENERGY PROJECT, L.P., a limited partnership of the State of Oregon, on behalf of said partnership.

_____
Notary Public for Oregon

My commission expires:_____

DRAFT

EXHIBIT A

West Jordan Cove Wetland Mitigation Site: Description and Depiction of Mitigation Site

EXHIBIT B

East Bridge Wetland Mitigation Site: Description and Depiction of Mitigation Site

EXHIBIT C

West Bridge Wetland Mitigation Site: Description and Depiction of Mitigation Site

DRAFT

Jordan Cove LNG Terminal Project
South Dunes Power Plant Project

Compensatory Wetland Mitigation Plan

Part B: Estuarine Impacts and Mitigation

Prepared for

Jordan Cove Energy Project, L.P.

125 Central Avenue, Suite 380

Coos Bay, OR 97420

Prepared by

DAVID EVANS AND ASSOCIATES INC.

2100 SW River Parkway

Portland, Oregon 97201

October 2014

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1. COMPENSATORY WETLAND MITIGATION PLAN OVERVIEW

1.1 INTRODUCTION

The Jordan Cove LNG Terminal Project (LNG Terminal) and South Dunes Power Plant (SDPP) (collectively referred to as the "Projects") will result in impacts to natural resources within the intertidal and shallow subtidal zone of Coos Bay (i.e., estuarine/tidal resources). These resources provide important ecological functions to the greater Coos Bay ecosystem and are regulated by state and federal agencies. Impacts to these resources will therefore need to be mitigated.

This Compensatory Wetland Mitigation (CWM) Plan Part B specifically covers permanent impacts and mitigation to estuarine resources. Freshwater impacts are covered within Part A. Development features that result in estuarine impacts and that are covered in this CWM Plan include (see permit application for detailed description of these features):

- Barge Berth
- Access Channel
- Mill Site/South Dunes Site
- Trans Pacific Parkway/Highway 101 Intersection Improvements
- Incidental impacts associated with Kentuck Mitigation Site construction not covered by DSL Permit 37712-RF

Total estuarine impacts, excluding deep subtidal habitat, are approximately 6.75 acres (includes incidental impacts at Kentuck Mitigation Site and adjustment for project overlap, see Table 1) and will be offset by 13.03 acres of mitigation (see Table 2). Figure 1 of Appendix A shows the location of proposed estuarine impacts and associated mitigation sites. The majority of estuarine impacts will occur at the proposed Barge Berth, Access Channel, and the Mill Site/South Dunes Site and include impacts to unvegetated mudflat, eelgrass (*Zostera marina*), and salt marsh. Additional smaller impacts to estuarine resources are proposed at the Trans Pacific Parkway/Highway 101 Intersection Improvements (riprap below highest measured tide elevation). Mitigation will occur at two locations within the Coos Bay estuary, as follows:

- Intertidal Flats Mitigation Site/Kentuck Slough Site (primarily unvegetated mudflat and tide channels, and some salt marsh)
- Eelgrass Mitigation Site (eelgrass only)

The above mitigation sites and the mitigation concepts proposed in this CWM Plan are related to mitigation previously approved by the Oregon Department of State Lands (DSL) under Permit 37712-RF. Specifically, this current CWM Plan will use "advance mitigation" credits approved at the Intertidal Flats Mitigation Site/Kentuck Slough Site. This current CWM Plan will also expand the area of the approved eelgrass mitigation site.

This proposed CWM Plan has been prepared in accordance with the DSL rules. It is also supportive of State Energy Facility Siting Council (EFSC) requirements, along with federal and local regulatory permitting requirements.

1.2 ECOLOGICAL GOALS AND OBJECTIVES

The goals and objectives of this mitigation plan seek to offset the loss of acreage and functions provided by the wetland and tidal water resources that would be impacted by the proposed Projects. Specific goals and objectives for each proposed mitigation area are provided below, with additional detail provided in Section 7.1.

Because this CWM Plan ties into previously authorized CWM sites associated with Permit 37712-RF, goals and objectives are the same as provided in the issued permit, with the exception of acreage amounts specific to this current permit application and CWM plan as described below.

1.2.1 Eelgrass Mitigation Site

(NOTE: Total eelgrass impacts addressed in this plan plus those permitted under Permit 37712-RF will be 2.56 acres based on the latest project configurations and the combined mitigation site will be 7.68 acres.)

Mitigation Goal 1: Create 0.54 acres of eelgrass beds (i.e., based on an enhancement ratio of 3:1) overlapping with the authorized eelgrass mitigation site included in Permit 37712-RF, whereby a minimum of 0.18 of these acres would be classified as medium- to high-density beds. To achieve this goal, the following objectives will be carried out:

- **Objective 1.1**: Recontour (excavate) an area of approximately 0.54 acres to provide suitable elevations for the establishment of eelgrass. Suitable elevations will be based on field observations of existing nearby robust eelgrass beds.
- **Objective 1.2:** Establish a minimum of 0.54 acres of eelgrass beds whereby a minimum of 0.18 acres would be classified as medium- to high-density eelgrass beds within the recontoured area described under Objective 1. Density classes are defined as follows: less than 10% cover equals an absence of eelgrass bed, low density equals approximately 10% to 39% cover, medium density equals approximately 40% to 79% cover, and high density equals approximately 80% cover or greater.

1.2.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

(NOTE: Design work for the Kentuck Slough Site has been refined based on agency comments since issuance of Permit 37712-RF. This has led to changes in credits provided by the overall site, including the advance mitigation area. See Section 1.3.2 for a discussion of changes, Appendix A Figure 2 for a break-down of credits apportioned to each project, and Appendix B for revised site drawings.)

Mitigation Goal 2: Establish 12.49 acres of tidally influenced habitats at the Kentuck Slough Site Permit 37712-RF Advance Mitigation Area and adjacent area not included in Permit 37712-RF.

To achieve this goal, the following objectives will be carried out:

- **Objective 2.1:** Establish a minimum of 0.12 acres of salt marsh habitat within the internal portion of the Kentuck Slough Site, with the remainder of the internal portion (10.64 acres) being mudflat and/or tide channel. A greater amount of salt marsh, with subsequent reduction in mudflat is acceptable,
- **Objective 2.2**: Establish an approximately 1.73 acre wetland bench along Kentuck Slough by relocating the existing levee southward.

- **Objective 2.3:** Establish an emergent to scrub-shrub, brackish to freshwater transitional plant community along the Kentuck Slough bench described in Objective 2.2.
- **Objective 2.4:** Restore tidal connection to the irrigation pond creek system through installation of a fish passable culvert that meets ODFW fish passage criteria.

1.3 OVERVIEW OF CWM CONCEPT AND FUNCTIONS AND VALUES REPLACEMENT

The CWM Plan will entail mitigation work at two distinct sites, with each site addressing a different mitigation need (see Figure 1 of Appendix A). Location information is provided in Section 2 of this report. Functions will be replaced through in-kind mitigation for each resource type. Additional discussion of functional replacement is provided in Section 5 of this report. An overview of the CWM concept at each proposed site is provided below.

1.3.1 Eelgrass Mitigation Site

(NOTE: Total eelgrass impacts addressed in this plan plus those permitted under Permit 37712-RF will be 2.56 acres based on the latest project configurations and the combined mitigation site will be 7.68 acres.)

To mitigate for impacts to eelgrass, JCEP L.P. proposes to create new eelgrass habitat adjacent to the authorized eelgrass mitigation site associated with Permit 37712-RF. The proposed mitigation site is located south of the airport's runway extension project, which took place in the 1980s. The airport conducted eelgrass mitigation in this general area, and it appears that the opportunity exists to add on to this mitigation work. The airport's mitigation site is located several hundred feet northwest of the end of the runway extension. The proposed mitigation site for the Project would be to the south of the end of the runway extension.

Based on documented evidence of eelgrass presence in Coos Bay, it is known that eelgrass tends to flourish between approximately -1.0 m to +1.0 m Mean Lower Low Water (MLLW) elevation (Thom et al. 2003). This data is further supported by hydrographic survey work conducted by David Evans and Associates, Inc. (DEA) at the proposed mitigation site during the following time periods: August 2007, January 2014, and August 2014. These elevations provide guidance on elevations that will be needed at the proposed mitigation site to establish eelgrass.

The proposed design approach is to excavate/dredge high areas down to approximately -1.0 m to +1.0 m MLLW (see figure in Appendix B). The site will be allowed to stabilize for one winter storm cycle. The site will then be transplanted with nearby donor stock, or other suitable sources, in subsequent years.

This was the approach used in eelgrass mitigation efforts associated with the Coos Bay-North Bend Airport runway extension project (McCollough pers. comm. 2006). The airport mitigation project was considered highly successful (Rumrill pers. comm. 2006). This former mitigation effort followed the technique described above, whereby excavation occurred in year one, the site was allowed to stabilize over one winter storm season, followed by test plots and monitoring in year two, and then the remainder of the site planted in year three. It is important to wait one winter season to determine that site recontouring remains relatively stable. Also, earthwork needs to take place during the in-water work period, which occurs between October 1 and February 15. This is past the preferred time for performing transplanting of eelgrass (i.e., the time of peek biomass, which occurs during late summer). For the airport

mitigation project, plant stock from the impact site was not harvested for transplant; instead an adjacent donor site was used. The proposed Project would follow this same general sequencing and methodology.

1.3.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

(NOTE: Design work for the Kentuck Slough Site has been refined based on agency comments since issuance of Permit 37712-RF. This has led to changes in credits provided by the overall site, including the advance mitigation area. The latest designs for the entire site are provided in Appendix B, including accounting of overall mitigation site credits. Based on these design revisions mitigation acreage is currently 46.59 acres (17.94 credits) –42.98 acres of enhancement and 3.61 acres of restoration. Mitigation site improvements such as levee relocation, cross-dike placement, roadway upgrades, etc. will result in 3.11 acres of permanent incidental wetland impacts, of which 0.59 acres was previously included in Permit 37712-RF. Mitigation site improvement incidental impacts will be mitigated for at the Kentuck Slough Site.

Permit 37712-RF authorizes 10.47 acres of mudflat impact plus, as mentioned above, an additional 0.59 acres of incidental emergent wetland impacts resulting from improvements needed at the mitigation site. Required mitigation for these impacts is 33.18 acres. Permit 37712-RF also authorized 10.42 acres of advanced mitigation acreage.

Impacts authorized by Permit 37712-RF and those included in this current CWM Plan and associated permit applications will be fully offset by the 46.59 acres (17.94 credits), which includes 0.31 credits of contingency mitigation, included in the revised plan drawings provided in Appendix B.)

Authorized mitigation associated with Permit 37712-RF will restore tidal connection to the west end of the Kentuck Slough Site, including the area authorized for advance mitigation. The following additional activities are proposed for the Kentuck Slough Site advance mitigation area. Historic diking and flood control efforts have led to considerable subsidence at the Kentuck Site. Survey information confirms that elevations within the former golf course are appropriate for establishing mudflat habitat. The primary salt marsh surface at the reference site (immediately downstream of East Bay Road) occurs between approximately elevations 5.5 and 8.5 feet NAVD88 (North American Vertical Datum of 1988) . However, typical elevations within the former golf course range between 2.0 and 4.0 feet NAVD88. These lower elevations in the former golf course preclude vegetation establishment, and therefore mudflat would be the predominant habitat type without intervention. However, elevations around the perimeter of the site should be conducive for salt marsh communities. This is particularly the case in the advance mitigation areas, where a narrow bench occurs at elevations supportive of future salt marsh. Current design includes raising elevations within the site to better support establishment of salt marsh; however, this is reliant on having suitable material to import to raise grades. Because of this, mitigation goals and objectives are focused on providing the minimum amount of salt marsh required to offset salt marsh impacts, but with the understanding that additional salt marsh establishment and subsequent decrease in bare mudflat is a desirable outcome.

Salt marsh vegetation is anticipated to establish by natural recruitment of tide born propagules. Experience of South Slough National Estuarine Research Reserve (SSNER) suggests that natural recruitment is an appropriate means of establishing salt marsh vegetation at mitigation and restoration sites and that planting should not be needed (Personal communications, Craig Cornu. SSNER. 2014). Mr. Cornu also noted that non-native annual salt marsh species, such as brass buttons (*Cotula coronopifolia*), often colonize a newly established salt marsh site during the first few years, but then are

typically outcompeted beginning within the third year post-implementation. Although natural recruitment is the proposed method of salt marsh plant establishment, supplemental planting will be provided if monitoring determines that natural recruitment by native species is occurring too slowly.

The current design proposes rebuilding the existing Kentuck Slough levee roughly adjacent to the south side of the existing levee. This is due to the poor condition of the existing levee. Once the levee has been rebuilt, the old levee will be removed, thus restoring the area under the old levee back to wetland. This will result in a wetland bench along the slough channel. This bench lies within a transition zone between estuarine (e.g. brackish) and freshwater environments. The bench will be planted and seeded with typical high marsh herbaceous species that also occur in freshwater conditions (e.g. tufted hairgrass, meadow barley, salt grass, etc.). Shrub species such as Hooker willow and Douglas spirea will also be planted along the bench with the understanding that some will die off at the downstream end due to salinity.

A new culvert will be installed through the earthen dam associated with the irrigation pond, which will restore tidal connection and fish access to drainage upstream of the dam.

The proposed mitigation effort will also remove, to the greatest extent practicable, existing golf course improvements in the mitigation site, such as fencing, ditches, foot bridges, and culverts.

1.4 SUMMARY OF IMPACTS AND CWM ACREAGE/CREDITS

Table 1. Project Impacts

Wetland ID	Cowardin Class[1]	Hydrogeomorphic (HGM) Class	Impact Acres/Debits
Coos Bay @ Access Triangle, Intertidal, CB below el. 10.26' (HMT)	E2US	Estuarine	0.316
Coos Bay @ Access Triangle, Eelgrass, CB below HMT[2]	E1/E2AB	Estuarine	0.182
Coos Bay @ Access Triangle, Shallow Subtidal, below HMT	E1UB	Estuarine	0.241
Coos Bay @ Barge Berth, Intertidal, below HMT	E2US	Estuarine	1.616
Coos Bay @ Barge Berth, Shallow Subtidal, below HMT	E1UB	Estuarine	0.074
Coos Bay adjacent to Wetland M, Intertidal, below HMT	n/a	Estuarine	0.181
Coos Bay adjacent to Wetland J, below HMT	n/a	Estuarine	0.141
Wetland H (West)	E2US	Estuarine	0.062
Wetland M (1-mudflat)	E2US	Estuarine	0.092
Wetland M (1-salt marsh)	E2EM	Estuarine	0.120
Coos Bay @ TPP/Hwy 101, Intertidal, below HMT	E2RS	Estuarine	0.054
Subtotal Project Impacts[4]			**3.08**
Incidental Kentuck Construction Impacts not covered by Permit 37712-RF	PEM/PFO	Slope/flats	2.520
Adjustment for overlap with Permit 37712-RF[3]	E1UB/E2US	Estuarine	1.150

Wetland ID	Cowardin Class[1]	Hydrogeomorphic (HGM) Class	Impact Acres/Debits
Subtotal Additional Impacts			**3.67**
Total All Impacts to be Mitigated			**6.75**
Subtotals by Habitat Types			
Subtotal Mudflat (E1UB + E2US)[4]			6.45
Subtotal Salt Marsh (E2EM)			0.12
Subtotal Eelgrass (E1/E2AB)			0.18

[1] Cowardin classes: E1/E2AB = estuarine, subtidal/intertidal, aquatic bed (i.e. eelgrass); E2USN = estuarine, intertidal, unconsolidated shore, regularly flooded (i.e. mudflat); E1UB = estuarine, subtidal, uncosolidated bottom (i.e. mudflat); E2EM = estuarine, intertidal, emergent (i.e. salt marsh) n/a = Cowardin class not applicable since area consists of upland vegetation, although area is below HMT.

[2] Total eelgrass impacts addressed in this plan plus those permitted under Permit 37712-RF will be 2.56 acres based on the latest project configurations and the combined mitigation site will be 7.68 acres.

[3] Adjustment for overlap with Permit 37712-RF resulting from JCEP tenant improvements. Cowardin and HGM classes assigned to mudflat habitats.

[4] Subtotal Project Impacts equals total estuarine impacts excluding deep subtidal provided in the DSL JPA impacts table (October 2014).

[5] Includes adjustment of overlap and incidental construction acreages. The minor impact to E2RS at TPP/Hwy 101 is also included.

Table 2. Mitigation Sumary [1, 2, 3]

Mitigation Site	Mitigation Type	Cowardin Class	HGM Class	Mitigation Acres[2]	Mitigation Credits[2]
Eelgrass	Enhancement	E1/2AB	Estuarine	0.54	0.18
			Subtotal	**0.54**	**0.18**
Kentuck Slough	Enhancement (internal area)	E1UB	Estuarine	8.88	2.96
	Restoration (internal area)	E1UB	Estuarine	1.76	1.76
	Restoration [3] (internal area)	E2EM	Estuarine	0.12	0.12
	Restoration (wetland bench)	E2EM/PSS	Estuarine/Riverine	1.73	1.73
			Subtotal	**12.49**	**6.57**
Total				**13.03**	**6.75**

[1] See design sheets in Appendix B for detailed breakdown of site acreages.

[2] Represents the minimum acreage/credits needed to meet DSL standards. The entire Kentuck Mitigation Site as currently designed will provide an additional 0.31 contingency credits.

[3] Additional acreage of salt marsh is likely to form at site, with subsequent reduction in mudflat habitat.

1.5 SUMMARY OF NET GAINS AND LOSSES OF FUNCTIONS AND VALUES

Functional assessment methods are not available for the majority of wetland type/acreage that would be impacted by the Project (i.e., eelgrass flats and unvegetated mudflat). Therefore, a simple presentation of functional scores pre- and post-Project is not feasible. However, because the mitigation proposes to result in a net increase in acreage of all impacted habitats and because mitigation habitats will function in an equivalent manner as those being impacted, it is anticipated that there would be a net gain in overall functions and values.

2. CWM SITE INFORMATION

2.1 CWM SITE OWNER NAME AND CONTACT INFORMATION

The Intertidal Flats Mitigation Site (i.e., the Kentuck Slough Site) has been operated as a golf course until recently and is now owned by Fort Chicago LNG II U.S. L.P. (a wholly owned and controlled subsidiary of JCEP L.P.'s parent company, Veresen, Inc.). The eelgrass mitigation site is owned by the State of Oregon, as administered by the Oregon Department of State Lands, Land Management Division.

Project contact information is provided below:

Attention: Bob Braddock,
Vice President –Project Manager
Jordan Cove Energy Project, L.P.
125 Central Avenue, Suite 380
Coos Bay, Oregon 97420
Phone: (541) 266-7510
Mobile: (303) 748-3746

Attention: Jim Grimes,
Coos County Coordinator
Oregon Department of State Lands,
Land Management Division
775 Summer St. NE Suite 100
Salem, OR 97301-1279
Phone: (503) 986-5233

2.2 LEGAL AGREEMENT FOR PROPERTY USE AND LONG-TERM PROTECTION IF SITE IS NOT APPLICANT-OWNED

2.2.1 Eelgrass Mitigation Site

The proposed Eelgrass Mitigation Site is and will be owned by the State of Oregon.

JCEP L.P. has entered negotiations with the Coos Watershed Association (CWA), a local non-profit organization established in 1993 meeting the requirements of ORS 271.715(3)(b) to provide near-term (i.e., permit monitoring period) and long-term management and maintenance of all mitigation sites associated with the Jordan Cove Energy Project (including estuarine mitigation proposed at Kentuck Slough and authorized via Permit 37712-RF, and freshwater mitigation proposed by Pacific Connector Gas Pipeline L.P. at Kentuck Slough via Application 54484-RF). It is anticipated the CWA would hold the conservation easement from the State for the Eelgrass Mitigation Site proposed in Applications 54908-RF and 54909-RF, as well as the Eelgrass Mitigation Site authorized via Permit 37712-RF. Clauses necessary to protect the site will be written into the easement(s).

2.2.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

JCEP L.P. is the applicant; therefore, a legal agreement for the use and long-term protection of the site is not proposed.

2.3 LOCATION INFORMATION

2.3.1 Eelgrass Mitigation Site

Impacts to eelgrass resources will be mitigated at a shallow, unvegetated intertidal island located to the southwest of the Coos-Bay North Bend Airport runway (Tax map #25-13-08, lot# not applicable, Township 25 South, Range 13 West, Section 8). The proposed mitigation site is owned by the State of Oregon, with management authority held by DSL.

2.3.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

Mitigation for unavoidable impacts to mudflat and salt marsh habitats at the development sites will be provided at the former Kentuck Slough golf course (Kentuck Slough Site), located east of North Bend, Oregon (Township 25 South, Range 12 West, Sections 6 and 7; Township 25 South, Range 13 West, Sections 1 and 12, Willamette Meridian). Tax maps and lots are: 25s12w06c lot 100, 25s13w12a lot 100, and 25s13w1d, lot 400.

3. CWM SITE SELECTION AND DESIGN PRINCIPLES

3.1 REPLACEMENT

The proposed CWM will replace impacted functions and values through in-kind mitigation, at a 3:1 ratio, thereby enhancing, restoring, and creating the same types of habitats that are being impacted. Net acreage of these habitats will be greater after the Project and CWM than under existing conditions as a result of the standard mitigation ratios required by Oregon law.

3.2 PROVIDES LOCAL REPLACEMENT FOR LOCALLY IMPORTANT FUNCTIONS AND VALUES LOST, IF APPLICABLE

CWM will take place in proximity to the proposed impact sites, thereby providing local replacement of lost functions and values. Eelgrass mitigation will take place roughly opposite the Coos Bay channel from the impact site. Mudflat mitigation will occur within the Coos Bay estuary system, 3 to 4 miles from the impact site.

3.3 CWM IS SELF-SUSTAINING AND MINIMIZES MAINTENANCE NEEDS

Each mitigation site has been designed to be self-sustaining to the greatest extent practicable. The Eelgrass Mitigation Site will not rely on water control structures or other intensively managed structures to maintain wetland hydrology. The Intertidal Flats Mitigation Site (Kentuck Slough Site/former Kentuck Golf Course) requires a new tidegate structure to protect adjacent and upstream properties. Mitigation at the former Kentuck Golf Course is not viable without this structure. However, the actual mitigation site will maintain a free and open connection to the Coos Bay Estuary as a result of the installation of a bridge along East Bay Drive. This will result in removal of the existing culvert and tidegate that connects the former golf course to the estuary.

3.4 SITING CONSIDERATIONS FOR ECOLOGICAL SUITABILITY

3.4.1 Eelgrass Mitigation Site

The proposed eelgrass mitigation site is situated adjacent to the authorized eelgrass mitigation site for Permit 37712-RF. The authorized Eelgrass Mitigation Site was selected after a rigorous review of potential sites by DEA (DEA 2007). The review looked at eight sites throughout the bay and evaluated each site based on ecological conditions suitable for eelgrass growth. These conditions included appropriate salinity concentrations, moderate flow/circulation, appropriate depths relative to MLLW, distance from potential pollution sources, and the presence of nearby eelgrass beds. The review also assessed land availability and constructability issues. Two sites with high potential for successful eelgrass mitigation were identified and then narrowed down to the chosen site based on input from resource and regulatory agency staff.

3.4.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

The proposed Intertidal Flats Mitigation Site was selected because it is part of the advance mitigation area previously authorized by Permit 37712-RF intended to provide mudflat and salt marsh habitat.

3.5 MINIMIZES TEMPORAL LOSS

Mitigation work will be conducted during the same time as Project construction. Project construction will take approximately 42 months. Mitigation work will begin at the front end of the construction schedule, where feasible, in an effort to minimize temporal loss of ecological functions.

4. CWM EXISTING SITE CONDITIONS (BASELINE INFORMATION)

4.1 WETLAND DELINEATION OR DETERMINATION

4.1.1 Eelgrass Mitigation Site

A wetland delineation report has not been prepared for the proposed Eelgrass Mitigation Site. The site consists of an unvegetated sand flat below the average high tide elevation of Coos Bay and is surrounded by deeper water areas. Eelgrass borders portions of the edge of the island where elevations drop and water circulation and other factors are conducive to eelgrass growth. The site is clearly an estuarine resource feature within DSL and U.S. Army Corps of Engineers (USACE) jurisdiction.

4.1.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

A wetland delineation report has been prepared for the Kentuck Slough Site (DEA 2009). The delineation report provides the following site description.

The approximately 128-acre former golf course study site is located adjacent to the south bank of Kentuck Slough, between river mile 0.0 and river mile 0.9. Prior to diking, the area would have consisted of mudflats, and low and high salt marsh plant communities located along a broad intertidal terrace. The property has been diked from Coos Bay and the slough, and (until recently) has been operated as a golf course. Near the northwest corner of the property, the Kentuck Slough channel flows under East Bay

Road through a bridge with a tidegate structure, where flows then enter Kentuck Inlet, an arm of the Coos Bay Estuary. The site is also hydraulically connected to Kentuck Inlet by way of a 5-foot-diameter culvert and tidegate near the southeast corner of the property under East Bay Drive.

Portions of the original channel and smaller tributary channels remain on the former golf course; however, they have been notably altered and additional drainage ditches have been added. The levee and East Bay Drive section have resulted in the conversion of the property from an estuarine (i.e., saltwater and brackish water) system to a fresh water system. Historically the site had a bi-directional hydrologic connection (i.e., tidal flow in and out) with the slough channel and Coos Bay. Currently, the site is protected from tidal inundation, and drainage only occurs in one direction.

The approximately 100-acre historic flood terrace has been delineated as an emergent wetland (palustrine emergent Cowardin class) plant community dominated by lawn grasses, with scattered native and ornamental tree plantings. The areas outside of the maintained former golf course grounds consist of forested wetlands (palustrine forested Cowardin class) and upland forest. Historically, the flood terrace would have been classified as an estuarine wetland.

4.2 HGM AND COWARDIN CLASSES/SUBCLASSES AT CWM SITE

4.2.1 Eelgrass Mitigation Site

Based on the Guidebook for HGM-based Assessment of Oregon Wetland and Riparian Sites: Statewide Classification and Profiles (Adamus 2001), the proposed Eelgrass Mitigation Site may be classified as Estuarine Fringe, Embayment (EFE). Estuarine Fringe sites include sites whose hydrodynamics are influenced mainly by the daily bi-directional movement of tides and where the deep water edge is defined by the 2-meter depth contour ,as measured from mean daily low tide (Adamus 2001). The EFE subclass typically receives more of its hydrologic inputs from the ocean than from rivers and is less influenced by seasonal runoff events.

The Cowardin class of the proposed Eelgrass Mitigation Site is estuarine, intertidal, unconsolidated shore, regularly flooded (E2USN).

4.2.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

The former golf course wetlands would be classified as a slope wetland under the Hydrogeomorphic (HGM) classification system, because groundwater provides the dominant source of hydrology; however, it could also be placed in the "flats" class due to the notable effect that direct precipitation can have on water levels in the site. Prior to diking, the wetland would have been classified as an estuarine wetland. Under the Cowardin classification system, this wetland would be classified as a palustrine emergent wetland (PEM). The small amount of forested area within the site would be classified as palustrine forested wetlands (PFO).

The narrow fringe wetlands within the Kentuck Slough channel would be classified as estuarine, intertidal, emergent wetlands (Cowardin class) closer to the tidegate, and as PEM wetlands (Cowardin class) farther from the tidegate. The western portions of these wetlands, which experience brackish water conditions, would be classified as an estuarine fringe, marine-sourced, high tidal wetland under the HGM classification system. The eastern portions, which experience freshwater conditions, would be classified as an estuarine fringe, river-sourced wetland under the HGM classification system.

4.3 EXISTING AND PROPOSED HYDROLOGY

4.3.1 Eelgrass Mitigation Site

4.3.1.1 Existing Hydrology

Coos Bay is the water source to the Eelgrass Mitigation Site. The site consists of an unvegetated sand flat below the average high tide elevation of Coos Bay and is surrounded by deeper water areas. The sand flat is exposed during lower tides.

4.3.1.2 Proposed Hydrology

Coos Bay will provide the water source for the Eelgrass Mitigation Site. The site will be situated near the MLLW elevation, which will allow near permanent inundation of the site, except during very low tides. This is the natural hydrologic condition at which eelgrass flourishes within the bay.

4.3.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

4.3.2.1 Existing Hydrology

Hydrology within the former golf course area is driven primarily by groundwater elevations and secondarily by direct precipitation. Groundwater was typically observed in soil pits from 10 inches depth to within an inch or two of the surface. Saturation typically occurred 2 inches above this depth. These conditions are typical of wintertime conditions. In summer, groundwater elevations are typically a foot or two deeper (Wally Culp, [previous] golf course owner, pers. comm. 2009). These observations are consistent with hydrology conditions described in the Coos County soils survey (USDA 1989). Hydrology is also provided by seeps near the base of hill slopes, where shallow sub-surface flows come to the surface.

Shallow ponding was observed in many locations throughout the former golf course, but was most pronounced in the western half. Ground topography throughout the former golf course varies slightly, with roughly 2 to 3 feet of difference in relief from location to location. Drift lines were observed along the edges of the higher areas, which suggest that ponding was substantially greater before the site visit occurred. This ponding is likely the result of direct precipitation, which had not occurred for more than a week before the site visit.

Some flooding occurs from the surface drainages, particularly during high and in-coming tides, when the tidegate on the culvert at the southwest corner of the former golf course is closed. This effect is exacerbated during heavy or prolonged steady precipitation events; however, a pump at the southwest corner can be turned on to reduce such flooding.

Hydrology for the narrow fringe wetlands adjacent to the Kentuck Slough channel is primarily a function of flooding by tidal inundation and high flows within the Kentuck Slough channel. A high water table and saturation were observed in the soil pits. Shallow inundation (i.e., approximately 6 inches) occurred during high tide.

4.3.2.2 Proposed Hydrology

Tidal inundation from Coos Bay/Kentuck Inlet will provide the water source for the Intertidal Flats Mitigation Site. Normal tide cycles will substantially flood the property twice daily. The Kentuck Slough channel and two small tributaries will also provide water to the site.

4.4 EXISTING PLANT COMMUNITY DISTRIBUTIONS AND ABUNDANCE OF EXOTIC SPECIES

4.4.1 Eelgrass Mitigation Site

The proposed Eelgrass Mitigation Site is primarily devoid of vegetation; however, some floating macroalgae (i.e., seaweed) may pass through the site. Some of the deeper areas adjacent to the proposed site contain eelgrass beds and associated epiphytic macroalgae.

4.4.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

The approximately 100-acre historical flood terrace has been delineated as an emergent wetland (palustrine emergent Cowardin class) plant community dominated by maintained lawn grasses, with scattered native and ornamental tree plantings. The areas outside of the maintained former golf course grounds consist of forested wetlands (palustrine forested Cowardin class) and upland forest. A small and narrow fringe of high salt marsh community occurs along the lower portion of the Kentuck Slough channel. Six plant communities were identified during the wetland delineation and are described below.

Maintained Lawn Community

The Maintained Lawn community was dominated by Kentucky bluegrass (*Poa pratensis*, FAC). This community occurred in the maintained flats portion of the former golf course. Around the margins of this community, particularly adjacent to forested wetland areas, reed canarygrass (*Phalaris arundinacea*, FACW) was also identified as a dominant. This plant community was considered to be hydrophytic because greater than 50% of the dominant plants with known indicator status were hydrophytic.

A second type of this community was found in upland locations and contained Kentucky bluegrass and hairy cat's ear (*Hypochaeris radicata*, FACU). This second community type occurred on maintained hill slopes. This type of the plant community was considered to be non-hydrophytic because no greater than 50% of the dominant plants with known indicator status were hydrophytic.

Tree plantings occur in localized groupings throughout the former golf course, but are not considered dominant. Tree species included Sitka spruce (*Picea sitchensis*, FAC), shore pine (*Pinus contorta*, FAC), and various ornamental species.

Weedy Upland

The Weedy Upland community was located primarily along the levee protecting the former golf course from the Kentuck Slough channel. It was also occasionally found along semi-maintained areas along the toe of slopes along the south side of the former golf course. The Weedy Upland community was dominated by Himalayan blackberry (*Rubus armeniacus*, FACU), trailing blackberry (*Rubus ursinus*, FACU), Scotch broom (*Cytisus scoparius*, UPL), tall fescue (*Schedonorus phoenix*, FAC), reed canarygrass, Kentucky bluegrass, and orchard grass (*Dactylis glomerata*, FACU). Hooker willow (*Salix hookeriana*, FACW) was also occasionally found in this community. This plant community was

considered to be non-hydrophytic because no greater than 50% of the dominant plants with known indicator status were hydrophytic.

Forested Wetland Community

The Forested Wetland community occurred at the base of hillside ravines along the south side of the former golf course, where maintenance activities do not occur. Dominant vegetation consisted of Red alder (*Alnus rubra*, FAC), Oregon crab apple (*Malus fusca*, FACW), salmon berry (*Rubus spectabilis*, FAC), twin berry (*Lonicera involucrata*, FAC), trailing blackberry, small-fruited bulrush (*Scirpus microcarpus*, OBL), stinging nettle (*Urtica dioica*, FAC), slough sedge (*Carex obnupta*, OBL), skunk cabbage (*Lysichiton americanum*, OBL), deer fern (*Blechnum spicant*, FAC), creeping buttercup (*Ranunculus repens*, FACW), water parsley (*Oenanthe sarmentosa*, OBL), and youth on age (*Tolmiea menziesii*, FAC). This plant community was considered to be hydrophytic because greater than 50% of the dominant plants with known indicator status were hydrophytic.

Forested Upland Community

The Forested Upland community occurres on the hillsides adjacent to the Forested Wetland communities and maintained portions of the former golf course. Dominant vegetation consisted of Douglas fir (*Pseudotsuga menziesii*, FACU), red alder, cascara (*Rhamnus pershiana*, FAC), red elderberry (*Sambucus racemosa*, FACU), salmon berry, evergreen huckleberry (*Vaccinium ovatum*, UPL), salal (*Gaultheria shallon*, FACU), trailing blackberry, sword fern (*Polystichum munitum*, FACU), and deer fern. This plant community was considered to be non-hydrophytic because no greater than 50% of the dominant plants with known indicator status were hydrophytic.

High Salt Marsh Community

The High Salt Marsh community is located towards the western end of Kentuck Slough, where some tidal influence occurs and results in saltwater/brackish water conditions. Dominant species included Lyngby sedge (*Carex lyngbyei*, OBL), with salt grass (*Distichlis spicata*, FACW) and (*Deschampsia caespitosa*, FACW) as common subdominants. This plant community was considered to be hydrophytic because greater than 50% of the dominant plants with known indicator status were hydrophytic.

Reed Canarygrass Community

The Reed Canarygrass community is located towards the eastern end of Kentuck Slough (within the study area). Tidal influence occurs; however, freshwater conditions predominate. Reed Canarygrass is the sole dominant in this community. This community transitions into the High Salt Marsh community to the west, where water conditions grade from predominantly fresh to predominantly brackish. The Reed Canarygrass community was considered to be hydrophytic because greater than 50% of the dominant plants with known indicator status were hydrophytic.

4.5 SITE CONSTRAINTS OR LIMITATIONS

4.5.1 Eelgrass Mitigation Site

Potential site constraints include the following:

- Site access for construction and monitoring is limited to barge and other water craft.
- Dynamic site conditions are susceptible to force majeure (i.e., catastrophic events such as severe storm surge, tsunami, etc.).
- Impacts to adjacent eelgrass beds must be avoided.

4.5.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

The following potential site constraints were identified in the CWM plan authorized by Permit 37712-RF:

- "Opening the site to tidal influence creates the risk of increased flooding potential and saltwater intrusion to adjacent and upstream landowners. New cross dike construction and repair and/or enhancement of the existing dike are therefore required to ameliorate this risk. Dike construction and/or repair will result in additional wetland impacts that are accounted for in this plan." ("in this plan" refers to the CWM plan authorized by Permit 37712-RF)
- "Portions of East Bay Drive and the former golf course access road need to be elevated above tidal elevations to allow continued access to private residences and/or to comply with Coos County requirements. Road improvements will result in additional wetland impacts that are accounted for in this plan." ("in this plan" refers to the CWM plan authorized by Permit 37712-RF)
- "Two overhead power lines traverse the mitigation site. Accommodations will need to be made to provide access to power poles."

4.6 ENHANCEMENT PROJECTS

4.6.1 Factors Leading to Degraded Condition

Enhancement will occur at the Intertidal Flats Mitigation Site. Before alteration, the area would have consisted of mudflats, and low and high salt marsh plant communities located along a broad intertidal terrace. The property has been diked from Coos Bay and managed for various uses over the decades, including use as pasture for grazing and use as a golf course. The factors leading to the degraded condition at the Intertidal Flats Mitigation Site include the construction of dikes and resulting isolation from Kentuck Inlet and Coos Bay; the construction of Kentuck Golf Course and appurtenances (e.g., cart paths, bridges, culverts); significant changes in vegetative communities resulting from altered site hydrology; and pumping and maintenance activities associated with golf course operations.

4.6.2 How CWM Plan Will Reverse Degradation

The CWM Plan will reverse degradation by breaching the dike and restoring tidal hydrology to the historical estuarine wetland, removing golf course appurtenances, and providing for the re-establishment of mudflat and salt marsh plant communities.

5. FUNCTIONS AND VALUES ASSESSMENT

5.1 ASSESSMENT METHODS USED

Formal functional assessment methods are not available for the wetland type/acreage that would be impacted by the Project (i.e., primarily eelgrass flats and unvegetated mudflat). Therefore, a simple presentation of functional scores pre- and post-Project is not feasible. However, because the mitigation proposes to result in a net increase in acreage of all impacted habitats and because mitigation habitats will function in an equivalent manner as those being impacted, it is anticipated that there would be a net gain in overall functions and values.

Best professional judgment was used to evaluate functions and values at the impact and mitigation sites.

5.2 FUNCTIONS AND VALUES ASSESSMENT

Table 3 provides a summary of functions for each assessed site, including predicted functions post-mitigation. A more detailed discussion of functions at the impact sites and mitigation sites pre- and post-mitigation is provided thereafter.

Table 3. Summary of Functional Assessment Results

	Eelgrass	Intertidal Flats
Impact Sites	Fish migration, rearing, and feeding; cover for juvenile fish; primary production and food chain support; waterfowl and shorebird habitat; invertebrate habitat.	Fish migration, rearing, and feeding; primary production and food chain support; waterfowl and shorebird habitat; invertebrate habitat.
Mitigation Sites – Existing	Similar functions to impact site; however, functioning at lower level due to lack of eelgrass, which provides increased primary and secondary production and greater diversity of organisms. Mitigation site does not provide cover for juvenile fish.	Limited fish migration, rearing, and feeding; limited support of native plant communities; limited waterfowl habitat; native amphibian support.
Mitigation Sites – Post-restoration	Same as impact site.	Same as impact site. Will also result in important brackish water transition zone for out-migrating anadromous fish.

5.2.1 Impact Sites

5.2.1.1 Intertidal Mudflat, Salt Marsh, and Eelgrass Habitats

The unvegetated intertidal mudflat, eelgrass, and salt marsh habitats provide similar functions; however, the salt marsh and eelgrass habitats tend to provide these functions to a greater extent. Functions provided by sand flats and mudflats, including eelgrass flats, are described in the project Biological Evaluation/Biological Assessment (Ellis Ecological Services 2007), which has been provided to DSL and the USACE, with relevant excerpts provided below.

> Flats habitats support algae, and a variety of benthic invertebrates. These habitats are generally sheltered from strong currents and wave action and their gradual slopes tend to dissipate wave and tidal energies (http://www.inforain.org). Sediment deposition and tidal/wave action are important factors that help develop and shape flats habitat. Tidal flat sediments vary from fine mud to cobbles. Sediments at the mitigation site are most likely to range from course sand to mud. Shallow water depths allow for maximum light and warm temperatures, which may result in extensive algae blooms in the spring and summer. Diatoms are a very common type of algae that are distributed throughout the lower bay. Diatoms contribute significantly to estuarine primary production.
>
> Mud and sand flats may provide habitat to various shellfish species and ghost shrimp. Bottom-feeding fishes graze over flats during high tide. Flats habitats are important to juvenile salmonids by providing suitable substrate conditions to support primary productivity (benthic algae) and prey species (benthic macroinvertebrates)..

Eelgrass beds further support primary productivity, act as substrate and structure for epiphytic (attached) algae and other aquatic organisms, and provide important cover for juvenile fish. Intertidal flats also provide feeding areas for waterfowl, shorebirds, and raptor species such as osprey.

5.2.2 Mitigation Sites Pre- and Post-Mitigation

5.2.2.1 Eelgrass Mitigation Site Pre-Mitigation

The proposed mitigation site currently consists of a sand flat island situated near mean lower low tide elevation. The island is exposed during lower low tides. Deeper areas surrounding the island contain eelgrass beds. Functions provided by sand flats and mudflats are described above in Section 5.2.1.1. Generally speaking, functions provided occur at a lower level for bare sand flats than for areas with eelgrass beds. Primary production and associated food chain support are lower in the bare sand flat areas than in the areas with eelgrass. The bare sand flat also lacks the substrate and structure to support epiphytic algae and other organisms that would increase primary and secondary productivity. Cover for juvenile fish is not provided.

5.2.2.2 Eelgrass Mitigation Site Post-Mitigation

The same pre-mitigation functions would be provided post-mitigation; however, these functions would be provided at a higher level. The presence of eelgrass would elevate levels of primary production and associated food chain support functions considerably. The eelgrass would also provide substrate and structure to support epiphytic algae and other organisms that would increase primary and secondary productivity. Cover for juvenile fish would be provided.

5.2.2.3 Intertidal Flats Mitigation Site (Kentuck Slough Site) Pre-Mitigation

Functions provided at the proposed Intertidal Flats Mitigation Site are limited by the current use as grazing pasture and former use as a golf course. The vast majority of the site is regularly grazed, which limits vegetation growth and associated functions such as primary production and wildlife habitat. The wetlands flood regularly during the winter months, providing flood storage function; however, the value of this function is limited by the fact that the site is located at the downstream end of Kentuck Slough, with tidal waters directly adjacent to the west end of the property. Therefore, this function does not prevent other properties from flooding. Furthermore, the levee along the north side of the former golf course prevents high flows in Kentuck Slough from spilling over into the property. Waterfowl likely use portions of the property for feeding on the short grasses and in several of the small ponds; however, former golf course activities hinder use of the site for breeding. Beaver activity was noted along the small creek channels that flow through the former golf course. These creeks are mapped by the Oregon Department of Fish and Wildlife (ODFW) as winter steelhead rearing and migration habitat. An 8- to 10-inch-long fish of unknown species was observed just upstream of the tidegated outlet culvert during the January 2009 site visit. Creek shading is poor, and there is minimal protective cover, such as large wood, within these creeks. Rough skin newts were observed in the creeks, revealing that the creeks are supportive of some species of native amphibians. Water quality functions are limited due to the regular maintenance activities, which likely include fertilizer application and some chemical spraying for weed control.

5.2.2.4 Intertidal Flats Mitigation Site (Kentuck Slough Site) Post-Mitigation

Functions provided at the proposed Intertidal Flats Mitigation Site will include those described for mudflats under Section 5.2.1.1 (i.e., similar functions as the proposed intertidal mudflat impact site). These would include: providing habitat to various shellfish species, and ghost shrimp and other invertebrates; migration, rearing, and feeding areas for fish; support of primary production and associated food chain support; and feeding areas for waterfowl, shorebirds, and raptor species such as osprey. Restoration of tidal connection authorized by mitigation associated with Permit 37712-RF will provide a larger and lengthened transition zone between freshwater and saline environments, which will be particularly beneficial to out-migrating anadromous fish.

6. MAPS, DRAWINGS, AND CONSTRUCTION SPECIFICATIONS

6.1 SCALED SITE PLAN AND CROSS SECTIONS

Scaled site plans and cross sections for each mitigation site are provided in Appendix B.

6.2 CONSTRUCTION SCHEDULE

Construction of the Project is anticipated to begin in the end of third quarter of 2014. Resource impacts resulting from construction will begin in the fourth quarter of 2014, concurrent with the in-water work window. Mitigation construction will occur prior to (when feasible) or concurrently with resource impacts. Planting will occur during the dormant season (approximately November 1 to March 15).

6.2.1 Eelgrass Mitigation Site

A proposed sequencing schedule is provided in Table 4. Mitigation construction is anticipated to begin in the fourth quarter of 2014. The schedule takes into account the following two key time periods that will affect mitigation activities:

- ODFW-approved in-water work period: October 1 through February 15.
- Optimal eelgrass transplanting period (i.e., time of peak biomass): summer.

6.2.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

Mitigation construction would begin in the fourth quarter of 2014 and considers the following schedule constraints:

- In-water work window for the estuary: October 1 through February 15.
- In-water work window for Kentuck Slough (i.e., above the existing tidegate): July 1 through September 15.

See Table 5 for the sequencing schedule for the Intertidal Flats Mitigation Site.

Table 4. Proposed Mitigation Project Sequencing Schedule – Eelgrass Mitigation Site

Year	Mitigation Activities
1	**Summer:** Conduct bathymetric survey and eelgrass surveys to determine appropriate excavation elevations. Begin contracting process for eelgrass tranplanting contractor. **Fall:** During in-water work period, excavate mitigation site to appropriate elevations. Post-excavation bathymetric survey or cross-sections to be used in monitoring site stability. Review and select eelgrass transplanting contractor.
2	**Late Spring/Early Summer:** Survey cross-sections to monitor site stability after first winter storm season. **Summer:** First eelgrass collection and transplanting treatment (test plots). Monitor reference/donor site for baseline growth characteristics. Post-transplanting monitoring of mitigation site to determine compliance with agreed-upon planting plan. **Fall/Winter:** Evaluate mitigation work to date and determine whether any corrective measures are needed for next season.
3	**Late Spring/Early Summer:** Survey cross-sections to monitor site stability after second winter storm season. If site appears to be relatively stable, then site-stability monitoring in subsequent years would only occur if other monitoring efforts discover a notable change in site elevations that could prevent the mitigation from meeting the performance standard for Objective 2. **Summer:** Second eelgrass collection and transplanting. Monitor reference/donor site and mitigation site. **Fall/Winter:** Evaluate mitigation work and determine whether any corrective measures are needed for next season.
4	**Late Summer:** Monitor reference/donor site and mitigation site (first year in which percent cover at mitigation site can apply to meeting performance standard, assuming additional planting is not proposed for this year). **Fall/Winter:** Evaluate mitigation work and determine if any corrective measures are needed for next season
5	**Summer:** Monitor reference/donor site and mitigation site (second year in which percent cover at mitigation site can apply to meeting performance standards, assuming additional planting is not proposed for this year). **Fall/Winter:** Evaluate mitigation work and determine whether any corrective measures are needed for next season. **If performance standards for Objective 2 have been met, then the mitigation project is considered a success and future monitoring is no longer required. If performance standards for Objective 2 have not been met, then additional monitoring is required**.
6 - 8	Continue to monitor until performance standards for Objective 2 are met. If by the end of year 8 performance standards have still not been met, then JCEP L.P. will consult with the agencies to determine future actions.

Table 5. Proposed Mitigation Project Sequencing Schedule – Intertidal Flats Mitigation Site (Kentuck Slough Site)(Schedule is for entire site authorized by Permit 37712-RF)

Year	Mitigation Activities
1	**Fall/Winter (beginning of estuary in-water work window):** Mobilize. Install erosion and sediment control measures. Construct East Bay Drive detour. Construct East Bay Drive bridge, including cofferdams to prevent tidal exchange into former golf course. Construct East Bay Drive roadway improvements. Construct former golf course access roadway improvements.
2	**Late Spring/Early Summer:** Repair/augment existing dike. Construct/enhance channel. Construct new cross dike and flapgate. **Summer (beginning of Kentuck Slough in-water work window):** Construct new tidegate structure with MTR gate in Kentuck Slough, including cofferdams. **Fall/Winter (beginning of estuary in-water work window):** Remove existing tidegate under East Bay Drive. Remove cofferdams. Site cleanup and demobilization.

6.3 SCHEMATIC OF WATER CONTROL STRUCTURES

Water control structures are not anticipated for the Eelgrass Mitigation Site. The Eelgrass Mitigation Site will interact freely with Coos Bay.

The Intertidal Flats Mitigation Site will feature new tidegates as authorized and described in Permit 37712-RF.

6.4 PLANTING LISTS BY HGM/COWARDIN CLASS

Planting lists for the Eelgrass Mitigation Site and Intertidal Flats Mitigation Site are provided in Table 6. Plantings at the Intertidal Flats Mitigation Site (i.e., Kentuck Slough) will only occur in proposed salt marsh areas and only if it is determined during site monitoring that natural recruitment is not occurring as desired (i.e., within timeframe to meet performance standards). Plant species substitutions may occur at the Intertidal Flats Mitigation Site based on species availability at the time of plant installation, but will be consistent with native species found in nearby Coos Bay Estuary salt marshes. No plantings will occur in proposed unvegetated mudflat portions of the site.

Table 6. Eelgrass Mitigation Site and Intertidal Flats Mitigation Site Planting Lists

Botanical Name	Common Name	Indicator Status
Eelgrass Mitigation Site HGM =Estuarine Cowardin = E2USN		
Zostera marina	Eelgrass	OBL
Intertidal Flats Mitigation Site HGM =Estuarine Cowardin = E2EM		
Deschampsia cespitosa	Tufted hairgrass	FACW
Hordeum brachyantherum	Meadow barley	FACW
Carex lyngbei	Lyngby's sedge	OBL
Grindelia integrifolia	Gumweed	FACW
Distichlis spicata	Saltgrass	FACW
Scirpus americanus	American threesquare	OBL
Salicornia virginica	Pickleweed	OBL

7. MONITORING PLAN

7.1 PERFORMANCE STANDARDS

Performance standards for each objective are presented below. Project objectives have been restated for the sake of convenience.

7.1.1 Eelgrass Mitigation Site

(NOTE: Total eelgrass impacts addressed in this plan plus those permitted under Permit 37712-RF will be 2.56 acres based on the latest project configurations and the combined mitigation site will be 7.68 acres.)

- **Objective 1.1:** Recontour (excavate) an area of approximately 0.54 acres to provide suitable elevations for the establishment of eelgrass. Suitable elevations will be based on field observations of existing nearby robust eelgrass beds.

  Performance Standard: *A minimum of 0.54 acres within the mitigation site will be at elevations suitable for eelgrass establishment. Wave and current action may cause elevations to shift over time. This is acceptable as long as performance standards for Objective 1.2 are likely to be met.*

- **Objective 1.2:** Establish a minimum of 0.54 acres of eelgrass beds whereby a minimum of 0.18 acres would be classified as medium- to high-density eelgrass beds within the recontoured area described under Objective 1. Density classes are defined as follows: less than 10% cover equals an absence of eelgrass bed, low density equals approximately 10% to 39% cover, medium density

equals approximately 40% to 79% cover, and high density equals approximately 80% cover or greater.

Performance Standard: *Site mapping will delineate 0.54acres of eelgrass beds, with a minimum of 0.18 of these acres falling within the medium to high density class. Density classes are defined as follows: less than 10% cover equals an absence of eelgrass bed, low density equals approximately 10% to 39% cover, and medium to high density equals approximately 40% cover or greater.*

Because of the documented natural annual variability of eelgrass bed coverage that can occur, it is not necessary for the mitigation site to constantly maintain the minimum of 0.54 acres of eelgrass bed. The performance standards will have been met when the site contains a minimum of 0.54 acres of eelgrass beds for any two years, including non-consecutive years, after the last year in which planting occurred.

7.1.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

Mitigation Goal 2: Establish 12.49 acres of tidally influenced habitats at the Kentuck Slough Site Permit 37712-RF Advance Mitigation Area and adjacent area not included in Permit 37712-RF.

To achieve this goal, the following objectives will be carried out:

- **Objective 2.1:** Establish a minimum of 0.12 acres of salt marsh habitat within the internal portion of the Kentuck Slough Site, with the remainder of the internal portion (10.64 acres) being mudflat and/or tide channel. A greater amount of salt marsh, with subsequent reduction in mudflat is acceptable,

  Performance Standard: *See Objective 2.3 for habitat/vegetation monitoring criteria.*

- **Objective 2.2**: Establish an approximately 1.73 acre wetland bench along Kentuck Slough by relocating the existing levee southward.

  Performance Standard: *An as-built survey will show that a 1.73 acre bench has been established adjacent to Kentuck Slough.*

- **Objective 2.3:** Establish an emergent to scrub-shrub, brackish to freshwater transitional plant community along the Kentuck Slough bench described in Objective 2.2.

  Performance Standard: *In the internal portion of the site, monitoring will show that a minimum of 0.12 acres of salt marsh has been established and 10.64 acres of mudflat established. A greater amount of salt marsh, with subsequent reduction in mudflat is acceptable. The wetland bench area will contain approximately 1.73 acres of native plant community that transitions from salt marsh to freshwater scrub-shrub (from west to east).*

  Performance Standard: *At the end of Year 5 [vegetation monitoring], the following percent cover objectives will be met, as determined through vegetation sample plots. These objectives are specific to the vegetation communities and minimum acreages noted above and do not include mudflat areas. Noxious weeds would include those species designated as "A" or "B" by the Oregon Department of Agriculture Noxious Weed Control Program, as well as non-native Spartina species.*

1. *The cover of native herbaceous species is at least 60%.*
2. *The cover of invasive herbaceous species is no more than 20%. After the site has matured to the stage when desirable canopy species reach 50% cover, the cover of invasive understory species may increase but may not exceed 30%.*
3. *The cover of invasive shrub or tree species is no more than 10%.*
4. *Bare substrate represents no more than 20% cover.*
5. *By Year 3 and thereafter, there are at least three different native species. To qualify, a species must have at least 5% average cover in the habitat class, and occur in at least 10% of the plots sampled.[this time period may be extended in the salt marsh area to account for natural recruitment processes]*
6. *Prevalence Index total for all strata is less than 3.0.*
7. *The density of woody vegetation is at least 1,600 native plants (shrubs) and/or stems (trees) per acre, or the cover of native woody vegetation on the site is at least 50% in the scrub-shrub community. Native species volunteering on the site may be included; dead plants do not count. Woody vegetation standards should be met for two successive years without irrigation.*

- **Objective 2.4:** Restore tidal connection to the irrigation pond creek system through installation of a fish passable culvert that meets ODFW fish passage criteria.

  Performance Standard: *An as-built survey will show that a culvert that meets ODFW fish passage criteria has been installed in the face of the existing irrigation dam/proposed realigned section of Golf Course Lane.*

7.2 MONITORING PLAN

The purpose of the mitigation monitoring requirement is to provide information for DSL to: (a) determine whether the mitigation project complies with the conditions of the authorization; (b) evaluate whether the mitigation project meets the goals, objectives, and performance standards of the mitigation plan; and (c) provide information for removal-fill program monitoring.

JCEP L.P. will monitor the mitigation sites and provide a post-construction report and annual written monitoring report(s) to USACE. Monitoring report(s) will include all data necessary to document compliance with goals, objectives, and performance standards associated with the CWM Plan. This data may include photographs, topographic surveys, plant survival data, hydrologic data, and other information as required to demonstrate compliance.

The report(s) shall include the following sections:

a. Introduction
b. Goals, objectives, and performance standards
c. Methods
d. Results
e. Summary and recommendations
f. Figures
g. Appendices with data and photographs

7.2.1 Schedule

7.2.1.1 Eelgrass Mitigation Site

Monitoring will be conducted for a minimum of five years but may extend up to eight years if performance standards for Objective 2 are not met within the first five years, as described in Table 4.

7.2.1.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

Monitoring shall be conducted for five years unless otherwise specified by DSL. Official vegetation monitoring period should start upon the first sign of natural recruitment of salt marsh species or within the third growing season post-tidal reconnection, whichever is sooner.

7.2.2 Methods

7.2.2.1 Eelgrass Mitigation Site

The following monitoring work will likely occur concurrently with eelgrass mitigation monitoring for Permit 37712-RF and will utilize the same methods. The following methods are as described in the CWM plan for Permit 37712-RF. Transects described below will be extended into the area described in this current mitigation plan.

"Monitoring will occur using hydrographic survey methods. Specifically, transects will be run across the mitigation site at 25-foot spacing using a single-beam echo sounder. Differential Global Positioning System (DGPS) will be used to track transect lines with submeter accuracy. This will equate to roughly 40 transects if the transects are run perpendicular to the approximately 1,000-foot-long site. Transect direction may require adjustment in the field due to prevailing wind and tidal conditions. Ultimately, full to near full coverage of the site will occur based on 25-foot spacing of transects. "

Appropriate single-beam technology will be used that can map both the bottom elevation and submerged aquatic vegetation (i.e., eelgrass). Transects will extend beyond the mitigation site and into adjacent existing eelgrass beds. Additional transects will occur as needed to assess the health and recovery of eelgrass plant stock donor sites. A submerged camera or video tow will be used, as needed to confirm data recorded by the single-beam echo sounder; however, due to the shallow nature of the site, visual observation from the boat deck may be sufficient.

Data from the single-beam transects will be analyzed against the objectives and performance standards as follows:

Objective 1.1: Cross-section bathymetry will be reviewed against desired elevations for eelgrass establishment. Change in bathymetry from post-construction excavation/dredging (i.e., as-built survey) to shortly after the first storm season will be reviewed to assess site stability before eelgrass planting occurs. Bathymetry data will be collected and reviewed in future years as warranted.

Objective 1.2: Eelgrass presence will be mapped along each transect. Within the mitigation site, individual transects will be subdivided into 10-foot-long sample segments (the sample segments). Each sample segment will be classified into one of three cover classes: (1) no eelgrass; (2) low density eelgrass (i.e., 10% to 39% cover); or (3) medium to high density eelgrass (i.e., 40% cover or greater). A tally of all sample segments by cover class will be conducted. To meet the objective of achieving 0.54 acres of eelgrass whereby a minimum of 0.18 acres would be classified as medium to high density eelgrass beds, a

minimum of 33% of all sample segments will have to be classified as medium to high density (based on 0.18 acres/0.54 acres), with the remainder of sample segments needing to be classified as low density eelgrass. A greater percentage of medium to high density eelgrass and associated lowered percentage of low density eelgrass is acceptable.

The duration of monitoring activities would be based on whether or not the Eelgrass Mitigation Site has met the performance standards. Specifically, monitoring would continue until performance standards for Objective 1.2 are met. This would require a minimum monitoring period of five years; however, it is anticipated that performance standards for Objective 1.2 would more likely be met in Years 6 or 7. If, by the end of Year 8, performance standards have still not been met, then JCEP L.P. will consult with the agencies to determine future actions.

7.2.2.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

Monitoring of the intertidal flats mitigation site specific to this current CWM plan will occur in conjunction with CWM monitoring authorized by Permit 37712-RF. Monitoring efforts specific to this current plan are focused on the establishment of salt marsh and the wetland bench. Post-construction monitoring will occur for a period of five years. Vegetation monitoring may wait several years post-construction to allow soils to adjust to the new saline environment and for native recruitment of salt marsh species to begin (see Section 7.2.1.2 Intertidal Flats Mitigation Site (Kentuck Slough Site). Monitoring visits will occur at least once per year during the five year monitoring period and will occur during the summer to early fall months.

Vegetation monitoring methods will be based on DSL Routine Monitoring Guidance for Vegetation (DSL 2009) or the most current DSL guidance document available when monitoring first starts, with minor modifications as needed to account for the site being salt marsh and not a freshwater wetland. Sample plots and photo stations will be established during the first year of monitoring and will be set up to appropriately monitor the site relative to the performance standards.

7.3 CONTINGENCY PLAN/ADAPTIVE MANAGEMENT PLAN

7.3.1 Eelgrass Mitigation Site

Contingency measures are based on principles of adaptive management. If monitoring shows that the performance standards are not being met or are not on a path to being met by the end of the monitoring period, then contingency measures will be needed. The following contingency measures are proposed to address foreseeable problems that could occur. Actual contingency measures would be based on monitoring data and site circumstances as they occur during the monitoring period:

1. If eelgrass transplants are surviving and appear healthy, but colonization of open areas is occurring too slowly or not at all, then additional transplanting would take place from a nearby healthy donor bed.
2. If eelgrass transplants are not surviving or appear unhealthy, then the following contingency measure would occur:

   Mitigation site monitoring data will be compared with monitoring of the donor site and a reference site to determine whether poor eelgrass survivorship/health is occurring in adjacent areas, with the following potential courses of action:

A. If survivorship/health is poor in nearby areas, then the mitigation site could potentially be re-transplanted. However, this re-transplantation should only occur once nearby eelgrass populations are healthy again.

B. If survivorship/health is good in nearby areas, then a review of transplanting technique and site elevations will occur to determine whether inappropriate installation methods were used and/or whether elevations have changed and may be the root cause of poor success.

3. If inappropriate installation methods were used, then the site may be re-transplanted once the installation method issue has been rectified.
4. If installation methods were deemed adequate, but elevations have changed so that they do not support eelgrass, then an assessment of site stability will be performed. If it is deemed possible to re-grade the site, with acceptable adjustment so that elevations will be maintained naturally, then the site could be re-transplanted. Replanting would occur at least one year after regrading occurs.
5. If installation methods were deemed adequate, elevations have not changed or have changed but cannot be appropriately rectified, and no other rectifiable source of plant failure can be identified, then no further actions would be proposed for this site. JCEP L.P. and the agencies would then discuss alternative mitigation strategies.

7.3.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

If the site does not meet the performance standards, including the identification of potential concerns to surrounding infrastructure, the potential cause(s) of the deficiencies or concerns will be evaluated as they arise, and solutions offered to the agencies.

8. LONG-TERM PROTECTION AND FINANCIAL SECURITY INSTRUMENTS

8.1 PROTECTION INSTRUMENT

8.1.1 Eelgrass Mitigation Site

The proposed Eelgrass Mitigation Site is and will be owned by the State of Oregon.

JCEP L.P. has entered negotiations with the Coos Watershed Association (CWA), a local non-profit organization established in 1993 meeting the requirements of ORS 271.715(3)(b) to provide near-term (i.e., permit monitoring period) and long-term management and maintenance of all mitigation sites associated with the Jordan Cove Energy Project (including estuarine mitigation proposed at Kentuck Slough and authorized via Permit 37712-RF, and freshwater mitigation proposed by Pacific Connector Gas Pipeline L.P. at Kentuck Slough via Application 54484-RF). It is anticipated the CWA would hold the conservation easement from the State for the Eelgrass Mitigation Site proposed in Applications 54908-RF and 54909-RF, as well as the Eelgrass Mitigation Site authorized via Permit 37712-RF. Clauses necessary to protect the site will be written into the easement(s).

During the construction and monitoring periods, floating signage and/or buoy markers will be used that identify the site as a mitigation site and that prohibit anchoring. JCEP L.P. will bear responsibility for site maintenance and enforcement of the prohibition on anchoring.

8.1.2 Intertidal Flats Mitigation Site (Kentuck Slough Site)

A deed restriction has been prepared for the Kentuck Slough Site as part of Permit 37712-RF, which is held by the Oregon International Port of Coos Bay (Port). This deed restriction includes the advance mitigation area from which JCEP L.P. will obtain mitigation credits. Although the deed restriction has been prepared, it has not been recorded yet, but this is planned to occur prior to construction of the Port's Slip and Access Project and would also occur prior to construction of the Projects (i.e., LNG and SDPP Projects). The additional mitigation area adjacent to those included in Permit 37712-RF will also be included in the deed restriction.

Documentation shall be recorded no later than the end of the first year of project construction.

8.2 PROPOSED FINANCIAL SECURITY INSTRUMENT

JCEP L.P. will provide a surety bond specifically for the purpose of guaranteeing CWM site performance. The bond amount will be based on guidelines in Oregon Administrative Rule (OAR) 141-085-700(6). Because there is not a mitigation bank within a service area covering the project's removal-fill site, JCEP shall post a bond amount equal to the current cost of payment in-lieu mitigation, and based on the project's amount of removal-fill acreage. Based on the most recent published DSL calculation (July 1, 2013), the rate of payment for Payment In-lieu mitigation is $75,000 per acre. The project proposes to permanently impact 10.19 acres of estuarine and freshwater wetlands; therefore, the proposed bond amount is estimated to be$764,250.

In addition, JCEP L.P. will provide personal guarantees or other appropriate sureties (e.g., a letter of credit from the managing partner of the Limited Partnership or its parent company) that secures compliance with mitigation obligations and promises to make all reasonable efforts to maintain the business entity in an active status until all mitigation obligations have been satisfied.

8.3 LONG-TERM MAINTENANCE PLAN (POST-MONITORING PERIOD)

8.3.1 Anticipated Ownership

The Eelgrass Mitigation Site will be owned by the State of Oregon, with an easement held by CWA. JCEP L.P. will own the Intertidal Flats Mitigation Site.

8.3.2 Anticipated Long-term Maintenance Actions

Long-term maintenance actions at the mitigation sites will take effect after the permit monitoring period has ended, which assumes that performance criteria have been met. Long-term maintenance actions may include the following, on an as-needed basis:

- At a minimum, conduct an annual site visit at each mitigation site to document potential management and maintenance needs
- Tidegate and bridge maintenance
- Dike maintenance
- Invasive/noxious weed control
- Garbage/debris removal
- Installation of protective signage and/or other deterrents if vandalism or inappropriate activities occur

- Maintenance of "no anchor" signage/buoys at the Eelgrass Mitigation Site
- Installation of new native plantings and/or habitat features

A long-term management plan, which incorporates principals of adaptive management, will be prepared as a permit condition of approval. The plan will discuss long term management goals, general monitoring and maintenance guidance, reporting requirements, and roles and responsibilities. In line with the principals of adaptive management, the long-term management plan will be considered a living document that may be revised over time in an effort to best serve conservation needs and on the ground realities.

8.3.3 Entity Responsible for Maintenance

JCEP L.P. has entered negotiations with the Coos Watershed Association (CWA), a local non-profit organization established in 1993 meeting the requirements of ORS 271.715(3)(b) to provide long-term management and maintenance of all mitigation sites associated with the Jordan Cove Energy Project (including estuarine mitigation proposed at Kentuck Slough and authorized via Permit 37712-RF, and freshwater mitigation proposed by Pacific Connector Gas Pipeline L.P. at Kentuck Slough via Application 54484-RF). CWA would also provide similar services during the permit monitoring period. JCEP L.P. would endow CWA to provide these services upon substantial completion of mitigation construction through the life of the Projects (estimated approximately 30 years post construction). If negotiations with CWS fail, JCEP L.P. would create and endow a third party entity meeting the requirements of ORS 271.715(3)(b) to provide management and maintenance services for the mitigation projects from substantial completion of mitigation construction through the life of the Projects.

8.3.4 Anticipated Funding Source

JCEP L.P. will create an endowment to fund long-term maintenance of the mitigation sites.

9. PREPARERS AND CONTRIBUTORS

Ethan Rosenthal, DEA Ecologist, authored this report. Sean Sullivan, DEA Senior Project Manager, provided the quality review. Dawn Afman, DEA Project Assistant, prepared the report drafts. Sara Gilbert, DEA GIS Specialist, and Justin Demello, DEA CAD Technician, provided graphics.

10. REFERENCES

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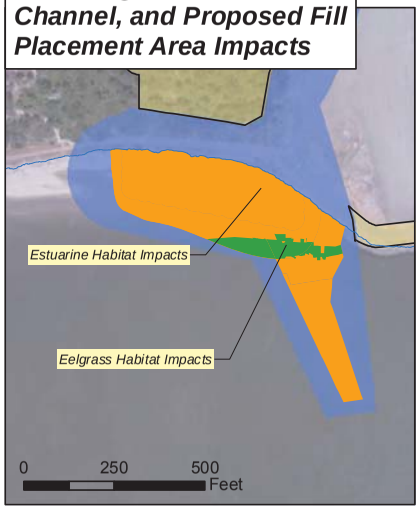
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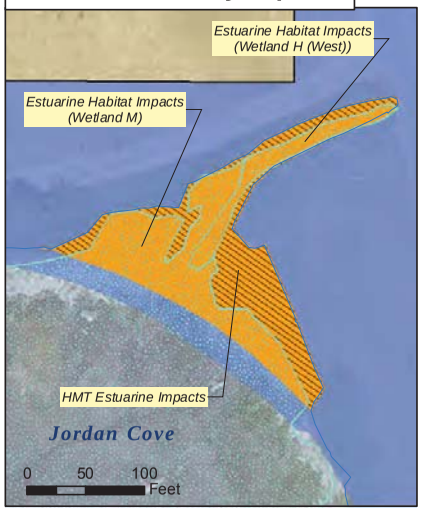
11. APPENDICES

APPENDIX A – FIGURE

LNG Barge Berth, Access Channel, and Proposed Fill Placement Area Impacts



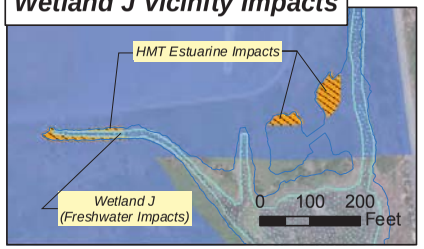
Wetland M Vicinity Impacts

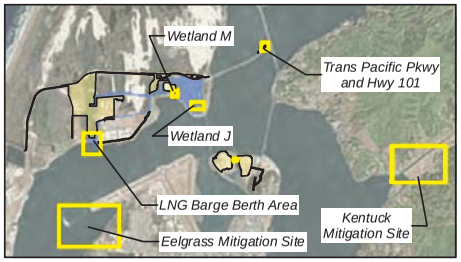


Trans Pacific Parkway and Highway 101 Impacts



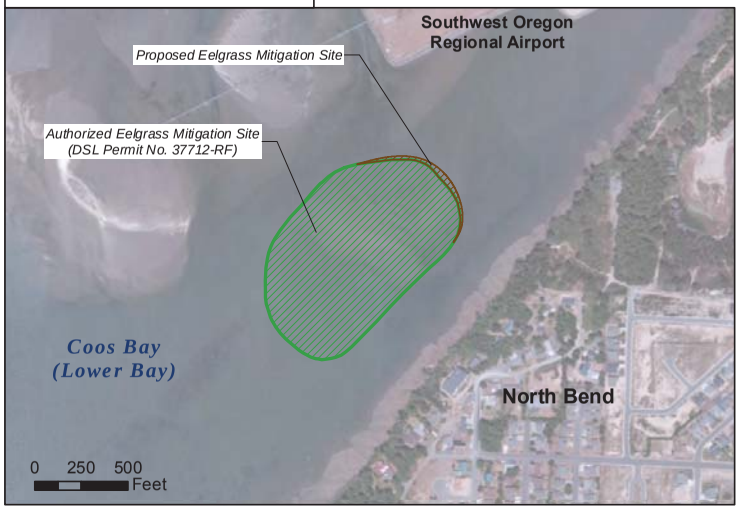
Wetland J Vicinity Impacts



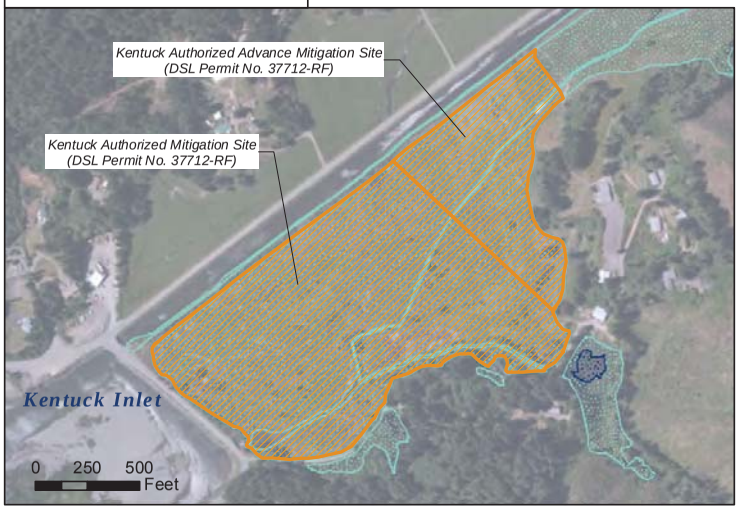


- Eelgrass Habitat Impacts
- Estuarine Habitat Impacts (Intertidal and Shallow Subtidal)
- HMT Estuarine Impacts (below 10.26 ft NAVD88)
- Highest Measured Tide (HMT) (10.26 ft NAVD88)
- Delineated Wetland
- Open Water
- LNG Project Footprint Boundary
- South Dunes Power Plant Site Boundary

Eelgrass Mitigation Site



Kentuck Mitigation Site



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JORDAN COVE LNG TERMINAL PROJECT

Figure 1

COOS COUNTY

Compensatory Wetland Mitigation Plan

Part B - Permanent Estuarine Impact Areas and Estuarine CWM Sites

\\Pdxfs1\project\J\JCEP00000004\0600INFO\GS\arcmap\Permits\CWM Plan DSL 2014_Sep Update\Figure 1 Part B Estuarine Wetlands and CWM Sites.mxd sast Oct 08, 2014 2:00PM

APPENDIX B – COMPENSATORY WETLAND MITIGATION DESIGN PLANS:

EELGRASS

Kentuck Mitigation Site



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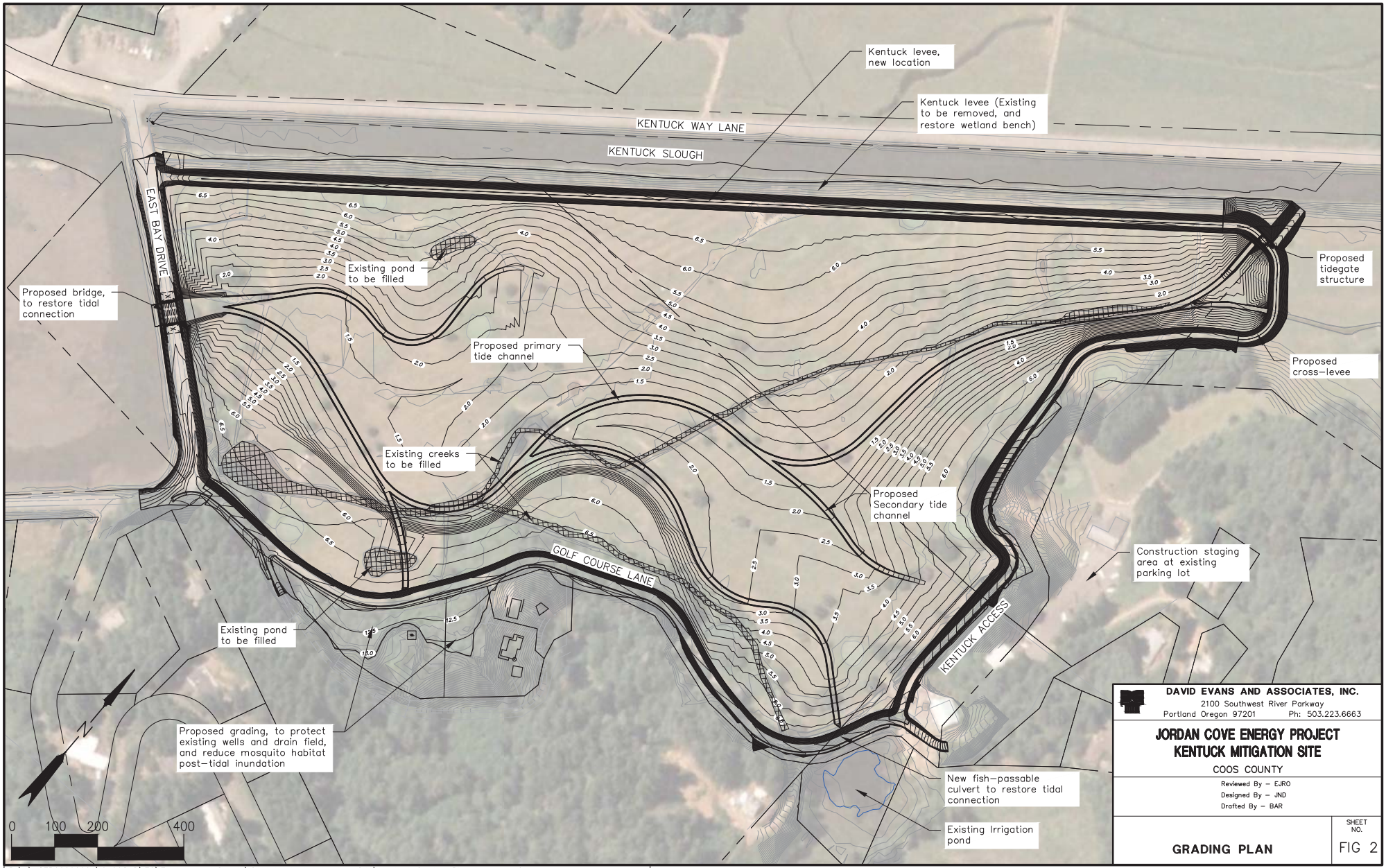
JORDAN COVE ENERGY PROJECT
KENTUCK MITIGATION SITE
COOS COUNTY

Reviewed By –
Designed By –
Drafted By –

EXISTING CONDITIONS

SHEET NO. FIG 1

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KENTUCK MITIGATION SITE

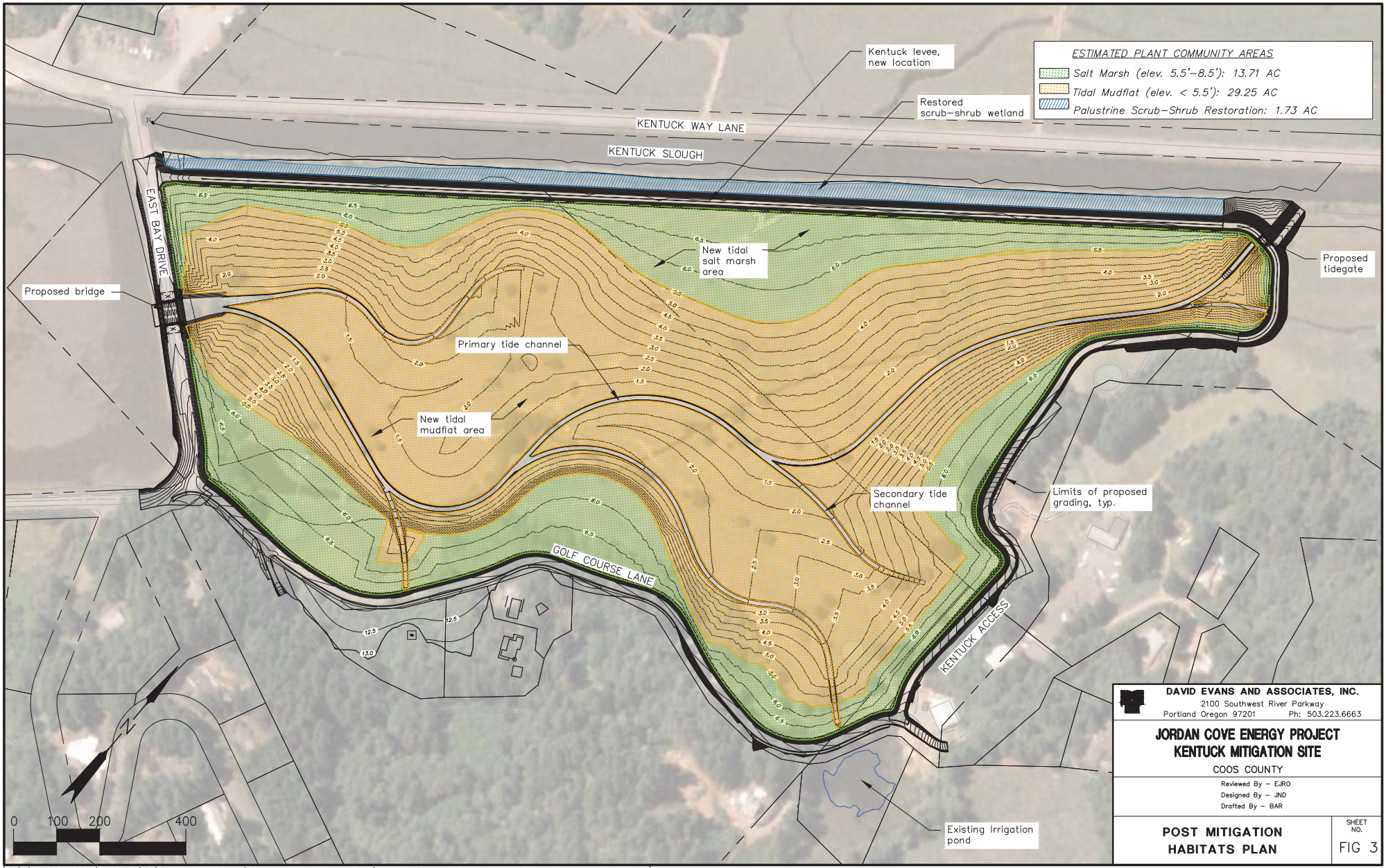
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Designed By – JND
Drafted By – BAR

GRADING PLAN

SHEET NO. FIG 2

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JORDAN COVE ENERGY PROJECT
KENTUCK MITIGATION SITE

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POST MITIGATION HABITATS PLAN

SHEET NO. FIG 3

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KENTUCK MITIGATION SITE PLANTING LIST:

Botanical name	Common name	Indicator Status	Condition
Palustrine Scrub–Shrub community: Wetland bench			
Argentina egedii	Pacific silverweed	OBL	No. 1 container
Carex lyngbei	Lyngbye's sedge	OBL	No. 1 container
Carex obnupta	Slough sedge	FACW	Bare root
Deschampsia cespitosa	Tufted hairgrass	FACW	Bare root
Distichlis spicata	Salt grass	FACW	No. 1 container
Myrica californica	California wax myrtle	FACW	Bare root
Salix hookeriana	Hooker willow	OBL	Live stake
Lonicera involucrata	Twinberry	OBL	Bare root
Spiraea douglasii	Douglas spiraea	FACW	Bare root

NOTE: Proposed mudflat and salt marsh areas shall be left exposed to tidal influence to allow natural vegetation coverage to become established. Annual monitoring will occur for a minimum of 5 years following construction to ensure native vegetation coverage establishes to meet the requirements of the Compensatory Wetland Mitigation Plan, and project permits. Supplemental planting will occur as needed.

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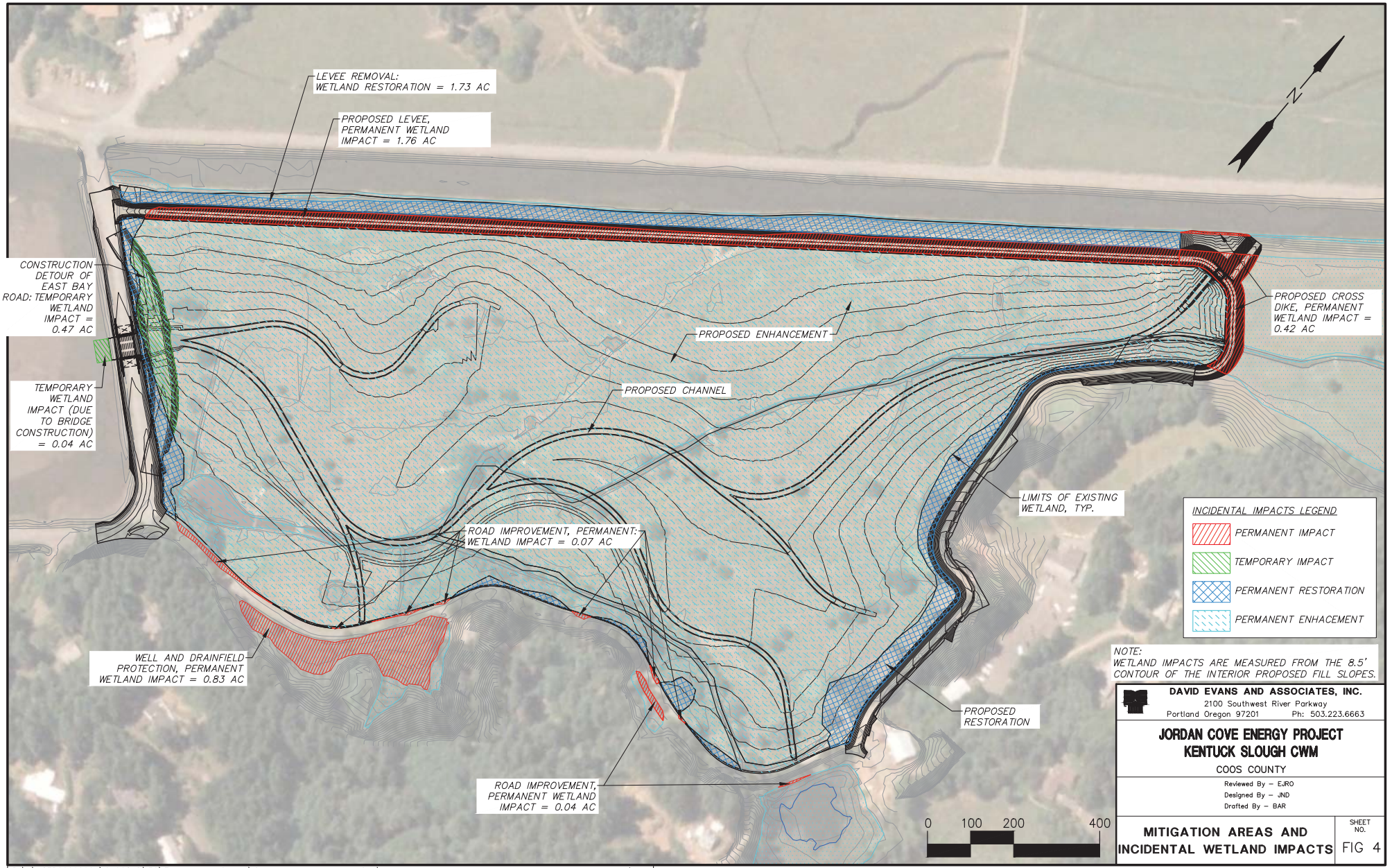
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KENTUCK MITIGATION SITE

COOS COUNTY

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Designed By – JND
Drafted By – BAR

PLANTING SCHEDULE

SHEET NO.
FIG 3A



NOTE:
WETLAND IMPACTS ARE MEASURED FROM THE 8.5' CONTOUR OF THE INTERIOR PROPOSED FILL SLOPES.

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JORDAN COVE ENERGY PROJECT
KENTUCK SLOUGH CWM

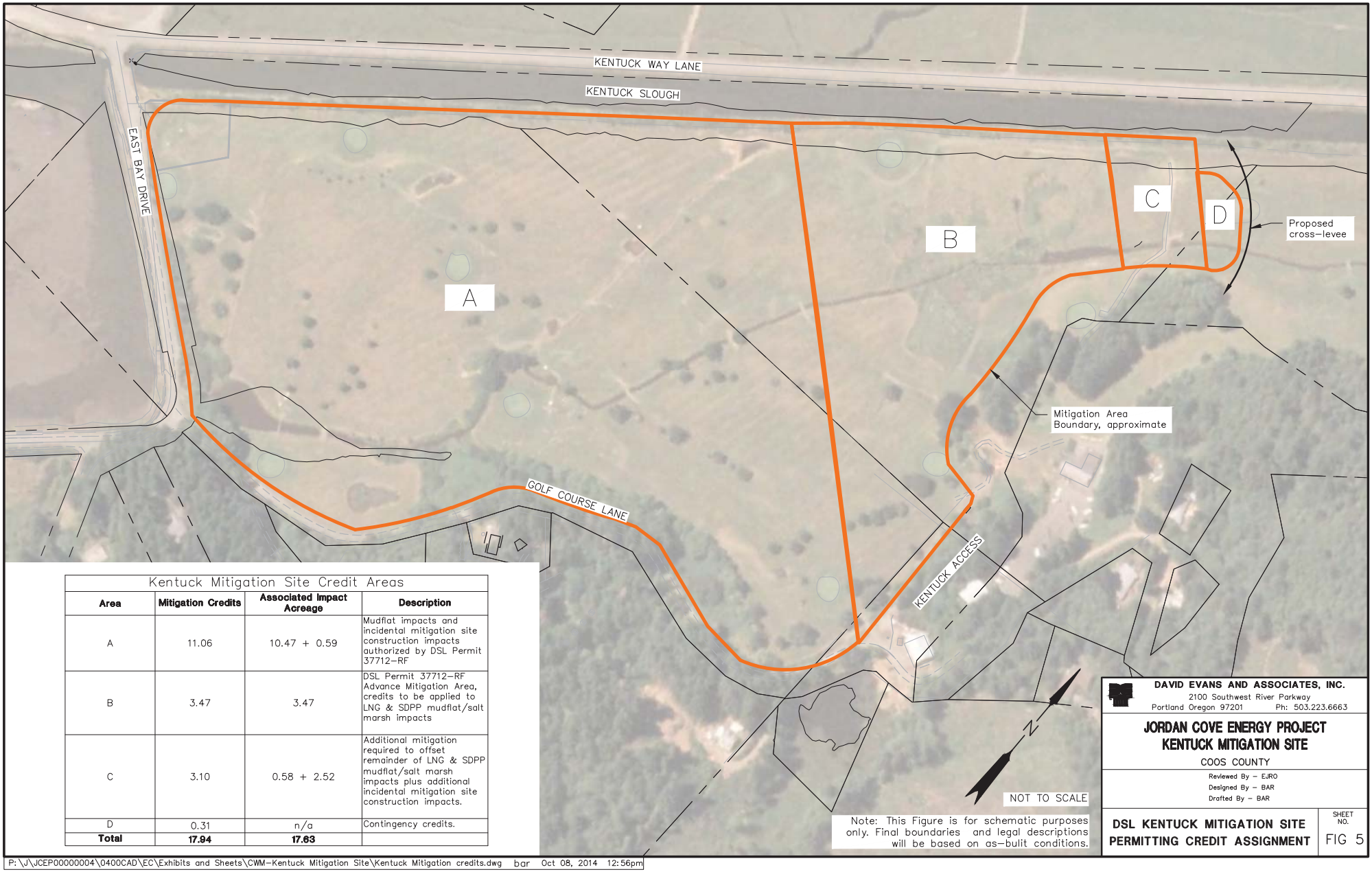
COOS COUNTY

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MITIGATION AREAS AND INCIDENTAL WETLAND IMPACTS

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Kentuck Mitigation Site Credit Areas

Area	Mitigation Credits	Associated Impact Acreage	Description
A	11.06	10.47 + 0.59	Mudflat impacts and incidental mitigation site construction impacts authorized by DSL Permit 37712-RF
B	3.47	3.47	DSL Permit 37712-RF Advance Mitigation Area, credits to be applied to LNG & SDPP mudflat/salt marsh impacts
C	3.10	0.58 + 2.52	Additional mitigation required to offset remainder of LNG & SDPP mudflat/salt marsh impacts plus additional incidental mitigation site construction impacts.
D	0.31	n/a	Contingency credits.
Total	**17.94**	**17.63**	

Note: This Figure is for schematic purposes only. Final boundaries and legal descriptions will be based on as-bulit conditions.

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JORDAN COVE ENERGY PROJECT
KENTUCK MITIGATION SITE
COOS COUNTY

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Designed By - BAR
Drafted By - BAR

DSL KENTUCK MITIGATION SITE PERMITTING CREDIT ASSIGNMENT

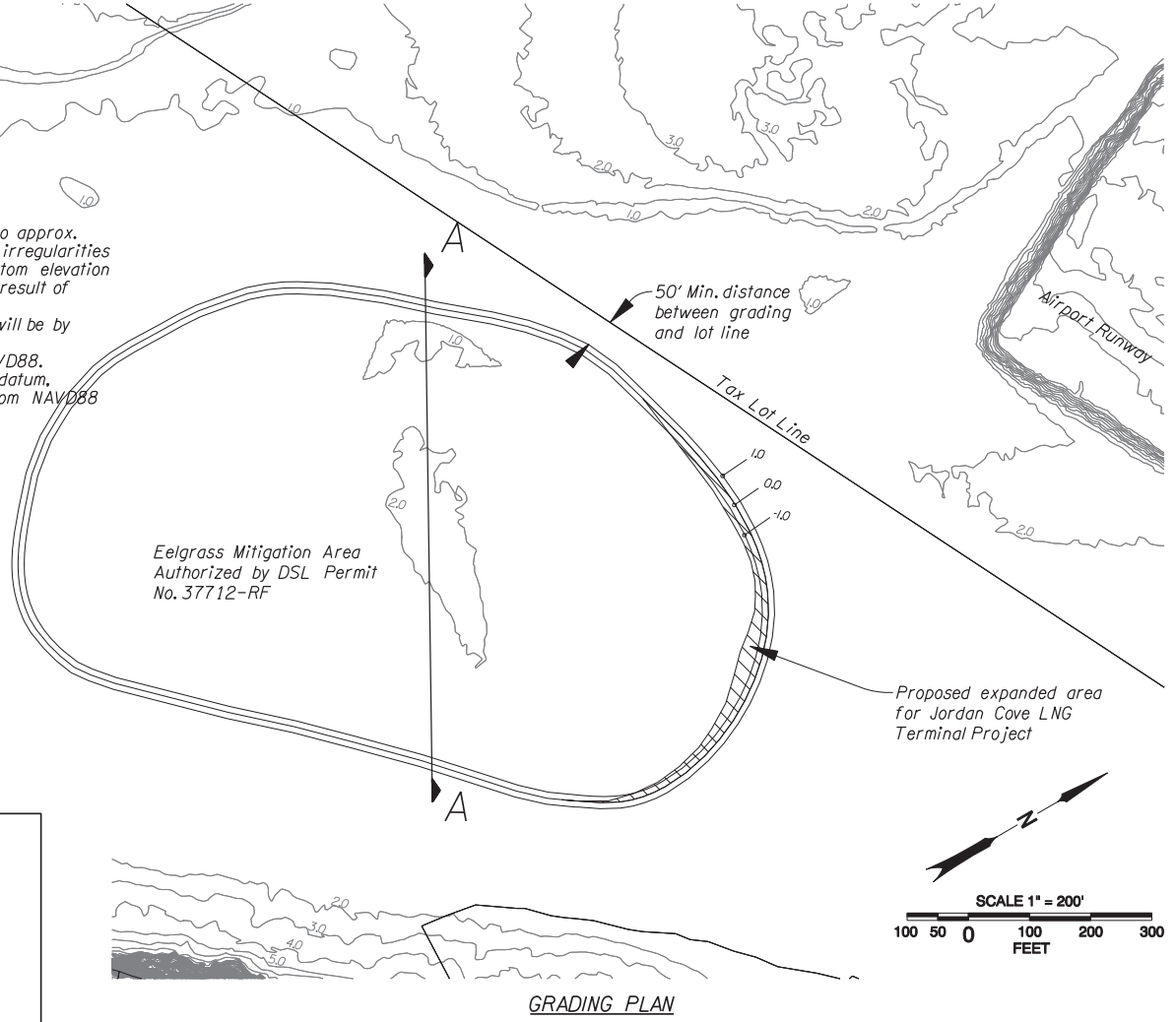
SHEET NO. FIG 5

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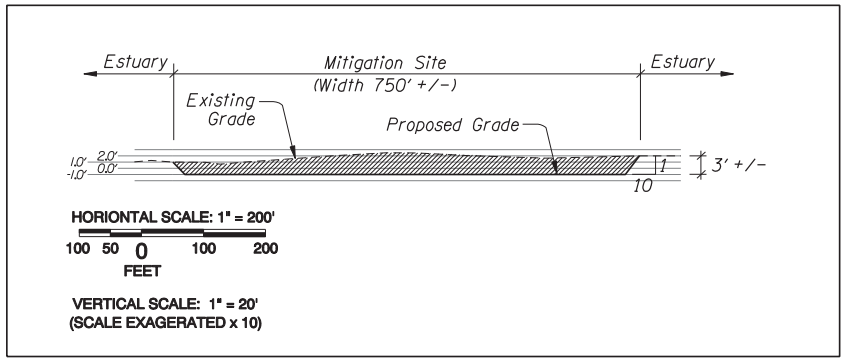


SITE CONTEXT
AERIAL PHOTO
(Google Earth 2005 - NTS)

Notes:
1. Site will be dredged to approx. elevation -1.0. Slight irregularities (+/- one foot) in bottom elevation are anticipated as a result of dredging operations.
2. Construction access will be by barge.
3. Elevations are in NAVD88. To convert to MLLW datum, subtract 0.50 feet from NAVD88 elevations.



GRADING PLAN



SECTION A-A

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Phone: 503.223.6663

JORDAN COVE LNG TERMINAL PROJECT
SOUTH DUNES POWER PLANT PROJECT

EELGRASS WETLAND MITIGATION

Appendix N
Oregon Department of State Lands-Recommended Removal-Fill Permit Conditions

MEMORANDUM

To: Andrea Goodwin
Oregon Department of Energy

From: Bob Lobdell
Oregon Department of State Lands
775 Summer Street NE
Salem, OR 97301-1279
503-986-5282
Bob.lobdell@dsl.state.or.us

Date: February 11, 2015

RE: Oregon Department of State Lands Report on the Application for Site Certificate for the South Dunes Power Plant.

General Comments: The information provided in Appendix J meets the basic completeness requirements required under OAR 141-085-0550. At this point of review in the EFSEC process we would recommend similar conditions used in DSL issued permit 37712-RF to the Port of Coos Bay for the Marine Slip and Access channel apply to the South Dunes Power Plant specific to the projects impacts. We would recommend the following generic permit conditions appropriate for this early stage of review taken from DSL issued permit 37712-RF. The South Dunes Power plant proposes temporary and permanent impacts to wetlands, freshwater and estuarine wetland mitigation would be required as conditions of approval if a site certificate is granted. Specific conditions for each mitigation effort would need to be resolved throughout the EFSC process. This is not an exhaustive list as some issues may arise during public review that necessitate revisions or conditions be imposed to protect state water resources. The following is a list of mitigation sites intended to offset impacts from project development.

Freshwater CWM sites
- East Bridge Mitigation Site
- West Bridge Mitigation Site
- West Jordan Cove

Estuarine CWM Sites
- Proposed Eelgrass Mitigation Site (situated adjacent to eelgrass mitigation site authorized by DSL Permit #37712-RF)
- Kentuck Authorized Advance Mitigation Site (authorized by DSL Permit #37712-RF)

The following conditions were taken from DSL issued permit 37712-RF.

Work Period in Jurisdictional Areas: Fill or removal activities below the highest measured tide line elevation of Coos Bay shall be conducted between October 1 and February 15, unless otherwise coordinated with Oregon Department of Fish and Wildlife and approved in writing by DSL.

Authorization to Conduct Compensatory Mitigation: This permit also authorizes removal and fill activities necessary to complete the required compensatory mitigation at the West Bridge

mitigation site, East Bridge mitigation site, West Jordan Cove mitigation site, eelgrass mitigation site, and the Kentuck Golf Course intertidal mitigation site as shown in Figure __ of Appendix J.

Changes to the Project or Inconsistent Requirements from Other Permits: It is the permittee's responsibility to ensure that all state, federal and local permits are consistent and compatible with the final approved project plans and the project as executed. Any changes made in project design, implementation and/or operating conditions to comply with conditions imposed by other permits must be approved by DSL prior to implementation.

DSL May Halt or Modify: DSL retains the authority to temporarily halt or modify the project in case of unforeseen damage to natural resources.

General Construction Conditions

Water Quality Certification: The Department of Environmental Quality (DEQ) may evaluate this project for a Clean Water Act Section 401 Water Quality Certification (WQC). If the evaluation results in issuance of a Section 401 WQC, that turbidity condition will govern any allowable turbidity exceedance and monitoring requirements.

Erosion Control Methods: The following erosion control measures (and others as appropriate) shall be installed prior to construction and maintained during and after construction as appropriate, to prevent erosion and minimize movement of soil into waters of this state.

a. All exposed soils shall be stabilized during and after construction in order to prevent erosion and sedimentation.
b. Filter bags, sediment fences, sediment traps or catch basins, leave strips or berms, or other measures shall be used to prevent movement of soil into waterways and wetlands.
c. To prevent erosion, use of compost berms, impervious materials or other equally effective methods, shall be used to protect soil stockpiled during rain events or when the stockpile site is not moved or reshaped for more than 48 hours.
d. Unless part of the authorized permanent fill, all construction access points through, and staging areas in, riparian and wetland areas shall use removable pads or mats to prevent soil compaction. However, in some wetland areas under dry summer conditions, this requirement may be waived upon approval by DSL. At project completion, disturbed areas with soil exposed by construction activities shall be stabilized by mulching and native vegetative plantings/seeding. Sterile grass may be used instead of native vegetation for temporary sediment control. If soils are to remain exposed more than seven days after completion of the permitted work, they shall be covered with erosion control pads, mats or similar erosion control devices until vegetative stabilization is installed.
e. Where vegetation is used for erosion control on slopes steeper than 2:1, a tackified seed mulch shall be used so the seed does not wash away before germination and rooting.
f. Dredged or other excavated material shall be placed on upland areas having stable slopes and shall be prevented from eroding back into waterways and wetlands.
g. Erosion control measures shall be inspected and maintained as necessary to ensure their continued effectiveness until soils become stabilized.
h. All erosion control structures shall be removed when the project is complete and soils are stabilized and vegetated.

Hazardous, Toxic, and Waste Material Handling: Petroleum products, chemicals, fresh cement, sandblasted material and chipped paint, wood treated with leachable preservatives or other deleterious waste materials shall not be allowed to enter waters of this state. Machinery refueling is to occur at least 150 feet from waters of this state and confined in a designated area to prevent spillage into waters of this state. Barges shall have containment system to effectively prevent petroleum products or other deleterious material from entering waters of this state. Project-related spills into waters of this state or onto land with a potential to enter waters of this state shall be reported to the Oregon Emergency Response System (OERS) at 1-800-452-0311.

Federally Listed Endangered or Threatened Species: When listed species are present, the authorization holder must comply with the Federal Endangered Species Act. If previously unknown listed species are encountered during construction, all construction activity shall immediately cease and the permit holder must contact DSL.

Archaeological Resources: If any archaeological resources and/or artifacts are encountered during construction, all construction activity shall immediately cease. The State Historic Preservation Office shall be contacted (phone: 503-986-0674).

Hazards to Recreation, Navigation or Fishing: The activity shall be timed so as not to interfere with or create a hazard to recreational or commercial navigation or fishing.

Temporary Ground Disturbances: All temporarily disturbed areas shall be returned to original ground contours at project completion, as proposed in the Site Restoration Plan in the application.

Compensatory Wetland Mitigation

The following conditions apply to the compensatory wetland mitigation actions proposed in the application Mitigation Plan dated December 2011.

The following conditions apply to the Freshwater Mitigation Acreage:

Freshwater Mitigation Acreage and Type of Compensatory Mitigation: Mitigation shall be conducted according to the acreages and methods described in the table below.

Acres	Cowardin/HGM Class	Method
Authorized Impacts		
0.1	Palustrine emergent Depressional/closed permanent (HGM)	
Required Mitigation		
0.15	Palustrine emergent Depressional/closed permanent (HGM)	creation

Freshwater Mitigation Site Location: Mitigation shall be conducted on-site. The center-point of the mitigation site is 43.4055, -124.2876. The current legal description is Township 25S, Range 13W, Section 18, Tax Lot 102 & 200 as shown on Figures 1 and 4 of the mitigation plan.

Timing of Mitigation Site Grading: Mitigation site grading shall be completed prior to or within the same construction season as the commencement of the wetland fill activity.

Signs Required: Signs shall be posted around the mitigation site perimeter stating that the area behind the sign is a protected wetland mitigation site.

Long-term Maintenance Required (see OAR 141-085-0705(1)(j)): Long-term site maintenance will be provided by Oregon International Port of Coos Bay unless or until transferred according to OAR 141-085-0585 (8). A long term management plan (i.e., beyond the initial performance monitoring period) acceptable to DSL shall be prepared and approved by DSL prior to the initiation of any work.

The following conditions apply to the Eelgrass Mitigation Acreage:

Eelgrass Mitigation Acreage and Type of Compensatory Mitigation: Mitigation shall be conducted according to the acreages and methods described in the table below.

Acres	Cowardin/HGM Class	Method
Authorized Impacts		
2.43	Estuarine unconsolidated shore Estuarine fringe embayment (HGM)	
Required Mitigation		
7.3	Estuarine unconsolidated shore Estuarine fringe embayment (HGM)	restoration

Eelgrass Mitigation Site Location: Mitigation shall be conducted off-site across the bay from the impacts. The center-point of the mitigation site is 43.4104, -124.2636. The current legal description is Township 25S, Range 13W, Section 08 as shown on Figures 1 and 2 of the mitigation plan.

Timing of Mitigation Site Grading: Mitigation site grading shall be completed prior to or within the same construction season as the commencement of the in-bay dredging activities.

Work Period in Jurisdictional Areas: Fill or removal activities below the highest measured tide line elevation of Coos Bay shall be conducted between October 1 and February 15, unless otherwise coordinated with Oregon Department of Fish and Wildlife and approved in writing by DSL.

Signs Required: Floating signs or buoys shall be posted around the mitigation site perimeter stating that the area behind the sign is a protected eelgrass mitigation site, no anchoring.

Long-term Protection of the Eelgrass Mitigation Site - Conservation Easement: The mitigation site shall be protected in perpetuity by conveying an approved Conservation Easement to a qualifying party pursuant to ORS Chapter 271. There shall be no wetland impacts until the approved Easement is recorded with Coos County. A copy of the recorded easement must be sent to the Department with the post-construction report. A long term management plan (i.e., beyond the initial performance monitoring period) acceptable to DSL shall be prepared and approved by DSL prior to the initiation of any work.

The following conditions apply to the Intertidal and Advance Mitigation Acreage:

Intertidal and Advance Mitigation Acreage and Type of Compensatory Mitigation: Mitigation shall be conducted according to the acreages and methods described in the table below.

Acres	Cowardin/HGM Class	Method
	Authorized Impacts	
10.47	Estuarine unconsolidated shore Estuarine fringe embayment (HGM)	
0.59	Palustrine emergent Flats (HGM)	
	Required Mitigation	
33.18	Estuarine unconsolidated shore Estuarine fringe embayment (HGM)	enhancement
	Advance Mitigation	
10.42	Estuarine unconsolidated shore Estuarine fringe embayment (HGM)	enhancement

Intertidal and Advance Mitigation Site Location: Mitigation shall be conducted off-site. The center-point of the mitigation site is 43.4235, -124.1836. The current legal description is Township 25S, Range 13W, Section 1D Tax Lot 400, and Section 12A Tax Lot 100 as shown on Figures 1 and 3 of the mitigation plan.

Timing of Mitigation Site Grading: Mitigation site grading shall be completed prior to or within the same construction season as the commencement of the in bay dredging activities.

Work Period in Jurisdictional Areas: Estuary fill or removal activities below the highest measured tide line elevation of Coos Bay shall be conducted between October 1 and February 15, unless otherwise coordinated with Oregon Department of Fish and Wildlife and approved in writing by DSL.

Work Period in Jurisdictional Areas: Fill or removal activities in Kentuck Slough and within the boundaries of the mitigation site shall be conducted between July 1 and September 15 prior to connection with the estuary, unless otherwise coordinated with Oregon Department of Fish and Wildlife and approved in writing by DSL.

Signs Required: Signs shall be posted around the mitigation site perimeter stating that the area behind the sign is a protected wetland mitigation site.

Long-term Protection of the Mitigation Site (privately owned site) - Deed Restriction: The mitigation site shall be protected in perpetuity by recording the Deed Restrictions approved by the Department. There shall be no wetland impacts until the approved Deed Restrictions are recorded with Coos County. A copy of the recorded instrument must be sent to the Department with the post-construction report. The deed restriction is in lieu of public ownership of the mitigation site. If the Port of Coos Bay provides proof of ownership prior to commencement of the project, a deed restriction is no longer required and a long term management plan will replace the deed restriction and provide administrative protection for the site, See Condition 41). A long term management plan (i.e., beyond the initial performance monitoring period) acceptable to DSL shall be prepared and approved by DSL prior to the initiation of any work.

Publicly Owned Mitigation Sites - Administrative Protection: For publicly owned mitigation sites, administrative protection shall be provided through an adopted management plan approved by DSL. The long term management plan shall provide appropriate protection of the mitigation site in perpetuity.

Long-term Maintenance Required (see OAR 141-085-0705(1)(j)): Long-term site maintenance will be provided by Oregon International Port of Coos Bay unless or until transferred according to OAR 141-085-0585 (8). A long term management plan (i.e., beyond the initial performance monitoring period) acceptable to DSL shall be prepared and approved by DSL prior to the initiation of any work.

Advance Mitigation Credits: The Oregon International Port of Coos Bay proposes enhancing an additional 10.42 acres of estuarine high marsh habitat which could generate 3.47 acre-credits of advance mitigation credit. These credits may only be used for future impacts where the Port of Coos Bay or Veresen, Inc. (or any of its affiliates) are the applicant for a permit and may not be sold on the open market. Future applications proposing use of the advance mitigation credit must comply with all applicable DSL statutes and administrative rules relating to the removal-fill program at the time of application. Future applications should identify the specific area within the mitigation area that will be used to compensate for each permitted impact, and these areas should be clearly and permanently marked on the ground.

Monitoring and Reporting Requirements

Post-Construction Report Required: A post-construction report demonstrating as-built conditions and discussing any variation from the approved plan shall be provided to the Department within 90 days of mitigation site grading for each of the three mitigation projects. The post-construction report shall include:

a. A scaled drawing, accurate to 1-foot elevation, showing the finished contours of the mitigation site.
b. A narrative that describes any deviation from the approved mitigation plan.
c. A copy of the recorded deed restriction or conservation easement.

Term of Monitoring; Annual Monitoring Reports Required: The permittee shall monitor the mitigation sites to determine whether the mitigation site is meeting performance standards for a minimum period of 5 growing seasons after completion of all the initial plantings, except for the eelgrass mitigation area which will be monitored for ten years. Annual monitoring reports are required for each of the three mitigation projects. Reports should clearly separate information for advance mitigation areas that are unassigned as compensatory mitigation for any permit. Permits that authorize the use of advance mitigation credits prior to final determination of success by the Department will require additional monitoring and financial security under the future permit conditions. For advance mitigation credits proposed for use after the monitoring period has ended, future applications must provide a current year monitoring report to show that the proposed mitigation area continues to meet the performance standards established in this permit.

Annual Monitoring Report Due Date: Annual monitoring reports are due by December 31 of each year for each of the three mitigation projects.

Extension of the Monitoring Period: The monitoring period may be extended for any of the three mitigation projects, at the discretion of the Department, for failure to provide monitoring reports, failure of the mitigation site to meet performance standards for two consecutive years or when needed to evaluate re-planting or other corrective or remedial actions.

Release of Mitigation Obligation: Mitigation monitoring is required until DSL has officially released the site from further monitoring.

Failure to Submit Monitoring Reports: Failure to submit the required monitoring report by the due date may result in an extension of the monitoring period and/or enforcement action.

Contents of the Annual Monitoring Report: The annual monitoring report shall include the following information:

a. Completed Monitoring Report Cover Sheet, which includes permit number, permit holder name, monitoring date, report year, performance standards, and a determination of whether the site is meeting performance standards.
b. Impact and mitigation site location map(s).
c. A brief narrative that describes maintenance activities and recommendations to meet success criteria.
d. Mitigation site map showing permanent plot locations that correspond to the data collected and fixed photo-points.
e. Data collected to support the conclusions related to the status of the site relative to the performance standards listed in this permit (include summary/analysis in the report and raw data in the appendix).
f. Photos from fixed photo points (include in the appendix).
g. Other information necessary or required to document compliance with the performance standards listed in this permit.
h. A post-construction functional assessment by the end of the monitoring period.

Corrective Action May be Required: The Department retains the authority require corrective action in the event the performance standards are not accomplished at any time within the monitoring period.

Performance Standards

To be deemed successful, the freshwater mitigation area shall meet the following performance standards, as determined by DSL:

Establishment of Permanent Monitoring Locations Required: Permanent plot locations must be established during the first annual monitoring in sufficient number and locations to be representative of the site. The permanent plot locations must be clearly marked on the ground.

Wetland Acreage Required: The CWM site will have a minimum of 0.15 acres of palustrine emergent, depressional/closed permanent (HGM) wetland as determined by a wetland delineation, as specified by the Department, during spring of a year when precipitation has been near normal, vegetation has been established, and irrigation has been removed for at least two years.

Native Species Cover: The cover of native species, as defined in the USDA Plants Database, in the herbaceous stratum is at least 60%.

Invasive Species Cover: The cover of invasive species is no more than 10%. A plant species should automatically be labeled as invasive if it appears on the current Oregon Department of Agriculture

noxious weed list, plus known problem species including *Phalaris arundinacea, Mentha pulegium, Holcus lanatus, Anthoxanthum odoratum,* and the last crop plant if it is non-native. Non-native plants should be labeled as such if they are listed as non-native on the USDA Plants Database. Beginning in Year 2 of monitoring, DSL will consider a non-native plant species invasive if it comprises more than 15% cover in 10% or more of the sample plots in any habitat class, and increases in cover or frequency from the previous monitoring period. Plants that meet this definition will be considered invasive for all successive years of monitoring.

Bare Substrate Cover: Bare substrate represents no more than 20% cover.

Species Diversity: By Year 3 and thereafter, there are at least 6 different native species. To qualify, a species must have at least 5% average cover in the habitat class, and occur in at least 10% of the plots sampled.

Prevalence Index: Prevalence Index is <3.0.

To be deemed successful, the Eelgrass mitigation area shall meet the following performance standards, as determined by DSL:

Establishment of Monitoring Locations Required: Transect locations must be established during the first annual monitoring in sufficient number and locations to be representative of the site. The transect locations must be clearly marked on the maps and drawings used in the monitoring reports.

Eelgrass Acreage and Density Required: The CWM site will have established a minimum of 7.3 acres of eelgrass beds whereby a minimum of 2.43 of these acres will be medium to high density eelgrass beds and the remainder of the 7.3 acres within the re-contoured area would classify as low density eelgrass beds as documented by annual monitoring. Density classes are defined as follows: less than 10% cover equals an absence of eelgrass bed, low density equals approximately 10% to 39% cover, medium to high density equals approximately 40% or greater.

Transplanting from Donor Sites: Transplanting of native eelgrass plants from donor beds to the mitigation site is authorized under the following conditions: Plants may be collected from identified donor beds with medium to high density (>40% cover) of native eelgrass. A grid collection pattern will be used with >1 meter spacing between collection areas. No more than 10% of the area of each bed will be harvested, and harvest is limited to areas with medium to high density (>40% cover) native eelgrass. Monitoring the donor sites along established transects will be provided for a minimum of 3 years after collection and results included in annual reports. Eelgrass cover in donor sites will be at least 40% cover by the third year after harvest.

Invasive Species Cover: The cover of non-native eelgrass species (Z. japonica) shall be no more than 15% for the duration of the monitoring period.

To be deemed successful, the Intertidal and advanced mitigation area shall meet the following performance standards, as determined by DSL:

Mudflat/Low Marsh Acreage Required: Construct a new bridge in East Bay Drive to allow tidal exchange between Kentuck Inlet and the “back nine” of Kentuck Golf Course to reestablish tidal flow to approximately 33.18 acres (required mitigation). The bridge shall be constructed as

designed and presented in the application. This action has the potential to enhance 10.42 acres that is proposed for advance mitigation. Advance mitigation areas are expected to consist of mudflat with the potential for high marsh along higher elevations.

Channels: Modified or newly constructed channels within the mitigation site will be meandering as much as possible to avoid fish entrapment. Success will be determined through review by an Oregon Department of Fish and Wildlife fish biologist.

Establishment of Monitoring Locations Required (Vegetated Areas): Transect locations must be established during the first annual monitoring in sufficient number and locations to be representative of the site. The transect locations must be clearly marked on the maps and drawings used in the monitoring reports.

Invasive Species Cover: The cover of invasive species in all mitigation areas is no more than 10%, except *Spartina* species which have a zero tolerance. A plant species should automatically be labeled as invasive if it appears on the current Oregon Department of Agriculture noxious weed list, plus known problem species including *Phalaris arundinacea, Mentha pulegium, Holcus lanatus, Anthoxanthum odoratum,* and the last crop plant if it is non-native. Non-native plants should be labeled as such if they are listed as non-native on the USDA Plants Database. Beginning in Year 2 of monitoring, DSL will consider a non-native plant species invasive if it comprises more than 15% cover in 10% or more of the sample plots in any habitat class, and increases in cover or frequency from the previous monitoring period. Plants that meet this definition will be considered invasive for all successive years of monitoring.

Vegetation Habitat Mapping Required (Advance Mitigation): Vegetation communities in the advance mitigation area will be mapped in annual reports. This map should distinguish mudflat (unvegetated), low marsh, and high marsh habitats.

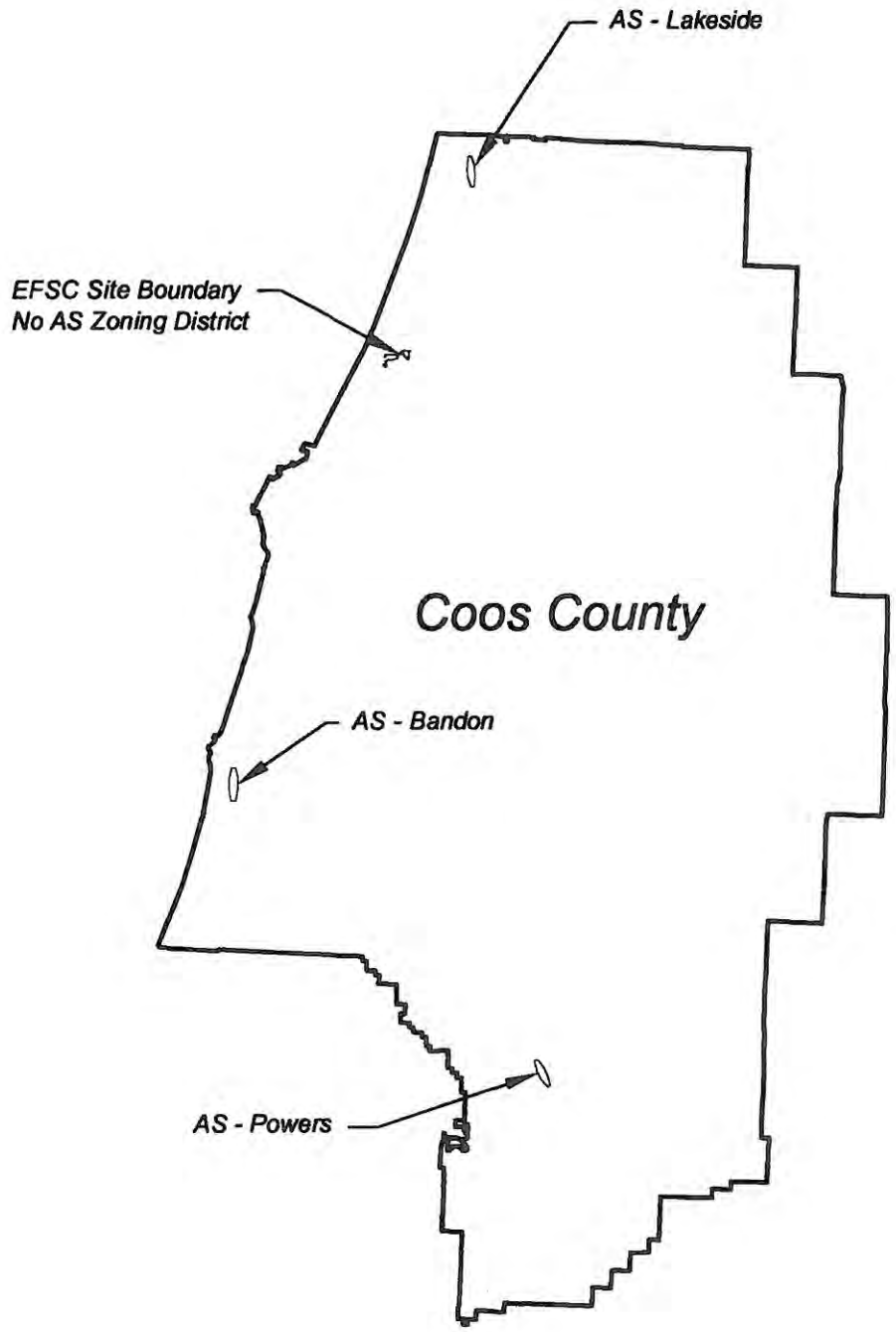
Special Vegetation Standards in High Marsh Habitats: The density of woody vegetation in high marsh habitats is at least 1,600 native plants (shrubs) and/or stems (trees) per acre, OR the cover of is at least 50% by year 5 of monitoring. Native species volunteering on the site may be included, dead plants do not count. After the overstory has reached 50% cover, the cover of invasive species may exceed 10%, but may not exceed 30% cover.

Construction Criteria: Construct a new cross dike between the front and back nine, with a standard tidegate to drain the front nine to the back nine; construct the tidegate array through the Kentuck Slough dike allowing the majority of the flow from Kentuck Slough to enter the back nine. Success will be determined through review of the tidegate array by an Oregon Department of Fish and Wildlife fish biologist. The dike shall be constructed as proposed and the tidegates will function as designed or modifications will be required.

Dike Maintenance/Repair Criteria: Dike repair and maintenance of approximately 2,250 linear feet of existing dike between Kentuck Slough and Kentuck Golf Course. No additional wetland impacts are requested or authorized as part of the dike maintenance.

South Dunes Power Plant Comments on the Application for Site Certificate Department of State Lands			
Exhibit	**Section No.**	**Pg. / Para. / Sentence Reference (as needed)**	**Comment**
E	2.3	State Permits: Not Federally Delegated	Additional Proprietary Authorizations from the Department of State Lands are required for the project as mentioned in the application: **Easements (OAR 141-122 Trust and Non-Trust Lands)** • Jordon Cove – Scour Apron, Access Channel – 30-year easement issued to Port of Coos Bay, July 2012. (APP 43982) • Jordon Cove – Railroad bridge crossing Coos Bay (submerged lands) – 30-year easement issued to Port of Coos Bay in 2003. (APP 26308) • Jordon Cove – bridge crossing between locations at Workforce Housing (submerged lands) – Requires temporary easement for construction and term easement for final structure – No application submitted. • Jordon Cove – Eel grass conservation easement for mitigation (submerged lands) – Port of Coos Bay applied for easement in 2010, authorization not finalized (APP 38462). Report states that Coos Watershed Association will hold easement. **Sand & Gravel Lease/Licenses (OAR 141-014)** • Jordon Cove – Scour Apron, Access Channel – Sand & Gravel License/lease required for the removal of state-owned materials and royalties, if applicable. Port of Coos Bay applied in 2010, authorization not finalized. (APP 43984) • Jordon Cove - Marine Slip – Sand & Gravel License/lease required for royalties for state-owned materials on site. No application submitted. • Jordon Cove – Workforce Housing – Sand & Gravel License required for royalties for state-owned materials on site. No application submitted. **Lease and Registrations (OAR 141-082)** • Jordon Cove – Barge Berth – 5-year Wharf Registration issued Oct. 1, 2010 for Construction Dock area (APP 43983) and will need to be recertified. If activities on the berth are not in accordance with wharf certification, a waterway lease may be required. **Special Uses (OAR 141-125)** • Jordan Cove –Kentuck Slough mitigation – Short Term Access Agreement to work within state-owned waters of the mitigation area will be required. No application submitted.

Appendix O
Table 4.7a Special Considerations Phenomenon 8-Airport Services



0 5 10 Miles

1 in = 10 miles

EFSC Site Boundary

Airport Surface (AS)

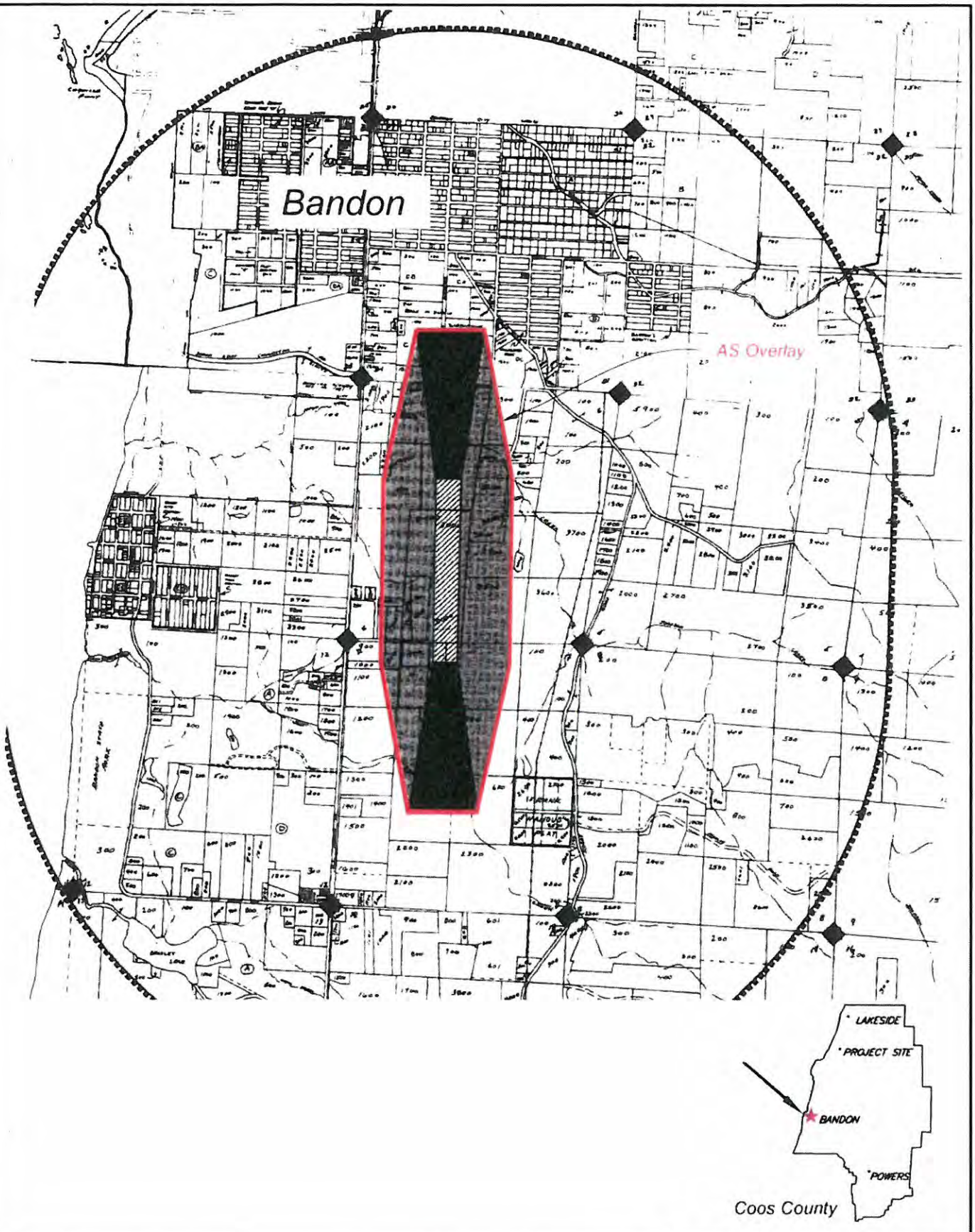
Data Source: Coos County Zoning and Land Development Ordinance (Article 4.6.310 Airport Sub-Zones and Article 4.7 Special Considerations) and Coos County Comprehensive Plan Volume 1 Balance of County

South Dunes Power Plant Project

EFSC Application

EXHIBIT K
Figure K-4.8
Table 4.7a - Special Considerations
Phenomenon 8- Airport Surfaces

Date: 11/15/2013
Reviewed By SD
Designed By MW



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1 in = 0.5 miles

Airport Surface (AS)

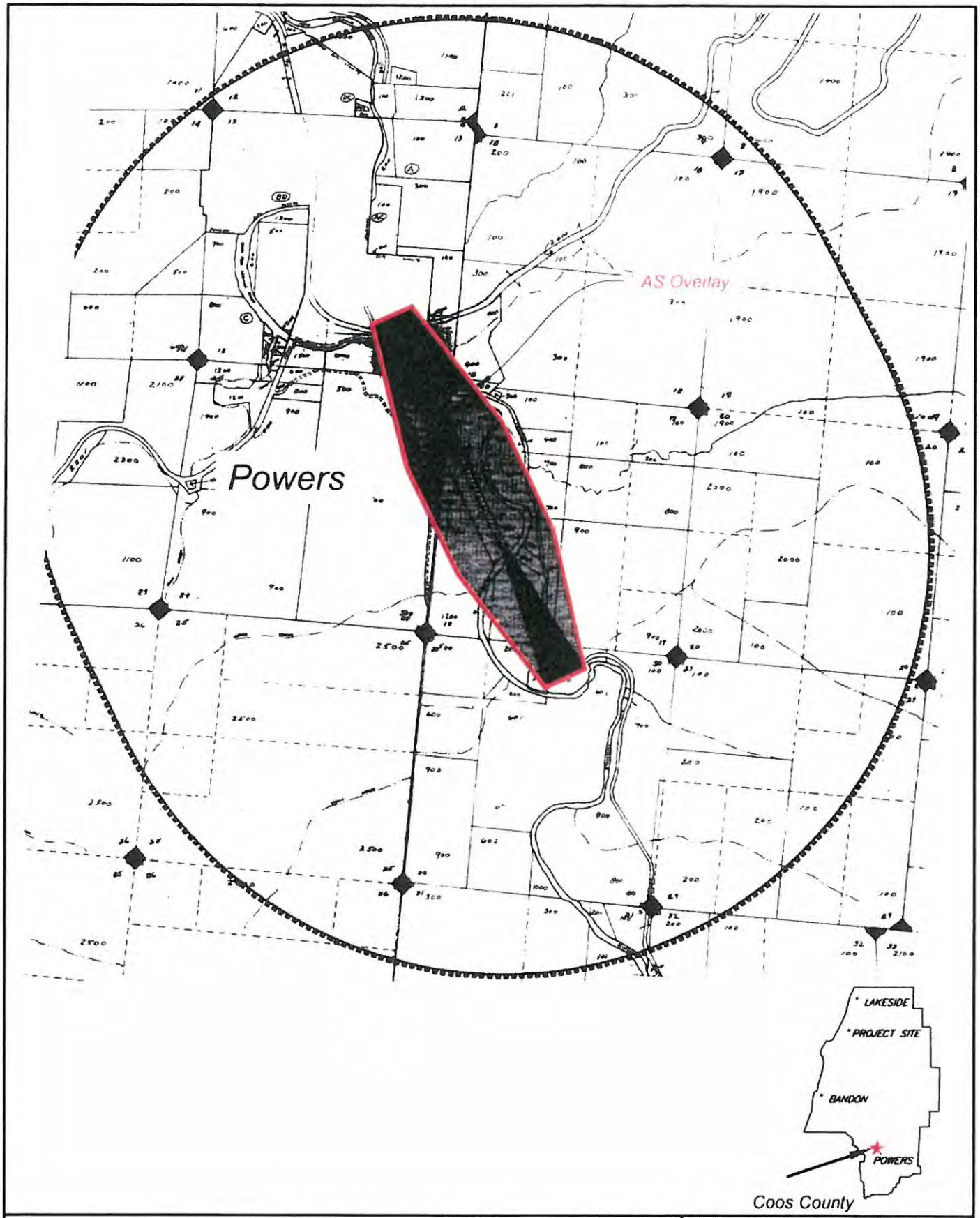
Data Source: Coos County Zoning and Land Development Ordinance (Article 4.6.310 Airport Sub-Zones and Article 4.7 Special Considerations) and Coos County Comprehensive Plan Volume 1 Balance of County

South Dunes Power Plant Project

EFSC Application

EXHIBIT K
Figure K-4.8.1
Table 4.7a - Special Considerations
Phenomenon 8- Airport Surfaces

Date: 11/15/2013
Reviewed By: SD
Designed By: MW



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1 in = 0.5 miles

Airport Surface (AS)

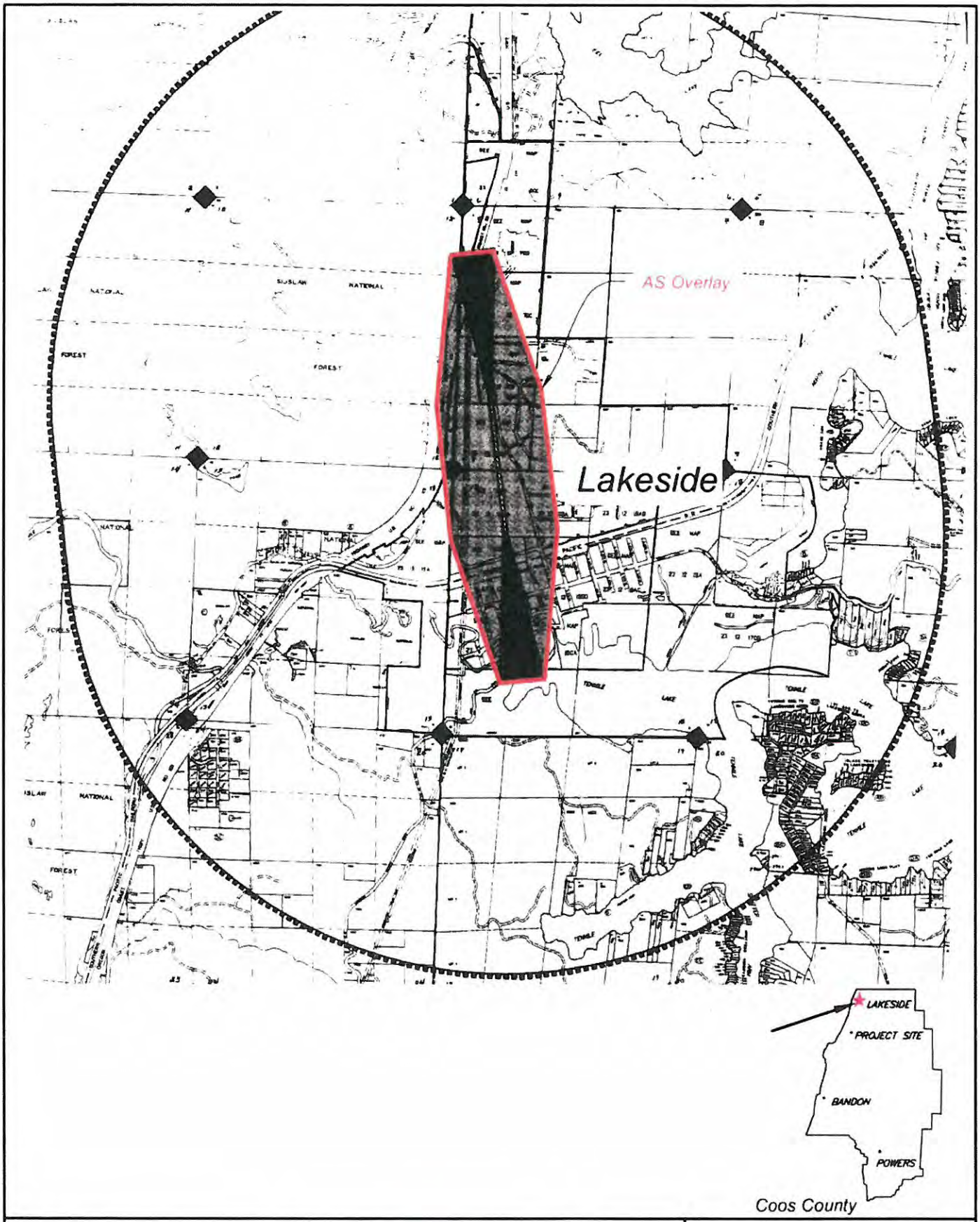
Data Source: Coos County Zoning and Land Development Ordinance (Article 4.6.310 Airport Sub-Zones and Article 4.7 Special Considerations) and Coos County Comprehensive Plan Volume 1 Balance of County

South Dunes Power Plant Project

EFSC Application

EXHIBIT K
Figure K-4.8.2
Table 4.7a Special Considerations
Phenomenon 8- Airport Surfaces

Date: 11/15/2013
Reviewed By: SD
Designed By: MW



0 0.25 0.5 Miles

1 in = 0.5 miles

Airport Surface (AS)

Data Source: Coos County Zoning and Land Development Ordinance (Article 4.6.310 Airport Sub-Zones and Article 4.7 Special Considerations) and Coos County Comprehensive Plan Volume 1 Balance of County

South Dunes Power Plant Project

EFSC Application

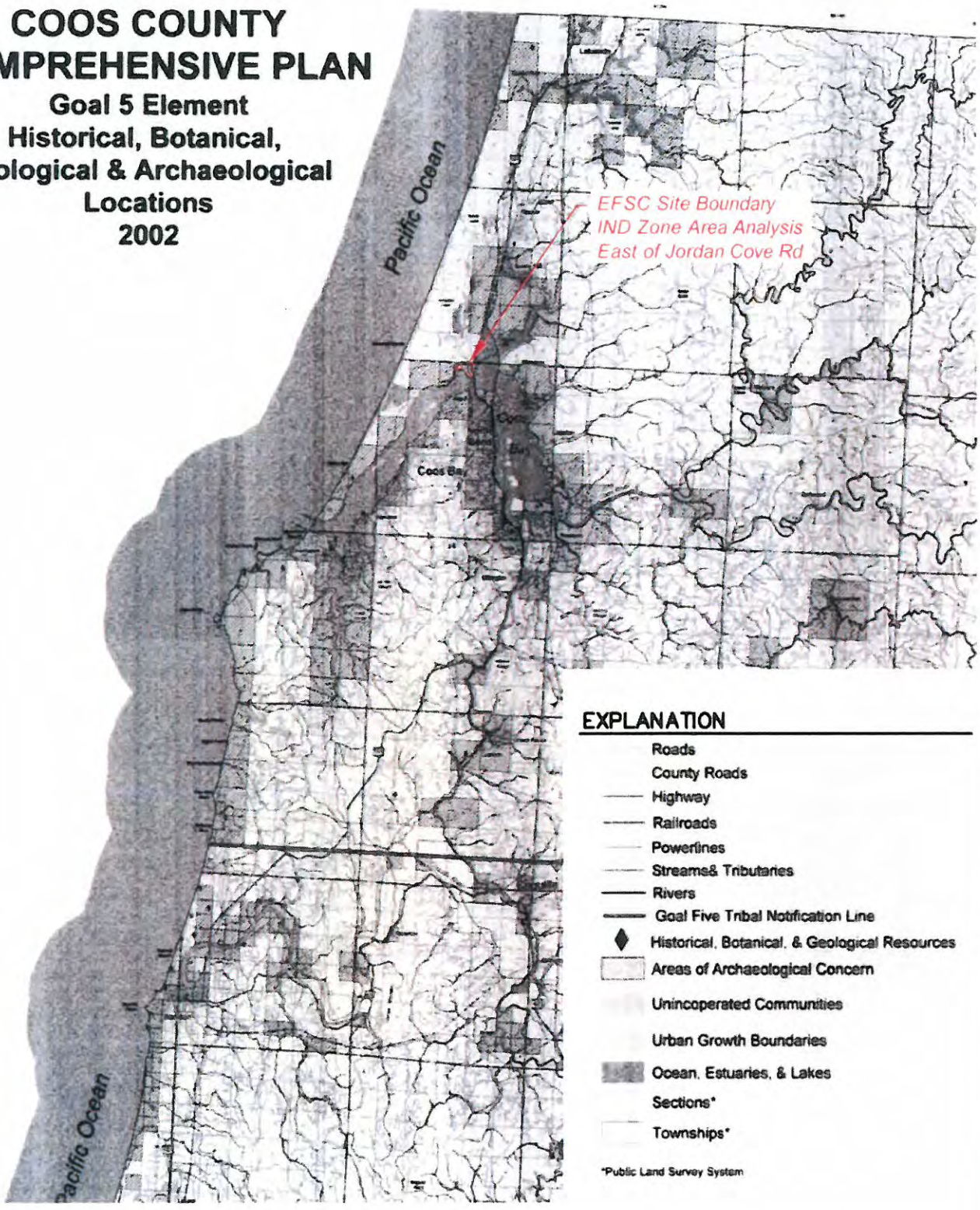
EXHIBIT K
Figure K-4.8.3
Table 4.7a - Special Considerations
Phenomenon 8- Airport Surfaces

Date: 11/15/2013
Reviewed By: SD
Designed By: MW

Appendix P
Table 4.7a Special Considerations Phenomenon 3-Historial/ Archaeological Sites

COOS COUNTY COMPREHENSIVE PLAN

Goal 5 Element
Historical, Botanical, Geological & Archaeological Locations
2002



Not to Scale

Date Source: Coos County Zoning and Land Development Ordinance (CCZ-LDO) Article 4.7

South Dunes Power Plant Project

EFSC Application

EXHIBIT K
Figure K-4.3
Table 4.7a - Special Considerations
Phenomenon 3- Historical/Archeological Sites

Date: 11/15/2013
Reviewed By: SD
Designed By: MW

Appendix Q
Unanticipated Discovery Plan

South Dunes Power Plant

PLAN AND PROCEDURES ADDRESSING UNANTICIPATED DISCOVERIES OF CULTURAL RESOURCES AND HUMAN REMAINS

September 2014

I. INTRODUCTION

Jordan Cove Energy Project, L.P. (JCEP) is the Applicant for the South Dunes Power Plant (SDPP) site certificate from the Oregon Department of Energy (ODOE). This document outlines JCEP's procedure, to prepare for, and address any unanticipated cultural or archaeological discoveries. It provides direction to SDPP personnel and their consultants as to the proper procedure to follow in the event that unanticipated discoveries of historic properties or human remains are made during construction, operation, or retirement of the SDPP.

II. TRAINING AND ORIENTATION

JCEP will appoint an Environmental Inspector (EI), who will be responsible for advising construction contractor personnel on the procedures to follow in the event that an unanticipated discovery is made. The EI will work with an on-site archaeologist monitor, who will train the EI to identify or recognize cultural resources. Training will occur as part of the pre-construction on-site training program for foremen, company inspectors, and construction supervisors. The EI will advise all operators of equipment involved in grading, stripping, drilling, trenching, or other activities to:

A. Stop work immediately if they observe any indications of the presence of cultural materials (artifacts or other man-made features), shell midden, animal bone, or possibly human bone.

B. Contact the EI (or the Chief Inspector at the site if the EI is not available) as soon as possible.

C. Comply with unanticipated discovery procedures.

D. Treat human remains with dignity and respect.

III. PROCEDURE WHEN CULTURAL MATERIALS ARE OBSERVED

Cultural materials include man-made objects (prehistoric and historic period items) and features (e.g., walls constructed of natural materials such as cobbles; surfaces paved by cobbles, brick or other material; or other remnants of cultural activity). In the event of a discovery of any cultural resource, SDPP personnel will follow State of Oregon regulations and requirements, as outlined in Oregon Revised Statues (ORS) 358.905 to 358.955. The State Historic Preservation Office (SHPO) may recommend determinations of National Register of Historic Places (NRHP) eligibility. Treatment measures at affected NRHP-eligible sites may only be implemented after permission is received from SHPO (via email or letter).

A. A.Stop work in the immediate vicinity of the observed cultural materials (including shell midden).

1. Notify the EI of the discovery.

2. If the EI believes that an unanticipated discovery has been made:

    a) The EI directs all ground-disturbing activities within 250 feet of the discovery to stop.

    b) The EI will protect and secure the evidence in place by delineating the find with flagging or fencing.

B. Minimize movement of vehicles and equipment in area immediately surrounding the discovery.

C. The EI will immediately notify the SDPP Construction Superintendent.

D. The SDPP Construction Superintendent will immediately notify the designated SDPP personnel and TRC Environmental Corporation (TRC) contacts by telephone with written confirmation (via email). All contacts are listed at the end of this document. (If primary contact cannot be reached, notify the indicated alternate.)

E. Within 24 hours, if possible, a professional archeologist will examine the location of the discovery, accompanied by the EI.

1. If the archeologist determines that the discovery is not a cultural resource, the archeologist will immediately advise the EI, the Chief Inspector and/or the SDPP Construction Superintendent, any of whom will have the authority to remove the stop-work order. The archeologist will submit a letter report including photographs of the discovery site to JCEP and TRC contacts within 15 business days.

2. If the archeologist determines that the discovery is a cultural resource, the archeologist will immediately advise the EI who will notify the ODOE, JCEP and TRC contacts listed at the end of this document. The TRC contact will notify the SHPO and the ODOE contact by telephone, with written confirmation by email.

3. If the discovery is aboriginal, JCEP will also notify appropriate Indian Tribe contacts listed at the end of this document. Notification will be by telephone, with written confirmation by fax and/or overnight mail. Notification will be the responsibility of JCEP.

F. Notifications to SHPO and ODOE about observations of cultural material will:

1. Explain why the archeologist believes the resource is or is not significant and request permission from ODOE for construction to recommence.

2. Describe a scope-of-work for evaluating the significance of the resource and evaluating potential Project effects on the resource. A request for authorization to immediately implement the work scope will also be made to ODOE.

3. Obtain the Archaeological Permit required under ORS 390.235, OAR 736-051-0080 through 0090.

4. Invite ODOE, SHPO and identified tribal representatives, when appropriate, to observe the implementation of any proposed work.

5. All work to evaluate significance and SDPP effects will be confined to the SDPP's potential area of impact.

G. When the evaluation of the cultural resources is complete:

1. JCEP will notify ODOE and SHPO by telephone and discuss the Project archeologist's opinion concerning the potential significance of the resource.

2. As soon as possible following the field investigation, the archeologist will provide SHPO, ODOE, and JCEP with a written report describing the results of the fieldwork.

3. If SHPO and interested Indian Tribes find that the resources are significant, the archaeologist will prepare a proposal for a treatment plan for review and approval by ODOE. Such treatment plans will only be implemented after permission is received from SHPO (via email or letter).

H. JCEP may choose to prepare an analysis of alternatives to data recovery to determine what form of mitigation is preferable.

1. If an alternatives analysis is conducted, JCEP will submit, by fax or overnight mail, the archeologist's report and the alternatives analysis to SHPO and ODOE.

2. If proposed mitigation measures may be carried out without being impeded or affected by construction, the submittal to SHPO and ODOE will be accompanied by a request that construction in the area of the discovery be permitted to resume.

I. Upon receipt of authorization from the ODOE, implementation of mitigation measures will begin immediately.

1. JCEP will advise SHPO and ODOE when all mitigation measures have been completed.

2. If construction has been halted, JCEP will also request authorization from ODOE to recommence construction.

3. JCEP will submit a summary report describing the results of mitigation to SHPO and ODOE within 30 days of notification that mitigation fieldwork has been completed.

4. If archeological data recovery is a component of the mitigation plan, a full report will be submitted to SHPO and ODOE in accordance with a schedule to be established in consultation with ODOE.

5. If reporting of any subsurface evaluation of identified sites and mitigation measures is required, it must be coordinated under the Archaeological Permit.

6. Copies of all reports will be sent to SHPO, the Legislative Commission on Indian Services, and all appropriate tribes.

IV. PROCEDURE WHEN HUMAN REMAINS AND/OR POTENTIALLY HUMAN SKELETAL MATERIALS ARE OBSERVED

Human remains are physical remains of a human body or bodies including, but not limited to, bones, teeth, hair, ashes, and preserved soft tissues (mummified or otherwise preserved) of an individual. Remains may be articulated or disarticulated bones or teeth. In the case of a discovery of human remains, JCEP will adhere to ORS 97.740 to 97.760, and notify ODOE, SHPO, State Police and other appropriate local officials (such as the county sheriff and county medical examiner). If the remains may be modern or the result of a crime, treatment would be determined by the State Police and local officials, and JCEP will notify ODOE and SHPO about the determinations of those agencies.

A. Workers will treat all human remains with dignity and respect.

B. Workers will immediately stop work in the vicinity of an unanticipated discovery involving potentially human remains.

C. Workers will immediately notify the EI about the find.

D. If the EI believes that potentially human skeletal remains have been found, the EI will stop all ground-disturbing activities within 250 feet of the potential discovery.

1. Protect and secure the evidence of the discovery.

2. Delineate the area with flagging or safety fencing.

3. Minimize movement by vehicles and equipment in the immediate vicinity of the discovery.

E. The EI will immediately notify the SDPP Construction Superintendent who will, in turn, immediately notify the designated contacts for SDPP, TRC, ODOE, SHPO, Oregon State Police, Coos County Sheriff, the landowner (if not JCEP), Legislative Commission on Indian Services, and the Indian Tribes.

F. Within 24-hours of the discovery, if possible, a professional archeologist will examine the discovery to determine if the remains are human and have an

archeological association and, if so, if that association is aboriginal or nonaboriginal.

1. The services of a physical anthropologist or other qualified professional will be retained if the archeologist is unable to determine if the remains are human.

G. If skeletal remains are determined to be non-human and there is no archeological association, the archeologist making the determination will immediately advise the EI and/or the SDPP Construction Superintendent, and construction may resume.

1. The archeologist will submit a letter report including photographs of the discovery site to JCEP and the TRC contacts within 15 business days of the determination.

H. If the skeletal remains are non-human but are associated with an archeological site, follow the steps described in Section III A through I.

I. If the skeletal remains are human and not associated with an archeological context, the SDPP Construction Superintendent will notify the designated contacts for the SDPP, ODOE, SHPO, the landowner (if not JCEP), State Police, Coos County Sheriff, Legislative Commission on Indian Service, and the Indian Tribes.

1. If the remains may be modern or the result of a crime, treatment would be determined by the State Police and local officials, and JCEP will notify ODOE and SHPO about the determinations of those agencies.

J. Human remains found in a prehistoric archeological context will be assumed to be aboriginal. If aboriginal human remains are identified (whether or not in an archeological context), JCEP will immediately notify the TRC Contact. TRC will then notify SHPO and ODOE. JCEP also will notify the Oregon Legislative Commission on Indian Services (OCIS), and the Indian Tribe contacts listed at the end of this document. JCEP will follow the procedures outlined in the State of Oregon and tribal position paper: "Treatment of Native American Human Remains Discovered Inadvertently, or Through Criminal Investigations on Private and Public, State-owned Lands in Oregon" (September 2006).

K. If human remains are present in an aboriginal archeological context, JCEP will follow the procedures described in Section III E through I, except as follows:

1. Notifications to ODOE and SHPO will make special note that human remains have been found.

2. JCEP will notify the Indian Tribe contacts, and request that identified tribal representatives advise JCEP, ODOE, and SHPO of any special desires they have regarding the disposition of the human remains.

3. Proposals for site evaluation will give special consideration to the fact that human remains are present.

    a) No intrusive examinations of the immediate area of the remains will be conducted prior to receipt of a permission from ODOE.

    b) The potential for the presence of multiple graves will be evaluated and procedures for determining if other unidentified graves may be present will be described.

    c) Efforts made to contact Indian Tribes will be described, the results of contacts, and efforts (as feasible) to accommodate the desires of the Indian Tribes regarding the treatment of human remains.

    d) If the discovery was made after excavation in the vicinity of the discovery has been completed, construction will be permitted to recommence, except within 100 feet of any human remains.

    e) Construction within the 100-foot area of the find will be permitted to proceed when the remains have been removed (or when ODOE advises JCEP that it has determined that the remains should be left in place).

4. If ODOE or SHPO advises JCEP that specific tribal representatives wish to take custody of any human remains and rebury them elsewhere, JCEP will, if requested, assist in any negotiations between the tribe and the landowner that may be necessary.

5. JCEP will make a good faith effort to accommodate any requests from identified tribal groups that they be present during the implementation of mitigation measures related to human remains. Subject to agreements with identified tribal groups, JCEP will offer to compensate a single tribal representative for time spent observing or participating in the removal of human remains. Compensation will include the individual's time (at an hourly rate equivalent to that paid the professional archeologist) and associated travel and living expenses.

6. JCEP will be responsible for the reburial costs of any human remains (not in crime scene) encountered during construction of the project.

L. If human remains are present in a non-aboriginal archeological context, the procedures described in Section IV E through J, will be followed except that:

1. If it is determined by SHPO, that the associated archaeological site is not eligible for the NRHP, the State Police's and Coos County Sheriff's offices will be requested to coordinate with the local medical examiner and either direct the archeologist to implement an approved plan for removal of the remains or arrange for alternative, appropriate removal of the human remains.

2. JCEP will make a reasonable effort to contact likely descendants. If those descendants request, JCEP will make arrangements with the owner of the

land where the remains were found (if the land owner is not JCEP) to allow for a site visit.

3. If the human remains are not modern or the result of a crime, JCEP will prepare a treatment plan, in consultations with ODOE, SHPO, interested Indian Tribes, or likely descendants. The treatment plan will outline measures, reached by consensus among the consulting parties, to be implemented, including addressing how the remains should be excavated, studied, repatriated, reinterred, and reported. Human remains and funerary objects will not be permanently curated.

4. Proposals for site evaluation will give special consideration to the fact that human remains are present (no intrusive examination of the immediate area of the remains; proposal will include an evaluation of the potential for the presence of multiple graves; and procedures for determining if other unidentified graves may be present will be described).

5. Within 15 business days of the resumption of construction, JCEP will provide ODOE with a written report describing the removal activities.

6. If the discovery was made after excavation in the vicinity of the discovery has been completed, construction will be permitted to recommence, except within 100 feet of any human remains.

M. The treatment measures for human remains will not be implemented by JCEP until after permission is received from the ODOE, and construction will not resume at a discovery location until after the measures are completed and ODOE issues notification.

Contacts for SDPP, Consultants Agencies, and Tribes

SDPP Contact
Robert L. Braddock
Jordan Cove Energy Project
125 Central Avenue, Suite 380
Coos Bay, OR 97420
Phone: (541)-266-7510
Fax: (541)-266-7510

Alternate SDPP Contact
To Be Determined

TRC Contact
Brian Thomas
TRC
4155 Shackleford Road, Suite 225
Norcross, GA 30093
Phone: (770) 270-1192
Fax: (770) 270-1392

Alternate TRC Contact
To Be Determined

ODOE Contact
Andrea Goodwin
Oregon Dept. of Energy

Alternate ODOE Contact
To Be Determined

625 Marion St. NE
Salem, OR 97301-3737
Phone: 503-373-0076
FAX: 503-373-7806
Email: andrea.goodwin@state.or.us

SHPO Contact
Dennis Griffin, Ph.D., RPA
SHPO State Archaeologist
Heritage Conservation Division
Oregon Parks and Recreation Dept.
725 Summer Street NE, Suite C
Salem, OR 97301-1271
Phone: (503) 986-0674
E-Mail: dennis.griffin@state.or.us

Alternate ORSHPO Contact
John Pouley
SHPO Archaeologist
Heritage Conservation Division
Oregon Parks and Recreation Dept.
725 Summer Street NE, Suite C
Salem, OR 97301-1271
Phone: (503) 986-0675
E-Mail: john.pouley@state.or.us

Oregon State Police Contact
Lt. Steven Smartt
Oregon State Police
Coos Bay Area Command
155 North Schoneman
Coos Bay, OR 97420
Phone: (541) 888-2677
Fax: (541) 888-9546

Alternate Oregon State Police Contact
To Be Determined

Coos County Sheriff Contact
Sheriff Craig Zanni
Coos County Sheriff's Office
250 N. Baxter
Coquille, Oregon 97423
Phone: (541) 396-7800

Alternate Coos County Sheriff Contact
To Be Determined

Landowner Contact
To Be Determined

Alternate Landowner Contact
To Be Determined

Commission on Indian Services Contact Services Contact
Karen Quigley, Exec. Director
167 State Capitol
Salem, OR 97301
Phone: (503) 986-1067
Fax: (503) 986-1071

Alternate Commission on Indian

To Be Determined

Native American Group Contact
Agnes F. Castronuevo, M.A., R.P.A.
Tribal Historic Preservation Officer/
Archaeologist
Confederated Tribes of Coos,
Lower Umpqua and Suislaw Indians
1245 Fulton Avenue

Alt Native American Group Contact
To Be Determined

Coos Bay, OR 97420
Phone: (541) 888-7513
E-Mail: acastronuevo@ctclusi.org

Native American Group Contact
Robert Kentta
Cultural Resource Program Director
Confederated Tribes of Siletz Indians
P.O. Box 549
Siletz, OR 97380

Alt Native American Group Contact
To Be Determined

Native American Group Contact
Nicole Norris
Archaeologist/Cultural
Resources Program
Coquille Indian Tribe
3050 Tremont St.
North Bend, OR 97459
(541)297-5739
nicolenorris@coquilletribe.org

Alt Native American Group Contact
To Be Determined

Appendix R: Draft Memorandum of Understanding

MEMORANDUM OF UNDERSTANDING
THE CLIMATE TRUST AND JORDAN COVE ENERGY PROJECT, L.P.
CARBON DIOXIDE STANDARD IMPLEMENTATION
MONETARY PATH PAYMENT REQUIREMENT

WITH A STANDBY LETTER OF CREDIT

THIS MEMORANDUM OF UNDERSTANDING (this "Agreement") is entered into as of the ___ day of _____, 201_, by and between Jordan Cove Energy Project, L.P. ("Project Owner") in its capacity as owner of the South Dunes Power Plant, and The Oregon Climate Trust ("The Trust").

RECITALS

1. The Project Owner intends to design, finance, and construct, own and operate a natural gas-fired combined-cycle generating facility consisting of two generator blocks with power augmentation capable of generating up to a total base-load net electric power output of about 420 megawatts (MW) in Coos County, Oregon ("Facility").

2. The State of Oregon requires new energy facilities to meet a carbon dioxide emission standard as described in OAR 345-024-0550 through -0710. This is a base load power plant designed with power augmentation technology (duct burners), as described in OAR 345-0245-0550.

3. As a condition to the siting of the Facility, the Project Owner is required to provide offset funds ("Offset Funds") and selection and contracting funds ("Selection and Contracting Funds") to The Trust. In accordance with Condition S.11 of the Site Certificate for the South Dunes Power Plant ("Site Certificate") that the Oregon Energy Facility Siting Council ("Council") granted to the Project Owner, dated XXXX, the Project Owner shall establish a third-party standby letter of credit (the "Letter of Credit") in The Trust's name, acceptable to the Council, sufficient to meet the monetary path requirement. Under the terms and conditions of this Agreement, the monetary path payments shall be disbursed to The Trust as specified in the Site Certificate and by The Trust as specified in OAR 345-024-0710.

4. The Trust is a qualified organization within the meaning of OAR 345-001-0010(46).

NOW, THEREFORE, in consideration of the premises and mutual promises herein contained, the parties hereto agree as follows:

1. Initial Base Load with Power Augmentation Monetary Path Payment for the Facility

1.1 The Project Owner has used the monetary path payment requirement calculations described in Conditions S.7 and S.8 of the Site Certificate to calculate the Initial Base-Load Monetary Path Payment amount for the Facility and has submitted them to the Oregon Department of Energy (the "Department") for verification. The Site Certificate requires that all monetary path payment be adjusted for inflation to the date of disbursement to The Trust using the U.S. Gross Domestic Product Implicit Price Deflator, Chain-Weight, published in the then current "Oregon Economic and Revenue Forecast" (the "Index"). The Project Owner and The Trust acknowledge that the calculation of the Initial Base-Load Monetary Path Payment in [Index date] dollars presented in Appendix A is correct and consistent with the Site Certificate.

1.2 Based on the calculations of the Initial Base Load Monetary Path Payment amount set forth in Appendix A, the Project Owner shall pay to The Trust the Inflation-Adjusted Selection and Contracting Funds in the amount of $_____ before beginning construction of the Project. The Site Certificate requires that the amount of the Selection and Contracting Funds portion of the Initial Base Load Monetary Path Payment be adjusted for inflation to the date of disbursement to the Trust using the Index.

1.3 Based on the verified calculations of the Initial Base-Load Monetary Path Payment set forth in Appendix A, the Project Owner shall pay to The Trust $_____ in inflation-adjusted Offset Funds. The Site Certificate requirements that the amount of the Offset Funds portion of the Initial Base Load Monetary Path Payment be adjusted for inflation to the date of disbursement to The Trust using the Index.

1.4 The Project Owner shall establish a Letter of Credit in the amount of $_____ in favor of The Trust, in the form attached as Appendix B to this Agreement. The effective date of the Letter of Credit shall be on or prior to the date on which Project Owner commences construction of the Project. The Trust shall be entitled to draw the entire amount of the Offset Funds secured by the Letter of Credit pursuant to Section 1.6 or Section 1.7 below and the terms of the Letter of Credit. The Project Owner shall pay the costs of establishing and maintaining the Letter of Credit and shall pay any transaction fees assessed by the issuer of the Letter of Credit.

1.5 The Trust shall have the right to request Offset Funds from the Project Owner as provided in ORS 469.503(2)(d)(A) upon execution of a letter of intent to acquire an offset project. At the sole discretion of The Trust, the amount of Offset Funds drawn may equal the entire amount of Offset Funds available. The Trust may request from the Project Owner less than the entire amount of the Offset Funds, but in no case shall the cumulative amount of all requests exceed the total Monetary Path Payment Requirement, as adjusted for inflation.

1.6 If the Project Owner fails to pay Offset Funds as requested by The Trust within ten (10) business days from the date of such request, The Trust may draw the sum of the Letter of Credit for the full or remaining amount of the Offset Funds.

1.7 Notwithstanding Sections 1.5 and 1.6, if the Project Owner fails to renew the Letter of Credit in a timely manner, The Trust may draw the sum of the Letter of Credit for the full or remaining amount of Offset Funds prior to the Expiration Date of the Letter of Credit pursuant to Exhibit B of the Letter of Credit.

1.8 Because of the need to establish a Letter of Credit with sufficient funds to cover withdrawal up to the end of a future period calculated by application of the Index, the amount of the Letter of Credit on any date may be greater than the entire amount of Offset Funds required by the monetary path, as adjusted for inflation. If there are funds available under the Letter of Credit after The Trust has withdrawn the entire amount of Offset Funds under the Monetary Path Payment Requirement, the Project Owner may terminate the Letter of Credit after The Trust certifies to the Department that it has received full monetary path payments and verification by the Department that the funds remaining in the Letter of Credit are excess of the Project Owner's obligations pursuant to Section 1.

2. Year One True-Up Base-Load Monetary Path Payment

2.1 Within the first 12 months of commercial operation of the Facility, the certificate holder shall conduct a 100-hour test (Year One Test) pursuant to Condition S.13. Within 30 days of filing its Year One Test report to the Council, pursuant to Condition S.13, the Project Owner shall re-calculate the initial monetary path payment requirement (the Year One True-Up -Base-Load Monetary Path Payment), as required by Condition S.14 of the Site Certificate. The Project Owner shall submit these calculations to the Oregon Department of Energy for verification, as required by Conditions S.14 of the Site Certificate.

2.2 The Year One True-Up Base-Load Monetary Path Payment, if any, shall be adjusted for [2015] dollars to the date of disbursement using the Index.

2.3 If any Year One True-Up Base-Load Monetary Path Payment exceeds the sum of the initial base load monetary path payment, the Project Owner shall pay the excess amount directly to The Trust within 30 days after its notification by the Department of the amount that project owner owes.

2.4 In no case shall the calculations under this Section 2 result in a refund to the Project Owner of any amount already paid to The Trust.

3. Undertaking by The Trust.

4.1 The Trust shall use the Initial Base-Load Monetary Path Payment as well as any Year One True-Up Base-Load Monetary Path Payment in accordance with OAR 345-024-0710.

4.2 With respect to the Offset Funds portions of any Initial Base-Load Monetary Path Payment or Year One Base-Load Monetary Path Payment, The Trust shall spend at least 80 percent of the Offset Funds for contracts to implement offsets, and may use up to 20 percent of the Offset Funds for monitoring, evaluation, administration, and enforcement of contracts to implement offsets. The Trust shall spend Offset Funds solely for contracts to implement offsets or for monitoring, evaluation, administration, and enforcement of contracts to implement offsets.

4.3 The Selection and Contracting Funds portions of any Initial Base-Load Monetary Path Payment and Year One Base-Load Monetary Path Payment shall compensate The Trust for its costs of selecting offsets and contracting for the implementation of offsets and administrative costs related to operating The Trust as a qualified organization.

4.4 The Trust shall use its best efforts to remain a qualified organization, as defined in OAR 345-001-0010(45), until The Trust has used all funds received from the Project Owner.

4. Limited Obligation of Project Owner.

The Trust acknowledges that, pursuant to OAR 345-024-0710(3), the Project Owner and the Project shall have no obligation with regard to offsets for the Project other than to make available to The Trust the total amount of the monetary path payments.

5. Limited Participation by Project Owner in The Trust Decision Making.

The Project Owner may appoint one nonvoting member to the Board of Directors of The Trust for a term lasting until The Trust has completed the contracting for the offset funds provided by the Project Owner for The Facility. The Project Owner shall have no approval rights over The Trust's offset contracts, disbursement of Offset Funds, or other day-to-day operations of The Trust.

6. Project Owner Agreement to Indemnify and Hold The Trust Harmless.

The Project Owner agrees to defend, hold harmless and indemnify The Trust from and against any and all claims, costs, liabilities, and expenses of any nature whatsoever, including reasonable attorneys' fees, resulting from or arising out of any failure by the Project Owner to make any payments required by this Agreement, or to establish and maintain the Letter of Credit described in Section 1.4 in a timely manner; PROVIDED, that the maximum amount of the Project Owner's liability to The Trust for claims, costs, liabilities and expenses, including attorneys' fees, arising out of the failure to make a payment or establish the Letter of Credit required by this Agreement in a timely manner shall not exceed twice the differential between the amount payable to The Trust on a particular date and the amount actually paid or made available to The Trust on or before that date. FURTHER PROVIDED, The Trust must make reasonable efforts to mitigate any losses, liabilities or expenses for which it seeks indemnification from the Project Owner.

7. General Provisions.

8.1 Governing Law: This Agreement shall be governed by and construed in accordance with the laws of the State of Oregon. Any ambiguity that may arise under this Agreement shall be given a fair and reasonable construction in accordance with the intention of the parties and without regard to which party caused or is deemed to have caused such ambiguity to exist.

8.2 Amendments and Waivers: This Agreement may not be modified, supplemented, altered or amended, or any provision hereof or rights hereunder deemed be waived, except by an instrument in writing designated as an amendment of or waiver under this Agreement and signed by both parties. The waiver of any particular breach or default hereunder shall not constitute a waiver of any other breach or default. Failure or delay by any party to enforce any provision of this Agreement shall not in any way be construed as a waiver of such provision, nor shall it prevent such party from thereafter enforcing each and every provision of this Agreement.

8.3 Entire Agreement: This Agreement constitutes the entire agreement between the parties hereto as to the matters set forth herein, and all prior proposals, commitments, understandings and agreements, whether oral or in writing, as to such matters are superseded by this Agreement.

8.4 Assignment: The rights of the Project Owner under this Agreement may be assumed by any entity that acquires an ownership interest in the Project. Upon such assumption, such entity shall be deemed to be a party to this Agreement. The Trust may not assign this Agreement without the prior consent of the Project Owner and Council; provided that, if the proposed assignee is a "qualified organization" as defined in OAR 345-001-0010(45), the Project Owner shall not unreasonably withhold such consent.

8.5 Third-Party Beneficiaries: Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies on any persons other than the parties hereto and their respective authorized successors and permitted assigns.

IN WITNESS WHEREOF, the parties have caused this Memorandum of Understanding to be executed by their respective duly authorized representatives, as of the day and year first above written.

JORDAN COVE ENERGY PROJECT, L.P.	THE OREGON CLIMATE TRUST
By:	By:
Name:	Name:
Title:	Title:
Date:	Date:

APPENDIX A: CALCULATION OF INITIAL BASE-LOAD AND POWER AUGMENTATION MONETARY PATH PAYMENT REQUIREMENT [NOT INCLUDED IN SITE CERTIFICATE]

APPENDIX B: STANDBY LETTER OF CREDIT

APPENDIX B TO MEMORANDUM OF UNDERSTANDING

[FORM OF CLIMATE TRUST LETTER OF CREDIT]

IRREVOCABLE STANDBY LETTER OF CREDIT NUMBER [Insert number]

[Date]

THE OREGON CLIMATE TRUST

65 SW Yamhill Street, Suite 400

Portland, OR 97204

Ladies and Gentlemen:

At the request and for the account of Jordan Cove Energy Project, L.P. (JCEP), address 125 Central Avenue, Suite 380, Coos Bay, Oregon, for its South Dunes Power Plant, we, [INSERT BANK NAME HERE], hereby establish effective immediately, in favor of you, THE CLIMATE TRUST ("Beneficiary"), this Irrevocable Standby Letter of Credit Number [Insert number] (the "Letter of Credit") in the amount of USD _____(as such amount may be reduced from time to time by partial draws hereunder, the "Stated Amount").

This Letter of Credit is being issued in connection with Site Certificate for the South Dunes Power Plant with the STATE OF OREGON, dated _____as may be amended from time to time.

This Letter of Credit is issued, presentable, and payable at our offices at [Drawing address], and expires with our close of business on _____ (the present or any future expiration date is referred to herein as the "Expiration Date").

It is a condition of this Letter of Credit that it shall be automatically extended without amendment for successive one (1) year periods from the present or any future Expiration Date hereof, unless we provide you with written notice of our election not to renew this Letter of Credit at least sixty (60) days prior to any such Expiration Date. For the purposes hereof, "Business Day" shall mean any day on which commercial banks are not authorized or required to close in _____. Subject to the terms and conditions herein, funds under this Letter of Credit are available at sight against your draft drawn on us bearing upon its face the clause "Drawn under _____ and accompanied by the following documents:

1. The original of this Letter of Credit and all subsequent amendments, if any; and

2. Your sight draft drawn on us; and

3. A dated draw certificate purportedly signed by an authorized officer of the Beneficiary and on Beneficiary's letterhead in the form of attached Exhibits A or B to this Letter of Credit (incorporated herein by reference and made an integral part hereof).

Partial and multiple draws are permitted under this Letter of Credit, provided that the Stated Amount of this Letter of Credit shall be permanently reduced by the amount of each such draw. This Letter of Credit may not be transferred or any of the rights hereunder assigned. Any purported transfer or assignment shall be void and of no force or effect. _____ agrees that a draft drawn and presented in conformity with the terms of this Letter of Credit will be duly honored upon presentation. If a draft made by Beneficiary does not conform to the terms and conditions of this Letter of Credit, we will give

Beneficiary prompt notice that the demand for payment will not be effected. Such notice will include a statement of reasons for the denial. Upon being notified that the demand for payment was not effected in conformity with this Letter of Credit, Beneficiary may attempt to correct the nonconforming demand; provided, however, that any draft or document prescribed to correct such nonconforming demand must be provided on or prior to the Expiration Date.

This Letter of Credit sets forth in full our undertaking and such undertaking shall not in any way be modified, amended, amplified or limited by reference to any documents, instruments or agreements referred to herein, except only the exhibits referred to hereby and any such reference shall not be deemed to incorporate by reference any document, instrument or agreement except for such exhibits.

This Letter of Credit shall be governed by the Uniform Customs and Practice for Documentary Credits, 2007 Revision, International Chamber of Commerce Publication No. 600 (the "UCP"). As to matters not covered by the UCP, this Letter of Credit shall be governed by the laws of the State of Oregon without regard to the principles of conflicts of laws thereunder.

_____ _____

Authorized Signature

[THE CLIMATE TRUST LETTERHEAD]

DRAW CERTIFICATE

[DATE]

[To Issuing Bank]

Drawn under Irrevocable Standby Letter of Credit Number _____

Any capitalized term used herein shall have the meaning defined for that term by the Letter of Credit.

The undersigned, the duly elected and acting _____ of the Beneficiary, hereby certifies as follows:

1. Jordan Cove Energy Project, L.P., has failed to pay Offset Funds to The Climate Trust for the Monetary Path Payment Requirements described in the Site Certificate for the South Dunes Power Plant, as amended from time to time, (the "Site Certificate") within the time provided in the Memorandum of Understanding between The Climate Trust and Jordan Cove Energy Project, L.P. for the Carbon Dioxide Standard Implementation of the Monetary Path Payment Requirement With A Standby Letter Of Credit ("Memorandum of Understanding").
2. As a result of said failure to pay, the Beneficiary is entitled pursuant to the provisions of the Site Certificate and the Memorandum of Understanding to make demand under the Letter of Credit in the amount of $_____.
3. The undersigned has concurrently presented to you its sight draft drawn in the amount specified in Paragraph 2 above, which amount does not exceed the lesser of (a) the amount the Beneficiary is entitled to draw pursuant to the provisions of the Site Certificate and Memorandum of Understanding, and (b) the Stated Amount as of the date hereof. The date of the sight draft is the date of this Certificate, which is not later than the Expiration Date.
4. Funds paid pursuant to the provisions of the Letter of Credit shall be wire transferred to the Beneficiary in accordance with the following instructions:

_____

_____

_____

IN WITNESS WHEREOF, the Beneficiary has executed and delivered this certificate as of [Date].

THE CLIMATE TRUST as Beneficiary

By: _____

Title:_____

EXHIBIT B

[THE CLIMATE TRUST LETTERHEAD]

DRAW CERTIFICATE

[Date]

[Insert Bank Information]

Attention: Letter of Credit Manager

Drawn under Irrevocable Standby Letter of Credit Number _____

Ladies and Gentlemen:

Any capitalized term used herein shall have the meaning defined for that term by the Letter of Credit.

The undersigned, the duly elected an acting _____ of the Beneficiary, hereby certifies as follows:

1. [Bank] as heretofore provided written notice to the Beneficiary of the Bank's intent not to renew the Letter of Credit following the present Expiration Date thereof.

2. Jordan Cove Energy Project, L.P. is required to deliver to the Beneficiary and keep in effect, a letter of credit that satisfies the requirements of Condition S.11 of the Site Certificate for the South Dunes Power Plant, as amended from time to time (the "Site Certificate").

3. Neither Jordan Cove Energy Project, L.P. nor any person acting on its behalf has, at least twenty (20) days prior to the present Expiration Date of the Letter of Credit, delivered to Beneficiary a letter of credit that satisfies the requirements of Condition S.11 of the Site Certificate.

4. As a result of said failure to deliver a replacement letter of credit at least 20 days prior to the present Expiration Date of the Letter of Credit, the Beneficiary is entitled pursuant to the provisions of the Site Certificate and the Memorandum of Understanding to make demand under the Letter of Credit in the amount of $ _____.

5. The undersigned has concurrently presented to you its sight draft drawn in the amount specified in Paragraph 4 above, which amount does not exceed the lesser of (a) the amount the Beneficiary is entitled to draw pursuant to the provisions of the Site Certificate and the Memorandum of Understanding, and (b) the Stated Amount as of the date hereof. The date of the sight draft is the date of this Certificate, which is not later than the Expiration Date.

6. Funds paid pursuant to the provisions of the Letter of Credit shall be wire transferred to the Beneficiary in accordance with the following instructions:

_____

_____

IN WITNESS WHEREOF, the Beneficiary has executed and delivered this certificate as of the [Date].

THE CLIMATE TRUST as Beneficiary

By: _____

Title: _____