

1.0 INTRODUCTION

1.1 PROJECT BACKGROUND

On September 4, 2007, Jordan Cove Energy Project, L.P. (Jordan Cove) and Pacific Connector Gas Pipeline, L.P. (Pacific Connector) filed applications with the Federal Energy Regulatory Commission (FERC or Commission) under sections 3 and 7 of the Natural Gas Act (NGA). The applications were noticed in the Federal Register on September 13, 2007. In Docket No. CP07-444-000 Jordan Cove seeks authorization to construct and operate a new liquefied natural gas (LNG) import terminal on the east side of the North Spit of Coos Bay, in Coos County, Oregon. In Docket No. CP07-441-000 Pacific Connector seeks a Certificate of Public Convenience and Necessity (Certificate) to construct and operate a new 36-inch-diameter natural gas sendout pipeline extending from Jordan Cove's proposed LNG terminal southeast for about 234 miles through Coos, Douglas, Jackson, and Klamath Counties, Oregon. Hereafter in this document, Jordan Cove and Pacific Connector are also referred to as the applicants, and their inter-related proposals are collectively referred to as the Jordan Cove Energy and Pacific Connector Gas Pipeline (JCE & PCGP) Project, or the Project.

The Oregon International Port of Coos Bay (Port) would permit and construct two components of Jordan Cove's proposed LNG terminal. The Port is seeking a joint permit under Section 10 of the Rivers and Harbors Act (RHA) and Section 404(b)(1) of the Clean Water Act (CWA) from the U.S. Army Corps of Engineers (COE), Oregon Department of State Lands (ODSL), and Oregon Department of Environmental Quality (ODEQ) to construct within Coos Bay the access channel to the LNG terminal slip, and to construct and own the slip at the LNG terminal. Although the Port itself is not under the jurisdiction of the FERC, construction and operation of the access channel and slip are considered interrelated and interdependent actions with those proposed by Jordan Cove and are therefore included in Jordan Cove's application to the FERC, and addressed in this Biological Assessment (BA) and Essential Fish Habitat (EFH) Assessment.

The FERC is the federal agency responsible for authorizing onshore LNG terminals and interstate natural gas transmission facilities, as specified in section 311(e)(1) of the Energy Policy Act of 2005 (EPAct) and the NGA. For the JCE & Pacific Connector pipeline, in accordance with section 313(b)(1) of the EPAct, the FERC is the lead federal agency for the coordination of all applicable federal authorizations, and is also the lead federal agency for preparation of an environmental impact statement (EIS) in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA).

The FERC issued a final EIS for this Project on May 1, 2009. The EIS provides a detailed description of the Project, and potential environmental impacts on specific resources. It also discusses measures that would be implemented to avoid, reduce, or mitigate impacts, and includes recommendations from the FERC staff of additional measures that the Commission may choose to attach as enforceable conditions to the Project Order, should it decide to authorize the Project. This BA and EFH Assessment is tiered on the EIS.

The U.S. Department of Agriculture Forest Service (USFS); COE; U.S. Environmental Protection Agency (EPA); U.S. Department of Homeland Security Coast Guard (Coast Guard); U.S. Department of the Interior Bureau of Land Management (BLM), Bureau of Reclamation (BOR), and Fish and Wildlife Service (FWS); the Pipeline and Hazardous Materials Safety

Administration (PHMSA) within the U.S. Department of Transportation (DOT); and Douglas County, Oregon, were cooperating agencies for the development of the EIS. A cooperating agency has jurisdiction by law or special expertise with respect to environmental impacts involved with the proposal, and is involved in the NEPA analysis.

Each of the cooperating agencies has their own authorities or permitting responsibilities for elements of the Project. The Coast Guard is responsible for assessing the suitability of the waterway and issuing a Letter of Recommendation (LOR); however it does not issue a permit or license in this context. The COE has authority to issue dredging and wetland permits for the Project under the RHA and CWA. The EPA has responsibilities under the Clean Air Act (CAA) and CWA. The DOT has authority to enforce safety regulations and standards for the LNG terminal beginning at the last valve immediately before the storage tanks, and the design and operation of the Pacific Connector pipeline. The BLM can issue a Right-of-Way Grant for the crossing of federal lands under the Mineral Leasing Act, and the USFS and BOR could concur. Douglas County would have to issue a Land Use Compatibility Statement for the portion of the pipeline within Oregon Coastal Zone, under Oregon State requirements for consistency with the Coastal Zone Management Act, and issue permits for crossing of county jurisdictional roads.

Table 1.1-1 provides a summary of major federal, state, and local permits, approvals, and consultations that would be required for construction and operation of the JCE & PCGP Project. Additional information on permits and approvals that would be required is included in section 1.5 of the Commission’s final EIS prepared for the Project.

TABLE 1.1-1			
Major Permits, Approvals, and Consultations for the JCE & PCGP Project			
Agency	Authority/Regulation/ Permit	Agency Action	Status
FEDERAL			
FERC	Sections 3 and 7 of the NGA Section 311 of the EPCAct 18 CFR 153, 157, 375, and 385 Order No. 687	Issue Approval of Place of Import and Authorization of Siting, Construction, and Operation of LNG Terminal Facilities (section 3a of NGA). Issue Certificate of Public Convenience and Necessity to construct, install, own, operate, and maintain a pipeline (section 7c of NGA). Prepare EIS.	On September 4, 2007, Jordan Cove and Pacific Connector filed applications with the FERC. FERC decision is pending until after the final EIS is issued.
	NEPA 40 CFR 1500-1508 18 CFR 380.12		On August 29, 2008 FERC issued the draft EIS. On May 1, 2009 FERC issued the final EIS.
Advisory Council on Historic Preservation (ACHP)	Section 106 of the NHPA 36 CFR 800	Has opportunity to comment on the undertaking.	Pending FERC review of final cultural resources reports, after consultations with Oregon State Historic Preservation Officer (SHPO).
Federal Communication Commission	License for fixed microwave stations and service	Review proposals for new or additions to existing communication station.	Pending.
USDA, Natural Resources Conservation Service (NRCS)	Farmland Protection Policy Act	Determine if the project would result in the permanent conversion of prime farmland.	Pending.
USFS	NEPA Special Use Permit	Adopt EIS. Review Permit.	Pending. June 12, 2006 Special Use Survey Permit issued.
	Amendments to Forest Plan Timber Sale	Amend Forest Plans. Reach Timber Sale Agreement.	Anticipated for 2009. Apply in 2009.

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Major Permits, Approvals, and Consultations for the JCE & PCGP Project

Agency	Authority/Regulation/ Permit	Agency Action	Status
COE	<p>Agreements Timber Clearing Permits Road Use Permits Mineral Sale Permits Fire Season Waivers Snow Plow Permit Special Use Permits</p> <p>Overload/Oversize Permit Right-of-Way Easement Grant Section 10 of the RHA 33 CFR 320 to 330</p>	<p>Issue Timber Clearing Permit. Issue Road Use Permits. Mineral Sale Permit. Fire Season Waivers. Permit plowing of access roads Permit use of Staging Areas, Industrial Camping, and disposal sites. Permit oversize loads on NFS roads. Consent to issue Right-of-Way Grant on NFS lands.</p>	<p>Apply in 2009.</p> <p>Apply in 2009. Apply in 2009. Apply in 2010. Pending. Apply in 2010.</p> <p>Pending. Pending.</p>
	Section 404 of the CWA	Issue permit for activities that will occupy, fill, or grade land in a floodplain, streambed, or channel of a stream or other waters of the United States.	<p>On April 22, 2008 the Port submitted a revised JPA.. In a letter dated October 6, 2008 the COE stated it will jointly evaluate the Jordan Cove, Pacific Connector, and Port projects. On November 19, 2008 COE issued letters indicating it was holding its review in abeyance until the Port provides additional information.</p>
National Marine Fisheries Service (NMFS)	Section 7 of the ESA	Issue permit for the placement of dredged or fill material into waters of the United States, including wetlands.	<p>On April 22, 2008 the Port submitted a revised JPA. On November 19, 2008, COE issued letters indicating it was holding its review in abeyance until the Port provides additional information.</p>
	Marine Mammal Protection Act (MMPA) 50 CFR 216 MSA	Consider lead agency determination of effects on federally listed species and their habitat. Provide a biological opinion (BO) if the project is likely to adversely affect such species or their habitat.	<p>The FERC will submit its BA and EFH Assessment to NMFS at about the same time the final EIS is issued. NMFS would issue its BO pending review of the FERC's BA and EFH Assessment.</p>
	Marine Mammal Protection Act (MMPA) 50 CFR 216 MSA	Consult on protected marine mammals.	Pending review of this EIS and the FERC's BA and EFH Assessment.
U.S. Department of Defense (DOD)	Section 311(f) of the EAct and Section 3 of the NGA	Provide conservation recommendations for projects that may adversely impact EFH.	<p>Consult with the Secretary of Defense to determine whether an LNG facility would affect the training or activities of an active military installation.</p>
DOE, Bonneville Power Administration (BPA)	Encroachment Permit for Electric Transmission Line Crossing	Permit review.	<p>Pending review of the FERC's EFH Assessment.</p> <p>On July 6, 2006, the FERC sent letters about the Project to the COE, Air Force Real Property Agency, Office of the Under Secretary of Defense, and Office of the Assistant Secretary of the Navy. On August 15, 2006, the Office of the Under Secretary of Defense responded indicating no objections to the Project. Pacific Connector anticipates submitting this permit request in 2009.</p>

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Agency	Authority/Regulation/ Permit	Agency Action	Status
EPA	Section 404 of the CWA Section 309 of the CAA	Can veto wetland permits issued by the COE. Review EIS for compliance with CAA and the NEPA.	EPA review pending COE permit issuance and FERC issuance of EIS.
Coast Guard	33 CFR 127	Captain of the Port (COTP) issues an LOR determining the suitability of the waterway for LNG marine traffic.	On April 10, 2006 Jordan Cove submitted Letter of Intent (LOI) to Coast Guard. On April 24, 2009, the Coast Guard issued its LOR.
	33 CFR 165	Establish safety and security zones for LNG vessels in transit and while docked.	July 1, 2008 Coast Guard issued Waterway Suitability Report (WSR)..
	Ports and Waterway Safety Act Maritime Transportation Act 33 CFR 101, 103, 104, 105	Ensure navigation safety. Develop LNG Vessel Management and Emergency Plan. Review and approve Facility Security Plan.	Pending. Pending.
	Navigation and Vessel Inspection Circular – Guidance on Assessing the Suitability of a Waterway for Liquefied Natural Gas Marine Traffic (NVIC 05-05)	Validate WSA and produce WSR.	On April 10, 2006 Jordan Cove submitted initial draft WSA to Coast Guard, and revised WSA on September 4, 2007. On July 1, 2008 Coast Guard issued WSR.
BLM	Section 28 of Mineral Leasing Act of 1920 43 CFR 2880	Issue Right-of-Way Grant for crossing federal lands for construction, operation, maintenance, and termination of 36-inch diameter natural gas pipeline. Road construction and use of BLM roads (may be authorized in Right-of-Way Grant). Offsite compensatory mitigation (may be authorized in Right-of-Way Grant).	On April 17, 2006 Pacific Connector submitted its Right-of-Way Application to the BLM, which was accepted on May 5, 2006. On May 5, 2006, BLM approved Casual Use activities. ROD pending FERC issuance of final EIS. Pending.
	Timber Harvest and Sale Authorization 43 CFR 5400	Authorize removal and sale of timber and other forest resources associated with land clearing for construction of the pipeline and ancillary facilities (may be authorized in Right-of-Way Grant).	
	Federal Land Policy and Management Act of 1976, as amended 43 CFR 1610	Land Use Plan Amendments - BLM must offer a 90-day comment period following the draft EIS and a 30-day protest period following issuance of final EIS and resolve protests prior to issuing the ROD.	Pending.
	Archaeological Resources Protection Act of 1979 (ARPA) 16 USC 470aa-470,,	Cultural Resources Use Permit.	In June 2007 BLM approved survey permits.
BOR	NEPA Right-of-Way Easement Grant	Adopt EIS or conduct own analysis. Consent to issue Right-of-Way Grant.	Pending. Pending.
FWS	Section 7 of the ESA	Consider lead agency determination of effects on federally listed species and their habitat. Provide a BO if the project is likely to adversely affect such species or their habitat.	The FERC will submit its BA to the FWS at about the same time the final EIS is issued. FWS would issue its BO pending review of the FERC's BA.
	Fish and Wildlife Coordination Act	Provide comments to prevent loss of and damage to wildlife resources.	FWS has participated in interagency meetings, provided comments on the EIS as a cooperating agency, and

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Agency	Authority/Regulation/ Permit	Agency Action	Status
DOT, PHMSA	Migratory Bird Treaty Act (MBTA) Natural Gas Pipeline Safety Act 49 USC 601 49 CFR Parts 190-199	Consultation regarding compliance with the MBTA. Administer national regulatory program to ensure the safe transportation of natural gas.	will review BA. Pending review of this EIS and the FERC's BA. Pending.
DOT, Federal Aviation Administration (FAA) U.S. Department of the Treasury, Bureau of Alcohol, Tobacco, and Firearms	18 CFR Subchapter E FAR Part 77 Explosives User Permit 27 CFR 555	Notice of Proposed Construction Possibly Affecting Navigable Air Space. Issue permit to purchase, store, and use explosives during project construction.	Jordan Cove claims to have submitted draft Notice. Permits to be obtained by Jordan Cove and Pacific Connector, as necessary, before construction.
STATE – OREGON Oregon Department of Agriculture (ODA)	Oregon Endangered Species Act Oregon Senate Bill 533 and Oregon Revised Statute (ORS) 564	Consult on Oregon listed plant species, and ODA would review botanical survey reports covering non-federal public lands prior to ground-disturbing activities where state listed botanical species are likely to occur.	On September 15, 2006, ODA responded to Jordan Cove that it was in compliance with state laws, and no species should be adversely affected. ODA provided Pacific Connector with a list of state species on July 24, 2006. Pacific Connector included botanical survey report in its September 4, 2007, application to the FERC. A second botanical report was submitted in November 2008, ODA review of those report is pending.
Oregon Department of Energy (ODE)	Section 311 of the EPA Act	Furnish an advisory report on state and local safety and security issues to the FERC, and conduct operational safety inspections.	ODE filed its safety and security report to the FERC on October 4, 2007.
ODEQ	Section 401 of the CWA	Water quality certification. Issue National Pollutant Discharge Elimination System (NPDES) permits for discharge of hydrostatic test water, submerged combustion vaporizer (SCV) condensate, and stormwater.	Review of the JPA is on hold pending additional information to be provided by the Port in March 2009,
	CAA	Issue air quality permit.	Pacific Connector submitted a draft Standard Air Contaminant Discharge Permit application to ODEQ on August 31, 2007. Jordan Cove submitted its air quality permit application to the ODEQ in September 2007. Jordan Cove intends to submit a Prevention of Significant Deterioration permit application by June 2009. Pending.
	Water Pollution Control Facility Permit under Oregon Administrative Rule (OAR) 340-045 ORS 468B.300 et seq.	Issues permit for the disposal of solid wastes and waste water into public waters. ODEQ to review and approve LNG vessel and facility spill contingency plans.	Pending.

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Agency	Authority/Regulation/ Permit	Agency Action	Status
Oregon Department of Fish and Wildlife (ODFW)	Fish and Wildlife Coordination Act and the Oregon Endangered Species Act under ORS 496, 506, and 509 and OAR 635	Consult on sensitive species and habitats that may be affected by the project and, in general, regarding conservation of fish and wildlife resources. Fish passage approval from ODFW needed for stream crossings.	Jordan Cove initiated consultations with ODFW on November 1, 2006. In May 2007, Pacific Connector consulted with ODFW regarding preliminary habitat categorization. ODFW participated in State and Federal Task Force. ODFW review pending issuance of this EIS.
	Fish and Wildlife HMP, OAR 345-022-0060	Consult on and approve fish and wildlife mitigation plan.	Pacific Connector filed revised habitat categorizations on July 24, 2008. ODFW provided comments and concurrence on February 15, 2009.
	ORS 509.140, et al 635-412-0005 through 0040	Consider issuance of in-water blasting permits Review temporary stream crossing plans consistency with Oregon fish passage law and ODFW fish passage rules	Applications by Pacific Connector pending. Pending
Oregon Department of Forestry (ODF)	EasementError! Bookmark not defined. on State lands Oregon Forest Practices Act OAR 629 ORS 477 ORS 527	Management of State Forest lands for Greatest Permanent Value, develops Forest Management Plans, stewardship under State's Land Management Classification System, monitors harvests of timber on private lands, and protects non-federal public and private lands from wildfires.	Pacific Connector anticipates submittal in 2009.
Oregon Department of Land Conservation and Development (ODLCD)	CZMA 15 CFR Part 930 ORS 196.435	Determine consistency with CZMA program policies.	Pacific Connector and Jordan Cove submitted draft requests for consistency to the ODLCD and the ODLCD indicated the applications were incomplete. Jordan Cove stated it would resubmit an application after the Port provides additional information in 2009.
SHPO	Section 106 of the NHPA ORS 338.920	Review cultural resources reports and comment on recommendations for National Register of Historic Places (NRHP) eligibility and project effects. Issue permits for excavation of archaeological sites on non-federal public and private lands.	On October 2, 2006, the SHPO wrote a letter to Jordan Cove commenting on the LNG terminal inventory report and requesting revisions. On May 28, 2008, SHPO commented on report of a survey covering the proposed Port Commercial Sand Stockpile area. On July 11, 2008, SHPO commented on Pacific Connector pipeline inventory report for archaeological resources. On December 30, 2008, SHPO commented on potential Project effects on above-ground resources.
ODSL	Submerged and Submersible Land Easement OAR 141-122	Grant submerged land easements (e.g., waterbody crossings).	Pacific Connector anticipates submitting this permit application to the ODSL in 2009.
	Joint Removal-Fill Permit, ORS 196.795-	Approve removal or fill of material in waters of the state.	Pacific Connector submitted its JPA in September 2007, Port

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	990 OAR 141-85-25-31, 115, 121, 126, 131 136, 141, 151	ODSL must determine that proposed removal and fill activity would not be inconsistent with protection, conservation, and best use of water resources in the state. Compensatory mitigation required for projects that would impact wetlands or waters of the state.	submitted revised JPA in April 2008. On October 4, 2007, ODSL reviewed the Port's original JPA and found it incomplete. The Port intends to revise JPA with new mitigation plan to be submitted in 2009. ODSL informed Pacific Connector that it would not review the pipeline JPA pending documentation of landowner permission for waterbody crossings.
Oregon Department of Transportation (ODOT)	Compensatory Wetland Mitigation Rules OAR 141-085-0121 Section 303(c) DOT Act 49 CFR 303	Review and approve wetland mitigation plans. Consultation and clearance letter regarding recreational land disturbance and construction-related traffic impacts.	Draft Mitigation Plan under review. Pending.
Oregon Department of Water Resources (ODWR)	Access Permit ORS 184, OAR 734-051 and 55 ORS 537, OAR 690-310	Issue permits to cross state funded roadways. Issue permits to appropriate surface water and groundwater during project operation.	ODOT sent letter to the FERC commenting on the project on April 9, 2008. Permit submittal is pending. Pacific Connector anticipates submitting permit application in 2010. Pending for Jordan Cove. Pending.
Oregon Department of Geology and Mineral Industries	ORS 537, OAR 690-340 Building Code Section 1802.1 and ORS 455.446 OR 517	Issue limited licenses for temporary use of surface waters for hydrostatic testing and suction dredging. Review per regulations on development in a tsunami inundation zone.	Pending Pending
Oregon Public Utilities Commission (OPUC)	OAR 860-031	Review per regulations on mining and reclamation activities. Inspect the natural gas facilities for safety.	Pending.
LOCAL Coos County	Multiple Land-use Permits and Approvals under CWA, CAA, and CZMA responsibilities delegated to the State of Oregon	Review consolidated applications for compliance. Issue permits and approvals.	On November 7, 2007, Coos County approved Jordan Cove's application for an Administrative Conditional Use Permit. On July 15, 2008 the Land Use Board of Appeals remanded the application back to Coos County for wetlands and archaeological issues. Pacific Connector to submit its application for a LUCS in 2009. Jordan Cove to submit ERP prior to construction.
Douglas County	Section 311 of EPAct Shoreline Management Act Land use permits required as part of the NPDES permit application delegated to the State of Oregon under section 402 of	Review and provide consultation regarding Jordan Cove's Emergency Response Plan (ERP). Issue Shoreline Development Permit to cross waterbodies covered by the Shoreline Management Act. Douglas County has stated to Pacific Connector at it will not require a land use process and will affix a statement to the LUCS.	Pending. Pending.

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Agency	Authority/Regulation/ Permit	Agency Action	Status
Jackson County	the CWA Land use permits required as part of the NPDES permit application delegated to the State of Oregon under section 402 of the CWA	Land use permits necessary for the Shady Cove Meter Station and the Butte Falls Compressor Station.	Permit applications submitted by Pacific Connector early in December 2007.
Klamath County	Land use permits required as part of the NPDES permit application delegated to the State of Oregon under section 402 of the CWA	Klamath County has stated to Pacific Connector that it will not require a land use process and will affix a statement to the LUCS.	Pending.
All Counties	Road Crossing Permits Grading Permits	Review permits to cross county roads. Review permits for excavation and grading activities.	Pending. Pending.
	Solid Waste Disposal	Review permits for disposal of solid waste generated by construction.	Pending.

Section 7 of the Endangered Species Act (ESA), as amended, states that any project authorized, funded, or conducted by a federal agency should not “jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined...to be critical” (16 United States Code [USC] section 1536(a)(2)(1988)). The lead federal agency, or the applicant as a non-federal party, is required to consult with the FWS and the National Marine Fisheries Service (NMFS) to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitat occur in the vicinity of the proposed project. If, upon review of existing data or data provided by the applicant, one (or both) of the two federal agencies determine that these species or habitats may be affected by the proposed project, the FERC is required to prepare a BA to identify the nature and extent of adverse impacts, and to recommend measures that would avoid the habitat and/or species, or would reduce potential impacts to acceptable levels.

In its comments on initial drafts of the applicant-prepared BA the FWS requested clarification, for the purpose of ESA consultation, of the roles and responsibilities that various federal agencies would have during the permitting, construction, and operational life of the Project. In accordance with section 313(b)(1) of the EPCRA, the FERC is the lead federal agency responsible for the coordination of all applicable federal authorizations, including consultation under the ESA. The FERC has and will continue to work closely with the COE, Coast Guard, BLM, USFS, and BOR as necessary to allow all of the agencies to adopt the results of this ESA and Magnuson-Stevens Fishery Conservation and Management Act (MSA) consultation process. It is our intent that the FWS and NMFS need only consult with the FERC regarding this BA and EFH Assessment.

If other federal permits are issued for the proposed Project, it would be the responsibility of each issuing agency to ensure federal permits would incorporate the results of the ESA consultation, including any terms and conditions identified by the FWS or NMFS. Each federal permit would likely contain its own set of conditions or mitigation requirements, and it would be the

responsibility of each issuing agency, following its own procedures or regulations, to ensure that implementation of permit conditions is done in accordance with any terms and conditions resulting from ESA consultation. In general, the FERC would maintain the lead agency role through construction and complete restoration of areas affected by the Project. The duration of other agency's jurisdiction over permit conditions would vary depending on the agency and the condition. For example, the Coast Guard would be responsible for safety and security of the LNG terminal for the life of the Project, while COE permit requirements may extend until wetland restoration or mitigation measures are deemed successful. Therefore, it is not possible at this time to identify the full extent of each federal agencies possible overlap with terms and conditions resulting from the ESA process. It would be the responsibility of the FERC, in accordance with section 313(d) of the EPA Act, to keep a complete consolidated record of all actions or decisions made by agencies undertaking federal authorizations.

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance EFH for those species regulated under a federal fisheries management plan. The MSA requires federal agencies to consult with the NMFS on all actions or proposed actions authorized, funded, or undertaken by the agency that may adversely affect EFH (MSA section 305(b)(2)). Although absolute criteria have not been established for conducting EFH consultations, the NMFS recommends consolidated EFH consultations with interagency coordination procedures required by other statutes, such as the NEPA, the Fish and Wildlife Coordination Act, or the ESA to reduce duplication and improve efficiency (50 CFR 600.920(e)). As part of the consultation process for this Project, we consolidated an EFH Assessment with the BA prepared pursuant to the ESA.

Our¹ BA and EFH Assessment is based on data contained in applications to the FERC, including supplements filed in the public record of the proceedings, such as the applicant-prepared draft BA, and the FERC's EIS. The FERC staff was assisted in the production of this BA and EFH Assessment by our third-party environmental contractor, Tetra Tech EC Inc. (Tetra Tech).

Jordan Cove, Pacific Connector, and the Port filed with the Commission an applicant-prepared draft BA and EFH Assessment on March 10, 2008. The applicant-prepared draft BA was prepared following close coordination with interested agencies, including a series of interagency task force meetings attended by representatives of the FWS, NMFS, FERC, BLM, USFS, COE, and state agencies. On April 22, 2008, we issued a data request asking the applicants for additional information and clarification from review of the applicant draft BA and EFH Assessment. Our data request included questions identified by other interested agencies participating in the interagency task force meetings. On May 12, 2008, the applicants filed responses to our data request. On January 13, 2009 the applicants provided an updated applicant-prepared draft BA and EFH Assessment that incorporated responses to the April 22 data request and results of 2008 field surveys and analysis.

¹ The pronouns "we," "us," and "our" refer to the environmental staff of the FERC's Office of Energy Projects (OEP).

1.2 PROJECT LOCATION AND ENVIRONMENTAL SETTING

The JCE & PCGP Project is located in southern Oregon. The main components of the Project include:

- Waterway for LNG marine traffic to the proposed LNG terminal, under the authority of the Coast Guard;
- Access channel and slip at the terminal to be permitted, constructed, and owned by the Port ;
- Jordan Cove's LNG import terminal; and
- Pacific Connector's pipeline and associated facilities.

The waterway would begin in the Pacific Oceans off the coast of Oregon, and end at the proposed LNG terminal in Coos Bay. The access channel, slip, and LNG terminal would be located in or adjacent to Coos Bay, in Coos County, Oregon. The Pacific Connector pipeline would begin at the LNG terminal and cross through Coos, Douglas, Jackson, and Klamath Counties, to its terminus east of the town of Malin. A more detailed description of Project components can be found in section 2 of the EIS.

1.2.1 Waterway for LNG Marine Traffic

The Coast Guard defines the waterway for LNG marine traffic for this Project as extending from the outer limits of the U.S. territorial waters, 12 nautical miles off the coast of Oregon, and 7.5 nautical miles up the existing Coos Bay navigation channel to the proposed location of the Jordan Cove LNG import terminal. For the analysis in this BA and EFH Assessment specific to species covered by the ESA and MSA, we considered impacts from LNG marine traffic extending out to the limits of the Exclusive Economic Zone (EEZ), 200 nautical miles off shore.

The characteristics of the waterway are described section 2.1.2 of the EIS, and are summarized here. The existing Coos Bay navigation channel extends from the mouth of Coos Bay to the City of Coos Bay Docks at about Channel Mile (CM) 15.1. The channel width at the entrance mark is 1,500 feet, reducing to 700 feet at CM 0 and 300 feet to CM 1. From CM 1 to the proposed LNG terminal the authorized channel width is 300 feet. At the entrance, the water is 47 feet deep, but the remainder of the navigation channel is 37 feet deep at mean lower low water (MLLW). The navigation channel is maintained by the COE.

Coos Bay, and the tributaries that flow into Coos Bay lie within the USGS-designated watershed, Coos Bay (USGS Cataloging Unit: 17100304). The watershed covers an area of approximately 739 square miles of Oregon's southern coastal range, and is included in the larger South Coast Watershed Basin. The navigation channel is included in the Coos Bay Estuary Management Plan (CBEMP) and is zoned Deep-Draft Navigation Channel (37-foot authorized draft). The navigation channel is bounded by the North Spit on the west and the mainland to the south and east. On the southern and eastern shore of Coos Bay along the waterway are several communities, including Charleston, Barview, Empire, and the cities of Coos Bay and North Bend.

The navigation channel does not have to be improved to allow LNG carriers to transit to the proposed Jordan Cove LNG terminal. Jordan Cove had a consultant conduct a carrier simulation study which showed that LNG carriers up to 148,000 m³ in capacity could safely transit up the

existing Coos Bay navigation channel under high tide conditions.² Section 2.1.3 of the EIS more fully describes the characteristics of LNG carriers.

There are several instances where LNG carrier traffic through the EEZ and the waterway could have affects on EFH and federally-listed species. First, there is the potential for vessel strikes on marine mammals or sea turtles. This potential impact is discussed for each affected species under section 4 of this BA. Second, a fuel or oil leak from an LNG carrier in transit could affect EFH or federally listed species. Again, this potential impact is discussed under individual species. Lastly, there is the remote possibility that of a leak of LNG from the carrier in transit. Section 4.12 of the EIS explains that a LNG leak, and associated pool fire if vapors are ignited, would extend out a maximum of 2.2 miles across the Zones of Concern.³ The risk management measures recommended in the Coast Guard's Waterway Suitability Report (WSR), issued on July 1, 2008 (included in Appendix B of the EIS), should protect the public and the environment from accidental or intentional incidents that may result in LNG discharge from a carrier in the waterway.

The LOR issued by the Coast Guard on April 24, 2009 found that based on full implementation of the measures outlined in Jordan Cove's Waterway Suitability Assessment, and the measures recommended in the Coast Guard's WSR the waterway could be suitable for the type and frequency of LNG marine traffic associated with this Project. The WSR limited LNG carriers calling at the Jordan Cove terminal and using to waterway to not greater than 148,000 m³ in capacity. Jordan Cove expects that as many as 80 LNG carriers may come to call at its terminal in a year.

There are no specific features to be constructed or operated in the waterway, except for the access channel and slip, which are discussed below. Therefore, there is no further discussion of the waterway in this section.

1.2.2 Port Component

The proposed access channel, and currently submerged portion of the slip, would be located in Coos Bay, at about CM 7.5 along the existing Coos Bay navigation channel, just past the Jarvis Turn in the navigation channel, within Sections 5 and 8, Township(T) 25South(S), Range(R) 13West(W), in unincorporated Coos County, just west of the corporate limits of the cities of North Bend and Coos Bay. The access channel would encompass about 25 acres of open water and shoreline.

The portion of the proposed slip that is currently upland is located on the bay side of the North Spit of Coos Bay (figure 1.2-1). This is currently vacant land that the Port has an option to purchase from the Weyerhaeuser Company (Weyerhaeuser). The slip would cover about 47 acres. Part would be inter-tidal shorelands, part would be relatively flat former dredge deposits covered by grass and brush, and part would be a forested dune.

² This report, Moffatt and Nichol, *Jordan Cove LNG Terminal Coos Bay, Oregon, 148,000 m³ Class LNG Carrier Transit and Maneuvering Simulations, March 17-20, 2008*, was filed with the FERC on May 23, 2008.

³ The Zones of Concern are described in Enclosure 11 of the Coast Guard's NVIC 05-05. These zones are based on the report *Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water*, December 2004 (SAND2004-6258) prepared by the U.S. Department of Energy's Sandia National Laboratories (Sandia Report).

The LNG terminal slip and access channel are located within the aquatic and shoreline segments of the CBEMP. The access channel and inter-tidal portion of the slip fall within zoning district 6 – Development Aquatic (6-DA). The purpose of the 6-DA zone is to provide areas for navigation and other water-dependent uses. The slip would include an LNG carrier unloading berth and a tugboat dock (necessary for operation of the LNG terminal). In conjunction with the tugboat dock, the Port proposes to construct a small administration building and small parking lot in an upland area.

The Port would have to excavate and dredge about 5.6 million cubic yards (mcy) of material to create the access channel and slip. The excavated and dredge materials would be deposited at three upland locations on the North Spit: 1) property owned by Jordan Cove (JCE Placement site); 2) placement facilities constructed at the site of the former Weyerhaeuser Linerboard Mill (Linerboard East and West sites); and 3) property owned by the Port (Port Commercial Sand Stockpile site or Port site). The JCE Placement Site would encompass about 14 acres of currently vacant land at the northern end of the proposed Jordan Cove LNG terminal tract. The Linerboard East and West sites combined cover about 110 acres of currently vacant land about 0.5 mile east of the access corridor to the LNG terminal, is partly located in Sections 3 and 4 T25S, R13W, and the north and west sides of geographic Jordan Cove. Starting in 1961 the site was used for a sulfite pulp and paper mill operated by the Menasha Wood Ware Corporation. It was acquired by Weyerhaeuser in 1981, and converted to a recycle paper mill in 1995, and closed in 2003, with the buildings removed (although foundations still remain). The Port site would occupy about 68 acres of currently vacant land owned by the Port about 1.5 miles southwest of the Jordan Cove LNG terminal, in Section 18, T25S, R13W. This site was formerly used to deposit materials dredged during maintenance of the Coos Bay navigation channel, and also contains vegetated dunes. While the JCE Placement site and Linerboard East and West sites would be for the permanent storage of materials, the Port plans to only temporarily store dredged materials at its site, and then ship the sand by barge to commercial users; such as cement companies in the San Francisco Bay area.

Dredging the access channel would affect about 10 acres of current shallow subtidal habitat (between MLLW and – 15 feet in depth), and almost 16 acres of deep subtidal habitat, (below 15 feet deep). This would include about 1.1 acres of eelgrass and 5.7 acres of macrophytic algae. Dredging in the bay portion of the slip would affect almost 6 acres of intertidal habitat between the MHHW and MLLW. Construction and operation of the upland portion slip would disturb about 18 acres of forest, and about 3 acres of grasses or brush. Use of the Port site would affect about 7 acres of forest and about 61 acres of grass and shrubs.

1.2.3 LNG Terminal

Jordan Cove's proposed LNG terminal would be located in an upland area on the North Spit adjacent to the location of the Port's slip, on private property identified on Coos County Assessor's map as tax lots 100/200/300, within Sections 4 and 5 T25S, R13W (figure 1.2-1). This is currently vacant land, located within the Coastal Shorelands Boundary and zoned 6-WD (Segment 6 – Water Dependent). This segment is planned zoned for water dependent and water related commercial and industrial development, including port and docking facilities. In 2007 and 2008 Coos County approved Administrative Conditional Use permits for the Jordan Cove LNG terminal, Port slip, and Port dredged material disposal areas.⁴

The site of the LNG terminal was the location of a livestock ranch until 1958. After it was acquired as part of the Menasha mill complex in 1961, the tract was occasionally used for log sorting activities. In 1972-1973, the COE spread materials dredged during maintenance of the Coos Bay navigation channel on the site. From the late 1970s through the early 1980s sand, boiler ash, and wood debris from milling operations were placed on the property. Weyerhaeuser, which acquired the mill in 1981, spread decant solids from its wastewater treatment facility at the site between 1985 and 1994.

Jordan Cove would purchase 149 acres of land for its LNG terminal from the Port, and 10 acres from the Roseburg Forest Products Company (Roseburg), which currently operates a wood chip facility adjacent to the east of the proposed LNG terminal. In addition, Jordan Cove would temporarily use about 32.8 acres of industrial land within the existing Roseburg property for construction staging activities. The western portion of the tract to be obtained from the Port is relatively flat, where formerly dredge materials were deposited and are now covered by brush and grasses. The eastern portion includes a forested dune. Jordan Cove would acquire an operational easement over 14.4 acres of Port land to cover the full extent of the LNG terminal thermal radiation and vapor exclusion zones, and an easement of 6.4 acres from Roseburg for the access road to the terminal.

Construction and operation of the LNG terminal would disturb about 62 acres of forest and about 17 acres of grasses. About 82 acres within the tract Jordan Cove would acquire from the Port would not be affected by terminal construction or operations.

1.2.4 Pacific Connector Gas Pipeline and Associated Facilities

The proposed Pacific Connector pipeline would extend about 234 miles southeast from the LNG terminal, traversing Coos, Douglas, Jackson, and Klamath Counties in Oregon (see figures 1.2-1 and 1.2-2 and figures A-1, A-2, and A-3 in Appendix A). The pipeline would cross the Coast Range and the Camas Valley, the Klamath Mountains and Cascade Range, and then the Klamath Basin. For about 90 miles the pipeline would be situated adjacent to existing rights-of-way, including powerlines, other pipelines, and roads. The pipeline would be 36-inches in diameter, designed to transport up to 1,000,000 decatherms per day of natural gas at a maximum allowable operating pressure of 1,440 pounds per square inch gage.

⁴ The Oregon Land Use Board of Appeals remanded three conditions of the permit back to the County for clarification, and a review is also pending before the Oregon Supreme Court.

The pipeline would cross 45.7 miles within Coos County, between MPs 0.0 and 45.7; 64.3 miles in Douglas County between MPs 45.7 and 110.0; 56.7 miles within Jackson County between MPs 109.7 and 166.4, and 64.5 miles within Klamath County between MPs 166.4 and 230.9.⁵ In Coos County the pipeline would cross lands zoned predominantly Farm and Exclusive Farm Use, as well as some Rural Residential (RR-5). In Douglas County the pipeline would cross lands zoned predominantly Timberland Resource and Exclusive Farm Use, and to a lesser extent Farm Forest Agriculture and Woodlot and Rural Residential (5R). In Jackson County the pipeline would cross lands zoned predominantly Forest Resource, a substantial length of Exclusive Farm Use, as well as some Open Space Reserve, and also possibly a small amount of land zoned RR-5). In Klamath County the pipeline would cross primarily lands zoned for Forest and Exclusive Farm Use, but also some Residential (R2) and Heavy Industrial.

The pipeline would cross a combined total of about 144 miles of forest, include deciduous forest, evergreen forest, mixed forest (containing both deciduous and evergreen trees), clearcut forest, and regenerating forest. About 32.4 miles of agricultural lands would be crossed, including cropland and pasture. The pipeline would cross about 22.4 miles of range, including herbaceous (grassy) rangelands, shrub and brush rangelands, and mixed (both grassy and brush) rangelands.

The standard construction right-of-way would be about 95-feet-wide. When crossing wetlands and certain riparian areas, the construction right-of-way may be reduced to 75 feet wide. Approximately 2,725 acres would be required for the construction right-of-way for the pipeline. The permanent easement would be 50 feet wide, except where Pacific Connector is able to negotiate a wider easement with particular land owners.

There would be a number of ancillary use areas associated with construction of the pipeline. Pacific Connector proposes to use almost 1,400 temporary extra work spaces, totaling about 1,300 additional acres. In addition, about 310 acres of uncleared storage areas would be used during pipeline construction, totaling another 779 acres. There would be 43 rock source and disposal sites, totaling about 55 acres. Pacific Connector would use 38 pipe storage and contractor yards, totaling about 1,313 acres. About 710 roads would be used to access the pipeline right-of-way during construction. Pacific Connector would have to make improvements at 62 of those existing roads, disturbing about 17 acres. Pacific Connector would need to build 18 new temporary access roads, totaling 6 acres, and permanently maintain 16 new access roads for operation of the pipeline, covering about 3 acres. Details about temporary extra work areas can be found in the EIS.

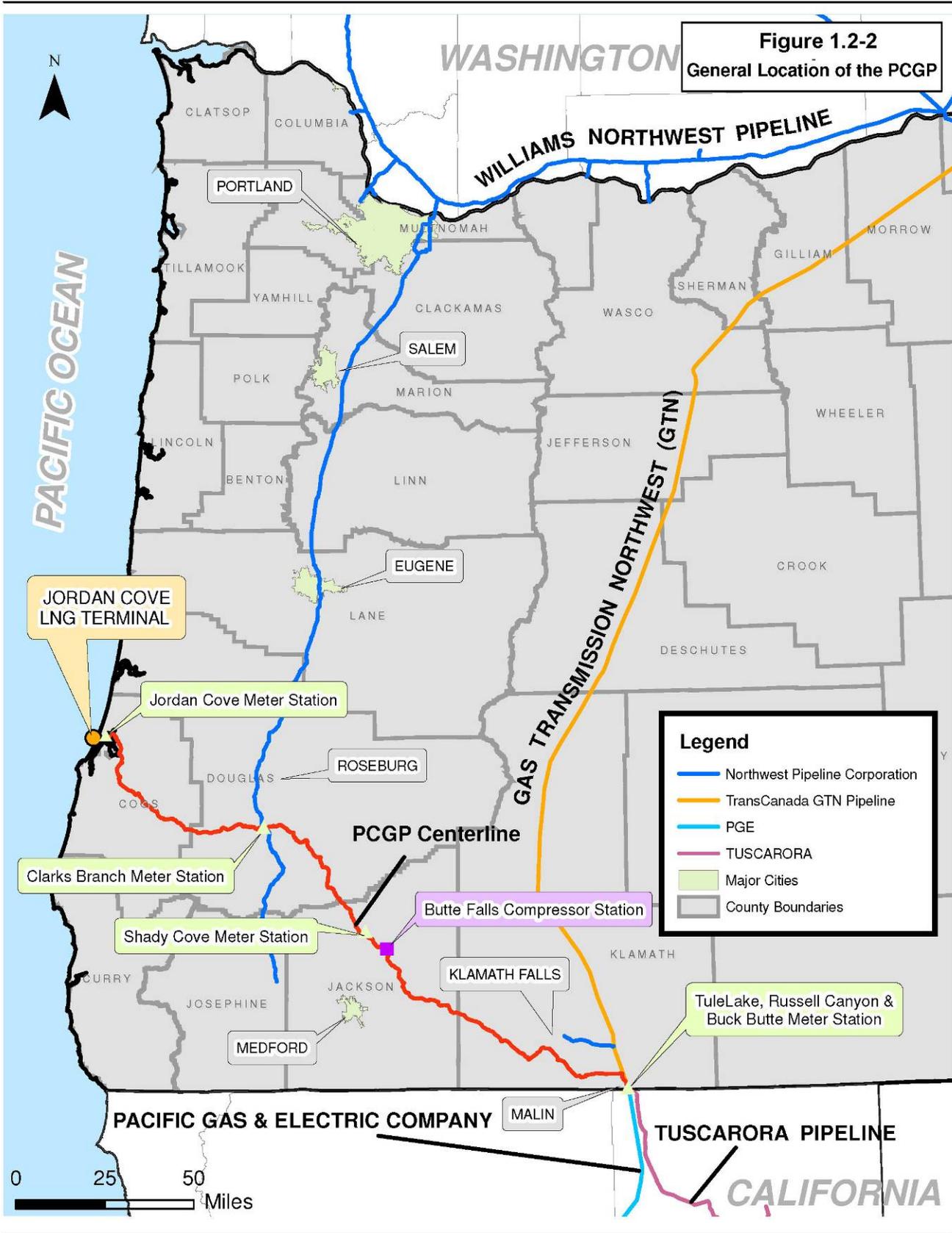
Aboveground facilities associated with the pipeline include six meter stations, a compressor station, 5 pig launchers/receivers, and 16 MLVs. All the pig launchers and receivers would be colocated at meter stations or the compressor station. The MLVs not located at meter stations or the compressor station would be within the permanent easement for the pipeline.

The Jordan Cove Meter Station, at MP 0.0 along the Pacific Connector pipeline, in Section 4, T25S, R13W, in Coos County, would be located on about 2.25 acres within the current Roseburg industrial property, adjacent to the proposed LNG terminal. It would include an interconnection

⁵ Although the total pipeline length is 233.5 miles, the pipeline ends at MP 230.9 due to numerous pipeline reroutes made after MPs were assigned that resulted in adding 2.6 miles to the overall length. Pacific Connector attempted to maintain continuity of original mileposts and accounted for reroutes using milepost equations rather than changing mileposts along the entire route.

with the LNG terminal, a pig launcher, MLV, and a 140-foot-tall communication tower. The Clarks Branch Meter Station would be located at MP 69.7 along the pipeline, in Section 12, T29S, R6W, on private land in Douglas County. It would occupy about 1 acre currently used for pasture. The meter station would include an interconnection with Williams Northwest Grants Pass Lateral, pig launcher and receiver, MLV, and 26-foot tall communication tower. The Shady Cove Meter Station would be located at MP 122.1 along the pipeline, in Section 4, T34S, R1W, in Jackson County. It would occupy about 3 acres of private land currently in pasture. The meter station would include an interconnection with Avista Corporation, and a 26-foot-high communication tower. The Tule Lake, Russell Canyon, and Buck Butte Meter Stations would be co-located within a 7 acre tract at the terminus of the pipeline, in Section 24, T41N, R12E, in Klamath County. This is private land currently used to raise alfalfa. These stations include interconnections with the existing facilities of Gas Transmission Northwest, Tuscarora Gas Transmission Corporation, and Pacific Gas and Electric Company, a pig receiver, MLV, and a 26-foot-tall communication tower.

The Butte Falls Compressor Station would be located at MP 132.1 along the Pacific Connector pipeline, in Section 27, T24S, R1E, in Jackson County. It would occupy about 7.4 acres of privately owned land that is currently forest and range. The Butte Falls Compressor Station would consist of two new Solar Taurus 70-10302S turbine-driven Solar C452 centrifugal compressor units. It would also include a pig launcher/receiver, MLV, and 160-foot-tall communication tower.



2.0 ESA CONSULTATION BACKGROUND

2.1 SPECIES LISTS

Twenty-nine federally endangered, or threatened species potentially occur in the proposed Project area as identified by the FWS (2006a, 2006b, 2007a, and 2007b) and NMFS (Wheeler 2006a and 2006b). Table 2.1-1 summarizes these species, including critical habitat and availability of recovery plans, and the general component of the Project where they may occur. In addition, two species have federally threatened status in Oregon, the Canada lynx and the bull trout Klamath River Distinct Population Segment (DPS). However, these species are not known or expected to occur within the proposed Project area and are not discussed further in this document (Canada lynx: Verts and Carraway 1998; McKelvey et al. 2000; ORNHIC 2006a; bull trout Klamath River DPS: FWS 1998a and 2002; ORNHIC 2006a).

Listed Species	Federal Status a/	Potential Occurrence within the Project Area	Critical Habitat within the Project Area	Recovery Plan Drafted
Mammals				
Steller sea lion	T-CH	Exclusive Economic Zone	In Project Area	Yes
<i>Eumetopias jubatus</i>		Coos Bay estuary		
Blue whale	E	Exclusive Economic Zone	None Designated	Yes
<i>Balaenoptera musculus</i>				
Fin whale	E	Exclusive Economic Zone	None Designated	Yes
<i>Balaenoptera physalus</i>				
Killer whale (Eastern Northern Pacific Southern Resident Stock)	E-CH	Exclusive Economic Zone	In Project Area	Yes
<i>Orcinus orca</i>				
Humpback whale	E	Exclusive Economic Zone	None Designated	Yes
<i>Megaptera novaeangliae</i>				
Sei whale	E	Exclusive Economic Zone	None Designated	No
<i>Balaenoptera borealis</i>				
Sperm whale	E	Exclusive Economic Zone	None Designated	Yes
<i>Physeter macrocephalus</i>				
Birds				
Short-tailed albatross	E	Exclusive Economic Zone	None Designated	Yes
<i>Phoebastria albatrus</i>				
Brown pelican	E	Coos Bay estuary Coos County	None Designated	Yes
<i>Pelecanus occidentalis</i>				
Western snowy plover (Pacific Coast Population)	T-CH	Coos Bay estuary Coos County	In Project Area	Yes
<i>Charadrius alexandrinus nivosus</i>				
Marbled murrelet	T-CH	Coos County	In Project Area	Yes
<i>Brachyramphus marmoratus</i>		Douglas County		
Northern spotted owl	T-CH	Coos County	In Project Area	Yes
<i>Strix occidentalis caurina</i>		Douglas County Jackson County Klamath County		
Reptiles				
Green turtle	T-CH	Exclusive Economic Zone	Not in Project Area	Yes
<i>Chelonia mydas</i>				
Leatherback turtle	E-CH	Exclusive Economic Zone	Not in Project Area	Yes
<i>Dermochelys coriacea</i>				
Olive Ridley turtle	T	Exclusive Economic Zone	None Designated	Yes
<i>Lepidochelys olivacea</i>				
Loggerhead turtle	T	Exclusive Economic Zone	None Designated	Yes
<i>Caretta caretta</i>				

Table 2.1-1.

Listed Species that May Be Present within the Project Area

Listed Species	Federal Status ^{a/}	Potential Occurrence within the Project Area	Critical Habitat within the Project Area	Recovery Plan Drafted
Fish				
Green sturgeon (Southern Distinct Population Segment) <i>Acipenser medirostris</i>	T	Coos Bay estuary	None Designated	No
Coho salmon (Southern Oregon/Northern California Coast Evolutionarily Significant Unit) <i>Oncorhynchus kisutch</i>	T-CH	Klamath River Rogue River	In Project Area	Yes (for Klamath River and its tributaries)
Coho salmon (Oregon Coast Evolutionarily Significant Unit) <i>Oncorhynchus kisutch</i>	T-CH	South Umpqua River Coos Bay Coos River Coquille River	In Project Area	No
Lost River sucker <i>Deltistes luxatus</i>	E-PCH	Klamath River Lost River	In Project Area	Yes
Shortnose sucker <i>Chasmistes breviostris</i>	E-PCH	Klamath River Lost River	In Project Area	Yes
Invertebrates				
Vernal pool fairy shrimp <i>Branchinecta lynchi</i>	T-CH	Jackson County	In Project Area	Yes
Plants				
Applegate's milk-vetch <i>Astragalus applegatei</i>	E	Klamath County	None Designated	Yes
Gentner's fritillary <i>Fritillaria gentneri</i>	E	Jackson County	None Designated	Yes
Western lily <i>Lilium occidentale</i>	E	Coos County	None Designated	Yes
Large-flowered meadowfoam <i>Limnanthes floccosa ssp. grandiflora</i>	E	Jackson County	None Designated	Yes
Cook's lomatium <i>Lomatium cookii</i>	E	Jackson County	None Designated	Yes
Kincaid's lupine <i>Lupinus sulphureus var. kincaidii</i>	T-PCH	Douglas County	Not in Project Area	No
Rough popcorn flower <i>Plagiobothrys hirtus</i>	E	Douglas County Jackson County	None Designated	Yes
^{a/} Status Key: E = Endangered, T = Threatened, CH = Critical Habitat, PT = Proposed Threatened, PCH = Proposed Critical Habitat				

Species listed under the ESA and under authority of NMFS (Wheeler 2006a, b) within the Project area include coho salmon - the Southern Oregon/Northern California Coast (SO/NCC) Evolutionarily Significant Unit (ESU), green sturgeon - the Southern DPS, and the Steller sea lion, all of which are listed as threatened. Within the Pacific Connector pipeline project area, federally designated critical habitat for coho (SO/NCC ESU) occurs in all streams and rivers below longstanding natural barriers and Lost Creek Dam within the Rogue River basin.

In addition, NMFS has jurisdiction over all marine mammals, including pinnipeds (seals, sea lions, walruses) and cetaceans (whales, dolphins, porpoises). All marine mammals are protected under the Marine Mammal Protection Act (MMPA) and some of those species have been listed as endangered or threatened under the ESA. With specific exceptions the MMPA prohibits "take" of marine mammals within waters of the United States and by U.S. citizens on the high seas. "Take" under the MMPA includes the following actions: harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect. Marine mammals listed under ESA that may occur off the Oregon coast are the southern resident killer whale, humpback whale, blue whale, fin whale, sei whale, sperm whale, and Steller sea lion. Similarly, NMFS has jurisdiction over four species of sea turtles, listed as endangered or threatened, which may occur off the

Oregon coast out to the limits of the EEZ which extends 200 nautical miles off shore. Although there are no breeding grounds in the Pacific Northwest and sightings are very rare, the four species include the leatherback sea turtle, loggerhead sea turtle, green sea turtle, and olive Ridley sea turtle. Each of these listed marine mammals and sea turtles is included in table 2.1-1.

Designated critical habitat units (CHUs) for NSO (CHUs OR-60, OR-37, OR-33, OR-32) and marbled murrelet (MAMU) (Critical Habitat Unit OR-06-d) are in the Project area (FWS 1992c and 1996). Additionally, NSO CHUs OR-62 and OR-34 and MAMU CHUs OR-06-b and OR-06-c are crossed by existing roads proposed for access to the construction right-of-way. Critical habitat has been proposed for the shortnose sucker and Lost River sucker within the Pacific Connector pipeline project area. Other species have critical habitat designated within counties crossed by the Pacific Connector pipeline, including the western snowy plover (Critical Habitat Unit OR-6), bull trout, and vernal pool fairy shrimp, but critical habitats for these species do not occur within the pipeline footprint. Critical habitat for vernal pool fairy shrimp occurs within the action area for the species; action areas for all listed species are defined in section 4 of this BA.

2.2 INFORMATION SOURCES

Information on listed species' distributions, habitat requirements, and potential occurrence in the Project area and vicinity was gathered from many sources including 1) published scientific literature; 2) agencies' published and unpublished reports; 3) agencies' unpublished raw and/or compiled data; 4) agencies' geo-spatial databases, which document species observations; 5) on-site surveys for species and habitats (as modified during agency review); and 6) personal communications with agency personnel knowledgeable about species ecological status in the Project area and vicinity. Agencies participating in the interagency task force meetings were provided the opportunity to review information used in the applicant-prepared BA. A subgroup of the task force, the ESA Consultation Subgroup, was established to provide guidance and conduct reviews of data and early drafts. The applicants and FERC representatives met with the Interagency Task Force, which included representatives of the FWS and NMFS, as well as USFS, BLM, ODLCD, ODE, ODSL, COE, ODFW, EPA, and ODEQ, to obtain specific input, guidance, and technical approach reviews with agency personnel knowledgeable about species' ecological status in the Project area. Additional information was communicated regarding the administrative and technical review processes for informal and formal consultation, permit applications and approvals, and agency policies and procedures. The work product of NSO Predicted Owl Modeling was provided through the Interagency Task Force interactions.

Existing vegetation within the Pacific Connector pipeline project area was classified using several reference/data sources: 1) National Wetland Inventory (NWI) maps refined with field delineation surveys conducted in summer/fall 2006 and spring/summer 2007; 2) aerial photography of the proposed Pacific Connector pipeline alignment taken during Summer 2006, with exceptions of reroutes outside of the 2006 aerial photography limits, in which 2005 county-wide photography was utilized; and 3) digital geographic information system (GIS) data coverage and vegetation categories described by the Oregon Gap Analysis Project (Kagan et al. 1999) and current wildlife habitat types described and delineated by the Northwest Habitat Institute in 1999 (Kiilsgaard and Garrett 1999). Vegetation cover types within the Pacific Connector pipeline project area were digitized with GIS from aerial photography taken in summer 2005 and 2006 and were delineated based on the predominant vegetation physiognomy (e.g., trees, shrubs, herbaceous vegetation) and the dominant species present.

The FWS and ODFW have developed mitigation policies to assist personnel in the evaluation of habitats of fish and wildlife impacted by proposed land and water developments, as well as provide guidance in the development of consistent and effective mitigation measures. The two policies are similar in that they present a framework to assign categories to habitat types impacted by a proposed project based on the relative importance and/or availability of habitats to fish and wildlife, and the status of species associated with impacted habitats. The FWS policy established four “resource categories” with varying mitigation goals and provided five actions (prioritized) that could be taken to mitigate the impacts, whereas the ODFW policy established six “habitat categories” and provided mitigation goals and actions for each category. The FWS’s four resource categories are quite similar to ODFW Habitat Categories 1 through 5 in habitat description and recommended mitigation goals. ODFW presents an additional habitat category, which captures habitats not valuable or important to fish and wildlife and that occurs in the Project area. Pacific Connector applied the habitat categorization process framed by ODFW to the Pacific Connector pipeline, but has incorporated additional guidance provided in the FWS Mitigation Policy, as well as consultations with members of the Habitat Quality Subtask Working Group (extension of Jordan Cove/Pacific Connector Task Force).

Fisheries (ESA-listed species and species with EFH) information was gathered from many sources including: 1) NMFS (Wheeler 2006a and 2006b); 2) the FWS (FWS 2006a and 2006b); 3) the ODFW Natural Resources Information Management Program (NRIMP) (ODFW 2006a), which documents observations of species in the project area; 4) species’ population and distribution information available online at StreamNet (StreamNet 2006); and 5) published scientific literature and agency reports. Information on other listed species was gathered from: 1) *Wildlife-Habitat Relationships in Oregon and Washington* (Johnson and O’Neil 2001), which provides relationships between specific habitats and the wildlife species that may occur in the Pacific Connector pipeline project area; 2) ORNHIC (ORNHIC 2006a), GeoBOB (BLM 2006), ISMS (BLM 2006), and NRIS (USFS 2006) databases; FWS GIS database and NSO demographic database; 3) National Biological Breeding Bird Survey routes and Audubon Christmas Bird Counts; 4) published scientific literature and agency reports; and 5) other state and federal databases and literature available online. Field surveys (below) were conducted prior to formation of the Interagency Task Force, but survey results and survey protocols have been reviewed by members of a Species Survey Subgroup.

2.2.1 Species Surveys

Existing vegetation cover types within the sites for the slip and the LNG terminal were determined from field surveys of the site, including wetland delineations that have been approved by the ODSL. Vegetation (including wetlands) cover type maps were prepared using current aerial photography overlaid with the cover type boundaries determined in the field surveys. Floristic surveys were conducted in 2005 and additional surveys were conducted on July 13 and 14, 2006, with the timing to be coincidental to optimal growth periods for select species (pink sand verbena, western lily, Wolf’s evening primrose, and silvery phacelia).

A preliminary site visit to the slip and LNG terminal site was conducted in June 2005 and the survey methodology was developed through consultation with personnel from ODFW, BLM, and FWS. The slip and LNG terminal site was visited 15 times for one to two days each from late June 2005 to early November 2006, with rigorous surveys conducted from late July 2005 to mid August 2006. For less mobile species, such as reptiles and amphibians, a 0.25-mile radius

survey area (centered on the LNG terminal site) as suggested by ODFW personnel was used. For habitat inventory using aerial photography, a 2-mile radius from the LNG terminal site was used. For highly mobile species, such as raptors and large mammals, a 10-mile radius from the LNG terminal site was used. The occurrence and status of fish and invertebrate species were based on currently available literature, which included actual field data from ODFW field sampling programs.

Surveys for federal and state endangered and threatened species were conducted in 2007 and 2008 and would continue to be conducted prior to ground-disturbing activities to document presence or absence within the Pacific Connector pipeline project area. In addition, for federally listed species, surveys have been conducted in the vicinity of the proposed pipeline for red tree voles, great gray owls, and terrestrial or aquatic mollusks, and species with survey and manage (S&M) status that require surveys prior to ground-disturbing activities. Surveys have also been conducted within habitats that may support special status plant species, including federal and state candidate species, BLM special status species, USFS sensitive species, and BLM and USFS S&M species). In addition to plants, special status wildlife species (vertebrates and invertebrates) were documented if observed during the survey activities. Survey results along the Pacific Connector pipeline route were provided in the 2007 Biological Survey Report, which was submitted with the September 4, 2007 FERC Certificate application, and the 2008 Biological Survey Report filed with the FERC in December 2008. Survey results conducted at the slip and LNG terminal were included in the Botanical Resources Report (and addendum) and 2005-2006 Preconstruction Wildlife Surveys. These reports were also submitted in the September 4, 2007 FERC Certificate application.

2.3 MAGNUSON-STEVENSON ACT CONSULTATION

The Sustainable Fisheries Act of 1996 amended the MSA and requires federal agencies, in part, to consult with the NMFS about activities that may adversely affect EFH (NMFS 1997). The MSA established guidelines for Regional Fishery Management Councils to identify and describe EFH in Fishery Management Plans (FMPs) to responsibly manage exploited fish and invertebrate species in federal waters. The Pacific Fishery Management Council (PFMC) has developed four FMPs that address EFH for managed species in the Project area (PFMC 1998, 1999, 2004). The four fisheries managed by the PFMC are highly migratory species, coastal pelagic species, groundfish, and Pacific Coast salmon.

This BA and EFH Assessment provides information to NMFS on potential effects to EFH, pursuant to Section 305(b) of the MSA. The MSA describes EFH as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity (NMFS 1997). Within the Project area, EFH has been designated for two salmonids (Chinook and coho), three pelagic species (northern anchovy, Pacific sardine and Pacific mackerel), and 29 groundfish species known or suspected to occur within Coos Bay. All habitat accessible to these managed species, including spawning and incubation, juvenile rearing, juvenile migration corridors, and adult migration corridors, is considered EFH (PFMC 1999). Highly migratory species defined by the PFMC include tunas (five species), sharks (five species), billfish/swordfish (two species) and the dorado (also called dolphinfish or mahi-mahi).