

**UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY
FEDERAL ENERGY REGULATORY COMMISSION**

IN THE MATTERS OF)	
)	
Jordan Cove Energy Project, L.P.)	Docket CP13-483-000
)	
Pacific Connector Gas Pipeline, L.P.)	Docket CP13-492-000
)	

The Western Environmental Law Center, Sierra Club, Waterkeeper Alliance, Center for Biological Diversity, Oregon Shores Conservation Coalition, Umpqua Watersheds, Cascadia Wildlands, Oregon Wild, Crag Law Center, Pipeline Awareness Southern Oregon, Southern Oregon Rural Community Partnership, Bob Barker, Coast Range Forest Watch, Rogue Climate, Rogue Riverkeeper, Klamath Riverkeeper, Columbia Riverkeeper, Food & Water Watch, Rogue Flyfishers, Pacific Coast Federation of Fishermen's Associations, Institute for Fisheries Resources, 350EUGENE and Klamath-Siskiyou Wildlands Center submit these comments on the Draft Environmental Impact Statement for the Jordan Cove Energy and Pacific Connector Gas Pipeline Projects, dated November 2014.

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I. INTRODUCTION

This draft environmental impact statement concerns a liquefied natural gas project that will require construction of massive infrastructure, directly impacting people and the environment throughout Oregon, and indirectly impacting the environment throughout the regions where

exported gas is produced and, by significantly contributing to climate change, the environment worldwide.

Jordan Cove Energy Project, L.P. (“Jordan Cove”) seek to build liquefaction and terminal facilities capable of exporting up to 0.8 billion cubic feet per day (bcf/d) of natural gas as liquefied natural gas (“LNG”) from a proposed LNG export terminal in Coos Bay, Oregon. The proposed project will also have import capability. The proposed design also includes a 420 MW powerplant to supply electricity to the terminal site and a 232-mile, 36-inch high-pressured gas pipeline. This pipeline would be placed through Coos Bay and cross and permanently impair streams, wetlands, and sloughs, along with causing associated deleterious impacts to upland habitat, forest, farm, recreational, and residential uses. The pipeline would cross 400 waterbodies, cross more than 11 miles of wetlands, require clear cutting of 1,013 acres of the remaining old growth forests in Oregon, cross steep and remote terrain prone to landslides where emergency response is limited to local volunteers, and impact and permanently impair approximately 5,938 acres of state, federal and privately owned lands. DEIS at 4-412, 4-448.

The current proposal is a modification of a prior, import-only proposal. In the course of review of that prior import-only proposal, including FERC’s NEPA review thereof, environmental and community organizations (including many of the undersigned), state and local government officials, and other federal agencies expressed numerous criticisms regarding the project itself and the adequacy of environmental review thereof. Many, if not most, of these criticisms continue to apply to the current proposal. The current export proposal will have even greater environmental impacts than the previous proposal (including but not limited to impacts relating to construction of liquefaction equipment, providing power for this equipment, and inducement of additional gas production to provide a supply for exports). Many of the deficiencies in the prior environmental review have not been corrected in the current draft EIS. Accordingly, below, we frequently cite the draft and final environmental impact statements, and comments thereon, filed in FERC dockets CP04-441 and CP07-444. These documents are, obviously, already available to FERC, and must be considered part of the record here.

The current draft EIS is deficient because it glosses over the many of the Project’s significant impacts and completely ignores many others. We discuss these deficiencies below. Following the structure of the DEIS, where appropriate, we roughly divide discussion of impacts of activities at the terminal site from discussion of impacts relating to the pipeline project. However, as we explain, these impacts must be considered cumulatively, and some types of impacts are common to both portions of the project. As such, some issues primarily addressed in one section also apply to the other, and each section must be understood as incorporating the others.

II. JORDAN COVE LIQUEFIED NATURAL GAS TERMINAL

A. Geological Hazards.

The Cascadia Subduction Zone (CSZ) is located off the Oregon coast and extends from Northern California to Vancouver, B.C, where the oceanic Juan de Fuca and Gorda Plates meet the North American Plate. The zone widens from 60 km off southern Oregon to 150 km off the northern Olympic Peninsula in Washington. According to US Geological Survey’s 2009 Earthquake

Probability Mapping there is a 10% chance of a greater than 5.0 magnitude earthquake in the CSZ in the next 30 years. This probability increases as the years go on with a 20-25% chance in the next 50 years and a 30-40% chance in 100 years. A recent study based on 13 years of research finds that the Coos Bay area is more vulnerable than northern stretches of the CSZ, and concludes that there is a 40 percent chance of a major earthquake in the Coos Bay region during the next 50 years.¹ The study author, Chris Goldfinger, a professor at Oregon State University, states that “major earthquakes tend to strike more frequently along the southern end – every 240 years or so – and it has been longer than that since it last happened.”² Forecasts predict that the CSZ is due for an earthquake similar in strength to the 9.0 magnitude earthquake felt off the coast of Japan in March 2011. A high magnitude earthquake in this zone would create several different conditions that may severely impact the stability of the terminal and pipeline.

The Jordan Cove LNG Terminal will be constructed on dredged spoils. This poses a threat from earthquake liquefaction hazards which occur when water-saturated sediment is exposed to strong seismic shaking. The shaking causes the grains to lose grain-to-grain contact and the sediment acts as a fluid. Liquefaction is more likely in loose sandy soil with a shallow water table. Liquefied sediment layers may vibrate with displacements large enough to rupture pipelines, move bridge abutments, or rupture building foundations.

The Coos Bay area has a population of about 31,750 according to the 2010 Census. There are residential areas, businesses, and an airport all located within half a mile of the Jordan Cove site. A hazardous event at the site could seriously impact the safety and infrastructure of the surrounding area. The Jordan Cove site will include two large LNG storage tanks, the liquefaction terminal, pipeline connections, marine facilities, and a natural gas fueled power plant. Disruption of the site from earthquake or tsunami could compromise the integrity of any of these components and possibly lead to leaking of gas or LNG, disruption in power service to the local grid, gas explosion or other catastrophic event.

A recent study of large historic landslides along the Oregon coast indicates that they were most likely caused by a high magnitude earthquake occurring in the CSZ. A future earthquake could result in further movement of existing rockslides as well as formation of new rockslides along the coast. Landslides along the pipeline route could result in breakage or movement of the pipeline.

Despite these risk factors, the DEIS concludes that, “the site is not unsuitable due to tsunami hazards.” DEIS at 5-4. The DEIS recommends that further geotechnical studies (which have not yet been performed) and detailed designs of ground improvements be submitted to FERC for review and approval prior to construction. *Id.* It is unclear why FERC believes that the initial information presented by the applicant is sufficient to make the determination that the site is

¹ Goldfinger, *et al.*, *Turbidite Event History – Methods and Implications for Holocene Paleoseismicity of the Cascadia Subduction Zone*, in EARTHQUAKE HAZARDS OF THE PACIFIC NORTHWEST COASTAL AND MARINE REGIONS, USGS PROFESSIONAL PAPER 1661 (Robert Kayen, ed.) July 17, 2012.

² Oregon State University Press Release, *13-Year Cascadia Study Complete – And Earthquake Risk Looms Large* (Aug. 1, 2012). Available at <http://oregonstate.edu/ua/ncs/archives/2012/jul/13-year-cascadia-study-complete-%E2%80%93-and-earthquake-risk-looms-large>

suitable for this project, given the proximity of the Coos Bay communities and infrastructure as well as the risks and probabilities of a major megathrust earthquake at this location.

While existing mapping and planning programs will provide communities with a better sense of what to expect in the event of an earthquake or tsunami, the 2011 Japanese tsunami is a prime example of the fact that even where planning programs and mitigation measures are in place for such a disaster, there are significant challenges to predicting the full extent of damage that may be caused by natural hazards. The DEIS does not adequately address the level of destruction possible at this location.

B. Safety Issues.

1. Spills

If LNG spills, it vaporizes. Because these vapors are heavier than air, they form a cloud close to the ground that will eventually dissipate. However, if an ignition source is present before the vapor cloud dissipates to less than 5% to 15% concentration, the vapor cloud can ignite and burn. The concerns expressed by many commenters about the risks of the pipeline extend beyond the possibility of catastrophic seismic events, to question the modeling and methods employed to understand the risks posed by vapor at the site. For example, on February 4, 2015, Senator Ron Wyden requested that FERC and PHMSA provide information to the public regarding the hazard modeling used to measure vapor cloud dispersion. This modeling is relevant to general spills but also to the possibility of a rupture or other spill resulting from tsunami or earthquake.

According to comments and analysis provided by professors of chemical and mechanical engineering Jerry Havens and James Venart, “the hazards attending the proposed operations at the Jordan Cove export facility could have the potential to rise, as a result of cascading events, to catastrophic levels that could cause the near total loss of the facility, including any LNG ship berthed there. Such an event could present serious hazards to the public well beyond the facility boundaries.” *See* Havens & Venart Comment, Jan 14, 2015.

2. Other Safety Concerns.

The DEIS must consider the safety concerns authorizing a bidirectional LNG facility entails. These concerns include but are not limited to a siting and carrier analysis,³ risk and consequence assessment of potential LNG spills over water,⁴ and National Fire Protection Association

³ Consequence Assessment methods for Incidents Involving Releases from Liquefied Natural Gas Carriers. (May 13, 2004) ABSG Consulting Inc. for the Federal Energy Regulatory Commission. Available online at: <http://www.ferc.gov/industries/lng/safety/reports/cons-model.pdf>.

⁴ Guidance on Risk Analysis and Safety Implications of a Large Liquefied Natural Gas (LNG) Spill Over Water. (December 2004) Sandia National Laboratories. Available online at: http://fossil.energy.gov/programs/oilgas/storage/lng/sandia_lng_1204.pdf.

standards applying to LNG.⁵ And, local and international regulatory requirements from such organizations as the International Maritime Organization, U.S. Coast Guard and hosting Port Authority should all be assessed for their roles in mitigating risks of LNG. As citizen advocates, we take this opportunity to stress the simple, and easily overlooked, issue of safety due to the several serious domestic LNG accidents history has recorded. The DEIS states that few accidents have occurred in the U.S., but omits the following accidents:

- *Staten Island Tank Fire, USA, 1973.* A fire erupted at an out-of-service LNG tank that was being repaired. Forty workers then inside the tank were killed. LNG, which had leaked through the liner during previous fillings, had accumulated in the soil below and around the concrete tank wall berm. It has been assumed that an electrical spark in one of the irons or vacuum cleaners ignited the flammable gas reentering the tank.
- *Massachusetts Barge Spill, July 1974.* After a power failure and the automatic closure of the main liquid line valves, a small amount of LNG leaked from a 1-inch nitrogen-purge globe valve on the vessel's liquid header - pressure surge caused by the valve closure induced the leakage of LNG – caused another LNG accident.
- *Nevada Test Site, Mercury, NV, 1987.* An accidental ignition of an LNG vapor cloud occurred at the U.S. Department of Energy (DOE) Nevada Test Site in August 1987.
- *USA, March 2005.* LNG Causes Pipeline Leaks and house explosion. On July 7, 2005, a company-sponsored study, launched after a District Heights house exploded in late March, found that subtle molecular differences in the imported liquefied natural gas the utility began using in August 2003 were drying the rubber seals of aging metal couplings that link sections of pipe. The breakdown of seals in the couplings of gas pipelines led to about 1,400 gas leaks during the past two years, and has required the company to launch a \$144 million project to replace lines and equipment. Two other house explosions in the area are now under investigation.
- *Savannah, GA March 14, 2006.* A potentially disastrous spill was averted when the liquefied natural gas tanker Golar Freeze discharging its load at the Southern LNG terminal on Elba Island broke from its moorings and pulled away from the pier. The dock was shut down for about 36 hours while representatives from the Coast Guard and an LNG engineer from the Federal Energy Regulatory Commission investigated the incident.
- *LNG Tanker Adrift Off Cape Cod Needs Rescue February 11, 2008.* Coast Guard and tugboat crews rescued a liquefied natural gas tanker crippled off Cape Cod after many hours of drifting at sea at the mercy of powerful winds and high waves. Just 5-years-old, the fully laden LNG carrier was corralled by four tugboats about 25 miles east of Provincetown.

⁵ NFPA 59A: Standard for the Production, Storage, and Handling of Liquefied Natural Gas (LNG), 2009 Edition. National Fire Protection Association. (Next edition 2012).

C. Water Quality and Compliance with the Clean Water Act.

In addition to the significant alteration of the purpose of the project from import to export of natural gas, several important elements of the prior import project proposal have been altered in the current application. These changes include but are not limited to the following:

- Increase in number of LNG vessels from 80 per year to 90 per year;
- Addition of the 420-megawatt South Dunes Power Plant;
- New 1-mile, 150-foot wide utility corridor between South Dunes and terminal;
- New barge dock;
- Addition of 4 liquefaction trains to replace 6 vaporizers;
- Addition of refrigerant storage and resupply system;
- Redesign of control and administration buildings;
- New temporary work areas;
- Relocation of industrial wastewater line and raw water line;
- Addition of temporary workers camp in North Bend;
- Addition of the 8-acre Southwest Oregon Regional Safety Center; and
- Major pipeline route realignments and associated meter and compressor station changes.

Many of these changes result in additional and significant impacts to wetlands and waters of the United States. The applicants propose to dredge 5.65 million cubic yards of sediment across 53 acres of the Coos Bay estuary for the purpose of constructing a liquefied natural gas (“LNG”) import terminal, slip dock and turning basin for the LNG tankers. The DEIS states that 38.0 acres of wetlands would be affected by the construction of the LNG terminal and facilities, with 35.6 acres permanently affected during operations. DEIS at 4-407. The project would cause a permanent loss of habitat due to maintenance dredging. Maintenance dredging will remove an additional 360,000 cubic yards during the first 10 years of the terminal operation, and 330,000 cubic yards of sediment during the second 10 years.

As discussed more fully below, the FERC may not grant a permit to the applicants because the State of Oregon has not and cannot certify that the project will comply with Section 303 of the Clean Water Act, which encompasses water quality standards adopted by the State of Oregon. In fact, the proposed project would do immense damage to water quality in Oregon. The proposed project would violate Oregon's anti-degradation policy by causing significant temperature increases in numerous stream segments, by causing significant decreases in dissolved oxygen levels in Coos Bay, and further degrading stream segments that are already water quality impaired for temperature, dissolved oxygen, pH, turbidity, and sedimentation.

The proposed project would violate Oregon's statewide narrative criteria by creating conditions deleterious to aquatic species, including Coho salmon (*Oncorhynchus kisutch*), green sturgeon (*Acipenser medirostris*) and eulachon (*Thaleichthys pacificus*); by permanently converting 6.8 acres of highly productive intertidal habitat to low productive deep-water habitat; by entraining and killing fish as LNG vessels uptake millions of gallons of engine cooling water; by discharging heated cooling water above ambient temperatures into Coos Bay; by killing and injuring aquatic life through ship-animal collisions (vessel strikes) and beaching (stranding) of

animals in the vessels' wakes; and by permanently removing coastal riparian vegetation along Henderson Marsh and Coos Bay that is an essential component of the food chain for fish and aquatic life.

The proposed project would also violate Oregon's water quality standard for temperature by removing riparian vegetation that shades streams, causing stream heating along a minimum 95-foot wide construction easement. The proposed project would violate Oregon's water quality standard for turbidity by causing a more than 10% increase in natural turbidity levels in Coos Bay and stream segments impacted by pipeline installations. The proposed action would also impair beneficial uses to be protected in the Rogue, Umpqua and South Coast Basins by engaging in blasting activities that will adversely impact surface water and groundwater used for drinking, and by impairing commercial and recreational fishing in estuaries and adjacent marine waters in the South Coast Basin.

The Coalition requests that the FERC not issue the Certificate of Public Convenience and Necessity because the CWA section 404 permit application is incomplete and contains insufficient and inaccurate data such that a decision cannot be made at this time, practicable alternatives to the project exist that have less adverse impact on aquatic resources; the project is contrary to the public interest; the project does not comply with the EPA and Corps' joint CWA § 404(b)(1) guidelines (hereafter "Guidelines"); the project violates Oregon water quality standards and § 401 implementation regulations; the project violates the Endangered Species Act ("ESA"), 16 U.S.C. §1531 et seq.; and the project is inconsistent with the Oregon Coast Management Plan and the Coastal Zone Management Act ("CZMA,") 16 U.S.C. § 1451 et seq. Furthermore, the Coalition requests that FERC not issue the Certificate of Public Convenience and Necessity because the application for a CWA section 404 permit is incomplete, the project does not comply with Statewide Planning Goals, the project will harm the Coos Bay Estuary, and the project does not comply with applicable local, state and federal laws, including the CWA section 401 regulations and CWA section 404 Guidelines, and the CZMA.

Below, we summarize deficiencies in the discussion of the terminal's impacts on water quality. We separately discuss the pipeline's impacts on water quality in following sections.

1. Extent and Impact of Channel Deepening Projects

Dredging has the potential to change the hydrodynamics of Coos Bay in the long-term. The application fails to evaluate the project in conjunction with other proposed dredging in Coos Bay. For instance, the FERC is considering a massive channel-deepening project for Coos Bay, and the State of Oregon commented that some level of channel deepening will be required to accommodate LNG tankers, particularly if the LNG terminal is allowed to use larger tankers in the future. The State of Oregon commented on the DEIS to FERC in 2008:

Deepening of the existing federal navigation channel will be required to accommodate the vessels with capacities proposed to be received at the terminal. The significant volumes of material to be removed, the geomorphic adjustments to the bay and its tributaries precipitated by deepening the channel, and all the

potential impacts to water quality and beneficial uses must be included in the analysis of dredging for this proposal, particularly with regard to projected ongoing maintenance dredging.

State of Oregon DEIS comments at 50, Dec. 4, 2008.

Similarly, Oregon Department of Fish and Wildlife (“ODFW”) noted that these issues were not adequately resolved in the 2009 FEIS:

In the FEIS, [Jordan Cove is] only considering the dredging at the slip and access channel into the slip as part of this project. ODFW continues to have concern over the potential ecological effects of future dredging (down to -51 feet mean lower low water and channel widening from 300 to 600 feet, plus widening the jetty opening) that is proposed to occur to further use the Port's facility ("Oregon Gateway Terminal"), even though the JCEP tenancy is not portrayed as associated with that level of dredging. Changes to salinity, ocean water exchange, water temperatures, flood/ebb rates, etc. may be expected to occur with additional deepening of the channel. Predictive modeling should be conducted to ascertain the potential impacts to the estuarine ecology from the anticipated >10 feet of additional depth from the current situation.

State of Oregon FEIS comments at 37, ODFW section, May 29, 2009.

The current DEIS again fail to address issues related to channel deepening in Coos Bay. Without remedying addressing these deficiencies in the DEIS, the 404 and 401 permits cannot be issued. The FERC must evaluate related and reasonably foreseeable channel deepening projects that might contribute to the impacts of the Jordan Cove project.

2. Extent and Impact of Haynes Inlet Removal and Fill

The applicants propose to install the 36-inch-diameter concrete weighted pipeline beneath Haynes Inlet by digging an 8-foot deep trench below the mudline with a clamshell dredge, placing excavated material adjacent to the trench, and replacing the material in the trench as backfill after the pipe is installed. The JPA estimates a total volume of approximately 150,000 cubic yards of excavated material, and states that “all of the excavated sediment will be reused as backfill; sediment will not be removed from the water or the project site.” (JPA Stand Alone Document 1-5 PDF page 158). The DEIS fails to explain how the placement of sediment adjacent to the trench will not resulting turbidity discharges in Haynes Inlet. Further, the DEIS fails to explain how the full volume of excavated material can be replaced into the trench after installation of a 36-inch-diameter pipe that will occupy and displace a volume of approximately 0.26 cubic yards per foot of pipeline. With over two miles of pipeline crossing, this displacement leaves a considerable volume of excavated material that cannot be replaced in the trench. The JPA fails to address this inconsistency, or explain how or where this material will be disposed of.

3. Dissolved Oxygen

The proposed action involves dredging that will decrease dissolved oxygen in Coos Bay because dredging increases the oxygen demand by disturbing sediments and releasing oxygen-demanding materials (decomposing organic materials contained within the sediments). As explained in the DEIS, “[r]esuspension of sediments during dredging operations can be a significant source of turbidity.” DEIS at 4-360. Although the DEIS apparently concludes that turbidity increases will not be significant, it admits that “the hydraulic cutterhead dredge to be used by Jordan Cove would generate TSS levels up to a maximum of 500 mg/l in the vicinity of the dredge” and “maintenance dredging may result in a turbidity plume for up to 1.9 miles from the dredging location at highest ebb or flood currents.” DEIS at 4-361.

Oregon DEQ previously expressed strong concerns about lowered dissolved oxygen levels that the proposed action would cause. In its 2008 DEIS comments, DEQ stated:

Total organic carbon, acid volatile sulfides, and nutrient sampling should be conducted to quantify the potential for adverse impact to oxygen levels caused by resuspension of sediments during dredging activities. Impacts should then be evaluated utilizing hydro dynamic modeling which can capture real time tidal conditions and simulate real time tidal exchanges during the period of the project.

State of Oregon 2008 DEIS comments at 63.

FERC must consider in deciding whether to certify the proposed action as complying with Oregon’s water quality standards, is that construction dredging lowers dissolved oxygen levels in estuarine waters not only by re-suspending sediment, but by deepening an estuarine channel where *hypoxic conditions can occur due to reduced circulation in deeper waters*. Once the dredging is completed, there also is the potential for reduced circulation in the deeper portions of the approach channel. In combination with other factors, reduced circulation has the potential to result in lower dissolved oxygen levels in the deeper waters. The applicants must prove that actual hydrodynamic conditions in Coos Bay would not result in a 0.1 mg/L decrease in dissolved oxygen levels caused by reduced circulation in the deeper channel. The importance of impacts on dissolved oxygen is illustrated by Oregon’s anti-degradation policy; impacts to dissolved oxygen risk violating this policy. OAR 340-041-0004(1), (3)(d).

4. Extent of Completed Work

The DEIS states that no work has yet been completed on the proposed project. The DEIS fails to note the prior excavation and testing programs that have already been completed on the project site, including pile testing and ground improvement evaluation that involved significant excavation and movement of material at the terminal and South Dunes power plant sites.

5. Contaminated Soils at Terminal and Related Sites

The DEIS states that testing at the former Weyerhaeuser mill site indicated that concentrations of contaminants are below screening levels that would represent a risk to public health, and that

DEQ recommended “No Further Action” at this location. The DEIS explains that Jordan Cove would “cover the former mill site with clean sediments from the marine slip and access channel” to raise the elevation of those sites. DEIS at ES-6. This information is incorrect and incomplete.

According to DEQ’s Environmental Cleanup Site Information (ECSI) Database, both the Ingram Yard property (ECSI 4704) and the Weyerhaeuser North Bend Containerboard Mill (ECSI 1083) sites contain levels of potentially bioaccumulating chemicals and “must not be placed in waters of the state” and are both listed as “Partial No Further Action” as of 2006. The DEQ reports acknowledge that the recommendation for no further action is contingent upon there being no “new or previously undisclosed information” becoming available.

On December 16, 2014, Barbara Gimlin, former Environmental Inspector at the Jordan Cove LNG terminal site and employee of SHN Consulting, submitted testimony to FERC regarding discovery of contaminants at the site during a March 2014 exploratory test program. (Comments attached). Ms. Gimlin describes her knowledge of discovery of contaminated soils along the Jordan Cove shoreline during a September 2013 cultural resources survey by Southern Oregon University Laboratory of Anthropology. Ms. Gimlin then describes her personal observations of excavations at the site exposing potential contaminants including “black soils (north to south in Ingram Yard, including near the shoreline), bright yellow granulated/powder found in clumps of varying sizes, gray gummy material found in clumps (likely related to hydraulic drilling conducted by GRI), and the exposure of an underground concrete storage tank punched through by heavy equipment with unknown liquid inside.” These exposures occurred during the March 2014 Kiewit test program.

The description of exposure and discovery of potential contaminants at the site as recently as April of 2014 should be investigated further. This information, provided by an individual with personal knowledge and professional experience of the discovery of potential contaminants should be considered “new or previously undisclosed information” “which warrants further investigation.” Given that the project calls for excavating and moving large amounts of soils from one area to another, to be used as fill for the South Dunes Power Plant location and other construction areas, the extent and condition of the contamination at these sites must be fully investigated, disclosed, and addressed to ensure contaminants do not reach waterways.

6. Impacts from Trenching through Coos Bay & Hayes Inlet

The applicants propose to install pipeline through Coos Bay over a 7-mile section, sidecasting material in the water without proposed turbidity control measures. After the pipeline is placed in the trench, the sidecast material will be used to backfill the trench. DEQ expressed concern that this activity in the waters of Coos Bay and the resulting suspension of large volumes of silty material over a long duration, will potentially result in exceedances of Oregon’s turbidity standard. DEQ has repeatedly advised the applicants of the need for sediment evaluation in this area due to known contaminated sediments in Coos Bay. The applicants have responded that the sediments are suitable for backfill (Response to DEQ, June 2013) but has not provided information to address the impacts of suspended sediments as a result of trenching activities in

the bay. Without this information, DEQ cannot provide the requested certification of compliance with water quality standards.

DEQ also requested that the applicants develop alternative methods for dredging and containment of suspended sediments to meet the turbidity standard and prevent distribution of fine and/or contaminated material. The applicant's response discusses alternatives to the pipeline route, but did not provide a discussion of alternative methods for the pipeline trench dredging and containment of suspended settlement that would meet the turbidity standard or the allowable exceedance.

7. Stormwater Management Plan

The applicants submitted a NPDES 1200-C application in 2010. DEQ notified the applicants that critical details of long-term stormwater management are required. Specifically, DEQ requested information related to runoff from all impervious areas at terminal and pipeline facilities, docks, structures, pavements, roadways, and access and storage areas. DEQ asked that information related to the final pipeline and associate roadways be included in the detailed stormwater management plan. The applicants have not provided a detailed stormwater management plan including specifications for proposed treatment facilities sized to handle runoff from all contributing impervious surfaces.

NMFS expressed concerns regarding deficiency in stormwater management as proposed in the prior FEIS, and these concerns have not been resolved for the new project. As NMFS explained:

Stormwater from the Jordan Cove site will be discharged into Coos Bay. The FEIS says the water will be tested before being discharged, but does not say what contaminants will be tested for and what levels will be allowed to be discharged. There is no indication in the FEIS that FERC recognizes that stormwater carries heavy metals, petroleum products and brake chemicals and compounds that are deleterious to fish and fish habitat.

NMFS FEIS Comments at 2 (June 8, 2009).. The current DEIS, like the previous documents, makes no mention of the potential for heavy metals. The DEIS states that stormwater in areas "potentially contaminated with oil and grease" will be collected, tested, and treated, but nothing indicates that what contaminants will be tested for, whether this testing will include heavy metals, or whether the treatment will be effective for the full range of possible contaminants. *See, e.g.,* 4-362. Nor is there any discussion of whether stormwater that is not potentially contaminated with oil and grease has the potential to be contaminated with other pollutants.

In addition, given the known and potential soil contamination at various locations that will be disturbed for site construction, a stormwater management plan must be individually developed for each construction location, accounting for contaminants at each site, and adopting measures to ensure that contaminants are not transported to the shoreline or released into the waters of Coos Bay and nearby wetlands.

8. Sources and Impacts of Hydrostatic Testing

DEQ requested information from the applicants regarding the sources and discharge of testing water. In its response, the applicants stated that, “the hydrotest water source will be potable and raw water from the existing CBNBWB water lines.” (Response to DEQ, June 2013). This information appears incomplete when compared to information provided in the DEIS, which includes a list of 14 potential hydrostatic testing source locations. DEIS 4-395, 4-396. The DEIS states that approximately 62 million gallons of water would be required to test the pipeline, yet the sources and disposal of this water are not fully determined. DEIS at 4-395. The DEIS provides only general information about the possible sources of water for testing, with no analysis of the impacts of proposed water withdrawals. Instead, the DEIS defers that analysis to a later time, stating that during any water rights permitting process, Oregon DEQ and ODFW could review water withdrawal applications to determine whether there are concerns about the impacts of water withdrawals on water resources. DEIS at 4-395.

The DEIS is equally vague in its discussion of the discharge of hydrostatic testing water:

During the test, it may be necessary to discharge water at each of the section breaks; however, discharges would be minimized and water would be conserved as much as practical by cascading water between test sections when feasible (pumping from one segment to the next). When discharged the test water would be released adjacent to the construction right-of-way through an energy dissipating device and a straw bale filter or sediment bag. Test water would not be discharged directly into surface waters. Pacific Connector would apply for permission to discharge the hydrostatic test water with ODEQ.

DEIS at 4-396.

The DEIS also states, “[w]here possible, test water would be released within the same basin from which it was withdrawn. However, cascading water from one test section to another to minimize water withdrawal requirements may make it impractical to release water within the same basin where the water was withdrawn in all cases.” DEIS at 4-397.

These descriptions do not make clear whether hydrostatic test water will reach waterways. In fact, the maps of the pipeline route included in the DEIS Appendix C show in several places apparent discharge points at or very near waterbodies. Numerous Federal and State environmental and natural resource protection agencies have raised alarms about the lack of information about discharges associated with hydrostatic testing. In its 2008 DEIS comments, NMFS stated:

Discussion of hydrostatic test water within Section 2.4.2.1 explains that it will be discharged into upland settings. *However, the description implies that discharge water will run into waterbodies.* Explain whether this is true. *If water is allowed to flow out of the erosion control devices, across the ground and into waterbodies, adverse impacts to NMFS trust resources will be greatly increased and need to be detailed in the effects sections.* Furthermore, the applicant-

prepared draft biological assessment explained that metallic cations, oil, and grease were often elevated in discharge water. Please address the following concerns: (1) Potential discharge of chemicals from inside the pipe; (2) potential of introducing non-native species from a different basin; (3) potential of causing changes in small stream channels due to the increased flow; and (4) fish stranding due to quickly ramping flows up and then down. Discharging water in a manner to allow it to fully infiltrate into the ground would eliminate most of these concerns.

NMFS 2008 DEIS comments at 2-3 (emphasis added).

In its 2008 DEIS comments, Oregon DEQ was even more pointed about the lack of information provided about the proposed hydrostatic testing:

The above passages are vague and contradictory about whether hydrostatic test water will reach the surface waters or not. If hydrostatic test water will reach surface waters, the DEIS should have a complete listing of all hydrostatic test discharge points with the name of the receiving stream and location on that stream. The discharge of pollutants into a water quality limit water body would be very difficult if not impossible to permit. If the total maximum daily load has been issued, the project would need to comply with the TM DL requirements.

If hydrostatic test water will not reach surface waters, the DEIS should have a complete listing of the infiltration areas. Such a list should include a location where the water would drain if it were released.

Hydrostatic test water cannot be discharged under the DEQ general storm water discharge permit.

State of Oregon 2008 DEIS comments at 67 (emphasis added).

9. Wastewater Treatment Facilities

The project includes proposed construction of a workers' camp in the City of North Bend. The camp would house up to 2,000 workers for the period of construction, over several years. Jordan Cove fails to explain how the existing wastewater treatment facility at North Bend will be able to handle the addition of wastewater produced at the workers' camp, or what alternative methods will be used to treat and manage wastewater from the camp.

10. The Proposed Action would Alter Wetlands that Perform Functions Important to the Public Interest.

The DEIS lists 19 "high value" wetlands that would be impacted by the project, including the Coos Bay estuary. DEIS Appendix N, Table N-2. However, the DEIS does not explain or justify the reasoning for limiting "high value" assessment to only these 19 wetlands. The FERC should

consider whether the applicants have accurately assessed and evaluated wetlands within the project corridor for their ecosystem values under the relevant standards.

The application fails to consider impacts to nearby wetlands from erosion, and other disturbances. Wetlands to the west of the slip are likely to be impacted, but ignored in the application. In addition, the estuarine wetlands provide a nursery for young salmon and other aquatic life. The combination of losing shallow water habitat from dredging and losing shallow water habitat from filling wetlands is a devastating blow to the estuary ecosystem. The DEIS must analyze the habitat loss of the dredge and fill cumulatively. The wetland fill will also degrade habitat utilized by birds, amphibians, mammals, and invertebrates.

Jordan Cove states that it will mitigate the impacts to the species affected by destruction of habitat through its Mitigation Plan. Nonetheless, the Mitigation Plan will be insufficient to mitigate the adverse impacts of filling the wetlands. The filling of the wetlands and their resulting destruction will be certain, permanent, and imminent. In contrast, the measures to be implemented in the Mitigation Plan and the effectiveness of such measures are highly uncertain. Even the DEIS admits that the Mitigation Plan fails to explain how it would compensate for impacts to wetlands associated with the Southern Oregon Response Safety Center, and does not adequately demonstrate avoidance and minimization techniques. DEIS at 4-410.

Furthermore, even if the measures of the Mitigation Plan are successfully implemented, the benefits from the measures may accrue slowly while the endangered and threatened species are put in further jeopardy by a lack of essential habitat. For example, the DEIS categorizes as “temporary” impacts those that may recover within three years. Three years of degraded and lost habitat within the Coos Bay estuary could have significant effects on benthic habitat, water quality, and the aquatic organisms that depend on these areas for survival. The DEIS should take these factors under consideration and require the applicants to provide a more thorough analysis concerning the effectiveness of the Mitigation Plan.

11. The Application Fails to Incorporate Practicable Steps that will Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem.

Under 40 C.F.R. § 230.10(d):

Except as provided under section 404(b)(2), no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.

a. Failure to Avoid Impacts

First and foremost, the application fails to demonstrate what efforts have been made to avoid impacts to wetlands. Instead, the DEIS focuses on explaining mitigation efforts to address impacts to wetlands and waters of the U.S.

EPA describes the mitigation sequencing as follows:

In 1990, the Environmental Protection Agency (EPA) and the Department of Army entered into a Memorandum of Agreement (MOA) to clarify the type and level of mitigation required under Section 404 regulations. The agencies established a three-part process, known as mitigation sequencing to help guide mitigation decisions:

1. Avoid - Adverse impacts are to be avoided and no discharge shall be permitted if there is a practicable alternative with less adverse impact.
2. Minimize - If impacts cannot be avoided, appropriate and practicable steps to minimize adverse impacts must be taken.
3. Compensate - Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain.

EPA, *Wetlands Compensatory Mitigation*, available at <http://www.epa.gov/owow/wetlands/pdf/CMitigation.pdf>.

The 1990 Memorandum of Agreement Between the Department of the Army and the Environmental Protection Agency describes the legal requirements:

Avoidance. Section 230.10(a) allows permit issuance for only the least environmentally damaging practicable alternative. The thrust of this section on alternatives is avoidance of impacts. Section 230.10(a) requires that *no discharge shall be permitted if there is a practicable alternative* to the proposed discharge which would have less adverse impact to the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. In addition, Section 230.10(a)(3) *sets forth rebuttable presumptions* that 1) alternatives for non-water dependent activities that do not involve special aquatic sites are available and 2) alternatives that do not involve special aquatic sites have less adverse impact on the aquatic environment. *Compensatory mitigation may not be used as a method to reduce environmental impacts* in the evaluation of the least environmentally damaging practicable alternatives for the purposes of requirements under Section 230.10(a).

MOA, 1990 (emphasis added).

Jordan Cove flips this sequence on its head by siting the terminal and pipeline where it will have tremendous adverse impacts, but then attempting to mitigate those impacts. For example, the pipeline is routed through Coos Bay affecting 76.3 acres in Hayes Inlet, as well as creating 2.5 miles of pipeline disturbance. DEIS at 4-414. As the MOA states, compensatory mitigation may not be used as a method to reduce environmental impacts.

b. Failure to Adequately Identify and Explain Mitigation Plans

Second, the JPA and DEIS do not adequately describe or explain proposed minimization and mitigation measures. Notably, two different compensatory wetland mitigation plans are included

in the full JPA. Both are dated October 2014, but it is not clear which is the final plan. In addition, two additional CWM plans were submitted to the Oregon Department of State Lands. The FERC and the public must be able to identify the final plan for mitigation in order to evaluate its components. The DEIS also contains misleading statements and missing information. For example, the DEIS states that the former Mill Site (which includes Ingram Yard) was “used only for dredge spoil disposal.” This is incorrect and misleading. The site is listed as a clean up site by Oregon DEQ due to previous disposal of mill wastes on the property. The full extent of the wastes and contamination on the property is not yet known. In addition, the DEIS mitigation plans lack specificity and detail to demonstrate compliance with applicable standards. For example, the DEIS references the erosion control plan contained Resource Report 2 as a measure to minimize impacts. This plan is not site specific and fails to disclose specific information for adequate evaluation of the mitigation designs and procedures to be used mitigating these environmental impacts. The FERC and the public cannot possibly evaluate the effectiveness of any mitigation plans proposed by Jordan Cove without the specifics of the plans. Simply stating that Best Management Practices (“BMPs”) will be used is insufficient for evaluation of mitigation measures specific to each site. This listing of BMPs to be used is inadequate for a proper analysis of the effectiveness of the proposed sediment control measures.

The mitigation plans lack, among other things:

- Specific information regarding the water quality and habitat impacts of the improvements to roads;
- Design specifics used to justify the incomplete ESC;
- An assessment of increase in impervious surfaces resulting from road improvements, and how surface flow runoff will be affected by said road improvements. The FERC should evaluate the effects of greater impervious areas and changes in storm water drainage dynamics resulting from road widening and construction, and also evaluate the potential from increased pollutants entering Henderson Marsh and Coos Bay from resulting increased storm water runoff;
- Analysis of the potential for releasing contaminants from the soil during road construction. The FERC should require Jordan Cove to provide a plan on dealing with any soil contaminants encountered during road construction activities and analyze the possible environmental effects from the release of any such contaminants.

The description of a general BMP without site-specific considerations is worthless to the public, and the FERC, for proper evaluation of the measures to be used for mitigation of environmental impacts caused by construction activities.

c. Failure to Compensate for Impacts to Wetlands

Third, even if Jordan Cove were properly avoiding adverse impacts, the mitigation does not adequately compensate for the damage. The 76 acres of prime estuarine salmon habitat that would be destroyed are irreplaceable. In addition, adequate mitigation must replace habitat values with “in-kind” and “in-place” habitat. The MOA states:

Generally, in-kind compensatory mitigation is preferable to out-of-kind. There is continued uncertainty regarding the success of wetland creation or other habitat development. Therefore, in determining the nature and extent of habitat development of this type, careful consideration should be given to its likelihood of success.

MOA, 1990.

There are multiple problems and deficiencies in the mitigation proposed for Coos Bay. Kentuck Slough, the site of proposed intertidal flats mitigation, contains obstacles to successful mitigation that have not been addressed in the DEIS. Kentuck Slough was historically a five-mile tidal inlet that was filled to create a golf course and other land uses over time. Recently in 2007, the Kentuck Slough Bridge was replaced, and a new tide gate was installed. The tide gate replacement was designed to prevent additional intrusion of salt water into the adjacent land via groundwater flow. Saltwater intrusion had been negatively affecting the quality of soil during summer months, when limited freshwater inflow failed to adequately dilute the salt water from the bay. The tide gate replacement was the result of special hydraulic design to understand the hydrologic conditions and tidal flow. According to the mitigation plan, that new bridge and tide gate would be removed. The mitigation plan does not address the issue of saltwater intrusion to adjacent lands and soils via groundwater. The mitigation plan likewise does not address flooding issues, impacts to private property, or potential increases in mosquito populations related to the proposed mitigation at this site. Already, farms and homes to the north and west of the Kentuck Slough channel frequently flood during heavy rains. These flood impacts, including stage, velocity, and duration, have not been addressed in the mitigation plan. These flooding impacts should be evaluated including increasing sea level and storm surge projections for the area.

In addition, current and historical land uses in the area may have created conditions detrimental to successful recreation of this estuarine habitat. For example, the former golf course at this site likely used fertilizers, pesticides and herbicides, and other chemical additives that would likely be mobilized by the restoration project. These potential contaminants have not been addressed in the mitigation plan. In addition, an existing quarry located upstream of the mitigation site (Main Rock Products, Inc.) has been filling wetlands along the channel, that would limit the effectiveness of the project's intent to reconnect estuarine and freshwater habitat. The DEIS fails to address or explain how these features are likely to impact the proposed mitigation at this site.

The reopening of the Kentuck channels is likely to cause complex and dynamic flow pattern alterations. The plan design must account for increased flows, tidal channels, and flooding impacts. The FERC should require the applicants to prepare a hydrodynamic model that clearly researches and addresses the capacity and flow dynamics likely to occur as a result of the proposed channel restoration. This should include monitoring upstream of the proposed mitigation site and be based, at minimum, on tidal data, storm surge, stream velocity, flow capacity and projected long-term sea level rise. The explanation of existing hydrology does not include adequate data to support its conclusions about inundation occurrences and conditions.

The applicants also propose creation of new eelgrass habitat to compensate for the loss of high quality benthic habitat at the terminal site. The DEIS fails to adequately evaluate and explain the

likelihood of successful eelgrass habitat creation at the proposed mitigation site. For example, siltation and sedimentation can greatly impact the effectiveness and longevity of eelgrass restoration projects. The applicants have not evaluated the conditions of the chosen site for likelihood of long-term success.

As discussed above, the applicants have yet to file a Biological Assessment, and formal consultation with NMFS has not yet been initiated. Previously, NMFS highlighted the inadequacies of the 2008 Draft Compensatory Mitigation Plan:

The compensatory mitigation plan is a draft document that will need to be negotiated and approved by multiple entities. It is reasonably likely that the final approved plan will be significantly different from the draft supplied in the BA. Until the plan is finalized, the effects of the mitigation actions, both adverse and beneficial, cannot be accurately assessed in the BA or analyzed by NMFS in a biological opinion. In the absence of a final mitigation plan that identifies non-discretionary commitments for mitigation, NMFS cannot assume mitigation will occur. Provide a final mitigation plan.

NMFS 2009 BA comments at 5.

At this point, without even a BA to review, let alone a final mitigation plan, the FERC, other reviewing agencies, and the public cannot assume mitigation will occur.

When discussing the total acres of wetlands that would be permanently filled by the Pacific Connector, the numbers in the Compensatory Wetland Mitigation Plan (CWMP) do not match those detailed in the DEIS. The DEIS states that 1.48 acres will be destroyed, yet the CWMP proposes to mitigate for only 1.42 acres.

The CWMP is only proposing mitigation for what the applicants consider permanent impacts of the Pacific Connector (either 1.48 or 1.42 acres depending on the source). There remains an additional 238.96 acres of wetlands to be impacted in a temporary fashion. Given the sheer number of acres to be impacted and the various Cowardin classes affected, there are concerns that some of the temporary impacts may cause permanent removal of vegetation to cause a shift of these wetlands Cowardin class and thus to their functions and values.

The proposed mitigation site detailed in the Pacific Connector CWMP is well outside the watershed of many of the wetland areas that would be permanently destroyed by the project. The proposed mitigation site is located within the Coos subbasin (HUC 17100304) between Glasgow and Cooston. However, many of the impacts would be located not only in Coos but also in Coquille (HUC 17100305), South Umpqua (HUC 17100302), Upper Rogue (HUC 17100307), Upper Klamath (HUC 18010206) and Lost (HUC 18010204) sub basins.

33 C.F.R § 332.3 (b)(1) and other portions of part 332.3 direct that, “the *required compensatory mitigation should be located within the same watershed as the impact site*, and should be located where it is most likely to successfully replace lost functions and services, taking into account such watershed scale features as aquatic habitat diversity, habitat connectivity, relationships to

hydrologic sources...” (emphasis added). The proposed mitigation site is located well outside the watershed for many impacted site, and can not reasonably replace those lost functions and values in the watershed.

To further alter the functions and values that would be provided by the mitigation site, the mitigation site may transition to salt water marsh in the future. The CWMP states in section 4.5 “Essentially, since the mitigation site is believed to occur at a transition zone between salt marsh and freshwater wetland, it would be acceptable if portions of the vegetation in the freshwater site proposed in this CWM are altered by future salt marsh restoration. These natural adjustments would mimic historic conditions, would provide good habitat for wildlife, and would not be counted against the CWM Plan Objectives following the initial five -year establishment period.” While it may mimic historic conditions at the mitigation site before conversion to a golf course, it would in no way mimic conditions at the sites this is intended as mitigation for along the proposed pipeline route in upstream freshwater habitats in other watersheds.

Watersheds to be affected contain species found in some, but not in others that have relationships to wetlands or the waterways they are connected to. In the case of SONCC Coho salmon, or the Lost River Sucker, neither is found in the Coos subbasin, nor would the freshwater components of their resident subbasins be effectively replaced by mitigation in the Coos subbasin, nor with saltwater marsh.

33 C.F.R § 332.3 states that not only should the mitigation site provide desired functions, but should specifically consider ESA listed species and the relative locations of mitigation and impact sites in a stream network. “The compensatory mitigation project site must be ecologically suitable for providing the desired aquatic resource functions. ... the district engineer must consider, to the extent practicable, the following factors:

(v) Reasonably foreseeable effects the compensatory mitigation project will have on ecologically important aquatic or terrestrial resources (e.g., shallow sub-tidal habitat, mature forests), cultural sites, or *habitat for federally- or state-listed threatened and endangered species*; and

(vi) Other relevant factors including, but not limited to, development trends, anticipated land use changes, habitat status and trends, *the relative locations of the impact and mitigation sites in the stream network*, local or regional goals for the restoration or protection of particular habitat types or functions (e.g., re-establishment of habitat corridors or *habitat for species of concern*), water quality goals, floodplain management goals, and the relative potential for chemical contamination of the aquatic resources.”

33 C.F.R. § 332.3(d)(1) (emphasis added).

Due to the extremely large quantity of supposedly temporary impacts (238.96 acres), it would be more than appropriate for the district engineer to require both additional mitigation, and the start of mitigation before project construction to offset temporal impacts due to the loss of wetlands during construction and the recovery period. “Implementation of the compensatory mitigation

project shall be, to the maximum extent practicable, *in advance of* or concurrent with the activity causing the authorized impacts. The district engineer shall require, to the extent appropriate and practicable, *additional compensatory mitigation to offset temporal losses* of aquatic functions that will result from the permitted activity” 33 C.F.R. § 332.3(m) (emphasis added).

D. Impacts to the Oregon Dunes ecosystem.

The Jordan Cove proposed LNG Terminal and Power Plant will require a tremendous amount of water to operate, 1.7 billion gallons during construction and 184 million annually for operations. This project is immediately adjacent to the Oregon Dunes National Recreation Area, which could be impacted by these water needs.

The project’s water will be provided by the Coos Bay North Bend Water Board (CBNBWB) from groundwater wells on the North Spit near the project area . The DEIS confirms (4-346) that the water wells used by the Project withdraw “water from the Dune-Sand Aquifer.... Use of water from the CBNBWB wells for project construction and operation may temporarily lower groundwater levels in the wells.” In scoping, FERC was asked to consider the impact of using these wells on the Oregon Dunes ecosystem , but the DEIS failed to address this issue.

The DEIS admits that “Water levels at the CBNBWB well that is closest to the LNG terminal (well #46 located 3,500 feet north) may drop as much as 0.5 feet”, DEIS 4-347, but failed to consider what that drop would do to lakes and wetlands, even the wetlands in the proposed mitigation site (Parcel P) next to well #46.

The Oregon Dunes National Recreation Area (ODNRA) is a sensitive ecosystem that contains Globally Significant Plant Communities, including rare vegetation dependent on wetlands, pools and lakes. The water withdrawals for the adjacent Jordan Cove project will impact the Dunes plant, fish and wildlife ecosystems.

Studies of the Oregon Dunes have found that groundwater wells near the southern edge of the Dunes could be drying up the natural lakes and wetlands in the Dunes.

FERC failed to consider the findings of this study, even though it was submitted during scoping: “The well field in the Horsfall area, at the south end of the Recreation Area, is being studied to monitor changes in groundwater levels, and its potential effects on wetlands. Sustained pumping of groundwater may alter extent and composition of seasonal or perennially-flooded wetlands. If dewatering is sustained over a period of years, shallow lakes may be replaced by dry or seasonally-wet associations typical of deflation plains. Because sand is highly permeable, excessive pumping may also cause pollution of groundwater by infiltration of salt water, sewage, fertilizers and pulp mill wastes.”

The “south end of the Recreation Area” is adjacent to the proposed Jordan Cove terminal. Horsfall area is less than one-mile north of Jordan Cove. Horsfall and Beale Lake are highly protected for wildlife within the Dunes, yet groundwater used to supply the water needs of this project could degrade them.

The Dunes study details some valuable plants that could be lost, page 8:

These lakes are unique because of their large size and extensive aquatic bed and emergent plant associations, dominated by pond lily, floating-leaved pondweed, water-shield and hardstem bulrush. Several lakes contain water clubrush, an uncommon plant species, and extensive populations of the insectivorous bladderwort. The lakes host large concentrations of waterfowl during the migration season.

The study warns: “Groundwater pumping in the wellfield in the Horsfall area may be lowering the water table, threatening the long-term viability of these lakes.”

This is exactly where well #46 is, and other wells to be used by the Jordan Cove Project. This study continues:

The groundwater drains into lakes, streams, North Slough and the ocean. Winter precipitation elevates the watertable... The seasonal rise in water table also causes vernal pools to form... These pools are teeming with invertebrates and are temporary sources of food and breeding grounds for amphibians and migrating waterfowl.... Groundwater pumping on the North Spit of Coos Bay has raised concerns about year-round depression of the water table, dewatering valuable wildlife habitat and possibly altering plant succession at these sites.

The Dunes study emphasized that “Pumping of groundwater for municipal use may be causing the water table to drop in some areas of the Recreation Area, and may hasten invasion of upland species.” Therefore, the billions of extra gallons needed by the Jordan Cove project will have significant impacts to the invasion of upland species.

The Dunes Study specifically points to the area just one mile north of the LNG project site, where the DEIS confirms Jordan Cove will be getting water. While the study recommends that “Groundwater pumping in the vicinity of Horsfall Lake and Beale Lake needs to be monitored to determine if it is detrimental to the plant associations there,” no monitoring was offered in the DEIS.

The Oregon Dunes is a critically important and unique habitat for plants and wildlife. The 1994 Oregon Dunes Plan says this “is a rare and beautiful place. The uniqueness and variety of this extensive system of dunes, streams, freshwater lakes, wetlands, and coastal forests on the shores of the Pacific Ocean, make it a world-class attraction.”

In 2003 botanist from Oregon Natural Heritage Information Center did a plant inventory of the Dunes just north of Beale and Horsfall Lakes. As a result, they nominated areas of the Dunes as Oregon Heritage Sites. They found a number high quality, rare and important plant communities. They said some of the globally significant areas represent some of the rarest and most endangered plant communities in Oregon. Large and intact examples of plant communities, like those found on the Dunes, are “quite rare”, with some “ranked as threatened throughout their range” Some are only known from the Oregon Dunes National Recreation Area. They called this area “a high priority for conservation.”

The 1998 Dunes study described several lakes, vernal pools, and seven of these native plant associations that are in danger due to groundwater pumping for the cities of North Bend and Coos Bay, and maybe for the LNG Terminal and Power Plant. Since the LNG Terminal and Power plant will use the groundwater from this area, the DEIS should have considered the impacts to these very sensitive, rare, and unique ecosystems adjacent to the Jordon Cove site.

Although the DEIS purports to discuss mitigation of these impacts, this discussion is inadequate. The proposed measures will be inadequate to mitigate the impacts. Mitigation for 178 tetrapod species (amphibians, reptiles, birds, and mammals), 151 seasonal or year-round bird species in the Project site, in addition to migratory birds is needed. “Twenty-nine federal or state-listed threatened or endangered species, and one proposed species, potentially occur in the proposed Project area.” Mitigation for these impacts is described in Appendix S, the Wildlife Habitat Mitigation Plan, including Parcel P, the Panhandle site. Parcel P is 105 acres of Dunes purchased by Jordan Cove, and is surrounded on 3 sides by Dunes managed by the Siuslaw National Forest.

Parcel P, or the Panhandle site, has several problems as a mitigation site. For instance, Jordan Cove does not offer to restrict motorized recreation on the site. The DEIS tells us that “JCEP intends to allow for public use and enjoyment” with no mention of restricting motorized access. Motorized recreation is very popular in the Dunes, and most wildlife being mitigation at the terminal site is also threatened by motorized recreation.

The Panhandle site is surrounded on three sides by the Oregon Dunes managed by the Siuslaw National Forest, who closed this area to motorized recreation in 1994. While not part of the Oregon Dunes National Recreation Area (ODNRA), it is still managed under the Dunes Plan, and is designated as “10A – Non-Motorized undeveloped”.

JCEP claims “Mitigation at the Panhandle would also expand existing protection of the adjacent ODNRA lands.” It is unclear if this statement by JCEP means they will restrict motorized use. It has been difficult for the USFW to enforce as non-motorized use. In google earth, we can see OHV trails also crisscross the Panhandle mitigation site. If motorized use will be restricted, Jordan Cove should describe how that would be accomplished.

One proposed mitigation of the Panhandle site is to apply herbicides to 1.8 acres of European beachgrass and Scotch broom to return it to an unvegetated site. This method has the potential to pollute wetland sites, and to impact wildlife if not applied with the correct method and time of year. The mitigation plan failed to provide these details.

The DEIS says (2-21):” The CBNBWB obtains water from groundwater wells on the North Spit.... It has two raw water lines on the North Spit. ... (see figure 2.1-10). The second raw water line extends from a well field west of the proposed terminal and north of the Trans-Pacific Parkway to a water treatment plant.”

Figure 2.1-10 shows that this waterline begins within the Panhandle mitigation site, and travels south, out of the mitigation site and crosses the Trans-Pacific Parkway. Jordan Cove proposes to install two taps on this line, one dedicated to replenish the fire water ponds, and the other to

provide water for portable and utility requirements once the terminal is in operation. However, the DEIS failed to consider the impacts to the wetlands in the mitigation site, by withdrawing water from the mitigation site for the fire ponds.

E. Impacts to Fish, Wildlife, and Sensitive Species

As of February 13, 2015—the last day of the DEIS comment period—no Biological Assessment had been released, and formal consultation with NMFS and USFWS has not yet been initiated for any portion of this project. As a result, the wildlife agencies have not yet had an opportunity to provide comments or assessments of the impacts of the current project proposal on listed species and critical habitat. The Corps must formally consult with the wildlife agencies NMFS and USFWS. Because this information was not publicly available and consultation has not occurred, FERC must deny the application for a Certificate of Public Convenience and Necessity.

In their review of the Biological Assessment for the previous iteration of this project, multiple agencies expressed concern regarding the lack of information provided. For instance, NMFS requested further information and consultation for green sturgeon based on potential dredging impacts. NMFS informed FERC: “Disturbance of substrate from project construction and biennial maintenance dredging, along with disposal at the Coos Bay ocean dredged material disposal site (Site F), will modify habitat and reduce safe passage by causing direct adverse physical effects due to physical entrainment in the discharge plume.” NMFS BA comments at 2.

Additionally, according to the DEIS, the project is likely to adversely affect the following species listed under the ESA:

- Threatened Marbled murrelet, DEIS 4-636 to 4-637
- Threatened Northern spotted owl, DEIS 4-639 to 4-640
- Threatened Coho salmon (SONCC), DEIS 4-642.
- Threatened Coho salmon (Oregon Coast ESU), DEIS 4-643 to 4-645
- Threatened North American green sturgeon (Southern DPS), DEIS 4-647
- Endangered Lost River sucker, DEIS 4-650,
- Endangered Shortnose sucker, DEIS 4-642,
- Threatened Vernal pool fairy shrimp, DEIS 4-656.
- Endangered Applegate’s milk-vetch, DEIS 4-659
- Endangered Gentner’s fritillary, DEIS 4-660,
- Endangered Large-Flowered Meadowfoam, DEIS 4-662, and
- Threatened Kincaid’s lupine, DEIS 4-665

Again, this list is not the result of a final Biological Assessment or any formal consultation and review by the wildlife agencies NMFS and USFWS. As a result, the DEIS appears to conclude that the project is “Not Likely to Adversely Affect” several other listed species without adequate analysis or explanation of those conclusions. For example, the DEIS states that the project is not likely to adversely affect the endangered Grey wolf. This species has only recently reoccupied Oregon lands west of the Cascades, with a single male wolf (known as OR-7) now known to have mated and produced one litter of pups. The pack has now been named the “Rogue Pack” as

it occupies areas of the Rogue River-Siskiyou National Forest in Douglas and Klamath counties. The DEIS acknowledges that the pipeline route would cross the area where OR-7 has become established. The DEIS also acknowledges that the territory size of a wolf pack can range up to 1,500 square miles and that individual wolves are known to disperse from packs sometimes more than 600 miles from a home range. DEIS at 4-629. The DEIS states that the pipeline would be located six miles from the OR-7 den location, but nevertheless concludes that its construction, clearcutting, and permanent right of way will not adversely affect the species. This analysis fails to acknowledge the impact of road development and clearing on grey wolf habitat suitability, the increase in accessibility that the pipeline route and maintenance roads could have, increasing possible human-caused mortality or harassment of wolves. Human activity tends to create an avoidance response, which can interfere with necessary activities such as hunting and breeding. In addition, increased human presence also increases the risk of exposure to new diseases and parasites to wolf populations, such as heartworm, Parvo, and Lyme disease. The DEIS does not address these risks, but formal consultation with USFWS may reveal more specific impacts resulting in a “Likely to Adversely Affect” determination.

The lack of consultation for the project is also problematic because key mitigation measures for ESA-listed species have not been determined or vetted by key agencies, such as the NMFS. Information included in the DEIS fails to provide an adequate assessment of how impacts of the project to key listed species will be avoided or minimized. For example, Coho salmon are ESA listed as a federally threatened species and face potential impacts from the LNG terminal and its tankers. The DEIS includes incomplete and inadequate information regarding the discharge of cooling water for LNG tankers.

State agencies including the Department of Fish and Wildlife (ODFW), Department of Geology and Mineral Industries (DOGAMI), Department of Land Conservation and Development (DLCD), Department of State Lands (DSL), and the Water Resources Department (OWRD), have all weighed in voicing serious and myriad concerns about the considerable adverse effects of this project on the state’s water, species, habitat, and forest resources, as well as emergency response resources. *See* State of Oregon FEIS comments, May 29, 2009, attached.

1. Permanent Loss of High-Quality Benthic Communities

The DEIS notes that submerged aquatic vegetation (including eelgrass, macrophytic algae) as well as other food web components such as phytoplankton, zooplankton, detritus, and epiphyton, are all important in supplying habitat and food base for EFH species within Coos Bay.

For example, submerged grasses or SAV are important habitat for small prey species of adult lingcod (in Appendix B-2 of PFMC 2008). Forage items that are habitat components for the managed species do depend to some extent on estuarine systems. Many species of groundfish and salmonids occupy inshore areas of the lower bay during juvenile stages (e.g., Chinook salmon, Coho salmon, English sole) where they feed on estuarine-dependent prey, including shrimp, small fishes, and crabs. As they mature and move offshore, their diets in

many cases change to include fish, although estuarine-dependent species (e.g. shrimp, crabs) can still constitute an important dietary component.

DEIS at 4-562.

A large and diverse invertebrate population exists in Coos Bay. The creation of the access channel and marine slip would modify approximately 28 acres of present-day subtidal and intertidal habitat to deep water habitat within Coos Bay. DEIS at 4-567.

The dredging operation to create the access channel would change physical conditions of the bay bottom in this area, locally altering the bathymetry and potentially altering the morphology and water currents. About 15 acres of intertidal to shallow subtidal habitat, including approximately 3 acres of SAV eelgrass habitat and less than 1 acre of salt marsh, would be modified to primarily deep subtidal habitat during the dredging process of the deepened channel.

Increasing depth and removal of vegetation would reduce the quality of habitat for juvenile salmonids and other juvenile marine species.

DEIS at 4-567 (emphasis added).

The DEIS further acknowledges direct impacts to benthic organisms from dredging activities:

Jordan Cove's dredging would also directly remove benthic organisms (e.g., worms, clams, starfish, and vegetation) from the bay bottom within the access channel. Mobile organisms such as crabs, many shrimp, and fish could move away from the region during the process, although some could be entrained during dredging so that direct mortality or injury could occur. Based on 1978 maps of shellfish (Gaumer et al. 1978), shrimp, soft shell clams, bentnose clams, and cockles are located within the intertidal areas near the slop and within dredge areas (west of the Roseburg Forest Products Company site). ODFW captured Dungeness crab and red rock crab in this area during 2005 seining efforts. *These species could be injured or killed during dredging operations.*

It is reported that benthic communities on mud substrate in Coos Bay, when disturbed by dredging, recovered to pre-dredging conditions in 4 weeks (Newell et al. 1998). Because of the large quantity being dredged, it may take a longer period relative to typical dredging and thus the benthic communities in the areas to be dredged may take a more varied length of time to recover. In addition, because the shallow area would be converted to deeper water habitat than what is currently there, some long-term reduction in benthic production would occur. Some of this loss would be offset by added annual benthic production from the newly formed 37-acre slip habitat, even though it would likely be of poor quality. We would also expect increased organic matter production to the Coos Bay system (at 3:1 habitat replacement) from Jordan Cove's proposed eelgrass and wetland mitigation sites.

DEIS at 4-569 to 4-570.

Dredging the bay will degrade the habitat of the native mud shrimp. The DEIS failed to address this species. The shrimp are especially sensitive to the kind of disturbance caused by installing the pipeline through the bay. Mud shrimps are also dealing with the cumulative impacts of an introduced parasite infestation, a parasitic isopod called *Orthonoe griffenis*.⁶ If the dredging and the pipeline installation in the bay cause the shrimp to decline even further, it can trigger lower water quality in the bay since the shrimp are filter feeders. Scientists have determined that “In Oregon estuaries, mud shrimp filter as much as 80 percent of the bay water per day.”⁷ They are also an important food source for birds, fish, and other animals. The DEIS failed to consider the impacts to the bay ecosystems if the Jordan Cove Project reduces Mud Shrimp populations even further. The invasive parasite arrived in the ballast water, probably on container ships sailing from Japan.⁸

The permanent loss of several acres of highly productive intertidal habitat that would be converted to low productive deep-water habitat is, within the meaning of OAR 340-048-007(11), a condition deleterious to fish or other aquatic life that may not be allowed.

2. Entrainment of Fish by LNG Vessels

The LNG vessels that would dock in the new marine slip under the proposed action would take in large amounts of bay water from the slip to cool vessel engines. The DEIS acknowledges this problem, but fails to take the required hard look at the effects this impact will have on endangered, threatened, and sensitive species.

The measures that Jordan Cove has proposed to deal with these problems are unproven and inadequate, as NMFS itself has noted in its comments for the prior DEIS and FEIS. NMFS used strong language to describe the inadequacies of the 2009 FEIS: “in reviewing the FEIS, NMFS has found that many of the December 1, 2008, DEIS comments have not been addressed.” Many of the criticisms NMFS previously levied against the project apply to the current proposal as well. For example, NMFS specifically noted problems with the lack of fish screens to prevent entrainment of threatened and endangered species:

Jordan Cove no longer proposes to include fish exclusion screens with a fixed water delivery system to the hulls of the ships. NMFS maintains that screening ballast and engine cooling water is the most effective method to minimize adverse effects to the aquatic resources. While the U.S. Coast Guard has identified some

⁶ Jolene Guzman, *Invader kills off mud shrimp* (February, 2009), available at http://theworldlink.com/news/local/invader-kills-off-mud-shrimp/article_fa08c2d9-47e9-5cb6-83d3-6bad07ec3bdf.html. (Guzman, 2009)

⁷ Eric Wagner, *Mud Shrimp Meets Invasive Parasite, High Drama for Northwest Estuaries* (2006), available at http://depts.washington.edu/nwst/issues/index.php?issueID=winter_2006&storyID=782. (Wagner, 2006)

⁸ *Id.*

regulatory difficulties with the original screening design proposed in the DEIS, those difficulties do not preclude its implementation.

NMFS FEIS Comments at 2 (June 8, 2009). The DEIS for the current export project indicates that this problem has not been remedied: the DEIS notes that the current proposal is to use ship-mounted screens that do meet NMFS criteria. DEIS 4-572 to 4-573. The DEIS acknowledges that a high portion of juvenile larval stages of fish and invertebrates entrained or impinged would suffer mortality. DEIS at 4-573. Nevertheless, the DEIS concludes that entrainment impacts are minimal because “natural mortality of these early life stages is extremely high.” *Id.* In other words, because many juvenile and larval aquatic organisms die, the additional mortality caused by entrainment is not significant. This logic flies in the face of standards for protection of water quality set forth in OAR 340-048-007(11). Simply because juvenile fish already suffer high mortality, that is not sufficient to discount the additional mortality caused by entrainment in LNG vessels via cooling water uptake. Furthermore, the DEIS fails to explain how the data regarding overall juvenile fish mortality is relevant to the specific conditions of Coos Bay and its ESA and EFH species and benthic communities. In addition, the DEIS states that the overall abundance of organisms in the slip will be relatively low compared to the main channel. NMFS previously rejected this assumption:

The NMFS knows of no literature to support this assumption. In fact, it is more likely that the abundance of organisms, including OC Coho salmon juveniles and southern DPS green sturgeon, especially smaller life stages, may be greater in the slip area as they use it for refuge from the higher velocities of the main channel. Secondly, the FERC analysis minimizes the potential for effects to resources based on the percentage of Coos Bay water that will be taken aboard ships. The analysis incorrectly assumes that resources are evenly distributed throughout the bay. Provide an effects analysis that incorporates the likely heterogeneity of resources in the estuarine environment.

NMFS 2008 DEIS comments at 2.

The FERC cannot ignore the serious concerns of NMFS, an expert federal agency. In addition, the unnecessarily high levels entrainment of fish and other aquatic life in engine cooling water for LNG vessels is, within the meaning of OAR 340-048-007(11), a condition deleterious to fish or other aquatic life that may not be allowed. Additional analysis is necessary to provide the agency and the public with adequate information about the fish exclusion technology to be used, complete with an analysis of the effectiveness of the plan, and the stormwater testing to be employed. Without addressing these issues, and without the many other missing studies, plans, and analyses pointed out by federal and state agencies, the Coalition, and other individuals and organizations in DEIS and FEIS comments, the DEIS is wholly inadequate and legally insufficient. The FERC cannot approve the application without consulting with NMFS.

3. Temperature Impacts from Discharge of Cooling Water

The DEIS states that water will be discharged from engine cooling at 3 degrees C (5.4 degrees F) above ambient water temperatures. DEIS 4-576. Modeling of mixing zones and dissipation of

water temperature increases were likewise based on this assumed 3 degrees increase. However, Jordan Cove did not provide any information regarding the source of this assumed temperature of cooling water. Nothing in the DEIS or FERC filings appears to support the assertion that engine cooling water will be only 3 degrees C higher than the average ambient Coos Bay water temperatures of 50 degrees F. On the other hand, FERC's FEIS for the Bradwood LNG Project states that "cooling water discharged from a 150,000 m³ steam powered LNG carrier could initially be 19.4 °F higher than ambient water temperatures" as compared to seasonally ranging ambient temperatures in the Columbia River of 42 to 68 °F. Bradwood LNG Project FEIS at 4-85 (2008). Oregon LNG, also proposed for the Columbia River, estimates that "according to industry sources, the water taken for cooling the vessel's machinery is warmed by 6 to 9 degrees Celsius at the point of discharge" and that the average for diesel-powered LNG vessels would be 8.9 °C above ambient water temperatures. Oregon LNG, CH2MHill Technical Memorandum, Appendix F Cooling Water Discharge Analysis, at 2 (Sept. 10, 2008). And according to EPA, cooling water can reach high temperatures with the "thermal difference between seawater intake and discharge typically ranging from 5 °C to 25 °C, with maximum temperatures reaching 140 °C." EPA, *Final 2013 Vessel General Permit Fact Sheet* at 133.

These discharges could be as much as 19 degrees F higher than ambient temperatures, presenting a significant temperature stress risk to salmonids. The DEIS appears to state that the temperature increase will be dispersed—apparently discussing a 5.4° F increase 50 feet from the discharge point and the average increase in the slip area as a whole—but the DEIS does not specifically discuss potential impacts from higher temperatures prior to dispersion closer to the discharge point. DEIS 4-576. Thus, the DEIS does not offer an adequate analysis of impacts to ESA-listed species. Consultation for the project is clearly warranted, and until official consultation is initiated, it is impossible for the public to know what mitigation measures will be proposed and whether they will be effective.

4. Strikes and Strandings by LNG Vessels

At least 90 LNG tankers are proposed to dock at Jordan Cove each year. Movement of these massive vessels will injure fish and aquatic life by ship-animal collisions (vessel strikes) and beaching (stranding) of animals in the vessels' wakes.

There are up to seven species of federally listed whales off the coast of Oregon. (DEIS 4-631). The DEIS claims that 180 more vessel trips per year are "not likely to increase the number of ship strikes to whales over known frequencies of incidents". The DEIS offered no references for this assumption. Indeed, adding 180 more trips will definitely increase ship strikes.

Even the Jordan Cove Application for Incidental Harassment says:

If all project-related LNG traffic transits the California EEZ stratum during the life of the project, one or more blue whale, fin whale, humpback whale, and sperm whale are expected to be injured or killed by a project-related LNG tanker.

For ships that stay within the Oregon-Washington EEZ, at least one sperm whale is expected to be injured or killed by a project-related LNG tanker. This information conflicts with the DEIS that no increase in ship strikes will occur. The Application also says that "Project-related ship-

strikes to gray whales are most likely as tankers cross perpendicular to gray whale northbound and southbound coastal migrations.”

NOAA says: “The west coast of the United States has some of the heaviest ship traffic associated with some of the largest ports in the country.... Of all the large whale species that inhabit our coastline, Blue, Fin, Humpback, and Gray whales are the most vulnerable to ship strikes because they migrate along the coast and many utilize areas along the coast for feeding.”

The most common whale along the Oregon coast is the Gray whale, which migrates twice a year past Coos Bay. The DEIS states that the LNG project could cause a 1.6 percent increase in shipping, which would increase impacts to whales. However, the DEIS refers to the “BA (FERC 2014)” for the discussion. The public was not able to review that document during the public commenting time. When it is released, FERC should re-open the public comment opportunity.

The DEIS claims Gray whales have been struck by ships (DEIS 4-668), about 1.2 whales annually, but the increase in shipping (180 more trips in and out of Coos Bay) will not further harm the gray whale. The DEIS provided no basis for this claim. Blue whales are also hit by ships, and ship strikes are insignificant.

Marine mammals being hit by ships is a larger, more significant danger than the DEIS considered. The DEIS repeatedly says: “ship strikes on whales within the EEZ analysis area are infrequent” (4-631). Why stop at the Oregon EEZ zone when some ships could be traveling in the California EEZ. And “infrequent” is not defined. For an endangered species, it could be frequent. The DEIS should also have considered impacts to marine mammals from increased ship traffic for the entire trip to Asia as a cumulative, connected action. Scientists even speculated that some vessels are so big, they may not even know that they hit a whale. LNG vessels will be the largest of these vessels.

The DEIS should also have considered the cumulative impacts of this project and the Principal Power Proposed Off-shore Wind Project (DEIS 3-17). The wind turbines will add to the noise impacts, and maintaining the wind turbines will add to ship traffic.

The LNG terminal and the tankers will harm marine mammals due to habitat destruction and vessel strikes. In addition, multiple ESA-listed mammals and turtles are also present, including the green turtle, leatherback, olive ridley, and loggerhead. In 2012, NMFS designated critical habitat for the leatherback, which includes nearshore areas around Coos Bay and areas part of the LNG tanker routes. 77 Fed Reg 4170 (Jan. 2012). All of these ESA-listed species, as well as the non-ESA-listed species, will be adversely affected by the proposed project.

The large increase in deep draft vessels due to the LNG terminal will increase the risk of vessel strikes of marine mammals and turtles. The NMFS’ unpublished compiled data indicates nine whale vessel strikes of were either reported in the region or detected during necropsy by the NW Marine Mammal Stranding Network between January 2002 and January 2007. Fin whales (6) were encountered most frequently, with individual strikes reported for blue, sei and humpback whales. Seven of the strikes were reported from Washington and two from Oregon, during the four year period (start of 2002 through start of 2007). The closest strikes to the proposed action

area involved a fin whale that came into the Port of Portland on the bow of a vessel in September 2002, and a blue whale that was reported struck and killed off Tillamook, Oregon, in January 2007. Far more actual strikes occur than are reported. The FERC must assess the impact of these strikes to individuals and populations. The FERC must fully understand the tanker route to Jordan Cove and the tanker routes in the Exclusive Economic Zone.

Separate from vessel strikes, vessel traffic will cause wake stranding of juvenile salmon and other fish. Wake stranding will increase greatly due to the additional deep draft ships. Further, turning of the LNG tankers with high thrust tugs will increase wake stranding and disorientation of salmon.

The killing and injuring of whales, leatherback sea turtles, harbor seals and fish caused by strikes with vessels or wake stranding, is, within the meaning of OAR 340-048-007(11), a condition deleterious to fish or other aquatic life that may not be allowed.

5. Injury Caused by Noise from LNG Vessels and Marine Slip Construction

Increased noise from LNG ship traffic creates conditions that are deleterious to fish or other aquatic life. The noise emitted from LNG ships is above the NMFS's noise threshold for physical harm to fish. LNG ships are considered cargo vessels and cargo vessels are known to emit high levels of low frequency sound (6.8 to 7.7 hertz (Hz) at 181 to 190 dB, re: 1 μ Pa) capable of traveling long distances (Richardson et al., 1995). *See* Bradwood Landing LNG Terminal DEIS at 4-224. The NMFS' current noise thresholds for fish are a peak pressure of 180 dB re: 1 μ Pa for physical harm and an impulse pressure, or root mean square (rms), of 150 dBrms re: 1 μ Pa for behavioral disruption. Noise from LNG vessels can adversely affect whale behavior.

In addition, noise from construction of the marine slip (including pile driving) may adversely impact pinnipeds. Jordan Cove would install 112 steel piles for the LNG vessel berth on the east side of the marine slip. This pile driving could exceed NMFS noise criteria and cause adverse impacts to pinnipeds. Marine mammals, especially pinnipeds, are sensitive to noise disturbances. According to the applicant's modeling, sound levels greater than 65 dB will extend less than 0.25 mile from pile driving operations. Jordan Cove has not yet developed a plan to protect pinnipeds from noise impacts associated with the construction of the marine slip and berth. The FERC should consider whether these potential impacts can be adequately addressed.

6. Permanent Loss of Coastal Riparian Vegetation

Removal of vegetation near the shorelines will adversely affect aquatic species by removing a source of food. Numerous studies have established that riparian vegetation provides a valuable food source for fish, especially juveniles. Wipfli, 1997. The food is the result of invertebrates in the detritus, understory, and canopy of riparian vegetation. Many of these invertebrates find their way into the water and are subsequently eaten by fish.

Clearing vegetation along the edge of Henderson Marsh and Coos Bay will destroy this habitat for invertebrates, thus destroying a valuable food source for fish along the stretches of these waterbodies. The analysis of food source impacts due to removal of vegetation conducted in the

DEIS is limited to possible increases in food in the form of microorganisms and aquatic invertebrates in the water due to increased temperatures. Any increases in food by increased production of microorganisms and aquatic invertebrates will further be offset by losses of invertebrates along the shoreline due to the removal of vegetation. The impacts to fish and other aquatic organisms resulting from the removal of a valuable food source, in the form of invertebrates, through the destruction of terrestrial vegetation along the shores of Coos Bay and Henderson Marsh, would be detrimental to resident biological communities.

The DEIS fails to address salinity changes and resulting impacts to fish resources in Coos Bay. The DEIS likewise does not address the impacts of fertilization in riparian areas and nutrient loading impacts on water quality.

Jordan Cove will introduce or allow the proliferation of invasive species to Coos Bay, the terminal site, and along the pipeline route. First, ships from foreign ports will transport exotic species on multiple surfaces and in water releases from ballast or engine cooling water. These species may harm the aquatic ecosystem. Second, the removal of vegetation, and long-term disturbances at the site will allow the introduction and proliferation of exotic species, which will harm native ecosystems and may require herbicides and pesticides to manage.

7. Individual Species

a. Coho Salmon – Southern Oregon/Northern California Coast ESU

The project area includes two major river systems known to support SONCC Coho: the Rogue River and the Klamath River. The DEIS acknowledges that the project is likely to adversely affect SONCC Coho due to numerous impacts to feeding, juvenile exposure to elevated turbidity levels, potential swim bladder rupture due to blasting activities, injury and mortality during fish salvage, and long term habitat deterioration due to reductions in large woody debris. Stream crossing construction and removal of riparian vegetation are the two primary contributors to these impacts.

In addition, the DEIS admits that the project is likely to adversely impact critical habitat for SONCC Coho. The acknowledged impacts include loss of hatching and rearing habitat from substrate removal and turbidity at stream crossings, degraded water quality as a result of turbidity caused by stream crossing construction, reduction in food sources, barriers to migration during stream crossing construction, and long term loss of native riparian vegetation.

The pipeline construction will disrupt fish passage by damming the streams during the trenching and pipeline placement. It is unclear how long fish passage would be interrupted. The mitigation of capturing and removing fish behind the dams is historically ineffective, and will result in the take of threatened salmonids. This is particularly troubling and unacceptable for large crossings proposed on the Coquille, Umpqua, and potential crossings of the Rogue and Coos if proposed HDDs fail. *See* discussion of HDD failure, *supra*. The DEIS fails to acknowledge the potentially

severe impacts to SONCC Coho and its designated critical habitat as a result of HDD failure, and the FERC should not rely on this faulty analysis.

b. Coho Salmon – Oregon Coast ESU

The project area includes designated critical habitat for the Federally Threatened Oregon Coast Coho: the South Umpqua Subbasin, Coquille Subbasin, and the Coos Subbasin (which includes the Coos Bay estuary). The DEIS acknowledges that the project is likely to adversely affect Oregon Coast Coho and its critical habitat. DEIS at 4-644, 4-645.

Activities related to the marine terminal and north spit facilities, including discharge of maintenance dredging spoils causing turbidity plumes, LNG vessel wake strandings, engine cooling water intake entrainment, dredging of the access channel and construction of the pipeline across Hayes Inlet could all jeopardize the survival of this species. Moreover, cooling water intake is likely to entrain and impinge many food sources for Coho, such as juvenile stages of crab and shrimp, other zooplankton and eggs and larvae fish. Pipeline-related activities including stream crossing construction or failures of those operations, blasting, mortality during fish salvage operations, and loss of large woody debris for habitat also have the potential to cause jeopardy to the Oregon Coast Coho and adversely affect its designated critical habitat. DEIS at 4-645.

The DEIS does not address direct mortality impacts to listed fish from dredging in Coos Bay. As discussed *supra*, the proposed hydraulic cutterhead dredge method will entrain juvenile fish, including threatened salmonids, as well as benthic organisms critical to salmon diets. Mechanical dredging would not have the same fish entrainment impacts, but is not seriously considered as an alternative dredge method.

The FERC must analyze the impacts of fish entrainment due to dredging. The FERC must also consider the fact that the fish killed will include salmonids listed as threatened under the federal ESA and the Oregon ESA. The FERC must also look to the effect cooling water entrainment would have on food sources for the threatened Coho salmon. The FERC must consider cumulative impacts on aquatic life, including the impacts from dredging, terminal construction and operation, pipeline construction and operation, as well as the impact of the channel deepening dredging and maintenance dredging.

The proposed dredging is the antithesis of salmon recovery and restoring estuarine habitats, as described in every local, state, and federal management plan. Quite simply, we cannot recover threatened salmon while simultaneously permitting this huge dredging project. Jordan Cove is a prime example of an unacceptable project due to its size, scope, and location in critical salmon habitat.

c. North American Green Sturgeon – Southern Distinct Population Segment

Both Northern and Southern population segments of the North American Green Sturgeon are known to occur within Coos Bay for feeding, growth, and thermal refuge. The DEIS admits that the project is likely to adversely affect Green Sturgeon as a result of bottom disturbance and

reduction of benthic food supply from construction and maintenance dredging as well as dredged spoils disposal, and the potential for dredged spoils disposal to bury subadult Green Sturgeon. DEIS at 4-647. Likewise, the project is likely to adversely affect critical habitat for the species. The FERC must look at the effect dredging and dredged spoils disposal would have on food sources for the threatened green sturgeon.

d. Pacific Eulachon – Southern Distinct Population Segment

Pacific Eulachon (also known as candlefish) utilize Coos Bay for habitat, and may be present in the estuary during construction and operation of the project. Eulachon typically spend three to five years in saltwater before returning to freshwater to spawn in late winter through mid-spring. Eulachon are a small fish rich in calories and important to marine and freshwater food webs, as well as commercial and recreational fisheries and indigenous people from Northern California to Alaska. The DEIS does not adequately assess potential impacts to this species as a result of the dredge and fill operations proposed in ocean waters, Coos Bay, and coastal tributaries.

e. Lost River Sucker

The Lost River Sucker is a federally listed endangered species that spawns in freshwater streams. The Pacific Connector Pipeline will cross the Lost River upstream of known spawning areas. The pipeline will also cross the Klamath River, another basin where Lost River suckers occur. The DEIS acknowledges that the project is likely to adversely affect Lost River sucker and its designated critical habitat due to injury or death during fish salvage or release of drilling muds from frac-out during HDD of the Klamath River. DEIS at 4-650.

f. Shortnose Sucker

The Shortnose sucker is another endangered fish species whose populations have been severely impacted by dam construction, water diversions, overfishing, water quality problems, loss of riparian vegetation, and agricultural practices. Shortnose sucker critical habitat includes the Klamath River within the project area. The DEIS states that the project is likely to adversely affect shortnose suckers for the same reasons that the Lost River sucker is likely to be adversely affected. DEIS at 4-652.

g. Snowy Plover.

The north spit “supports the most productive snowy plover population segment on the Oregon coast”. (DEIS 4-633). The DEIS failed to consider all threats to the threatened western snowy plover from this project. For instance, dredging soils will attract snowy plovers to nest in inappropriate areas. Plovers often return to the same breeding sites year after year, while the dredged sand will be moved for various purposes.

The closest snowy plover nest is only 1.1 miles from the terminal site, in critical habitat, and in the best Snowy Plover nesting habitat in Oregon, at the tip of the north spit.

Additional impacts the DEIS failed to consider would be increased predation to plover nests because increased development brings increased corvids, a predator of plover nests. LNG ships could negatively impact the snowy plover at sea. Skunks and coyote's could be attracted to the dredged material or human presence, increasing the predation threat in plovers. Increased human activity also means more dogs disturbing their nests. The DEIS says that Jordan Cove would "minimize" impacts by humans and pets, but has no specific information on how that would be done.

These impacts to the Snowy Plover should have made the Plover a Likely to Aversely Affect endangered species. The mitigation offered in the DEIS is inadequate, simply a few thousand dollars.

Western snowy plover active nest sites are located within two miles of the proposed LNG terminal site, with critical habitat located approximately 2.6 miles from the site. Snowy plovers are heavily impacted in this area due to human disturbance and scavenger and predator effects. Jordan Cove proposes to implement BMPs to protect plovers from construction and operation impacts, however, those measures have not been clearly articulated or demonstrated that they will offset the potential impacts from increased human activities in the area where plover are known to nest and occupy critical habitat.

h. Native Oysters.

DEIS 4-547: "Coos Bay contains one of only three known native Oregon coastal populations of the Olympia oyster. Within its native range, this species is significantly diminished from historical levels...". Up to 1,000 Olympia Oysters could be within the pipeline right-of-way (4-584). Oysters will be affected by turbidity and sedimentation caused by the installation of the pipeline in the bay, using an open cut method in Haynes Inlet.

The DEIS refers us to the Olympia Oyster mitigation plan . That plan claims that "dispersal of fine sediments and elevated turbidity will be confined to a very small area and are thus unlikely to negatively impact Olympia oysters outside the pipeline right of way. Thus the only negative effects to Olympia oysters would be direct disturbance."

The PCGP failed to consider that fine sediments and turbidity spread downstream with the flow of water, or upstream if the tide is coming in. The PCGP has no basis to conclude the dispersal of fine sediments will not travel.

Dredging the bay, which would not occur as much without this project, will harm more oysters. These oysters, including at the mouth of Coos Bay, should have been considered in the DEIS.

PCGP proposes to relocate the oysters within the right-of-way to an area northwest of the right-of-way, where there are already Olympia oysters. However, the DEIS failed to consider how many oysters can occupy that site, and if it is currently at capacity.

F. Compliance with the Coastal Zone Management Act.

Pursuant to section 307(c) of the CZMA, the applicants must provide a consistency certification that the project is consistent with the Oregon Coastal Management Program. 16 U.S.C. § 1456(c)(3). The Oregon Department of Land Conservation and Development is responsible for ensuring, pursuant to the federal Coastal Zone Management Act (CZMA) of 1972, that the proposed project is consistent with the state's coastal management program. 15 C.F.R. Part 930, Subpart D, contains the applicable regulations for the federal consistency determination. Specifically, 15 C.F.R. § 930.11(h) defines "enforceable policy," stating,

The term 'enforceable policy' means State policies which are legally binding through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decision, by which a State exerts control over private and public land and water uses in the ['coastal zone,' 16 USC 1453(6a), and which are incorporated in a management program as approved by OCRM either as part of a program approval or as a program change under 15 CFR part 923, subpart H.

Oregon's coastal management program includes: 1) the statewide land use planning goals; 2) the applicable acknowledged city or county comprehensive plan and land use regulations; and 3) state statutes and regulations governing removal-fill, water quality, and fish & wildlife protections.

The DEIS does not demonstrate compliance with the Coastal Zone Management Act ("CZMA"). The application is both incomplete and inadequate. The application is premature, lacking complete applications to other key agencies and adequate analyses of impacts to sensitive resources. Additionally, the project has failed to obtain local approvals for the terminal and pipeline necessary for the project to demonstrate compliance with the CZMA.

1. Inadequate Information to Support Certification.

As described above, the application to the Corps, DEQ, and DLCD lacks key information. The lack of adequate information for all of these agencies, including DEQ, renders the CZMA application incomplete because the CZMA requires key state authorizations be received as part of the application. For all the reasons detailed above demonstrating incompleteness of the section 401 application to DEQ, the application to DLCD is also incomplete under the CZMA.

The application is also incomplete because it does not show that the project complies with local land use regulations, despite assertions to the contrary in the DEIS. Although some portions of the project have been reviewed and approved by Coos County, key elements of the project, including the South Dunes Power Plant and Utility Corridor, have not yet been subject to review for consistency with Statewide Planning Goals and/or local comprehensive plan and land use ordinance provisions. There are currently no pending applications before Coos County for these determinations. Instead, these components are being reviewed as part of the Oregon Department of Energy (Energy Facility Siting Council) certification process. The DEIS is therefore inaccurate and the public notice is misleading and premature.

The applicants have failed to provide adequate information related to Statewide Planning Goals and local land use requirements:

- Information demonstrating compliance with Statewide Planning Goals 16, 17, and 18 for impacts to coastal shorelands, estuaries, and dunes.
- Information demonstrating compliance with Statewide Planning Goal 7 related to natural hazards.
- Information demonstrating compliance with Statewide Planning Goals 5 and 6 for natural resources and air and water.
- Information demonstrating compliance with CBEMP Policies #17 and #18. The location of project components within the Coos County Shorelands Values Inventory Map has not been provided and/or explained with sufficient detail to allow a determination of compliance with those policies.

The applicants have failed to provide adequate information related to state removal-fill laws:

- Information regarding impacts to waters of the state including wetlands at the South Dunes site. The information provided as to impacts to Wetland M is inconsistent. In addition, the applicants have not provided any information explaining the nature of fill material to be deposited in the waters of the state.
- Descriptions of the nature and duration of each activity associated with the construction of the barge berth, including dredging, filling or pile driving, and impacts due to sedimentation and noise.

The applicants have failed to provide adequate information related to state water quality laws:

- Information related to wastewater discharge from the South Dunes site.
- Information related to the source of water for the South Dunes facility, maximum water use, and annual average and worst-case conditions for water loss.
- Information explaining measures to be included in the NPDES permit for stormwater discharges that will minimize impacts of erosion and sedimentation on surface water.

The applicants have failed to provide adequate information related to state wildlife protection laws:

- Information related to sensitive species on ODFW Wildlife Division Sensitive Species List.
- Information related to the nature, extent and duration of impacts on the habitat that could result from construction, operation and retirement of the South Dunes facility.
- Information related to the potential for indirect impacts on eelgrass habitat from sedimentation and the quantity of habitat that could be impacted.
- Information sufficient to demonstrate how the Upland Erosion Control, Revegetation, and Maintenance Plan will offset fragmentation impacts to wetlands and estuarine habitat for the South Dunes site.
- Information related to mitigation of indirect impacts to amphibians at the South Dunes site.

- Information related to impacts to raptors, other birds, and nesting habitat at the South Dunes site.
- Information to substantiate claims of no direct impact to stellar sea lions from the South Dunes project component.
- Information related to mitigation measures for wildlife habitat disturbed as a result of activities related to the South Dunes site.
- Information related to impacts to marine mammals and birds resulting from the South Dunes project component.
- Inconsistent information related to impacts to green sturgeon.

This lack of information puts DLCD in the impossible position of reviewing a consistency certification without fundamental information about how the project would impact the coastal zone. Without this information, DLCD and the public are crippled in their ability to comment on the project's consistency with the enforceable policies of the OCMP. At a minimum, the Coalition requests that DLCD object to the Applicants' CZMA certification on the basis that they have failed to submit adequate information demonstrating that the project complies with the enforceable policies of the Oregon Coastal Management Program.

2. The Project is Inconsistent with Statewide Planning Goals.

DLCD should object to the CZMA certification because the project is inconsistent with several of Oregon's Statewide Planning Goals. The Statewide Planning Goals are implemented through local comprehensive plans. For this project, Coos County and Douglas County, as well as the City of Coos Bay are the local governments with regulatory authority for land use approval of the project. However, as discussed above, many components of the project have not been reviewed or approved for local land use approvals. DLCD must independently consider whether the project will comply with the Statewide Planning Goals applicable to this project within the Coastal Zone.

a. Goal 6: Air, Water, and Land Resource Quality

For the reasons stated in these comments, Jordan Cove LNG fails to demonstrate its project is consistent with Statewide Planning Goal 6, "[t]o maintain and improve the quality of the air, water and land resources of the state." The Coalition's scoping comments to FERC, as well as prior comments from the State of Oregon, National Marine Fisheries Service, and others, describe a multitude of environmental impacts from Jordan Cove LNG's terminal. DLCD should object to the CZMA certification because the project is not consistent with Statewide Planning Goal 6.

b. Goal 7: Natural Hazards

Statewide Planning Goal 7 requires land use planning to reduce risk to people and property from natural hazards. Regulated natural hazards include floods, landslides, earthquakes and related hazards, tsunamis, coastal erosion and wildfire. The proposed LNG terminal would be located in an area subject to extreme risk from earthquake and tsunami inundation. In addition, the pipeline

would cross several areas of steep terrain and heavily forested areas within the Coastal Zone, subject to landslide and wildfire risk.

Scientists predict that there is a 40 percent chance of a major earthquake (magnitude 8.7 to 9.2) and tsunami on the Cascadia Subduction Zone off Coos Bay in the next 50 years. The severity of the earthquake would be similar to that experienced in Japan in March of 2011. If by 2060 there has not yet been a major earthquake, 85 percent of known intervals of earthquake recurrence in 10,000 years will have been exceeded. This type of event would cause violent ground motion, soil liquefaction, lateral spreading and subsidence. In turn, these land changes could cause pipe breaks and damage the LNG storage tanks proposed for the facility. In order to protect the site from tsunami inundation, Jordan Cove proposes to use sand to fill and elevate the property site above the projected inundation level, 40 feet or more about current land elevations.

The project site on the North Spit is located at a bend in Coos Bay, where tidal energy is deflected. The elevation of the land at this location could significantly alter the direction and velocity of an incoming tsunami. For example, instead of running up onto the North Spit and inundating the land there, the proposed sand wall, if it survives the liquefaction and lateral spreading effect of the earthquake, would deflect and re-direct the force of a tsunami. DOGAMI has prepared inundation zone maps to help the communities of Coos Bay and North Bend prepare for evacuation and planning in case of tsunami. The proposed significant alteration of the shoreline at this location could have important effects on the inundation of other areas within the Bay Area communities. In other words, the risks of these types of hazards extend beyond just the inundation, liquefaction, and ground shaking at the project site. The project's proposed alterations of the shoreline at the project location could have significant impacts to the communities of the Coos Bay area. These types of risks to people and property must be accounted for in order to comply with Goal 7.

c. Goal 9: Economic Development

Statewide Planning Goal 9, OAR 660-015-0000(9) provides for "adequate opportunities throughout the state for a variety of economic activities vital to the healthy welfare, and prosperity of Oregon's citizens." Jordan Cove LNG's proposed terminal and its adverse effects on shipping, fishing, and tourism would undermine the fundamental mandate of Goal 9. The Jordan Cove LNG site falls along the necessary ingress and egress of practically any vessel bound for or leaving from Coos Bay. These unavoidable interferences with these industries indicate the failure of Jordan Cove LNG's proposal to comply with Goal 9's intent for Comprehensive Plans to account for the economies of all regions of the state.

Additionally, construction of the terminal would disregard at least two Planning Guidelines enumerated in Goal 9. Planning Guideline 2 of Goal 9 offers among the most relevant considerations to the proposals at issue when it states in part that "[t]he [comprehensive] plan should also take into account the social, environmental, energy, and economic impacts upon the resident population." While guidelines are "suggested approaches . . . designed to aid . . . in compliance with goals," ORS § 197.015, the failure to follow guidelines suggests the potential for noncompliance with goals. Here, the Applicants' proposals would negatively impact each of the considerations enumerated in the portion of Planning Guideline 2 stated above.

Social: Construction of the Jordan Cove LNG terminal would diminish recreational and commercial fishing due to both the fishing vessels' compliance with the mandatory safety zone accompanying every LNG carrier en route to Jordan Cove LNG as well as the decreased salmon spawning habitat as a result of the vast amount of proposed dredging and filling of critical salmon habitat. Additionally, the danger of an LNG breach will surely instill a degree of apprehension among a number of those within an LNG carrier's mobile blast zone and, in some cases, fear. Particularly given the modern potential for terrorist activity, both apprehension and fear would have a reasonable basis in reality.

Environmental: The proposed terminal site is home diverse flora and fauna, both marine and land, including salmon rearing habitat. In supplanting this ecosystem with industry, Jordan Cove LNG will harm these and other environmental treasures. As discussed throughout these comments, the environmental effects of the proposed project are significant and far-reaching.

Economic: The terminal and accompanying carriers will cause economic harm inhibiting the flow of boat traffic, diminishing the tourism appeal of the area, and negatively impacting the housing market. Coos County is home to many commercial and recreational fishermen. The LNG-related delays caused to commercial fishing vessels would thus be felt heavily in Coos County. Delayed shipping and tourist vessels bound for Coos County would experience similar costly delays. In addition to these delays faced by tourist vessels, LNG would diminish tourism in the area in general. Additionally, property values of areas near Jordan Cove or anywhere along the LNG tanker pathway would experience a considerable decrease, due to factors such as the diminished aesthetic appeal of the area as well as the ongoing subjection to the blast zone of the LNG carriers. Also associated with the risks inherent in LNG are increased insurance costs. Id.

Energy: The costs of LNG export likewise will harm the community. LNG export activities, rather than providing public benefits, will significantly increase gas costs to U.S. consumers and businesses as they are forced to compete with high-priced overseas markets. These impacts are discussed in detail in Section 1.1 of these comments, *infra*.

Jordan Cove LNG's project also disregards Goal 9's Planning Guideline 4, which states "[p]lans should strongly emphasize the expansion of increased productivity from existing industries and firms as a means to strengthen local and regional economic development." This guideline indicates the Goal 9's preference toward improvements or modifications of existing entities, with an emphasis on "local and regional economic development."

d. Goal 11: Public Facilities and Services

Statewide Planning Goal 11 is to "plan and develop a timely, orderly and efficient arrangement of public facilities and services to serve as a framework for urban and rural development." OAR 660-015-0000(11). The project, with its influx of 2,100 workers (at peak), is likely to place stress on existing public services including police and fire protection, as well as water and sewer treatment providers. Several components of the project, including the addition of the Southwest Oregon Regional Safety Center and the North Bend worker's camp, threaten to violate the policies of Goal 11. For example, the Applicants have not demonstrated that the proposed North

Bend workers' camp can be adequately served by existing water and sewer systems. If existing water and/or wastewater treatment facilities are not adequate to serve the additional 2,000 users at the workers' camp, the expansion of these public services must comply with Goal 11 policies.

DLCD has an independent obligation under the CZMA to review Douglas and Coos County's actions related to land use approvals for the project and ensure that the counties' actions comply with the Statewide Planning Goals. In addition, several components of the project have not yet been reviewed for land use compliance. DLCD must ensure that all aspects of the project comply with the Statewide Planning Goals as part of the enforceable policies of the Coastal Management Program. The Coalition urges DLCD to protect Oregon's interests by objecting to the Applicants' consistency determination on the basis that the project is inconsistent with the Statewide Planning Goals.

3. The Project's Proposed Water Use is Inconsistent with Coastal Management Plan Policies.

The Applicants will be required to seek approval for water rights to construct and operate the LNG terminal and pipeline. The Oregon Water Resources Department's (OWRD) mission is to "restore and protect streamflows and watersheds in order to ensure the long-term sustainability of Oregon's ecosystems, economy, and quality of life."⁹ Further, water resources are held by the state in trust for its citizens. "The state, as trustee for the people, bears the responsibility of preserving and protecting the right of the public to the use of the waters [for navigation, fishing and recreation]." *Oregon Shores Conservation Coalition v. Oregon Fish and Wildlife Comm'n*, 62 Or App 481, 493, 662 P2d 356 (1983).

As part of its mission and public trust duty, OWRD must act to protect water resources for future generations of Oregonians. In light of the threats to water resources posed by population growth, increased usage and demand, upstream pollution, urbanization, drought and climate effects, and over-utilization of groundwater and surface waters, OWRD should be vigilant in acting to protect continued access to potable water. OWRD has acknowledged that management of water resources in Oregon is facing a number of significant challenges. *See* WRD, *Integrated Water Resources Strategy Discussion Draft* 8 (Dec 2011). Surface water is nearly fully allocated during summer months and groundwater is showing decline in many areas. *Id.* at 19. Almost 15,000 stream miles in Oregon do not meet the state's water quality standards for one or more pollutants. *Id.* at 22. These include several streams and waterways that will be impacted by the project, including Coos Bay and the Coos River.

Using Oregon's public water resources to construct and operate LNG export facilities is not in the best interest of the public of this state. The proposed LNG terminal and pipeline would consume millions of gallons of water each year, cause water pollution, and harm Oregon's recovering salmon runs. Pipeline construction would damage forestlands and watersheds, and disrupt property rights. Forcing Oregonians to live and work near massive LNG export facilities will subject citizens to unacceptable and unnecessary risks. Because using Oregon's water for

⁹ Oregon Water Resources Department, *About Us*, http://www.oregon.gov/OWRD/about_us.shtml (May, 2007) (last visited Jan. 11, 2015).

LNG export would be detrimental to Oregon's interests, OWRD has the authority, and the obligation, to deny applications for water rights for this project.

G. Compliance with Port Ordinance 129.

Port Ordinance 129 states that “unless approved by vote of the people at a general or special election, the Port shall not hereafter lease, sell or transfer any of its property for a proposed industrial use which would be... 1) a single point source discharger of waste water... in excess of 2 million gallons per day... or which would use or divert in excess of 2 million gallons of fresh water per day... 2) an air pollution source... which discharges or releases into the air one ton of total reduced sulfides per year... 3) an air pollution source which releases into the air toxic chemicals in excess of state or federal standards...” See, Port of Coos Bay, *Total Reduced Sulfides*, <http://portofcoosbay.com/ord129.pdf> (accessed Feb. 11, 2015) (“Ordinance 129”). Additionally, the Board of Commissioners established “a citizens committee to advise the Port on actions which the Port should take for breach of provisions in leases, deeds or transfer agreements relating to compliance with federal, state or local environmental laws and regulations.”

While it appears that the Port of Coos Bay believes that the project meets the Ordinance provided that Jordan Cove is in compliance with federal and state air quality standards, in fact the project will likely violate the second and third provision of the Ordinance. The emissions during operation of the project from the LNG terminal and South Dunes Power Plant, LNG vessels, and transport of dredged materials to the open sea disposal site add up to be very substantial, 73.36 tons per year of sulfur dioxide during operation. DEIS, 4-884. These emissions violate the one ton of total reduced sulfides per year criteria in Port Ordinance 129.

To minimize pollution, the project plans to first scavenge the sulfur, that is removed from the natural gas for the liquidation process, (to a condensed phase), using the Ultrafab Sweet 100 Process (and subsequently disposed of off-site), and then any remaining sulfur not captured by that process will be oxidized to SO₂ using the thermal oxidizers. No detectable emissions of H₂S or other reduced sulfur compounds are expected to be produced during construction or operation of the facilities yet they report substantial figures of sulfur dioxide. The DEIS notes that hydrogen sulfide would also be present in the air emissions during operation of the facility. This compound is present in the pipeline coming into the terminal and would be at concentrations of 0.0003 pounds of sulfur per thousand standard cubic feet of pipeline. DEIS, Appendix D. Consequently, the Pacific Connector pipeline also violates the one ton rule. DEIS, 4-889 – 4-890.

For hazardous air pollutants, the DEIS simply states that the requirements stayed within federal regulation and compliance are satisfied. DEIS, 4-879 – 4-888. The DEIS states “the project’s PSD permit application demonstrates that the applicable requirements of these regulations are met.” DEIS, 4-882. The DEIS should not rely on a permit application for many reasons. First, the EPA and ODEQ may reduce the amount emissions discharge proposed in the permit application. Second, EPA and ODEQ may not accept the permit application. In both situations, the current proposed emissions will violate both federal and state air quality standards. Since the DEIS simply references to the PSD permit application, the DEIS does not report any data of the hazardous air pollutants emissions. This data is missing from the DEIS and must be reported in

order to make sure that the Jordan Cove project is in compliance with the third criteria of Port Ordinance 129.

III. PACIFIC CONNECTOR NATURAL GAS PIPELINE.

The applicants also propose to construct a 232-mile, 36-inch high-pressured gas pipeline, which will be placed through Coos Bay and cross and permanently impair streams, wetlands, and sloughs, along with causing associated deleterious impacts to upland habitat, forest, farm, recreational, and residential uses. The pipeline would cross 400 waterbodies (RR2 at 6), require clear cutting of 1,013¹⁰ acres of the remaining old growth forests in Oregon, cross steep and remote terrain prone to landslides where emergency response is limited to local volunteers, and impact and permanently impair approximately 5,938 acres of state, federal and privately owned lands. DEIS at 4-448. The DEIS states that the Pacific Connector Gas Pipeline (PCGP) would cross approximately 11.6 miles of wetlands. DEIS at 4-412. The Joint Permit Application (“JPA”) associated with Clean Water Act compliance for this project states that the PCGP would cross approximately 11.64 miles of wetlands, impacting approximately 239 acres of wetlands. Resource Report 2 at 70. The JPA also states that 87,454.19 cubic yards of material will be excavated from wetlands, and 39,117.61 cubic yards of material from waters, for a total of 126,571.80 cubic yards to be excavated along the pipeline route. According to the JPA, 660 features of potentially jurisdictional wetlands and other waters were identified within the project corridor. Resource Report 2 (Table 2A-3 of Appendix 2). The DEIS states that approximately 239 acres of wetlands will be disturbed during construction of the project. DEIS Appendix N, Table N-1b at N-67.

As a largely undeveloped upstream region, the portion of the Project area sited for the proposed upstream pipeline and related infrastructure will be dramatically affected. The Pacific Connector pipeline would traverse approximately 40 miles of BLM lands and 31 miles of NFS lands on its 232-mile route from Malin to Coos Bay, Oregon. The pipeline project would cross portions of 19 fifth-field watersheds, 16 of which include BLM or NFS lands where the ACS applies. In 12 of the 16 watersheds traversed by the pipeline on federal lands, the pipeline project would cross perennial or intermittent streams or clip areas designated as Riparian Reserves; in 4 of the watersheds crossed, the pipeline project would not intersect with Riparian Reserves or stream crossings.

A. Pipeline and the Pipeline Right-of-Way

Construction of the pipeline, including clearing the pipeline right of way, will have tremendous impacts. In this section, we discuss the impacts related to terrestrial pipeline activities. Impacts related to pipeline stream crossings are discussed in the following subsection.

1. Sediment Impacts from Corridor Clearing and Construction

¹⁰ This includes 858 acres of construction-related clearing and 155 acres of operation-related clearing. DEIS at 4-456.

The DEIS 4-73 falsely asserts that “as a result of application of the measures in the ECRP, soil erosion and sediment transport during corridor clearing and construction is expected to be minor and within the range of natural variability of the watersheds where the action occurs”. First, the use of qualitative and subjective descriptors (e.g. “minor”) is not adequate technical analysis for a project of this size and variability. Corridor clearing on steep erosive slopes is certain to generate more sediment than the same action on stable flat ground. The DEIS is defective because it fails to estimate the amounts of sediment generated from clearing and construction. Sediment generated from forest clearing (i.e. logging) on steep topography is well documented even with the measures identified (DEIS 4-73). For example, the DEIS 4-73 cites Robichaud et al. (2000) to assert that silt fences are 90-95 percent efficient in trapping sediment. Even if this trapping efficiency is true for Corridor Clearing and Construction, this means that up to 10% of the sediment generated by the project will reach streams. Ten percent delivery of sediment from a large disturbance area is likely to be significant for spawning coho salmon in very small streams.

Methods and models are available for estimating volumes (i.e. cubic yards) of sediment generated from clearing (aka logging), road building, road use with heavy equipment, and large scale excavations. Quantitative analysis commensurate with the scale of disturbance (xxx acres of initial deforestation, xx miles of temp. road, millions of cubic yards excavated) would reveal a range of sediment amounts generated for each pipeline segment based on site characteristics. Some pipeline segments, but certainly not all, may warrant a “minor” descriptor

The DEIS does not address scientific controversy and uncertainty about the effectiveness of erosion control measures. In particular, the DEIS fails to acknowledge severe sedimentation of streams caused by the construction of a much smaller gas pipeline from Roseburg to Coos Bay. (See Register Guard Article dated 7/25/2004 “Enterprise goes Sour”). The DEIS fails to discuss scientific uncertainty and scientific controversy regarding the effectiveness of sediment control measures identified in the DEIS. Since sediment control measures failed catastrophically during the construction of a previous gas pipeline, similar sediment discharges would be expected for this gas pipeline because this pipeline traverses the same unstable steep terrain, this pipe is much larger, and the area of deforestation is much larger. The DEIS fails to address the credibility issue surrounding gas pipeline construction in southwest Oregon and associated severe sediment impacts to many miles of coho salmon streams. Assertions of “minor” sediment impacts for this pipeline are not scientifically or empirically substantiated.

Assertions of compliance with laws and regulations do not constitute a science-based disclosure of sediment impacts. The DEIS 4-73 falsely states “As a result of application of the measures in the ECRP, soil erosion and sediment transport during corridor clearing and construction is expected to be minor and *within the range of natural variability of the watersheds where the action occurs*” (emphasis added).

The reference to “the range of natural variability” is in the context of compliance with the NFS/BLM ACS. Assertions of compliance with the ACS does not exempt the DEIS from disclosing in plain English what the sediment impacts to miles of stream actually are. Furthermore, the best available science strongly suggests that the watersheds and stream channels traversed by the pipeline west of the Cascades are already degraded to a condition

outside the “the range of natural variability” due to previous and ongoing logging and road building (see Columbaroli and Gavin 2010, attached). Since the 1950s sedimentation of streams has increased 5 fold due to logging and road building which is far greater than any sediment episode in the past 2,000 years. This means that any further human related deposition of sediment (i.e. pipeline construction) will cause an undisclosed number stream miles to be further outside the “the range of natural variability.” The watersheds and critical coho salmon habitat impacted by the pipeline have no buffering capacity for additional sediment from pipeline construction due to historic and ongoing logging.

The DEIS fails to disclose the estimated amount of sediment discharged into streams from blasting and associated turbidity and suspended sediment. See DEIS 4.2.2.5 Blasting During Trench Excavation. This entire section is written from the perspective of impacts to human uses and structures and totally ignores the impact of blasting to increased sediment in streams.

The DEIS: 4-617 and 4-644 indicate that blasting could injure or kill fish, including coho salmon. The DEIS is not based on the best available science because it did not survey stream crossings or other areas where blasting could directly affect fish to determine the species present and densities of fish species that could be affected. ODFW has standard protocols for establishing juvenile densities in small streams but the DEIS failed to use them. The DEIS is defective because it did not estimate the numbers of fish that could be affected at the 30 sites identified (DEIS 4-644).

The DEIS is not based on the best available science because it has not established pre-project quantitative baseline upland erosion rates, baseline stream sedimentation rates and baseline data for other aquatic parameters for the stream miles that could be impacted.

The DEIS has not surveyed stream channels at stream crossings for physical and biological parameters. Baseline data for fishes and fish habitat appears limited to “proposed” pre-construction surveys at stream crossings (DEIS 4-608). While we agree these surveys are needed prior to construction, these surveys are inadequate to establish baseline (pre-construction) stream conditions above and below stream crossings. Spawning sites below stream crossings would be subjected to elevated sedimentation (DEIS 4-645). Survey techniques are available from ODFW, EPA, and USFS to document habitat conditions for stream miles that could be affected from cumulative sediment effects during the life of the project. In the absence of baseline stream inventories, monitoring of sediment would be limited to anecdotal observations of EI’s and not be based on the best available science. We further assert that all stream miles within 6th or 7th field watersheds that will have pipeline construction be stream surveyed with an emphasis on fine sediment deposition, pebble counts and quality/quantity of spawning/rearing habitat (see Anlauf et al 2011, Firman et al. 2011). The East Fork Cow Creek is a good example of a smaller stream needing its own watershed analysis due to multiple pipeline crossings. Anecdotal observations of EI’s about erosion and turbidity, while necessary, are not sufficient with respect to “best available science.” Protocols for establishing baseline conditions for streams are available for NEPA purposes from ODFW, USFS, and EPA. The DEIS fails to disclose expected increases of erosion/sedimentation because it has not established baseline conditions for streams and stream reaches at pipeline crossings. The DEIS fails to report the

erosion rates/sedimentation rates for occupied stream miles for “no action” and various alternatives or proposed actions.

Scientific monitoring during the life of the project cannot document adverse impacts if baseline conditions are not established prior to disturbance. The DEIS fails to disclose its non-scientific strategy of “no data” to mean “no sediment problem.” At a minimum, habitat conditions for critical coho salmon habitat must be surveyed prior to construction to agency protocol standards that would allow for future scientific monitoring.

The DEIS is not based on the best available science because its sediment analysis appears to be limited to 5th field watersheds. This scale of analysis is not appropriate for a linear project that would adversely affect coho salmon and other fishes that spawn in 6th and 7th field watersheds. The science issue is that pipeline construction across, upstream, or upslope of spawning and rearing fish (e.g. coho salmon) will be impacted due to large scale disturbance on steep slopes that will deliver sediment to stream channels located below them. Currently, there is ongoing erosion and sedimentation from the forested areas associated with fish bearing streams. Deforestation and pipeline construction is certain to increase erosion rates and increase sedimentation. The question is how much and where? Repeated sediment denial in the DEIS with reference to “minor” impacts and repeated statements about reliance on anecdotal observations of EI’s are not “best available science” when establishing ongoing and post-project sediment impacts to streams occupied by fish, especially the federally listed coho salmon. Pre- and post- stream surveys are a science based approach to monitor sediment impacts and the effectiveness of a suite of mitigations for this large project but none seem to have been identified in the DEIS.

In addition to longer-term impacts, there are likely to be particularly severe impacts in the first year of construction. Pacific Connector proposes to clear timber from along the pipeline route in fall 2015, with mainline construction to begin in 2016. The DEIS does not provide an analysis of how cleared areas are to be managed during the winter of 2015-2016 in order to prevent significant erosion and sedimentation events during that time. Without site-specific analysis relevant to this construction period, the FERC, DEQ, other state and federal agencies, and the public cannot meaningfully evaluate the effectiveness of measures to control erosion and sedimentation of waterways during this period.

2. Temperature Impacts of Vegetation Clearing Along The Right-of-Way

The proposed action would cause stream temperature increases by removing riparian vegetation across a wide construction easement. The project would remove riparian vegetation in the right-of-way for all pipeline crossings. The DEIS states, “removal of vegetation that once shaded the stream may cause local and temporary (daily) increases in temperature during the hot summer months. This may or may not exceed the TMDL on temperature-impaired streams...” DEIS at 4-372. The proposed action would result in 'obvious stream heating.' The temperature increases the proposed action would cause could not be authorized under OAR 340-041-0028(11) or (12). Therefore, the temperature increases associated with the proposed project would constitute degradation that violates Oregon’s antidegradation policy.

Removing riparian vegetation will increase water temperature by decreasing shade in numerous streams identified as having salmon and steelhead spawning use, having core cold water habitat use, having salmon and trout rearing and migration use, or having migration corridor use. In numerous instances, the proposed action would cause temperature increases that violate the standards contained in OAR 340-041-0028(4)(a)-(d).

The proposed action would impact: 1) Streams identified as having salmon and steelhead spawning use in the Rogue Basin and South Coast Basin¹¹; 2) Streams identified as having core cold water habitat use¹²; 3) Streams identified as having salmon and trout rearing and migration use¹³; and 4) Streams identified as having migration corridor use.¹⁴

Numerous stream segments that would be impacted by the proposed action already suffer high temperatures that violate State water quality standards. Many of these streams are on the State's list of water quality limited waters under Section 303(d) of the Clean Water Act. *See* DEIS Table 4.4.2.2-3 (ODEQ Water Quality Limited Streams Crossed by the Pacific Connector Pipeline). Therefore, any temperature increases in these streams attributable to the proposed action would result in exacerbations of existing violations of state water quality standards. The Ninth Circuit Court of Appeals recently made clear that new dischargers may not add a pollutant into a water body that is water quality limited. *See Friends of Pinto Creek v. United States Environmental Protection Agency*, No. 05-70785 (9th Cir. Oct. 4, 2007).

Under OAR 340-048-0042(5):

Upon completion of the department's evaluation, including consideration of public comment and, if applicable, coordination through a HART in accordance with OAR 340-048-0037, the Director must issue a decision approving or denying certification for the activity, containing:

(g) If certification is approved, conditions the Director determines are necessary to assure compliance with applicable standards and requirements set forth in sections (2) through (4) of this rule for the duration of the federal license or permit.

However, there is no realistically achievable set of conditions that the Oregon DEQ could impose on the applicants to assure that the proposed action would be in compliance with numerical temperature limits specified in OAR 340-041-0028(4). Stream temperature increases cause *acute* stress that has an immediate impact on salmon and other temperature-dependent fish. The DEIS only discuss what the applicants might be able to do to reduce the extent of stream

¹¹ Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 271B (Rogue Basin) and Figure 300B (South Coast Basin)

¹² Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 300A (South Coast Basin).

¹³ Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 271B (Rogue Basin) and Figure 300B (South Coast Basin)

¹⁴ Subbasin maps and tables set out in OAR 340-041-0101 to 340-041-0340: Figure 300A (South Coast Basin).

heating *several years* after temperature increases have occurred - well after the damage caused by stream temperature increases has occurred. At that point, the damage will be irreparable.

While the DEIS admits high water temperatures represent a limiting factor for salmonid viability, it fails to assess the significance that further degradation of already impaired waterways creates in terms of reducing salmonid survival, production, and abundance.

3. Northwest Forest Plan, Late-Successional Reserves, and Mitigation.

The Northwest Forest Plan (NWFP) Late Successional Reserve (LSR) standards and guidelines state (C-17) that pipelines should be planned to have the least possible adverse impacts on LSRs. “New access proposals may require mitigation measures to reduce adverse effects on Late-Successional Reserves. In these cases, alternate routes that avoid late-successional habitat should be considered.” The DEIS failed to document that alternate routes around all LSRs were considered, such as the unmapped LSR at MP 86 that has an obvious way to go around it. The NWFP also states (C-17) that these types of proposals will be reviewed on a case-by-case basis and may only be approved when adverse effects can be minimized and mitigated. The DEIS fails to minimize the impacts, and fails to properly mitigate the impacts, as documented in these comments. Thus, the project violates the Northwest Forest Plan and its Standards and Guidelines.

The NWFP only allows new developments like this in LSRs when the developments “address public needs or provide significant public benefits” (C-17). The NWFP gives examples, and exporting domestic fossil fuels to Asia was not included as having a significant public benefit or public need. Therefore, the pipeline is not allowed in the LSRs described by the Northwest Forest Plan.

The NWFP does not allow some of the mitigation offered for clearcutting endangered species habitat. For instance, concerning the mitigation of placing wood in streams, the NWFP says (B-32): “In-stream structures should only be used in the short term and not as a mitigation for poor land management practices.” FERC has not demonstrated that its mitigation will be effective or is even permitted under the NWFP.

The DEIS failed to compensate for the increased Equivalent Clearcut Area (ECA) within each watershed. If the watershed has too many clearcuts, the additional ECA caused by the pipeline could cause peak flow increases, not allowed by the Aquatic Conservation Strategy of the Northwest Forest Plan.

Other ACS objectives are not being met. For instance, some mitigation proposed to meet ACS objectives repairs damage caused by the pipeline, but does not restore habitat above that. This is the case with the 6.4 miles of fencing proposed on the Winema NF to keep cattle out of pipeline right-of-way. This should not be counted as mitigation. It is simply the cost to build the pipeline.

Plants and wildlife on the Survey and Manage list of the Northwest Forest Plan have inadequate protections. Moving the pipeline around them, instead of the weak mitigations offered for destroying them, could have protected many of these areas.

4. Forest Fire Threats.

Forest fires will occur in these fire-adapted forests, no matter how wide a fuel break is. The DEIS states (4-991) “In the event a fire was to occur on the surface in the vicinity of the pipeline, the presence of the pipeline would not increase fire hazards.” This analysis is incomplete. It’s not the presence of the pipeline that would increase fire hazards. Rather, it is the presence of the early-seral habitat in the right-of-way that increases fire hazards. Because these areas are sunnier and dryer, they are more fire-prone. Native and introduced brushes in the right-of-way instead of trees are also more volatile and burn hotter than in a mature forest. And because the right-of-way is linear, it has the ability to spread a hotter fire faster over the landscape.

Similarly, if there is a rupture in the pipeline, truly catastrophic fire will result. The location of the pipeline is a very rural, very rugged area without prompt access to any kind of first responders, much less fully equipped crews to suppress a gas-fueled fire. As history indicates, professional fire crews from the State of Oregon, Forest Service, Bureau of Land Management, and other federal and state agencies rarely are able to suppress wildfires in this country, much less a fire fueled by natural gas. The DEIS does not analysis the likelihood that such a fire could occur, or what the environmental consequences would be. The lack of analysis is arbitrary, capricious, and not in accordance with law. 5 U.S.C. § 706(2)(A).

The DEIS only analyzed the risk of the pipeline to fire behavior when instead the DEIS should have analyzed the risk of the right-of-way to fire behavior. Because the right-of-way will cause the fire to spread along the right-of-way, the damage to the forests, wildlife, and homes will increase near the right-of-way.

The DEIS claims (4-991) that the pipeline itself will not be impacted by a forest fire “because of the insulating effects of soil cover over the pipeline. Soil is a poor conductor of heat...” However, the pipeline will only be buried 24” in many places, especially rocky areas. The FERC should present some scientific evidence that a heat cannot penetrate 24” in rocky soils.

Another problem with the right-of-way and fire is the right-of-way will cause more fire suppression. It is environmentally advantageous and economical to treat many wildland fires as a controlled burn, and not suppress them in the backcountry when it doesn’t threaten homes or other infrastructures. However, the presence of a pipeline in the back-country will mean that more wildland fires will have to be suppressed, fires that otherwise would have been treated as natural, beneficial fires. The DEIS failed to consider this problem.

B. Stream Crossings

1. The DEIS Does Not Clearly Identify All Affected Waterbodies.

The application materials do not consistently specify the number of waterbodies that would be crossed. As noted by DEQ, the pipeline will necessitate direct impacts to waters at 510 locations, including 218 to 383 water body crossings. According to Resource Report 2, the pipeline would cross 400 waterbodies (RR2 at 6). The DEIS states that the pipeline would cross or affect 274 waterbodies. DEIS 4-582.

In addition, the application does not identify the location of all wells, springs, and seeps within 150 feet of the construction right-of-way for the pipeline. Springs and seeps supplied by shallow groundwater could be affected by the pipeline project. In particular, if the pipeline is located up-gradient of a spring or seep location. DEIS at 4-355.

Unless and until the applicants provide a consistent and complete list of waterbodies that would be affected by the proposed action, and name each affected waterbody, the application fails to contain the mandatory minimum information required under OAR 340-048-0020(2)(c), (e) and (f) and must therefore be rejected as incomplete.

We note that of the water bodies identified, many are already impaired. The project would cross at least 35 waterbodies that are listed on the 303(d) list as impaired for various parameters, including temperature, dissolved oxygen and sedimentation. An approved TMDL exists for the South Umpqua and Rogue.

The 2008 Rogue TMDL covers temperature and bacteria. As discussed in more detail in Section 2.4 the proposed action would result in 'obvious stream heating.' The Rogue TMDL allocates reserve capacity to accommodate future growth as well as to provide an allocation to any existing source that may not have been identified during the development of the TMDL. The applicants have not demonstrated that there is sufficient reserve capacity in the Rogue TMDL for increased temperatures to accommodate this project and allow for anticipated growth and development of the Rogue Valley, one of the fastest growing areas in the state.

In addition to temperature, West Fork Trail, Indian and Lick Creeks in the Rogue Basin are listed on the 303(d) listed for dissolved oxygen. The pipeline would cross all three of these creeks. The 2008 EPA approved Rogue Basin TMDL states:

At the time of the writing of this TMDL, there were insufficient data to address the Rogue River Basin dissolved oxygen listings...DEQ intends to re-visit the Rogue River Basin dissolved oxygen impairments when the temperature and bacteria TMDLs are reviewed, on a 5 year basis.

DEQ does however expect that improvements in dissolved oxygen levels will occur as a result of implementing the Temperature TMDL. Stream temperature has a significant impact on the dissolved oxygen level in a stream in two ways. As stream temperatures decrease, the amount of oxygen that can remain dissolved in water increases, and as temperatures decrease the amount of oxygen consumed by biological processes decreases.

There are a number of causes of increased stream temperatures in the Rogue River Basin...It is anticipated that decreasing stream temperatures as required for nonpoint source heat load allocations in the Temperature TMDL will also reduce dissolved oxygen impairments. Surrogate measures to reduce nonpoint source heat loads include percent effective shade targets and hyporheic flow percentage

targets. DEQ encourages the long-term monitoring of dissolved oxygen on the 303(d) listed streams in the Rogue River Basin.

Available at <http://www.deq.state.or.us/WQ/TMDLs/rogue.htm#rb>.

In addition, South Fork Little Butte Creek is also 303(d) listed as impaired for sedimentation. The 2008 Rogue TMDL states:

At the time of the writing of this TMDL, DEQ is in the process of developing a sedimentation assessment methodology that could be used for implementing the narrative sedimentation standard. When the methodology and associated guidance is completed, the agency will establish sedimentation TMDLs for those waterways on the 303(d) list. DEQ also intends to re-visit the Rogue River Basin sedimentation impairments when the temperature and bacteria TMDLs are reviewed, on a 5-year basis.

DEQ does however expect to see decreases in sedimentation as a result of implementing the Temperature TMDL ... Sedimentation results from either stream channel or upland erosion. Disturbances that change riparian vegetation, increase the rate or amount of overland flow, or destabilize a stream bank may increase the rates of stream bank erosion and result in sedimentation increases. Disturbances in the uplands that remove vegetation, reduce soil stability on slopes, or channel runoff can increase sediment inputs (DEQ 2003, DEQ 2007). Sediment created from upland erosion is delivered to a stream channel through various erosional processes. Wide mature riparian vegetation buffers filter sediment from upslope sources as well as stabilize stream banks from erosion. System potential riparian vegetation measured by percent effective shade is a surrogate measure that has been used in other TMDLs to address sedimentation (DEQ 2003). Percent effective shade targets for the Rogue River Basin were set in the Temperature TMDL. DEQ encourages the long-term monitoring of sediment related parameters on the 303(d) listed streams in the Rogue River Basin.

Id.

Furthermore, with regard to peak flows in the Rogue Basin, the DEIS states that streams already listed on the 303(d) list will be further impacted:

The greatest forest clearing disturbance within the transient snow zone on a percentage basis would occur within the Spencer Creek Watershed. The pipeline would disturb a total of about 126 acres of forest within the 21,913-acre transient snow zone within the 54,242-acre watershed.... When considering forest vegetation disturbance within the transient snow zone, the pipeline would also have the highest percentage of forested disturbance within the Trail Creek Watershed, disturbing about 107 acres of forested vegetation types within the 30,107-acre transient snow zone in the 35,343-acre Trail Creek Watershed.

The Little Butte Creek fifth-field watershed would have the largest area disturbance by the Project that is located within the transient snow zone with about 434 acres ...”

DEIS at 4-398.

The 2009 FEIS stated:

Fluvial erosion represents potential hazard to the proposed pipeline where streams are capable of exposing the pipe as a result of channel migration, avulsion, widening, and/or streambed scour. The principal hazard resulting from channel migration and streambed scour is complete or partial exposure of the pipeline within the channel from streambed and bank erosion or within the floodplain from channel migration and/or avulsion.... two crossings were identified that require additional field reconnaissance; West Fork Trail Creek and North Fork Little Butte Creek.

2009 FEIS at 4.3-36.

The 2014 DEIS omits this analysis. However, it is unclear what, if any additional reconnaissance has been completed. In addition, the 2009 FEIS stated that, “the assessment recommended burial of the pipeline at least 5 feet below the surface at Indian Creek (MP 128.6) due to channel migration concerns.” 2009 FEIS at 4.3-37. The DEIS does not contain the recommended condition.

TMDLs for the Coos, Coquille, Upper Klamath and Lost River subbasins have not been completed.

2. Sedimentation and Turbidity from Stream Crossings

The DEIS 4:599-604 conducted modeling to estimate suspended sediment impacts to fish associated with stream crossing. These studies demonstrate that the dam and pump technique (a.k.a. dry cut) creates less suspended sediment than wet cut and effects would be non-lethal. However, there is no certainty that the proposed dam and pump technique will be used in every stream crossing. The DEIS is not based on the best available science because it does not require systematic suspended sediment monitoring during the first phase of construction where impacts are known to be the greatest due to the large amounts of fine sediments at these stream crossings. While anecdotal observations by EI’s are certainly necessary, we assert that scientific monitoring of suspended sediment is also warranted for at least the first phase of construction where fish are at most risk due to high amounts of fine sediment.

The DEIS is not based on the best available science because it fails to adequately disclose, analyze or monitor fine sediment deposition subsequent to stream crossings. Increased fine sediment deposition below the stream crossing is likely to despoil fish spawning and rearing habitat. Assertions of “minor” impacts are not science based.

The DEIS 4-74 states:

A literature review of pipeline stream crossing studies showed this method to be effective at controlling sediment. During construction, the crossing site is isolated from the stream by dams, and water is pumped around the site to maintain downstream flows. When dams and pumps are removed and the stream is allowed to flow across the crossing site, there may be a short-term (typically a few hours) pulse of sediment that will vary by substrate type. When compared to sediment mobilized by natural disturbance events such as fires and high-intensity precipitation, the sediment created is expected minor, short-term and well within the range of natural variation and comparable in scale to a minor bank slough.

Comparing the sediment discharge to natural disturbance events is disingenuous and misleading because during the summer when stream crossings would occur there are no natural sediment creating disturbances and streams would be expected to be clear with no natural induced increased sediment. Introducing sediment into a clear stream during stream crossings is an adverse impact that needs to be quantified with scientific monitoring and not summarily dismissed with subjective, qualitative and misleading descriptors (e.g., “minor”, “within the range of natural variability”).

The DEIS is not based on best available science because it has not established baseline physical and biological conditions at and below stream crossings. The DEIS cannot assert “minor” impacts if it has not established baseline conditions. A project of this size must establish baseline stream conditions for “miles” of stream habitat because of the numerous and variable stream conditions along the pipeline route.

Stream habitat is linear and needs to be analyzed as a linear phenomenon. The DEIS is not based on the best available science because it has not analyzed impacts to linear stream miles of fish habitat.

Finally, we note that construction of pipeline stream crossings appears virtually certain to violate Oregon’s statewide and basin-specific water quality standards for turbidity. Under OAR 340-041-0036 (Turbidity):

No more than a ten percent cumulative increase in natural stream turbidities may be allowed, as measured relative to a control point immediately upstream of the turbidity causing activity. However, limited duration activities necessary to address an emergency or to accommodate essential dredging, construction or other legitimate activities and which cause the standard to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and one of the following has been granted:

- (1) Emergency activities: Approval coordinated by the Department with the Oregon Department of Fish and Wildlife under conditions they may prescribe to accommodate response to emergencies or to protect public health and welfare;
- (2) Dredging, Construction or other Legitimate Activities: Permit or certification authorized under terms of section 401 or 404 (Permits and Licenses, Federal

Water Pollution Control Act) or OAR 141-085-0100 et seq. (Removal and Fill Permits, Division of State Lands), with limitations and conditions governing the activity set forth in the permit or certificate.

Put more simply, a violation of Oregon's water quality standard for turbidity occurs when an activity causes a more than 10% increase in natural turbidity levels, unless the activity is necessary to accommodate essential dredging, construction or other legitimate activities *and* all practicable turbidity control techniques have been applied.

It is certain that the proposed action would cause a more than 10% increase in natural turbidity levels. According to the DEIS, background turbidity levels range seasonally from 5.7 to 45.7 milligrams per liter total suspended solids, and Jordan Cove's hydraulic cutterhead dredge would generate total suspended solids up to 500 mg/l. DEIS at 4-359.

JPA Stand Alone Document 1 contains the applicant's assessment of water quality impacts risks from the various stream crossing methods, and concludes that 272 crossings are at moderate risk for impacts from turbidity, 294 at moderate risk from nutrients, and 276 at moderate risk for impacts from metals. However, the report offers no analysis of practical effect of this conclusion, other than to assert that the use of BMPs "meet the standard in Oregon turbidity rules that require 'all practicable turbidity control techniques have been applied.'" (JPA Stand Alone Document 1 at 20). The analysis fails to address whether the projected increases in turbidity exceed the 10% increase standard in Oregon's narrative criteria, but instead simply asserts that the project complies with the Section 401 criteria because turbidity control techniques are proposed. This analysis fails to address cumulative effects within the watersheds or individual waterways and does not explain how "moderate" risk of impacts from turbidity are consistent with Oregon's water quality standards.

In the event that the proposed HDD crossing fails at the proposed Klamath or Rogue Rivers, Pacific Connector's contingency crossing plans would be wet open-cut crossings at approximately the same location as the proposed HDD crossings. Wet open-cut methods produce more suspended sediments and turbidity than dry open-cut methods, as it would be completed in the flowing waterbody. Should either of these HDD crossings fail, Pacific Connector would be required to obtain all necessary permits and authorizations for in-water construction from the appropriate agencies prior to commencing an open cut crossing.

Because it is certain that the proposed action would cause a more than 10% increase in natural turbidity levels, DEQ must find that the proposed action violates Oregon's water quality standard for turbidity unless the activity is necessary to accommodate essential dredging, construction or other legitimate activities *and* all practicable turbidity control techniques have been applied. Even if we grant that the proposed action were necessary to accommodate essential dredging, construction or other legitimate activities, the proposed action violates Oregon's water quality standard for turbidity because all practicable turbidity control techniques have not been applied. Under these circumstances, DEQ is required by OAR 340-041-0036 to find that the proposed action violates Oregon's water quality standard for turbidity.

The DEIS 4:39 states that 103 red tree vole sites will be adversely affected which requires NW forest plan amendments to allow the destruction of habitat and the killing of voles. This is an unprecedented amount of take and certainly contributes to reduced viability of red tree voles in southern Oregon. The red tree vole in southern Oregon is a candidate species for listing.

3. Impacts, Risks, and Contingencies for Horizontal Directional Drilling

HDD crossings, when successful, have impacts in areas adjacent to rivers where staging and construction areas occur. HDDs also require the disposal of materials extracted from the drill hole. HDD attempts frequently fail, causing drastic impacts to water quality and fish habitat. According to Williams' own experience, large-diameter HDDs frequently fail. In recent history, many HDD attempts along the 12-inch Coos County pipeline failed, resulting in "frac-outs," situations in which large amounts of sediment and bentonite clay (used as a drilling lubricant) were released into streams. Bentonite clay and sediment released through frac-outs can disrupt fish spawning habitat, increase turbidity, and potentially introduce other contaminants to impacted waterways. The 2009 FEIS states at 2-97: "...there are two problems that may occur during the use of an HDD. First, there may be an unintentional release of drilling mud, forcing its way to the surface through underground fissures. This situation is termed a 'frac-out.' Second, the drill may be blocked by unexpected substrata soils or geological conditions (such as gravel or boulders)." The current DEIS does not mention the second problem of blockage by unexpected substrata soils or geological conditions. DEIS at 4-387. The DEIS briefly discusses the possibility of frac-out.





The photographs above document a frac-out that led to sedimentation and a huge release of bentonite clay into the Coquille River during construction of the 12-inch Coos County pipeline. A similar HDD failure on the Rogue River would severely impact water quality and salmon habitat. Bentonite clay is highly detrimental to salmon spawning habitat. In addition, the DEIS states that drilling mud “can include additional additives specific to each drilling operation” and “Pacific Connector would approve any additive compounds” but does not disclose what these additives might include. DEIS at 4-387.

4. Hydraulic Alteration at Each Pipeline Stream Crossing

The pipeline will cross tributaries and mainstream rivers within the Coos, Coquille, South Umpqua, Rogue and Klamath basins, most of which are impaired for several water quality parameters. The applicants have not provided analysis of potential risk for hydraulic and geomorphic alteration upstream and downstream from the impact areas. DEQ requested the applicants provide risk assessment for stream crossings based on fluvial geomorphic analyses as recommended by the U.S. Fish and Wildlife Service for all proposed stream crossings. The applicants did not provide this information.

5. Potential Interference of Subsurface Flow Regimes from Pipeline Construction

The applicants have not provided information demonstrating the potential effects of pipeline construction, including streambed and bank disturbance and placement of pipe and backfill, on the hyporheic regimes of affected waterbodies. As noted by DEQ, rerouting of subsurface water or prevention by barriers (such as buried pipes) of subsurface flows interacting with stream flows can increase temperature. These interactions have a greater impact at low flow periods, when baseflow impacts are critical. Hyporheic exchange often allows for cool water pockets, providing

thermal refuge for migrating cold water fish like threatened Coho salmon. In addition, other water quality parameters including pH and dissolved oxygen can be impacted by disturbances to hyporheic exchanges.

6. Post-Construction Restoration at Stream Crossings

Several stream crossing methods are proposed for different types of streams. With the exception of some of the larger water body crossings, specific crossing methods for specific stream reaches have not been identified. One proposed method for “dry” streams is to “dry cut.” First, this method assumes that streambeds are actually dry with no subsurface flows during construction. Second, the methods do not explain how streambeds will be restored to avoid impacts to water quality following re-watering of the streams.

7. Impacts to the Rogue River

We offer the following thoughts about the particular impacts of pipeline construction and stream crossings on the Rogue River, and the need for mitigation thereof.

Full review and public comment on Rogue River crossing alternatives in the event of an HDD failure should occur prior to the issuance of the Final EIS. It is not appropriate to wait until an HDD failure to address a construction failure of this environmental and economic significance. If both the wet open-cut crossing and overhead alternatives are found to be unacceptable during this review, The final EIS should include a statement that the proposed Rogue River crossing site will be abandoned in the event of an HDD failure. A failure should be defined as two unsuccessful attempts with the pilot hole, hole opening or pullback stages of the HDD. Alternatives in the event of an HDD failure are not discussed or referenced in the DEIS (see pages 4-386-388).

In the event of a frac-out, the HDD Contingency Plan and Failure Procedure proposed by PCGP (Appendix 2H attached to Resource Report 2 of their application to the FERC) should be strengthened to provide additional protection to the environmentally sensitive Rogue River. The HDD Contingency Plan and Failure Procedure should be modified to provide that drilling fluid pumps will be shut off and drilling will not resume until designated Federal and State inspectors visit the site, insure that appropriate containment procedures have been implemented, and approve resumption of drilling.

Page 4-825 included a statement that use of HDD technology would avoid direct impacts on the river and would have no direct impacts on recreational users of the river. This is only true if the HDD is successful. HDDs can, and do, fail.

Pacific Connector should be required to post a bond for costs of any clean-up or environmental damage caused by the inadvertent release of drilling mud resulting from HDD operations.

The DEIS states that the closest existing residence to the west end of the Rogue River HDD section is about 740 feet from the probable equipment location and the closest residence to the eastern end of the Rogue River HDD section is about 340 feet from the probable equipment

location. Additionally, the noise levels on the west side of the river are significantly less as shown on Table 4.12.2.4-7 and Table 4.12.2.4-8. In view of the above information, request that the drill entry point be on the west side of the river.

If actual noise levels exceed the dBA standard (above), drilling operations must be shut down until compliance with the standard is achieved. Noise monitoring should be continuous during drilling and pull back operations and procedures in place for shutting down immediately if noise levels are exceeded.

Page 4-396 of the DEIS identifies the Rogue River crossing as a potential hydrostatic source location with an estimated volume of 8,770,257 gallons. Specifics of the withdrawal, including analysis and impact, must be provided and made available for public comment before any permit is issued. Needed details include how the river will be accessed (i.e. from which side of the river), road construction to the river, equipment utilized and exactly how the water will be transported to the pipe (since it is a considerable distance to the drill entry and exit sites under the Rogue). Strongly recommend that the Rogue River not be used as a water source for hydrostatic testing. The public should have 30 days to comment on the Hydrostatic Test Plan once it is submitted.

Appendix P of the DEIS (Pacific Connector's Proposed Modifications to FERC's Plan and Procedures) includes 28 pages of site-specific variances to FERC's Wetland and Waterbody Procedures and Upland Plans. The variance at MP 122.00 & 122.6 talks about access to the river for a water source (Hydrostatic, HDD, dust abatement) and for potential frac out response. This is the only place in the DEIS where vehicle access to the Rogue River is mentioned (there is currently no road access to the river at the proposed crossing site). Road construction or equipment traffic to the edge of the Rogue River crossing site should not be allowed for any purpose. Water for dust abatement along Old Ferry Road (OFR) and the east side of the Rogue River should come from an existing access road along the Rogue River, presumably where OFR comes within a few feet of the river at flood rock. The Rogue River as a source of water for dust is not mentioned in the main body of the DEIS. Rogue River water for hydrostatic testing is addressed in the following comment.

The GeoEngineers report included in Appendix 2H attached to Resource Report 2 (Rogue River HDD – Preliminary Feasibility Analysis, File 8169-021-00, Task 1200) states: "The HDD entry workspace may be accessed via a private drive off of Old Ferry Road and will likely require clearing and extensive grading improvements prior to construction". These "extensive grading improvements", which may have water quality environmental consequences due to their proximity to the Rogue River, should be detailed now in the EIS rather than waiting until construction begins, so they may be addressed in the 401/404 permitting process.

The Old Ferry Road (OFR) Committee disagrees with your recommendation. The problems associated with the use of OFR are not adequately addressed in the DEIS. The thrust of the language in the DEIS is more about justification for the use of OFR rather than addressing the issues that would be created by its use. Of central concern are three issues:

First, the extent of OFR modifications to accommodate HDD drill rigs and associated equipment, trucks to remove drill tailings and vegetation/lumber from the ROW, trucks to haul pipe and pipe laying equipment. The DEIS (3-48) includes a statement that “the road would need to be approximately 16 feet wide while footnote b (3-50) states that “The existing road prism of OFR is estimated to be an average of approximately 12 feet in width”. There is no explanation for this disparity which does not support the statement (3-51) that “Improvement could be limited to several turn outs, curve widenings and one staging area”. We believe that the actual road modification will be much greater than stated. Where OFR runs along the Rogue River at flood rock, road modification to 16 feet would require widening within 10 feet of the river or rock removal and possible blasting on the up-hill side of the river.

Second, the volume of traffic on OFR by duration and type of vehicle to include HDD drilling related equipment and truckloads of drill tailings, clearing vegetation/lumber from the right-of-way, truckloads of pipe (including total length of pipe propose to be transported via OFR), pipe laying equipment and vehicles transporting workers. The DEIS does not address the length of the pipeline ROW that will be supported by OFR. The distance involved will have a huge impact on OFR traffic. Are several miles of pipe being transported to the pipeline ROW via OFR and are several miles of cleared trees and possibly other vegetation being transported to Hwy 62 via OFR? These questions are not answered in the DEIS and raise the concern that the volume and type of construction related traffic on OFR will be much greater than implied. We need answers to these questions.

Third, OFR road management during (and after) pipeline construction to include peak traffic hours (by type of vehicle), traffic management, gate management, watering schedule, repair of any road damage or drainage problems through the first winter/spring following completing of construction.

Traffic volume along OFR would be significantly reduced if pipe for mileposts 123.1 to 124.9 were brought in via the Indian Creek Firebreak Road (BLM road 34-1-23). The OFR Committee strongly recommends bringing in pipe for this section via the Indian Creek Firebreak Road. Please address this point in the FEIS (it was not addressed in the DEIS despite this request in my scoping comments).

Pacific Connector has stated that the OFR gate will be replaced with a construction gate during the construction window. Since the gate width of 14 feet is wider than many sections of OFR, we question the need to remove the existing gate during the construction period. Please address this concern in the FEIS.

Page 3-51 of the DEIS states that “The largest TEWA within the VRM II area has also been located in an existing log landing area; therefore, these TEWAs are expected to be consistent with the BLM’s VRM II visual quality objectives”. We are not aware of any such existing log landing area and therefor fail to see any connection with BLM’s VRM II visual quality objectives. VRM II visual quality objectives east of the Rogue River will be addressed separately under the heading of Visual Impact later in these comments.

The most appropriate mitigation for OFR residents is to eliminate or minimize the use of OFR for this project.

8. The Pipeline, and Pipeline Stream Crossings in Particular, Will Violate Oregon's Antidegradation Policy.

Under OAR 340-041-0004:

(1) Purpose. The purpose of the Antidegradation Policy is to guide decisions that affect water quality such that unnecessary further degradation from new or increased point and nonpoint sources of pollution is prevented, and to protect, maintain, and enhance existing surface water quality to ensure the full protection of all existing beneficial uses. The standards and policies set forth in OAR 340-041-0007 through 340-041-0350 are intended to supplement the Antidegradation Policy.

(3) Nondegradation Discharges. The following new or increased discharges are subject to this Division. However, because they are not considered degradation of water quality, they are not required to undergo an antidegradation review under this rule:

(c) Temperature. Insignificant temperature increases authorized under OAR 340-041-0028(11) and (12) are not considered a reduction in water quality.

(d) Dissolved Oxygen. Up to a 0.1 mg/l decrease in dissolved oxygen from the upstream end of a stream reach to the downstream end of the reach is not considered a reduction in water quality so long as it has no adverse effects on threatened and endangered species

(7) Water Quality Limited Waters Policy: Water quality limited waters may not be further degraded except in accordance with section (9)(a)(B), (C) and (D) of this rule.

The 2009 FEIS stated:

Clearing and grading of streambanks, removal of riparian vegetation, instream trenching, trench dewatering, and backfilling could result in streambank modification; increased sedimentation; turbidity; increase in temperature, decreased dissolved oxygen concentrations; releases of chemical and nutrient pollutants from sediments; and introduction of chemical contaminants, such as fuel and lubricants. An increase in soil compaction and vegetation clearing could potentially increase runoff and subsequent streamflow or peak flows. Surface waters could be impacted due to alteration of groundwater flow where the pipeline intersects waterbodies.

2009 FEIS at 4.3-31.

DEQ previously expressed strong concern that the proposed action would violate Oregon's antidegradation policy. In its 2008 DEIS comments, DEQ stated:

The project proponent cannot be allowed to further degrade a water quality limited waterbody. According to Oregon Administrative Rule (OAR) 340-041-0004(7) 'Water quality limited waters may not be further degraded except in accordance with section (9)(a)(B), (C) and (D) of this rule.' Section (9)(a)(B), (C) and (D) specify very limited circumstances where further degradation can be allowed. It is unknown whether this project could qualify for any exception...

The project cannot cause or contribute to water quality standard violations nor discharge pollutants to a stream that already is in violation. If a TMDL has been issued, the project needs to comply with all requirements of the TMDL. If they cannot comply with a TMDL, no discharge is possible and the project probably cannot go forward.

State of Oregon 2008 DEIS comments at 48. As we explain above, the concerns are still valid. In particular, the project will impair temperature, sediment, and dissolved oxygen.

C. Impacts From Road Construction, Maintenance, Modification, and Use

In addition to impacts from the pipeline itself (both on land and in rivers), construction and maintenance of the pipeline will require construction, modification, maintenance, and extensive use of a large road network. This will have numerous additional significant impacts, which we discuss below.

1. Extent and Type of New and Existing Roads Used

The DEIS failed to adequately consider impacts from the Project's new roads. In fact, it was difficult to find in the DEIS how many miles of new, permanent roads will be built, and who would maintain the new roads through time. We are aware that some of the roads being called "existing" are in fact, proposed new roads. For instance, the so-called existing road from south Myrtle Road to MP 85.5 of the pipeline is actually a narrow, illegal, user-created ATV trail. No road has ever been engineered in this location, yet the DEIS calls it an existing road. (This issue was brought up numerous times in Scoping, but FERC ignored those comments.) This is one place where we know this problem exists, so there are likely other areas with the same problem.

The DEIS states that, "Pacific Connector has estimated that modifications of 60 miles of existing access roads may be required outside of the existing road bed ... resulting in about 22 acres of disturbance." In addition, the DEIS states that 2.4 miles of new temporary access roads and 0.9 miles of new permanent access roads would be constructed. DEIS at 2-88. Appendix 8 Table 8A-1 of the JPA includes 31 pages of "Access Roads to and Major Roads Crossed by the PCGP Project," however, this is not the most recent or complete list of roads that will be used for the project. Significant changes have occurred in the location of access roads. *Compare* JPA

Appendix 8 Table 8A-1 *with* DEIS Appendix D Table D-2. The application is incomplete and inaccurate without the most recent information.

Roads are one of the most damaging components of a watershed, so the DEIS should have considered how many miles of roads exist currently, and how this project would change that.

2. Impacts of Road Construction, Modification, and Use

Even for the miles of roads that are considered, the DEIS inadequately addresses the aquatic impacts from road use, road modifications (including but not limited to Key Watersheds), temporary extra work area (TEWA) construction, and temporary and permanent access roads. Roads contribute to the disruption of hydrologic function and increase sediment delivery to streams. Roads also provide access, and the activities that accompany access magnify their negative effects on aquatic habitats. Activities associated with roads include fishing, recreation, timber harvest, livestock grazing, and agriculture. Roads also provide avenues for stocking non-native fishes. The DEIS fails to provide complete and accurate maps of roads (existing, proposed, and expanded), specific characterizations of impacts to waterways that would be impacted, details regarding types of roads and how they will be modified, or specific details on long-term maintenance proposed for roads in steep terrain areas.

Road construction has the potential to produce myriad impacts to waters of the U.S.:

- Soil erosion, compaction, loss of forest productivity;
- Pollution: sedimentation, thermal loading;
- Rapid water runoff: peak flows;
- Impaired floodplain function;
- Barrier to movement of wood and spawning gravel;
- Fragmentation: wildlife dispersal barrier;
- Human disturbance, weed vector, hunting pressure, loss of snags, litter, marbled murrelet nest predation, human fire ignition, etc.

Roads have a particularly negative influence on aquatic and riparian ecosystems and organisms. Roads interfere with movement of materials and organisms in three dimensions: upstream/downstream, channel/upland, and surface/subsurface.¹⁵ Roads also act as conveyor belts for delivering chronic sediment to streams.¹⁶

Over the last few decades, studies in a variety of terrestrial and aquatic ecosystems have demonstrated that roads aggravate many of the most pervasive threats to biological diversity, including habitat destruction and fragmentation, edge effects, exotic species invasions, pollution, and overhunting. Roads have been implicated as mortality sinks for animals ranging from snakes to wolves; as displacement factors affecting animal distribution and movement patterns; as

¹⁵ Jim Doyle, Where the Water Meets the Road. Available at <http://web.archive.org/web/20070325061623/http://www.fsl.orst.edu/geowater/RRR/jim/aquahab/index.html>.

¹⁶ Michael Derrig, Road Improvements for Watershed Restoration. Available at <http://www.fsl.orst.edu/geowater/PEP/calFed/derrig/index.html>.

population fragmenting factors; as sources of sediments that clog streams and destroy fisheries; as sources of deleterious edge effects; and as access corridors that encourage development, logging and poaching of rare plants and animals. Road building in National Forests and other public lands threatens the existence of de facto wilderness and the species that depend on wilderness.¹⁷

From an intensive review of the literature, we conclude that increases in sedimentation are unavoidable even using the most cautious roading methods. Roads combined with wildfires accentuate the risk from sedimentation. The amount of sediment or hydrologic alteration from roads that streams can tolerate before there is a negative response is not well known. It is not fully known which causes greater risk to aquatic systems: building roads to reduce fire risk or realizing the potential risk of fire. More research is needed in this area.

U.S. EPA describes the impacts of roads as follows:

Stormwater discharges from logging roads, especially improperly constructed or maintained roads, may introduce significant amounts of sediment and other pollutants into surface waters and, consequently, cause a variety of water quality impacts. ... [S]ilviculture sources contributed to impairment of 19,444 miles of rivers and streams [nationwide]. ... forest roads can degrade aquatic ecosystems by increasing levels of fine sediment input to streams and by altering natural streamflow patterns. Forest road runoff from improperly designed or maintained forest roads can detrimentally affect stream health and aquatic habitat by increasing sediment delivery and stream turbidity. This can adversely affect the survival of dozens of sensitive aquatic biota (salmon, trout, other native fishes, amphibians and macroinvertebrates) where these species are located. Increased fine sediment deposition in streams and altered streamflows and channel morphology can result in increased adult and juvenile salmonid mortality where present (e.g., in the Northwest and parts of the East), a decrease in aquatic amphibian and invertebrate abundance or diversity, and decreased habitat complexity.

The physical impacts of forest roads on streams, rivers, downstream water bodies and watershed integrity have been well documented but vary depending on site-specific factors. Improperly designed or maintained forest roads can affect watershed integrity through three primary mechanisms: they can intercept, concentrate, and divert water (Williams, 1999).

EPA 2012. Notice of Intent To Revise Stormwater Regulations Federal Register. May 23, 2012.¹⁸

Temporary roads present most of the same risks posed by permanent roads, although some may be of shorter duration. Many of these roads are designed to lower standards than permanent

¹⁷ Noss, Reed; The Ecological Effects of Roads. Available at <http://www.wildlandscpr.org/ecological-effects-roads>.

¹⁸ Available at <http://www.gpo.gov/fdsys/pkg/FR-2012-05-23/pdf/2012-12524.pdf>.

roads, are typically not maintained to the same standards. While temporary roads may be used temporarily, for periods ranging up to 10 years before decommissioning, their short- and long-term effects on aquatic species and habitats can be extensive.¹⁹

The DEIS fails to disclose the full extent of the road network for pipeline construction or explain how these impacts could be adequately mitigated.

In order to use heavy equipment on these roads, significant road modifications will be necessary, including blading/grading, widening, drainage improvements, and the construction of turnouts and roadside TEWAs. The DEIS does not include detailed descriptions of what activities will be occurring that could impact wetlands, streams, and other waters. Rather, the DEIS relies on blanket statements about the application of best management practices to avoid impacts to streams. By not specifying the location and nature of construction activities associated with all access roads, the DEIS provides an inadequate description of the project.

Specifically, the JPA states in that best management practices (“BMPs”) will be used for culvert replacements. “Culvert replacements that may be required along existing access roads will be completed according to the exemptions specified under OAR 141-085-0020.” However, such roadwork would not be exempt under the rules of OAR 141-085-0020, as this proposal does not constitute maintenance or repair, but instead expansions and modifications to facilitate a major construction project with significant environmental impacts. The FERC, DLCD, Oregon DEQ, and other state and federal agencies must all evaluate the impacts of all construction activities – including culvert replacements – arising from construction of the Pacific Connector pipeline. The current application lacks site-specific information on impacts to resources for both existing and new roads to be constructed, instead relying on broad statements regarding use of BMPs. It is impossible for the public to know which special aquatic sites will be impacted without a detailed and up-to-date description of road construction activities.

On steep slopes, particularly in rainy winter months, similar BMPs have failed in the past to prevent impacts to streams, creeks and ditches. Not only is road construction inadequately described, but also the measures to prevent significant sedimentation and turbidity in streams are neither site-specific nor reliable.

¹⁹ Roadless Area Conservation FEIS — Specialist Report for Terrestrial and Aquatic Habitats and Species prepared by Seona Brown and Ron Archuleta, EIS Team Biologists, Available at http://web.archive.org/web/20040515020554/http://roadless.fs.fed.us/documents/feis/specprep/xbio_spec_rpt.pdf



During construction of the 12-inch Coos County pipeline in 2003, covering terrain similar to the proposed PCGP, erosion and sedimentation control measures repeatedly failed. The DEIS and DEIS give little specific information to justify the assumption that, particularly in steep areas, BMPs will be adequate to prevent impacts to streams. Pictured above, a silt fence during construction of the Coos County pipeline in 2003 is overtopped by eroding soil, which is then deposited directly into a small tributary stream of the Coquille River. The second photo shows a

bale of hay – an erosion control device – that has become lodged in a culvert, resulting in stream cutting through the road itself.

D. Summary of Sedimentation Impacts

The DEIS failed in many ways to properly assess how the pipeline construction and operation will persistently and significantly elevate sediment delivery to affected streams in numerous and additive ways. There is a considerable body of information indicating that ground-disturbing activities that occur within several hundred feet upslope of streams and water bodies have numerous negative and enduring sediment-related impacts on those water bodies and streams.

The DEIS does not recognize the major long-term increases in sediment delivery arising from pipeline stream crossings. The crossing will involve periodic vegetation removal that will be maintained over a 30-foot wide corridor over the pipeline, often in close proximity to streams, on a long-term basis. The crossings will also involve significant soil disturbance and compaction, including that on associated work spaces, in close proximity to streams. All of these impacts significantly elevate erosion and sediment delivery to streams.

Pipeline clearing and severe soil disturbance from excavation possess impacts akin to road construction. Roads undergo elevated erosion for decades, even after obliteration. The soil compaction from pipeline construction activities is likely to persist for decades, and even longer in soil with high clay content, contrary to the alleged “short-term” assumptions in the DEIS. Soil compaction contributes to elevated surface erosion potential by degrading surface and subsurface hydrology in several ways: the ability of soils to absorb, store, and slowly release water and increases in surface runoff increases erosion and sediment delivery. These long-term impacts are ignored and relegated as adequately “mitigated” and viewed as “short-term” when the opposite is true.

The DEIS also fails to reasonably factor in that at and near stream crossings, efforts to the prevent delivery of eroded sediment are usually not completely effective, as is the case with road crossings. As mentioned elsewhere, the DEIS assumes that BMPs will consistently be effective at reducing sediment delivery from pipeline corridors in riparian areas and stream crossings to minimal and transient levels, in direct conflict with available scientific information. The area over the pipeline will periodically be subject to vegetation removal, including trees and shrubs over 15 feet high, on a continuing basis, which will have sediment-related impacts akin to those from logging, which are highly significant and persistent. Significantly elevated erosion in logged areas typically persists for at least five years. This will increase the magnitude and persistence of elevated sediment-delivery from pipeline operation on a continuing basis.

This periodic removal of ecologically important vegetation for pipeline construction and operation will also accelerate bank erosion and reduce bank stability at stream crossings, because trees and deep-rooted vegetation are critically important to bank stability. Decreased bank stability contributes to both stream sedimentation and channel widening. The persistent loss of bank stability associated with pipeline construction and maintenance at water bodies will persistently elevate sediment delivery, although this is never assessed.

Notably, many headwater streams are extremely sensitive to elevated runoff and channel erosion and have poor prospects for recovery after being degraded. Although the pipeline will cross a large number of perennial headwater streams, severely elevating runoff, sediment delivery, and channel erosion, the DEIS fails to provide any sound analysis of these cumulative impacts on downstream fish habitats and water quality. This failure is one of the more severe in the DEIS with respect to sediment impacts on fish habitats, because all stream crossings upstream of fish habitats will cause enduring increases in sediment delivery that will cumulatively elevate sediment delivery to downstream habitats. Downstream fish habitats are highly susceptible to the deposition of sediment delivered from upstream reaches. However, the DEIS does not assess this cumulative effect from all stream crossings at the scale of affected watersheds.

The pipeline will also elevate sediment delivery to streams via the increased use of unpaved roads associated with the construction and operation of the pipeline. Studies have consistently documented that elevated use of unpaved roads vastly elevates sediment delivery from roads to streams, particularly near and at stream crossings, where it is impossible to eliminate the delivery of sediment from road runoff. Therefore, this pipeline impact will also elevate sediment delivery to streams. The elevated use of unpaved roads is a certainty. However, the DEIS fails to address this source of elevated sediment delivery to streams or make known the length and location of roads subject to elevated traffic from pipeline construction and operation.

The DEIS also fails to address that the long-term increases in sediment delivery caused by the pipeline in affected watersheds as a direct conflict with what is needed to restore decimated salmonid populations in coastal lowland streams in Oregon. The restoration needs for salmonids in these downstream reaches relies on reduced sediment delivery and reduction of sediment-related damage to salmonid habitats in order to restore salmonid populations. Elevated sediment delivery and the resulting sediment-related impacts on coho habitat are a major threat to coho and a major factor for their decline. The DEIS ignores these critically important contexts and findings with respect to assessing the significance of sediment-related impacts from the pipeline.

1. Post-Construction

The DEIS 4-74 states:

The analysis discloses that in the first year or two following construction, a minor pulse of sediment could be observed following the first seasonal rain, but this sediment-laden water is likely to dissipate within a few hundred feet and would be indistinguishable from background levels. With the exceptions noted below at MP 119.7, 125.59 and 131.7, this is expected to be a very minor amount of sediment because of the requirements in the ECRP to establish and maintain erosion control structures, sediment barriers, effective ground cover and accomplish rapid revegetation. Pacific Connector has committed to maintain silt barriers until effective ground cover is reestablished. Silt fences are 90 to 95 percent efficient at trapping sediment (Robichaud et al. 2000). As a result of these measures, the Project corridor is not expected to become a chronic source of fine sediments.

The use of qualitative and subjective descriptors (e.g. “minor”) is not adequate technical analysis for a project of this size and variability. Intense winter rainfall on areas deforested on steep erosive slopes is certain to generate more sediment than the same action on stable flat ground (e.g., farm pastures). The DEIS is defective because it fails to estimate the amounts of sediment generated from erosion during intense winter storms where several inches of rain can occur in a few hours. Sediment generated from forest clearing (i.e. logging) for the pipeline on steep topography is well documented even with the sediment control measures identified (DEIS 4-73). The DEIS 4-74 cites Robichaud et al. (2000) to assert that silt fences are 90-95 percent efficient in trapping sediment. Even if this trapping efficiency is true for post-construction during intense rainfall, this means that up to 10% of the sediment generated during intense rainfall will reach streams. Ten percent delivery of sediment from a large disturbance area is likely to be significant for spawning coho salmon in very small streams.

The DEIS is not based on the best available science because it fails to identify stream miles that could be affected with elevated sediment loads post-construction. Except for stream crossings during construction, the DEIS fails to estimate the increase in turbidity (NTUs), the amount of suspended sediment (mg/ml), or the intensity of sediment laden water that could affect many stream miles located downstream or down slope of pipeline construction.

The DEIS fails to acknowledge severe post construction sedimentation of streams caused by the construction of a much smaller gas pipeline from Roseburg to Coos Bay. The DEIS fails to discuss scientific uncertainty and scientific controversy regarding the effectiveness of sediment control measures identified in the DEIS for coastal areas with known potential for catastrophic erosion/sedimentation. Since sediment control measures failed catastrophically during the construction of a previous gas pipeline, similar sediment discharges would be expected for this gas pipeline because this pipeline traverses the same unstable steep terrain, this pipe is much larger, and the area of disturbance is much larger. The DEIS fails to address the credibility issue surrounding gas pipeline construction in southwest Oregon and associated severe sediment impacts to coho salmon streams from a previous gas pipeline. Assertions of “minor” sediment impacts for this pipeline are not scientifically or empirically substantiated. Data from pipelines constructed in Washington are not directly applicable to the Oregon Coast Range geology.

The DEIS fails to acknowledge likely (during the life of the project) catastrophic sedimentation from landsliding that is associated with pipeline construction or sedimentation that is greatly exacerbated due to the presence of the pipeline (e.g., explosions, fire, loss of stabilizing tree roots and forest cover along pipeline corridor, need to relocate pipeline). See for example: Seismically Induced Landslides and Rockfalls (DEIS 4-265); Landslide Hazards (DEIS 4-266); Rapidly Moving Landslide Risk Assessment (DEIS 4-267); Deep-seated Landslide Risk Assessment (DEIS 4-268-278).

We are not asserting that the installation of the pipeline will “cause” landslides, although it certainly could. What is certain is that the pipeline will exacerbate sedimentation of streams when landslides engulf the pipeline corridor and landslide debris proceeds downslope to enter stream channels.

The DEIS discussion (DEIS 4: 265-278) is from the perspective of maintaining the pipeline infrastructure and avoiding damage to private property. The DEIS 4:269 states: “For the purposes of landslide hazard evaluation in this report, a distinction is made between the hazard associated with a landslide and the risk associated with that hazard. In the following discussions, statements of risk apply to the potential for damage or failure of the pipeline from earth movements. It is recognized that the consequences of a pipeline failure may be catastrophic and involve fire and/or explosion.”

The likely delivery of large amounts of sediment to stream systems from landsliding during the life of the project is not quantified. High risk stream miles for landslides are not spatially identified. The DEIS takes the position that landslides are only a threat to the pipeline and ignores the threat to water quality, coho salmon, and critical fish habitat.

The DEIS contains no site specific erosion control structures that could ameliorate sedimentation of streams from large landslides. The DEIS fails to state that erosion control structures intended for surface erosion (DEIS 4-73) would likely be ineffective in preventing large landslide sediment from reaching stream channels (e.g. sediment fences). In fact, such erosion control structures could exacerbate the effects of landslides.

The DEIS 4:612-615 temperature analysis fails to consider landslides (e.g. debris flows, aka rapid moving landslides) that are either caused or exacerbated by pipeline construction. Debris flows could destroy shade for stream segments up to a mile or more of perennial stream as well as coho salmon spawning streams. The DEIS temperature analysis is not based on the best available science.

Similarly, the project is likely to adversely affect proposed critical habitat for coho salmon in the Oregon Coast ESU because debris flows, either caused or exacerbated by pipeline construction, could seriously degrade many miles of coho critical habitat over the life of the project (DEIS 4-645).

The DEIS fails to quantify post-construction sediment from road construction and use. Heavy vehicle use of unpaved access roads during construction will create large amounts of fines on the road surface that will be washed into streams the following winter. This fine sediment delivery is likely to be substantial and will significantly add to baseline sediment. The DEIS appears to lack any specific mitigations for roads that would disconnect the sediment laden road surface runoff from entering streams and subsequently adversely affecting critical coho salmon habitat. Dismissing road related sediment impacts as “minor” due to implementing BMPs is not science based. Even with BMPs roads are known to be a major fine sediment sources impacting small coho streams. Even with watering, large amounts of dust is likely to enter streams as fine sediment. Dust has been found to be substantial source of fine sediment in heavy use areas. The DEIS is not based on best available science because it does not disclose the miles of stream habitat (e.g. critical coho stream miles) that could be impacted by road construction and heavy road use. The DEIS is not based on best available science because it fails to identify pre-project surveys to establish baseline conditions for stream miles that could be affected by increased road related sediment caused by this project.

The DEIS fails to acknowledge that portions of the pipeline corridor will be used by OHV. Determined OHV users, especially hunters, will find access around boulders placed to prevent OHV use. Motorized use will damage erosion prevention measures and newly planted vegetation. Vehicle ruts will funnel winter flows. Ruts will become gullies delivering more than “minor” amounts of sediment to stream channels. The DEIS fails to disclose that effective control of OHV will be very difficult due to the remoteness of the pipeline corridor and numerous points of access. The DEIS fails to establish baseline monitoring protocols to assess OHV damage. The DEIS has failed to develop a coordinated plan with NFS, BLM and private land owners to prevent OHV. We assert that expected erosion control cannot be met if OHV access destroys newly planted vegetation, damages erosion control structures and create ruts, rills and gullies. Inevitable OHV use will be accompanied with the high risk of introducing POC root disease to critical stream habitat. The DEIS fails to disclose that introduction of the POC root disease would decrease shade along streams far more than stream crossings. Assuming effectiveness of mere boulders to prevent OHV use in SW Oregon is naïve to say the least.

The DEIS 4:74 acknowledges 3 exceptions to its assertions about “minor” sediment effects: “At MPs 119.7 (Trail Creek Watershed), 126.59 (Shady Cove - Rogue River Watershed), and 131.7 (Big Butte Creek Watershed), the Project, if constructed, would likely become a chronic source of sediment that may retard attainment of ACS objectives at those locations.” We assert that there are many more exceptions where pipeline construction “would likely become a chronic source of sediment”. First, it appears the DEIS is relying on federal agencies to identify locations “where the Project, if constructed, would likely become a chronic source of sediment”. Only the Medford BLM district has come forward with field data indicating serious sediment impacts from pipeline construction. We assert that similar serious sediment producing sites exist on Coos Bay BLM district, Roseburg BLM district, Rogue River-Siskiyou National Forest and private land ownerships but these entities have not officially identified sediment issues with the pipeline for incorporation into the DEIS.

The DEIS 4-289 states “Because the pipeline would cross a predominance of rugged terrain within BLM and NFS lands, there is potential for previously unidentified landslides or new landslides to affect the pipeline after it is installed.” Similarly there are previously unidentified locations “where the Project, if constructed, would likely become a chronic source of sediment.” Despite these scientific uncertainties, the FERC DEIS takes the indefensible position that since no others sediment sites have been identified by third parties, then no others exist. The DEIS implicit “sediment denial” position is scientifically indefensible for a project of this size. The DEIS is not based on the best available science. The best available science would certainly indicate that there are other known (but undisclosed) or unknown sites where “the Project, if constructed, would likely become a chronic source of sediment”. The DEIS fails to discuss the significance of this scientific uncertainty with respect to sediment impacts to miles of stream habitat (e.g. critical coho salmon habitat).

The DEIS is not based on the best available science because it has not established quantitative baseline erosion rates, baseline stream sedimentation and baseline data for other aquatic parameters for the stream miles that could be affected. The DEIS proposes but has not surveyed stream channels at stream crossings for physical and biological parameters. Protocols for establishing baseline conditions for streams are available for NEPA purposes from ODFW,

USFS and EPA. The DEIS fails to disclose expected increases of erosion/sedimentation because it has not established baseline conditions for stream miles that could be affected above and below stream crossings. The DEIS fails to report the baseline erosion rates/sedimentation for stream miles with “no action” and various alternatives or proposed actions. Scientific monitoring during the life of the project cannot document adverse impacts if baseline conditions are not established prior to disturbance.

The DEIS is not based on the best available science because its sediment analysis is at 5th field watersheds that are too large to reveal significant impacts to spawning fish. This scale of analysis is not appropriate for a linear project that would adversely affect coho salmon that spawn in 6th and 7th field watersheds.

1. Impacts on Smaller Streams and Waterways

The DEIS fails to adequately assess direct, indirect, and cumulative impacts of pipeline construction and maintenance on small, non-perennial or perennial headwater streams crossed by the pipeline, as well as those crossings’ cumulative impacts on downstream salmonid viability. The DEIS appears to generalize impacts on small, non-perennial and perennial headwaters. Doing so understates the importance of headwater streams for affected ecosystems and salmonids in particular.

First, headwater streams, including non-perennial streams, represent the vast majority of watershed’s channel system, and exert a large influence on downstream conditions. These headwaters supply the bulk of runoff and material transfers to downstream mainstem river segments, including sediment to downstream segments with salmonid habitat. The DEIS does not accord appropriate significance to the impact its pipeline will have cumulatively on affected headwaters or their downstream segments.

Second, stream crossings affect the frequency and quality of large woody debris, an essential component of fish habitat in the Pacific Northwest. Stream crossings contemplated by the Project will create long-term losses of large woody debris and cumulatively deplete large woody debris in downstream reaches with salmonid habitat. The DEIS does not award appropriate weight to this impact. Failing to assess impacts on large woody debris availability and downstream conditions also affects the DEIS’ assessment of impacts on pools, channel form, and salmonid habitat due to the importance of large woody debris to these conditions and the importance of these conditions to salmonid viability.

Third, the DEIS fails to appropriately characterize the significance of pipeline crossings’ role in delivering excessive volume of fine sediment to local waterways and resulting impacts on downstream segments. Headwater streams supply the overwhelming majority of water and sediment to downstream habitats. Downstream low-gradient stream reaches are highly susceptible to deposition of sediment transported from upstream reaches. The sediment delivered from upstream reaches degrades a variety of downstream conditions including turbidity and suspended sediment, pool conditions, and substrate. The degradation of these elements of fishery habitat by sediment delivery from upstream channels contributes to reductions in the survival and propagation of salmonids. The DEIS fails to adequately assess the cumulative

impacts of the majority of stream crossings and of all crossings of all streams on downstream fish habitat at the watershed scale. This is particularly important because headwater reaches are extremely sensitive to disturbances, including increases in sediment delivery and transport and runoff, all of which will be increased by pipeline crossings for a long term. Indeed, even small increases in peak flows at headwater streams can trigger significant increases in channel erosion and downstream sediment transport! Headwater streams are also sensitive to upslope impacts, due to the steeper slopes associated with these streams. Many headwater streams have extremely poor potential for post-disturbance recovery. The DEIS does not reasonably account for these important characteristics of headwater streams or sediment transport and delivery and resulting impacts.

E. Wildlife Issues.

This section of our comments focuses on plant and wildlife impacts of the 230-mile Pacific Connector Pipeline. Our comments show that the impacts are more severe than the DEIS considers, and the mitigations proposed are inadequate.

Under 40 C.F.R. § 230.30(b):

The major potential impacts on threatened or endangered species from the discharge of dredged or fill material include: ...

(3) Facilitating incompatible activities.

The proposed action would facilitate incompatible activities in the form of a 232-mile-long, 36-inch-diameter welded steel underground interstate natural gas pipeline that would run a 95' clear-cut right of way through and degrade critical habitat for endangered species, including the Northern Spotted Owl (NSO) and the Marbled murrelet.

The pipeline right-of-way would clearcut over 2,080 acres of southern Oregon forests, removing 34,746 mbf (over 7,000 log truck loads) of trees. Over half of this will come from public forests (17,379 mbf) and approximately 80% of that is from reserves set aside to protect rare species. 14,215 mbf will be from mature and old growth forests with an average DBH of 39".

This unprecedented logging of rare habitat means Pacific Connector must ask for numerous exemptions from regulations protecting at least 13 threatened and endangered species. This project is "likely to adversely affect" five endangered plant species in the path of the pipeline, two birds who nest in or near the pipeline route, five species of fish and one invertebrate who depend on streams, and wetlands the pipeline will cross.

1. Marbled Murrelets (*Brachyramphus marmoratus*)

The pipeline right-of-way runs through prime old-growth marbled murrelet habitat.

There are 173 occupied murrelet stands within a quarter mile of the proposed action that would be affected. 926 acres of murrelet habitat would be clearcut, including about 58 acres of suitable habitat removed from 25 stands.

2,264 acres of murrelet habitat would be within 300 feet of newly created edges (DEIS 4-469) and thousands more acres will have edge-impacts within 700 feet of clearcuts. Considering road and noise impacts, 6,841 acres of suitable nesting habitat is impacted, which will effect murrelet behavior, including breeding activities (DEIS 4-1031). Uncleared Storage Areas, 100' wide on either side of the clearcut edge will also degrade murrelet habitat, though the DEIS neglected to consider this impact or disclose acres for UCSAs in murrelet habitat.

The right-of-way corridor, plus the Temporary Extra Work Areas (TEWA) to be clearcut, will essentially cause all the murrelets in nearby stands to be unsuccessful in nesting, and allow predators unprecedented access to what was murrelet-secure interior forest habitat.

Marbled murrelet nests are notoriously difficult to locate because of their cryptic nesting behavior and the fact that nests occur high up in trees in the Coast Range and are often in rugged terrain . Therefore, when the pipeline clearcuts near occupied stands, it is impossible to tell if the actual nest tree is being cut down.

Marbled murrelet populations have declined over much of their range, mostly due to current and historic loss and fragmentation of older-aged forest breeding habitat . Primarily because of logging, populations have been plummeting by 3.7% per year . The primary reason for declines continues to be sustained low recruitment from the loss of quality nesting sites and increases in predation in nesting habitat . Habitat loss is not mostly due to forest fires, as claimed in the DEIS.

Murrelets and edges: The Pacific Connector Pipeline right-of-way would create miles of new edge habitat. Marbled murrelets currently have low fecundity levels in Oregon caused mostly by nest predation because of edges caused by forest fragmentation . Using the correct distance for edge effect analysis is especially important for murrelets because the vast majority of murrelet nest failure is due to predation from corvids who otherwise cannot penetrate interior forest habitat.

The DEIS failed to fully consider the impacts of forest edges on murrelets. For instance, figure 4.1-6 (page 4-157) shows only occupied murrelet stands that intersect the pipeline right-of-way. It fails to show murrelet stands that are adjacent to the pipeline right-of-way that will be impacted by the new edge it creates. Since the DEIS determined the edge effects extend 100 meters into the forest, all occupied stands within that distance should have been displayed in figure 4.1-6 and impacts considered in the DEIS.

The DEIS is only considering 300' for edge impacts to murrelets, 28' less than 100 meters. However, Murrelet habitat within 700 feet of the pipeline could be impacted by edge effects, and should have been considered and mitigated for, not just the 300 feet the DEIS considers. Studies have demonstrated microclimate effects of clearcut edges to >780 feet [237 m] into the forest interior. The DEIS also failed to consider the impacts of the Uncleared Storage Areas running for

100' on either side of the clearcut, which requires that the edge impacts be pushed out another 100'. UCSAs will impact ground vegetation and understory trees, opening up the canopy and degrading near-by interior forests.

When the pipeline clearcuts through younger stands (less than 80 years old), the DEIS only considers 30 meters (90 feet) for the edge effect. Using only 90 feet for edge impacts is inadequate and was never justified in the DEIS.

The DEIS itself says (4-160) impacts from edges in forests under 80 years old “extends out approximately two times the average tree height.” 90 feet is not half the average tree height of a 50-year-old tree (the age of most managed plantations on Federal land). A 50-year-old Douglas fir tree in a managed tree plantation could be closer to 75' tall, not 45'. Thus, if the DEIS is considering impacts two-tree heights, it should be 150' distance, not 90 feet. For a 70-year-old forest, it should be even larger. Thus, the DEIS significantly underestimated the edge impacts from the Pacific Connector pipeline.

Windthrow especially can result from the clearcutting areas on ridges exposed to high winds, exactly where the pipeline is located in the coast range. Studies found that sites at clearcut edges had less moss than interior murrelet nest sites and natural edge sites (stream corridors) due to stronger winds, higher temperatures, and lower moisture retention when compared with interior sites. Maintaining microclimate is critical to maintaining moisture in murrelet habitat to help moss development and aid in proper thermoregulation of marbled murrelet adults and chicks.

The worst forest-type combination for murrelets is suitable murrelet habitat adjacent to clearcuts and regenerating forests with berry producing plants, which is optimal habitat for predators. This is exactly what the Pacific Connector Pipeline does, clearcuts next to suitable habitat (unoccupied or occupied) with plans to plant berry producing plants in the outer parts of the clearcut. This attracts known predators at active murrelet nests, such as Common Ravens (*Corvus corax*), Steller's Jays (*Cyanocitta stelleri*), and American Crows (*Corvus brachyrhynchos*).

The DEIS also failed to consider the impacts of off-road recreation in the right-of-way as an additional threat to owls and murrelets. Pipeline right-of-ways in Oregon attract abundant off-road recreation. This human activity has the potential to increase impacts to murrelets by leaving food trash, attracting more corvids. Sound from Off Highway Vehicles (OHVs) on the right-of-way will also impact nest initiation and nest success. The DEIS failed to consider these impacts, as required by NEPA.

The proposed action would also jeopardize the continued existence of the Marbled murrelet and critical habitat supporting this species. The DEIS for the proposed action admits that the Project is likely to adversely affect Marbled murrelets because proposed actions that generate noise above ambient levels might disturb or disrupt Marbled murrelets and interfere with essential nesting behaviors at 79 Marbled murrelet stands within 0.25 mile of the pipeline that could be constructed during the breeding season and 161 Marbled murrelet stands within 0.25 mile of access roads that could be used during the breeding season. DEIS at 4-637. In addition, blasting for the pipeline trench may occur within 0.25 of Marbled murrelet stands between April 1 and

September 30. Helicopter use for removal of timber during pipeline construction within 0.25 mile of 9 Marbled murrelet stands during breeding season and potentially disturb adults and nestlings or even blow nestlings out of nest trees within 7 Marbled murrelet stands due to rotor wash. The pipeline will remove and modify potential suitable nesting habitat and recruitment habitat, including clearing approximately 40 acres of Marbled murrelet habitat in 12 stands on BLM lands in the Coos Bay District and 5 acres in 2 stands in the Roseburg District. DEIS at 4-638. LNG vessel traffic will cause potential effects to foraging Marbled murrelet. DEIS at 4-637.

The DEIS also acknowledges that a likely to adversely affect determination is warranted for Marbled murrelet critical habitat because the project may remove or damage trees with potential nesting platforms, or the nest platforms, decreasing the value of the trees for future nesting use as well as damage to trees adjacent to nesting platforms that provide habitat elements essential to the suitability of the potential nest tree or platform. DEIS at 4-637.

2. Northern Spotted Owl (*Strix occidentalis caurina*).

The pipeline route would cross through 90 northern spotted owl (NSO) home ranges and eight nest patches. It would impact fifty-seven activity sites occurring in federally designated Critical Habitat Units (CHUs). Project construction would remove a total of about 565 acres of Nesting Roosting and Foraging (NRF) habitat for NSO, including high-quality NRF habitat. (DEIS 4-638 and 1031). The pipeline also plows right through three Known Owl Activity Centers (KOAC) nest sites.

Known Owl Activity Centers (KOACs) are highly protected forests on BLM land. Pacific Connector is asking for a change in Resource Management Plans to allow some KOACs be clearcut. The DEIS describes why, for each of these sites, the pipeline could not be rerouted around the KOAC.

However, there are reasonable route alternatives around the KOACs the DEIS failed to consider. For instance, for KOAC P2294 (MP86), the DEIS says the pipeline must stay on the ridgeline where the KOAC is located, to “ensure pipeline safety and integrity and minimize disturbance by reducing grading requirements.” The DEIS failed to discuss the best alternative to protect this KOAC, that is, move the pipeline to the original 2007 route, where it stays almost a mile away from KOAC P2294.

The DEIS compares the pros-cons of this alternative on page 3-42, Table 4.2.7-1. But in the comparison between the Proposed Route and the 2007 Route, there is no mention that the Proposed Alternative goes through KOAC P2294 and the 2007 Route stays far away from it. That is a significant omission that should have been included to inform the decision of which alternative to choose. Environmentally, the 2007 Route Alternative is preferable. The landowner also considers the 2007 route the least objectionable. Without these two pieces of information, FERC cannot make an informed decision about this alternative at MP 85-86 and the fate of KOAC P2294.

Appendix H, page 73, also misses this information when describing the “Minimization Efforts” done to avoid KOACs. For KOAC P2294, it never mentioned the 2007 alternative that was

originally proposed, that the landowner finds it least objectionable, and that it completely avoids LSOG habitat and the KOAC. This omission must be corrected. FERC should also consider that the Northwest Forest Plan requires that for rights-of-ways, “alternate routes that avoid late-successional habitat should be considered.” (C-19)

The DEIS is also inaccurate on page 2-53, when it claims “No fuels reduction or thinning projects are currently proposed in... the vicinity of the KOAC at MP 86...” Other sections of the DEIS contradict this statement numerous times. Thinning IS proposed in the KOAC at MP 86. Figure 6-2 in Appendix F, “Mitigation Actions on the BLM Roseburg District” shows MP 86 has a fuels reduction project. Figure 2.2-27 in Appendix H also shows “Fuel Treatment” at MP 86. Figure 4 in the April 2014 Proposed Compensatory Mitigation Projects shows mitigation site #79 “Fuel_Treatment_Buffer2”, right at MP 86, and inside the KOAC. The Fuel Treatment consists of commercial timber sales on 982 acres in the Days Creek-South Umpqua watershed. It will cost \$1,175,463.00 dollars for this so-called mitigation, including logging inside of a KOAC.

The proposed action would jeopardize the continued existence of the Northern Spotted Owl and critical habitat supporting this species. The pipeline route would cross through 90 Northern Spotted Owl home ranges and 8 nest patches. The DEIS admits that the project is likely to adversely affect Northern Spotted Owl. DEIS at 4-639. Noise from blasting and helicopter use during pipeline construction within 0.25 mile of Northern Spotted Owl sites during late breeding season could increase the risk of predation to fledglings. Construction would remove high nesting, roosting or foraging habitat within the range of the Northern Spotted Owl, including in areas that are currently below thresholds needed to sustain owl populations. This habitat reduction and degradation increases the likelihood of displacement from nesting areas, concentration of populations, increased inter- and intra- specific competition for nest sites, decreased survival due to increased predation and or limited resource availability, and diminished reproductive success for nesting pairs. The project construction would modify key habitat features throughout the project area and including 56 home ranges currently below sustainable threshold levels of suitable habitat for continued persistence in the home range or core area. The project would bring two Northern Spotted Owl core areas below the 50 percent nesting, feeding or roosting habitat threshold. DEIS at 4-640. These are not even the most current numbers, as another nest site was identified in June 2014 and has not been incorporated in the analysis included in the DEIS. DEIS at 4-640.

The project would occur within designated critical habitat for the Northern Spotted Owl and would result in habitat impacts within those areas. The DEIS admits that a likely to adversely affect determination is warranted for Northern Spotted Owl critical habitat. DEIS at 4-640.

3. Mitigation of Impacts to Marbled Murrelets and Northern Spotted Owls Is insufficient.

In order to compensate for significant adverse impacts to federal public land resources, the DEIS proposes a series of planned mitigation measures on and off federal lands. DEIS, 2-55 – 2-71. Some “mitigation” includes planned timber harvest, road reconstruction, fire suppression activities, thinning, land acquisition and reallocation, hazardous fuels reduction, and other

measures. *Id.* The DEIS states that this “mitigation” is required to account for adverse effects from forest plan amendments that permit the violation of forest plan requirements.

Notably, however, the DEIS does not analyze the environmental consequences of undertaking this “mitigation.”²⁰ If the mitigation is required as part of FERC’s (or the land management agencies’) authorization of the proposed project, then the DEIS is required to assess the environmental consequences of those actions. 40 C.F.R. §§ 1508.25, 1508.25(a)(1) (connected actions); *Robertson v. Methow Valley*, 490 U.S. at 352 (“mitigation [must] be discussed in sufficient detail to ensure that environmental consequences have been fairly evaluated”); *Neighbors of Cuddy Mountain v. United States Forest Service*, 137 F.3d 1372, 1381 (9th Cir. 1998) (“mere listing of mitigation measures is insufficient to qualify as the reasoned discussion required by NEPA”) (setting aside EIS in part on grounds that the USFS’s mitigation analysis contained only “broad generalizations and vague references”); *Idaho Sporting Congress v. Thomas*, 137 F.3d 1146, 1151 (9th Cir. 1998) (“Without analytical detail to support the proposed mitigation measures, we are not persuaded that they amount to anything more than a ‘mere listing’ of good management practices”). If the mitigation is *not* required, then the adverse effects of violating several Forest Service and BLM forest plans are not accounted for in the DEIS, in violation of NEPA. *Southwest Ctr. for Biological Div. v. Bartel*, 470 F. Supp. 2d 1118 (S.D. Cal. 2006); *Sierra Club v. Marsh*, 816 F.2d 1376, 1386 (9th Cir. 1987); *Sierra Club v. Babbitt*, 15 F.Supp.2d 1274, 1282 (S.D. Ala. 1998); *Nat’l Wildlife Fed’n v. Nat’l Marine Fisheries Serv.*, 524 F.3d 917, 935-36 (9th Cir. 2008).

Moreover, it appears impossible that FERC can guarantee that the proposed mitigation occurs. While the DEIS seems to suggest that Jordan Cove will provide funding to the land management agencies to support the suite of mitigation, there is no estimation of the cost of such mitigation, or guarantee that it will occur. For example, presumably all mitigation projects will require additional NEPA analysis and public involvement, which by definition may – and in fact *should* – result in change to the action. Those changes may not fully compensate for the adverse effects from the Jordan Cove pipeline that required an obviation of forest plan requirements. Furthermore, there is no guarantee that the mitigation projects will survive legal scrutiny, which would result in an unmitigated effect stemming from the implementation of the Jordan Cove pipeline project.

Given that FERC and the applicant cannot guarantee that any of the mitigation proposed to compensate for the violation of forest plan requirements, the DEIS conclusion that amending the various forest plans is arbitrary and capricious. 5 U.S.C. § 706(2)(A).

a. Marbled Murrelet and Northern Spotted Owl mitigation.

The DEIS mitigation offers no new habitat for murrelets, only existing habitat with tiny regulation changes. The Pacific Connector Pipeline contributes to the decline of the murrelet in Zone 1, the best murrelet habitat. The mitigation offered is mostly in Zone 2, less useful habitat

²⁰ Commentors dispute that any of the planned activities are in fact “mitigation,” but rather consist of the ordinary program of work that the Forest Service and BLM undertake on an annual basis. There is no evidence that these activities in any way account for sanctioning what would otherwise be a violation of law.

further from the ocean. For instance, the mitigation to convert matrix lands to LSR uses matrix in Zone 2 to make up for degrading LSRs in Zone 1.

Mitigation to put heli-ponds, and other fire-suppression tools, near murrelet habitat in the Coast Range is not sufficient mitigation because it is logging, not fire, that is the main threat to murrelets in the Coast Range. The DEIS never documented any significant loss of murrelet habitat due to wildland fire. Moreover, the heli-ponds are being put on private lands, where the BLM has no authority to design them, monitor them, or guarantee their usefulness over the years.

Mitigation on private land, for impacts on BLM land, is not allowed.

Using heli-ponds as mitigation is further compromised by its use as a place to discharge potentially toxic water. At least one heli-pond (at MP 28.3) is in the exact same place as a hydrostatic water discharge site, enabling Pacific Connector to take a liability, toxic water discharge, and turn it into mitigation for harming marbled murrelets.

Other mitigation offered, fuels reduction, even thinning forests along the pipeline route, make matters worse for the murrelet, further opening up closed canopy forests near the interior habitat the murrelet needs. Opening up the canopy allows increased access to predators, especially jays and ravens. The DEIS offered no sound scientific justification for this so-called mitigation in the Coast Range, a moist forest that is not suffering from fire-suppression.

A better mitigation for murrelets would be to buy up private land in the BLM checkerboard of Zone 1, where private land borders productive murrelet habitat. This would allow the murrelet to recover in the future without the threat of future forest fragmentation. The decision should explain why this more useful mitigation was never considered in any alternative.

Mitigation for spotted owls and murrelets includes converting some matrix lands to LSRs. This is insufficient mitigation for a number of reasons. For example, occupied murrelet and owl sites in the matrix are automatically converted to an LSR anyway, so there is no extra benefit to endangered birds for this being done as mitigation. The DEIS claims (page 49) that turning the already occupied murrelet (MAMU) habitat into an LSR, instead of an “unmapped LSR”, will “provide additional protections and benefits for MAMU habitat”. But these so-called “additional protections” are not enumerated. LSRs and unmapped LSRs are governed by the same standards and guidelines.

The DEIS claims the managed plantations near the unmapped LSRs would be able to mature into MAMU habitat in the future if it became a block LSR. However, managed plantations are never clearcut anyway.

The DEIS claims that the Coos Bay BLM LSR 261 (where much of the murrelet habitat is impacted by this project) is “highly fragmented”, and converting matrix to LSR “would consolidate habitat”. Similar claims are made for spotted owls matrix conversion. We disagree. The BLM land remains a checkerboard after any land management conversion. Land management conversions do not block up any BLM land, so it is unclear what the DEIS meant by “consolidate habitat”.

The DEIS implies that owl and murrelet occupied habitat in the matrix would become LSR. This is also wrong. Occupied habitat in the Matrix is considered an LSR as soon as it is determined to be occupied. This mitigation gives us no additional protected lands.

If the matrix land slated to be converted to LSR contains unoccupied owl and murrelet nesting habitat, the BLM couldn't log it anyway because the Spotted Owl Recovery Plan (RA 32) requires that this habitat cannot be degraded. So habitat on matrix lands (and unmapped LSRs) being converted to LSR is no mitigation for clearcutting habitat.

Proposed mitigation that converts matrix to LSR in young forests, especially managed plantations, is also no help to the murrelets and owls because the endangered birds need the quality of habitat being clearcut, not future habitat they cannot use until after they go extinct.

b. Late-Successional Reserve Mitigation.

Another problem with the Roseburg BLM matrix lands slated to be converted to LSR: While it appears these lands are on the edge of an LSR, Oregon Senator Ron Wyden has introduced, and is shepherding through congress, legislation which will convert this LSR into a timber emphasis area. Once passed, the tiny slivers of matrix land slated for conversion to LSR will be isolated patches that provide virtually no interior forests at all for wildlife.

In the Coos Bay BLM, near MP 34-36 of the pipeline, mitigation has been offered to change matrix lands to LSR. However, the pipeline then goes right through the new LSR, so the mitigation itself has to be mitigated. This is not adequate mitigation.

Only 409 acres (DEIS 2-42) is proposed to be transferred from Matrix to LSR on Roseburg District BLM, less than one section. And only a little over half of that is Late Successional Habitat. Less than one section is little help to murrelets and spotted owls being impacted on BLM land.

The DEIS says (1-15): "Pacific Connector would be required to acquire timber producing lands to replace those BLM Matrix lands proposed for reallocation to LSR by the BLM." The DEIS doesn't specify where the acquired lands would have to be located or what condition they have to be in. Depending on those factors, this could either be part of the mitigation, or it could be a public liability. Most of the private timberlands in the area of the pipeline have been repeatedly clearcut, sprayed with herbicides, and have far too many logging roads, some of which will soon fail into streams that support fish. If these lands are acquired to replace the matrix lands converted to LSR, would it be public funds, not Pacific Connector mitigation funds, that would be required to restore ecosystems on the acquired lands?

c. Other mitigation.

Fire suppression should not be used as mitigation. Tools for fire suppression are the most common mitigation offered in the DEIS for the pipeline's impacts to spotted owls and marbled

murrelets. This includes fuel reduction projects, commercial timber sales that thin forests, and heli-ponds.

Pacific Connector would fund various projects on federal lands that would improve forest structure and health, and reduce the effects of wildfires. This would include 6,563 acres of stand density, 1,152 acres of thinning, 620 acres of planting, and 2,105 acres of fuel deduction. (DEIS ES-8)

The DEIS erroneously considers fire-suppression to have caused a problem in the stand structure of moist forests in the Coast Range. Scientists have refuted this. Moist forests in the western half of the proposed pipeline do not suffer the effects of fire-suppression because the natural fire-return interval is hundreds of years. Any DEIS reference to problems caused by fire suppression in the first 70 miles of the pipeline must be corrected.

Even in dry forests, the basic concept in the DEIS that fire-suppression is necessary to protect wildlife from wildland fire is flawed. The DEIS claims (2-52): “Monitoring of the NWFP for the past 15 years has shown that the largest single factor contributing to the loss of LSOG forests (and hence NSO habitat) has been high-intensity stand replacement fire (Moeur et al. 2011).” Other studies disagree and come to a different conclusion. The DEIS failed to consider these other relevant studies.

For instance, FERC must consider the Baker Study.²¹ Instead of claiming that fire harms spotted owl habitat, the Baker study finds the opposite. It uses records in dry forests where northern spotted owls are known to exist to demonstrate they were historically mixed-severity-fire-adapted. Such fires actually maintained habitat for owls. They did not degrade habitat.

This is significant in terms of whether thinning to push these forests into lower fuel loads, as proposed in the DEIS, can be justified as ecologically restorative. The Baker study concludes: Mixed- and high-severity fires strongly shaped historical dry forests and produced important components of historical NSO habitat. Focus on short-term loss of nest sites and territories to these fires is mis-directed. Fuel treatments to reduce these natural fires, if successful, would reduce future habitat of the NSO in dry forests.

The Odion study²² also shows that most fire systems in western North America were mixed severity systems and that thinning can be a bigger risk than the presumed fire risks to the northern spotted owl. If anything, we currently have a fire deficit in much of Oregon. The Odion study found that:

... the future amount of spotted owl habitat that may be maintained with these rates of high-severity fire and ongoing forest regrowth rates with and without commercial thinning. Over 40 years, habitat loss would be far greater than with no thinning because,

²¹ William L. Baker, *Historical Northern Spotted Owl Habitat and old-growth dry forests maintained by mixed-severity wildfires* (December 2014). Published in *Landscape Ecology*. December 2014. (Baker, 2014)

²² Dennis C. Odion, et al., *Effects of Fire and Commercial Thinning on Future Habitat of the Northern Spotted Owl* (2014). Published in *The Open Ecology Journal*, 2014. (Odion, 2014).

under a “best case” scenario, thinning reduced 3.4 and 6.0 times more dense, late-successional forest than it prevented from burning in high-severity fire in the Klamath and dry Cascades, respectively. Even if rates of fire increase substantially, the requirement that the long-term benefits of commercial thinning clearly outweigh adverse impacts is not attainable with commercial thinning in spotted owl habitat. It is also becoming increasingly recognized that exclusion of high-severity fire may not benefit spotted owls in areas where owls evolved with reoccurring fires in the landscape.

Therefore, the DEIS assumption that wildland fire is bad for owls is flawed, which has produced flawed mitigation proposals in the DEIS demanding further evaluation.

Thinning can increase fire risks by drying out the forest with increased sunlight and logging slash. However, the DEIS claims: “Stand density reductions in riparian zones have the dual benefit of reducing the risk of stand replacing fire, while also accelerating the development of late successional stand conditions by accelerating growth of remaining trees.” Riparian zones are especially sensitive to logging and are some of the areas least threatened with fire. Additionally, it does no good to accelerate the development of late successional stand condition by thinning in late successional stands.

Thinning and fuel breaks should not be used as mitigation. The DEIS claims (2-53) that, concerning commercial timber sales, “removal of commercial-sized material is necessary” to create fuel breaks to help with fire suppression, to save the owls not killed by the pipeline from a future wildfire, including 6,000 acres of integrated fuels reduction along the Pacific Connector corridor near Milo, Trail, the South Umpqua River and the Rogue River.

The thinning and fuel reduction is also ineffective on BLM lands for the alleged purpose of suppressing future wildland fires because it is in such short segments. The BLM land is checkerboarded, so the thinning occurs in lines under one-mile long, with sometimes dozens of miles of the pipeline route between the short thinning segments. This is the case with the 6,000 acres of proposed fuels reduction near Milo, Trail, the South Umpqua River and the Rogue River – it is broken up into little segments. The DEIS fails to conclude that a wildland fire will only happen on Federal land and that the fuel reduction will be fresh enough that it can actually reduce the fire spread.

Fuel breaks are also ineffective because the landscape is “fuel rich” and the fuel breaks are relatively narrow. Wind driven embers can easily jump the pipeline clearance.

Any fuel break that is over a few years old will be thick with small trees and brush, increasing the fire hazard. The DEIS offers no plan to maintain these impractical firebreaks over time rendering them even more useless as a mitigation measure.

The PCGP plans to replant the outer half of the right-of-way with trees. This replanting will occur between the fuel break and the permanently cleared right-of-way. Therefore, in just a few years, the fuel-break will not be directly connected to the cleared right-of-way, making it less effective. Mitigation projects should provide benefits beyond just a few short years.

Studies²³ have found fuel breaks ineffective:

...fuel break performance and benefit is based on the questionable expectation that fire suppression will be capable of “stopping” fires after initial attack fails... Utilizing fuel breaks involves a large burnout operation, which may be of a size equal to the original wildfire, take place regardless of the fire behavior at its current location, and produce negative effects on wildland vegetation greater than the original wildfire. Maintenance costs of fuel breaks are often ignored by proponents but maintenance is a perpetual burden that is likely to divert efforts from managing fuels and vegetation on the remaining majority of the landscape.

The commercial aspect of the mitigation is also problematic. Mitigation projects that are commercial, i.e., makes money and pays for itself with timber sales, is not helpful mitigation. Mitigation should be for projects that would otherwise not get done due to financial constraints. The DEIS published the million dollar cost to Pacific Connector for this mitigation, but failed to account for the timber sale receipts received from selling the logs.

Using commercial logging as mitigation allows Pacific Connector and BLM to extract far more trees from an LSR than otherwise would be allowed.

4. Grey Wolf.

The DEIS lists impacts to the Grey Wolf on page 4-629, and includes noise and increased human presence. However, the DEIS failed to include the threat of being shot and killed because of increased human presence.

The DEIS describes the benefits to wolves from the “restored and revegetated pipeline corridor,” which will increase habitat diversity and forage used by ungulates such as deer, which are prey for gray wolves. If the wolf were to take advantage of this, as the DEIS claims, and follows ungulates down the pipeline right-of-way, the wolf will be led away from safer forest habitat directly into the ranches and farms in the valleys. The DEIS failed to consider the impact to livestock, and the increased chances of the wolf being shot.

The DEIS determined the impacts to the wolf to be “not likely to adversely affect.” Because of these additional threats, the assessment should be changed to LAA.

Grey wolves are protected under the federal ESA in Oregon west of the Cascade Mountains. The “Rogue Pack” (OR-7 pack) currently occupies areas of the Rogue River-Siskiyou National Forest in Douglas and Klamath counties. The DEIS acknowledges that the pipeline route would cross the area where OR-7 has become established. The DEIS also acknowledges that the territory size of a wolf pack can range up to 1,500 square miles and that individual wolves are known to disperse from packs sometimes more than 600 miles from a home range. DEIS at 4-629. The DEIS states that the pipeline would be located six miles from the OR-7 den location,

²³ Mark Finney and Jack Cohen , *Expectation and Evaluation of Fuel Management Objectives* (2003). 364 USDA Forest Service Proceedings RMRS-P-29. 2003. (Finney & Cohen, 2003)

but nevertheless concludes that its construction, clearcutting, and permanent right of way will not adversely affect the species. This analysis fails to acknowledge the impact of road development and clearing on grey wolf habitat suitability, the increase in accessibility that the pipeline route and maintenance roads could have, increasing possible human-caused mortality or harassment of wolves. Human activity tends to create an avoidance response, which can interfere with necessary activities such as hunting and breeding. In addition, increased human presence also increases the risk of exposure to new diseases and parasites to wolf populations, such as heartworm, Parvo, and Lyme disease. Although the DEIS dismisses potential impacts to grey wolves resulting from the project, the FERC must engage in formal consultation regarding this species to ensure its recovery and survival under the ESA.

5. Pacific Fisher.

Fishers are forest-dwelling mammals related to weasels, mink, martens, and otters. During the 1800s and early 1900s, hunting and habitat alteration dramatically reduced fisher populations in the West. The U.S. Fish and Wildlife Service is proposing to list the West Coast distinct population segment of fisher as threatened under the ESA. The fisher's historic range includes the area proposed for the pipeline, yet the DEIS and application dismiss potential impacts to this species. The FERC should require that impacts to the fisher be analyzed as part of the formal consultation under the ESA. If consultation reveals jeopardy to the species as a result of project activities, the FERC cannot approve the permit.

6. Salmonids

As we explain above, construction of the pipeline (including clearing the right of way and constructing stream crossings), as well as construction and use of associated roads, will have numerous severe environmental impacts. In this section, we summarize the effect of these impacts on aquatic habitat in particular. Activities that create or incite impacts on aquatic resources, and salmonid viability in particular, include but are not limited to:

- Permanent loss of vegetative shading at corridors for pipeline stream crossings construction and operation
- Permanent loss of base flows from pipeline
- Stream width increases from sedimentation related to pipeline construction and operation
- Soil, vegetation, bank destabilization and increased sedimentation from pipeline construction and implementation
- Permanent degradation of riparian areas in pipeline corridors at stream crossings
- Permanent loss of Large Wooded Debris areas from degradation of riparian areas and increased sediment transport in stream and river channels
- Deforestation in pipeline corridors combined with wetlands damage and long-term soil compaction and new road creation and use, plus decreases in hydrologic connectivity due to all of the above
- Increased, prolonged sedimentation of waterways

These Project impacts affect the following elements or processes, many of which are critical “pathway indicators” used in NMFS’ framework for assessing impacts on ESA-listed salmonids:

- Water temperature: will increase and degrade already degraded conditions
- Turbidity & suspended sediment: will increase and degrade already degraded conditions
- Substrate: quality and quantity will be degraded and lost
- Presence of Large Woody Debris: will decrease availability and degrade already degraded conditions
- Pool frequency & quality: will be lessened and existing, minimal conditions further degraded
- Off-channel habitat: will be lessened and existing conditions further degraded
- Refugia: will be degraded beyond existing, degraded condition
- Width/depth ratio: will be degraded beyond already degraded condition
- Streambank health: will degrade beyond already degraded condition
- Floodplain connectivity: will degrade beyond already degraded condition
- Peak flows/base flows: will fluctuate causing further degradation from existing degraded conditions
- Watershed disturbance level: will rise to significant levels given intensity and duration of Project actions and activities
- Wetland hydrology & health: will degrade already degraded conditions

The FEIS must rely on the final Coho Salmon Recovery Plan as the “best available” science and must review the recovery plan for possible recovery actions relevant to mitigation for pipeline and road construction. It is available at:

http://www.nmfs.noaa.gov/pr/recovery/plans/cohosalmon_soncc.pdf

7. Oregon Spotted Frogs

Many of the waterbodies being crossed by the pipeline (e.g. Lost River) are historic habitat for Oregon spotted frogs and some frogs may continue to persist at low densities at these historic sites. The DEIS 4-652 cannot assume that because critical habitat has not been identified that Oregon spotted frogs are not present. New detections of Oregon spotted frogs is likely for Klamath County, especially on private lands. Accordingly, Pacific Connector must survey all perennial wetlands and streams east of Buck Lake into Klamath County for federally listed Oregon spotted frogs that could be affected by pipeline construction or road building.

8. Plants and Invertebrates.

a. Kincaid’s Lupin.

One of the largest populations found of this plant is between MP 57.84 and 57.92 of the pipeline route. Here Pacific Connector found seven sub-populations, almost 200 plants, within a 5-acre area centered on the pipeline. Therefore, the pipeline was moved slightly to avoid a direct hit of the population. However, the 95’-wide right-of-way clearing width goes right to the very edge of some of the plants. The pipeline should have been moved further.

Incredibly, Pacific Connector also decided to also put Temporary Extra Work Areas (TEWA) immediately adjacent to populations of the plant. Virtually every population adjacent to the right-of-way clearing has a TEWA on another side. This is an unnecessary impact to the plant. If Pacific Connector wanted to fully protect this rare grouping of Kincaid's Lupin, the TEWAs should have gone elsewhere. Also problematic is a hydrostatic discharge site just a few feet west of the population. Clearly, pouring thousands of gallons of potentially toxic water on the Kincaid's Lupin site will destroy it.

The population at MP 96.5-96.9 will also be impacted by TEWAs. No alternatives were offered to move what is clearly movable, TEWAs and hydrostatic discharge sites. Pacific Connector has offered to collect seeds and replant the species "if these lands are protected by a conservation easement." That's a pretty stiff requirement. Doesn't Pacific Connector know by now which lands are protected by conservation easements?

b. Vernal Pool Fairy Shrimp, Large-Flowered Meadowfoam, Cook's Lomatium

These three endangered species all use vernal pools in the Rogue River Valley in Jackson County, and will be adversely affected by the storage of pipes in, or adjacent to their designated critical habitat. Additional surveys are required to insure there are species in unsurveyed pipe-storage areas. Additionally, recent surveys are required elsewhere, as the 8-year-old surveys done in 2007 are no longer relevant.

The DEIS (4-644-622) documents that even habitat adjacent to the pipe storage area, in their designated critical habitat, could be degraded by the hydrology being impacted by soil compaction from heavy equipment and pipe storage. This could be fixed by changing where the pipes are stored, away from designated critical habitat of these rare plants. Even if all three of the species are not currently present, it is not worth degrading their potential habitat, when pipes could be stored elsewhere.

To learn more about the threats to these species, the DEIS directs the public to see the "FERC BA 2014". We've asked for that document, but have so far been denied access. After it is released, the public should be given more time for comments, as all documents referred to in the DEIS must be available for public review, during the commenting time.

c. Cox's Mariposa Lily

The mitigation plan says the pipeline will cross a documented population of *C. coxii* (up to 5,000 plants) between MP 75.05 and 75.30 on lands administered by the BLM. However, the Alignment sheet for MP 75.05 to 75.3 indicates that section of the pipeline goes through property belonging to the Gow family, not BLM. The BLM land doesn't start until around MP 75.5.

The proposal to protect the lily is to collect the bulbs and replant them after the pipeline is built. However, the DEIS failed to consider that after the pipeline is built OHV traffic will be abundant, especially on BLM land. BLM has acknowledged, and the DEIS concedes, that

controlling ORV use in the pipeline area will be extremely difficult, if not impossible. The DEIS does not resolve this issue, which may result in unexamined effects to the lily.

F. The Proposed Mitigation Is Inadequate

The DEIS often assumes BMP effectiveness, while science and practical experience has proven that BMPs have limits on effectiveness, particularly for streams in steeper terrain. Rather than assessing impacts resulting from the pipeline with the understanding that BMPs and mitigation will have limited effectiveness, the DEIS arbitrarily assumes impacts will be eliminated or significantly reduced. For example, construction mats will not wholly prevent or retard soil compaction, particularly in saturated and soft soils (where many pipeline related actions will occur). The DEIS does not account for the degree, extent, or persistence of inevitable compaction nor the long-term impacts it creates, such as infiltration rates, saturation capacity, runoff volume, and affected wetlands processes, including the ability to absorb, store, and slowly release water. Compaction thus has direct, indirect, and cumulative impacts such as erosion, sediment delivery, water quality, peak flows and low flows on aquatic resources and salmonids, yet these impacts – which affect salmonid survival and production – were not given a hard look.

The same flawed analyses of impacts to salmonids are present in the context of pipeline construction and operation in riparian zones. The DEIS is replete with assumptions of BMP effectiveness in eliminating runoff and sediment impacts to waterways. Conversely, best available science indicates that such BMPs do not eliminate such impacts from vegetation removal and significant soil disturbance in close proximity to waterways, on steep slopes adjacent waterways, and/or in areas with high levels of precipitation and runoff like the Pacific Northwest. The same flawed assumption of BMP effectiveness applies to the DEIS' assumption that post-construction revegetation will be effective in mitigating sediment-related impacts from pipeline construction on aquatic resources. Scientific studies have documented that post-construction revegetation is largely ineffective at reducing erosion and sedimentation.

Furthermore, the DEIS assumes – without supporting evidence – that project activities in riparian areas will “minimize” their impacts and thereby apparently sufficiently mitigate changes in water temperature, runoff, and sediment delivery. The DEIS does not explain what “minimized” impacts means, nor does the DEIS factor in any explanation of available scientific data corroborating the limited effectiveness of BMPs in preventing impacts to aquatic resources and salmonids from stormwater runoff, vegetation removal, and elevated erosion.

Thus, if the Project is approved, additional mitigation is necessary. We suggest that Pacific Connector file with the Secretary a commitment to acquire conservation easements on a substantial number of private land stream miles that are occupied critical habitat for coho salmon. These conservation easements along coho salmon spawning streams would be assigned to FWS for administration.

We dispute the implied or stated assertion that sediment effects of the proposed action can be fully mitigated on-site. Once pipeline associated sediment is delivered to stream channels it cannot be mitigated. The use of log placement to mitigate increased sediment is not a proven technique because of the transient nature of sediment and the finite ability of log placement to

retain very much sediment. We believe that conservation easements on private lands would best secure coho habitat well into the future and help compensate for despoiled stream miles from pipeline construction.

A particular problem with mitigation is mitigation or avoidance of impacts on private lands. The DEIS has numerous instances and whole sections documenting a suite of protective standards for NFS and BLM lands. Much lower protective standards for private lands are explicitly stated or implied. For example, the DEIS:610 states: “A riparian strip at least 25 feet wide on private lands and 100 feet wide on federally managed lands, as measured from the edge of the waterbody, would be permanently revegetated.” The best available science would clearly show that the 100 ft strip is adequate to protect and restore aquatic resources while a 25 ft strip is not. We assert that the ACS as negotiated by BLM and NFS is the best available science (see Frissell et al. 2014 which further supports 100 ft or more buffers).

The DEIS fails to discuss quantitatively the higher risk or higher expected impacts to stream miles on private lands due to lower and scientifically inadequate protection standards. The tradeoffs of reduced environmental protection on private lands versus increased costs are not made explicit as required by NEPA.

We know that FERC would not allow lesser engineering or safety standards for pipeline construction on private lands. We assert that the FERC must insist that the same protective standards for public lands be implemented on adjacent private lands. Implementation, contracting, EI monitoring, impact assessment, legality, etc. would be simplified by using the same standards for all land ownerships where practical, rather than reducing environmental standards on private lands to reduce short term construction costs while burdening everybody else with conflicting standards and inevitable stream degradation.

G. Safety issues.

The DEIS should have considered the impacts from different safety standards that are required for pipelines in rural areas. Most of southern Oregon is in a “Class 1” location because there are 10 or fewer buildings on a one-mile length of pipeline. This could put rural Oregonians in greater danger than people in urban areas.

Examples of how southern Oregon would be treated differently than urban areas include:

- Fewer welds are required to be inspected or tested, 10% verses, 100% in urban areas.
- Thinner pipes are permitted.
- No internal inspections are required on the pipeline once it is in the ground.
- Pipelines are buried 6” higher.
- Maximum distance to block valves is greater.
- Hydrostatic test pressures are weaker.

- Maximum allowable operating pressure is greater.
- Frequency of pipeline patrols and leak surveys are less often.

The DEIS says it is the U.S. Department of Transportation (DOT) that sets these standards, not FERC. Nonetheless, it is FERC's duty under NEPA to consider the impact to the human environment from these standards. The DEIS failed to do that. The DEIS does say (4-986) that FERC accepts the DOT standards and "does not impose additional safety standards." But NEPA still requires FERC to consider the impacts of those standards.

The DEIS continues: "If the Commission becomes aware of an existing or potential safety problem, there is a provision in the MOU to promptly alert the DOT." The FERC must issue this alert to the DOT and ask for higher safety standards in Class 1 areas to address the increased dangers of landslide-prone steep mountainous soils and the dangers of natural and accidental forest fires.

The DEIS tell us (4-986) that the DOT standards "are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures". However, the DOT had no way to evaluate the site-specific safety problems of southern Oregon. That evaluation should have happened in the DEIS before rural Oregonians are intentionally put in higher risk.

Thinner pipes in landslide prone areas, and increased distance to block valves in remote, rural areas, are particularly worrisome. It means we have a greater risk of an accident, and less capability to turn the gas off.

Out of the 230 miles of the proposed Pacific Connector pipeline, 212 miles are in a Class 1 location, allowing Pacific Connector significant cost savings in pipeline design. We assume these standards were set because, if an accident occurs, only a few people would be harmed or die, instead of the hundreds in an urban area. However, landowners in these Class 1 areas object to their lives being given less value than those landowners in urban areas.

Weaker standards are allowed even though there are significantly more inherent risks in Oregon's rural areas. The route through southern Oregon is over the unique geological features of the rugged Cascade and Coastal mountain ranges, including steep and unstable slopes, rocky terrain, with earthquake and high forest fire potential areas. Rural families could also dig more for utility installation and farming projects than residents in Class 4 areas.

We are also concerned about the DOT standards when we see so many pipeline accidents on the news, many built under the DOT standards. The DEIS (4-996) reviews the alarming high number of pipeline accidents, an average of 62 significant accidents per year (620 accidents per decade). The DEIS failed to say what percent of those accidents were in pipelines built under the DOT standards, but we assume all of them.

During scoping comments FERC was asked to disclose how much money Pacific Connector is saving by using the weaker regulations in rural Oregon. This important economic information was not included in the DEIS. We deserve to know what monetary value is being put on the lives of rural Oregonians.

We request application of Class 3 standards, at the minimum, along the pipeline route wherever there is a residence within 1000 feet of the pipeline. It seems criminal to place rural residents at greater risk because they live in a lower density area. Table 4,13.9.1-2 identifies three DOT 3 locations and high consequence areas totaling 3.1 miles. Please confirm that these three locations and their beginning and ending MP will be Class 3.

H. Geological Hazards.

The DEIS notes that the pipeline will cross areas of high liquefaction and/or lateral spreading as well as rapidly moving landslides. In these areas, the applicant proposes to monitor conditions and possibly implement additional mitigation measures at these locations. DEIS at 5-4. According to FEMA, “Large, permanent ground movements in the form of surface faulting, soil liquefaction, and landslides, are the most troublesome sources of damage to gas and liquid fuel pipelines (O’Rourke, 1987).” See FEMA, *Earthquake Resistant Construction of Gas and Liquid Fuel Pipeline Systems Serving, or Regulated by, the Federal Government*, at 1 (FEMA-233, July 1992).

Therefore, a primary concern for buried pipelines is their ability to accommodate abrupt ground distortions or differential displacements. (ASCE, 1984). The amount and type of ground displacement across a fault or fault zone is one of the most important factors to be considered in seismic design of pipelines crossing active faults (ASCE, 1983). Since ground displacements are in most cases difficult to predict, it is also difficult to develop designs which will protect pipelines against their effects. The most common forms of ground displacements are faulting, lateral spreading caused by liquefaction, and slope failures (landslides).

Id. at 11-12. In addition to these severe direct effects on pipelines, secondary effects from earthquakes can also damage pipelines. For example, flooding, hazards from fallen power lines, and explosion hazards when gas lines are ruptured can all result as secondary effects of an earthquake. *Id.* at 12. The proposed monitoring outlined in the DEIS does not adequately address these risks or explain how the pipeline itself, including choice of pipe material, type of joints, arrangement of the network, length of segments, location and details of fittings and accessories are made. In addition, there is no evidence that where the pipeline is proposed in the vicinity of active landslides and liquefaction zones that any proposed measures can adequately protect against pipeline damage and disturbance to protect the environment and communities of Southern Oregon. The DEIS acknowledges as much, stating that “it is not possible to completely mitigate the risk of pipeline damage in Coos Bay resulting from lateral spreading during a megathrust seismic event.” DEIS at 4-265.

The DEIS recognizes “that the consequences of a pipeline failure may be catastrophic and involve fire and/or explosion.” DEIS at 4-269. Nevertheless, the DEIS fails to take a hard look at alternatives that would avoid locating the pipeline in areas of seismic activity that pose a risk to the safety of the pipeline and the communities around it.

The DEIS is clear, and based on our experience it is true, that the Pacific Connector pipeline will cross very unstable and steep slopes, as well as other areas that are geologically unpredictable. Where these areas exist on public lands, the Northwest Forest Plan requires that unstable and potentially unstable areas be designated as riparian reserves and put off limits to management. NFP S&Gs, C-31. There is no indication that FERC or the project proponent has complied with this requirement. 5 U.S.C. § 706(2)(A).

I. Use of Eminent Domain Is Inappropriate For This Pipeline, Because It Will Not Serve A Public Purpose.

1. The Project Does Not Benefit The American Public

Many of the undersigned previously protested the application, explaining that the project was contrary to the public interest. FERC has not responded to those protests. We reiterate those concerns herein.

The DEIS at 1-13 states:

Under Section 7 of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decision on technical competence, financing rates, market demand, gas supply, environmental impact, long-term feasibility, and other issues concerning a proposed project.

The Commission must also determine if there is a public benefit for U.S. citizens from Veresen, a Canadian company, building a terminal to export gas to Asia.

The DEIS tell us (1-20) the public benefit determination is entirely within the hands of the Department of Energy (DOE), and the DOE has already made a determination that exporting LNG would have a public benefit. DOE's evaluation is only conditional, and DOE has explicitly committed to revisiting this evaluation. In particular, DOE has not yet considered how the numerous and severe environmental impacts of the project influence DOE's public interest analysis. Even on purely non-environmental issues, however, we contend that DOE's conditional assessment is flawed, for reasons stated in our prior comments to DOE and FERC. Because DOE's conditional authorization is not final, is flawed, and is subject to future challenge, FERC cannot rely on it here.

Moreover, FERC has an independent duty to assess the public interest as part of its Natural Gas Act and NEPA analyses. As the DEIS says (3-63), it is "The Commission that will consider the need and public benefit of this Project".

The DEIS also says at 6-163: "A FERC Certificate would verify that the Project has a public need and provides significant public benefit." Therefore, FERC must consider what the public

benefit is of the Jordan Cove Project and document their findings. FERC must make their own determination and justify it in the EIS. The DEIS confirms this when it says: “The Commission will consider the need and public benefit of this project when making its decision on whether or not to authorize it...”

The DEIS adopts the IMPLAN-based economic projections offered by Jordan Cove. The problems with this modeling were discussed in Sierra Club’s protest of the application. We reiterate those concerns here, and incorporate that argument by reference.

We can see the effects of a dynamic world on Coos County by looking at the last four decades. In 1970, Coos County had about 60,000 residents and lots of them were engaged in primary jobs such as timber cutting and commercial fishing. Today, most of the timber and fishing jobs are gone, so you might think the number of residents would have declined. In fact, it still has about 60,000 residents, partly because something else replaced those jobs, largely retirement money. The LNG terminal might create some new primary jobs, but it also might kill some primary jobs since some potential retirees may decide they don’t want to live in a county with an LNG terminal.

The Jordan Cove EIS relies on ECONorthwest to use and interpret IMPLAN results. But ECONorthwest itself has challenged the use of IMPLAN to estimate the employment effects of another project. In a March, 2013 Critique of Substitute Environmental Document: “IMPLAN overestimates the true employment and economic impacts of alternatives” partly because economies “are not static.”²⁴

FERC should find that United States citizens do not benefit from the profits of a corporation in a foreign country. Little of the profits made by Veresen in Canada on this project will trickle down to Oregonians. Landowners stretched across the southern part of the state will be made poorer as a result of land condemnations, lowered property values, and unjust and unequal compensatory remuneration. Taxes and payments offered to local counties are miniscule compared to their budgets and will likely not even cover the actual expenses of increasing emergency services to address increased hazards in rural Oregon.

Eminent domain was established for, and is useful for, projects that have a public use, like highways and electric lines. But a pipeline whose main purpose is to export gas to Asia does not have any benefit to U.S. citizens.

Likewise, Oregon does not substantially benefit from the 145 permanent jobs this project is expected to produce, of which only 100 will be local hires. There are robust alternatives to producing 145 local jobs. For instance, there is a drastic shortage of solar-panel installers in southern Oregon. A recent report found that we could create 2,500 permanent jobs through renewable energy development in Oregon.

²⁴ “Critique of Substitute Environmental Document in Support of Potential Changes to the Water Quality Control Plan for the San Francisco Bay- Sacramento/San Joaquin Delta Estuary: San Joaquin River Flows and Southern Delta Water Quality,” prepared by ECONorthwest for Michael Jackson, March, 2013.

More than 90% of the private landowners along the 230-mile long pipeline rejected the initial offers made by PCGP in the summer of 2013. Many of the landowners do not want a high-pressure, 36" unodorized gas pipeline near their homes, especially as we hear about pipeline explosions on the nightly news. Many landowners scoffed at the very low offers being made. For instance, Pacific Connector offered a landowner at MP 86 just \$2,294 for using 7.8 acres of their land.

At one public meeting landowners asked a representative of PCGP if they would pay an annual payment, similar to royalties, for the annual landowner expenses, such as having to pay property taxes on the PCGP right-of-way. The response was a quick "No. You can take your one-time payment and invest it, and the interest will be like royalties." Later, when landowners received their very low-ball offers, this statement appeared to be a joke.

Veresen Inc. will be making billions and billions of dollars by using private land in southern Oregon. They have an unfair advantage over families to start with, because they have well-paid staff trained to justify low payments and get our land for the cheapest price possible. Landowners are even more crippled when they have the threat of eminent domain hanging over the negotiations for property.

To help U.S. citizens gain an equal footing with Veresen, the Commission should not find that this project has a public benefit and should not allow eminent domain. The DEIS 1-12 points out that under section 3 of the NGA, the Commission considers "all factors" bearing on the public interest. This should include how the threat of eminent domain interferes with fair negotiations for using private property.

2. Purpose of Pipeline.

DEIS page 1-13 says one of the purposes of the pipeline is "to supply additional volumes of natural gas to markets in southern Oregon...Pacific Connector intends to deliver about 40 million cubic feet of natural gas per day to Northwest's existing Grants Pass Lateral through an interconnection with the proposed Clarks Branch Meter Station." What the DEIS failed to disclose is how much natural gas will be withdrawn from the Grants Pass Lateral, through the Coos Bay 12" line that is north of the proposed Clarks Branch Meter Station. If Jordan Cove uses 40 million cubic feet from the Grants Pass Lateral through the 12" Coos Bay line, and then puts 40 million cubic feet back in at Clarks Branch, that equals *no* extra gas for Oregon, which does not meet the stated purpose of the Pacific Connector Pipeline.

At the FERC public hearings at Canyonville, John Clark testified and presented paperwork showing Jordan Cove had a contract to remove as much natural gas from the Grants Pass Lateral (via the Coos Bay 12" line) as they claim they will put back in.

FERC must fully disclose the net amount of gas that would be supplied to Oregon to determine if the purpose of the PCGP is being met and if there is a true public benefit for Oregon.

3. Blanket Certificate.

The DEIS says, page 1-2:

Pacific Connector also requested a blanket certificate to allow for future construction, operation, and abandonment activities under Subpart F of Title 18 Code of Federal Regulations (CFR) Part 157 of the Commission's regulations, and requested a blanket certificate to provide open-access transportation services under its tariff in accordance with Subpart G of Part 284. Requests for these future actions performed under the blanket program are restricted to minor actions and would be filed as prior notices or in annual reports that would be subject to individual environmental reviews by FERC staff in accordance with Part 157.206.

The Commission cannot issue a blanket certificate to allow unknown impacts to landowners along the pipeline. Because the DEIS did not define the scope of a "blanket certificate", it could allow PCGP to do anything to private land that PCGP considered a "minor action", like construction of buildings, new roads, etc. What PCGP might consider "minor", the landowner might not. "Minor" should have been, but was not, well defined.

The DEIS says that future actions allowed under this blanket certificate is "subject to individual environmental reviews by FERC staff..." However, the DEIS failed to clarify if this would be a review in compliance with the National Environmental Policy Act (NEPA), or if it would simply be an internal review not subject to public input. We have asked Paul Friedman this question twice, in writing, and have received no answer. FERC should clarify that any action taken under the "blanket certificate" is subject to NEPA review, allowing full public and scientific input.

A "blanket certificate" allowing unknown impacts is not allowed by NEPA. "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The information must be of high quality." The DEIS violates this requirement.

4. Rural Emergency Services.

The DEIS failed to consider that rural areas in Oregon are not prepared to deal with the emergencies that a high-pressure gas pipeline could cause. There are going to be only 17 mainline block valves on the entire 230 miles of the pipeline. Therefore, if there is an accident or natural disaster, there could be significant damage done before a person can drive to one of the valves to turn it off and then let the gas burn out of 1/17th of the pipeline.

The taxes PCGP is providing the counties is not nearly enough to upgrade the needed rural emergency services to address potential problems.

The DEIS has underestimated the difficulty in road-building and trenching on Oregon's steep, unstable, landslide prone, earthquake susceptible mountain slopes. This puts rural Oregonians in additional peril from accidents that occur due to heavy rain or geologic events, especially since the pipes are thinner in rural areas, and we have inadequate emergency response capabilities.

Increased fire-fighting expenses are also not covered by PCGP. Because of the short vegetation maintained in the right-of-way, forest fires will be able to travel across the landscape quicker than without a clear path of short, dry brush. The money given to local governments does not cover the extra forest-fire fighting costs, thus endangering rural residents even more.

5. Bonding.

The DEIS documents (2-132) the “bond or letter of credit” posted by Jordan Cove “to cover the amount in the estimate to retire the facility”. FERC should also require Jordan Cove and PCGP to post a bond to cover damages from the pipeline while it is service, not just at retirement. For instance, if the pipeline blows up and starts a forest fire, impacted families should be assured that PCGP can pay for the damages they cause.

6. Other Landowner Concerns.

Comments filed with the FERC by Barbara Gimlin on December 16, 2014 provide compelling evidence that staff hired by Jordan Cove and Pacific Connector have a conflict of interest and may not report required environmentally sensitive information. FERC and the federal land management agencies should publicly identify the number of third-party environmental monitors hired, the areas for which they are responsible and contact information. The scope of the third-party monitors should include work performed on private property.

What specific process is available to a property owner along the pipeline right-of-way if there are concerns that quality assurance standards, compliance with mitigation measures and other applicable regulatory requirements are not being met or followed? If the Chief Inspector and the EI work for Pacific Connector, there must be a clear and timely process for taking concerns beyond Pacific Connector representatives if the Chief Inspector or other Pacific Connector representative does not resolve the concern.

Will the public have the opportunity to review the Landowner Complaint Resolution Procedures prior to the issuance of the final EIS? What types of complaints are eligible for review? Do the procedures provide for appeal to a neutral third party if the Landowner is not in agreement with a decision by Pacific Connector? If there is a neutral third party reviewer, does this individual have the authority to award damages in applicable situations if the landowner prevails.

Pacific Connector should be required to post a bond for damages resulting from construction of the pipeline including, but not limited to, contamination of wells, erosion, drainage or failure to restore areas disturbed during construction in accordance with the ECRP.

FERC should not allow the permanent easement to be used for any purpose other than the interstate transportation of natural gas.

J. Forest Plan Amendments.

1. Forest Plan Amendments Generally.

As acknowledged on page 2-36 of the DEIS, the proposed pipeline construction across federal public forestlands involves numerous actions that are inconsistent with the planning documents and management intent for those lands. The proposed violations of the underlying land use plans are significant, irreversible and irretrievable and may retard and prevent accomplishments of the goals and objectives of the land management plans (Resource Management Plans, RMPs on BLM lands; Land and Resource Management Plans, LRMPs on Forest Service lands). There are two concerns with this approach.

First, while the Forest Service does have the ability to implement site-specific forest plan amendments to exempt a project from compliance with forest plan requirements, the BLM does not have similar authority. We were unable to locate any reference in the DEIS to BLM's authority to use site-specific forest plan amendments to exempt a project from compliance with applicable forest plan requirements. Given that, FERC's reliance on site-specific forest plan amendments on BLM lands is arbitrary, capricious, and not in accordance with law. 5 U.S.C. § 706(2)(A).

Second, given the magnitude of the forest plan violations and the forest plan amendments necessary to address them, in conjunction with the serious adverse effects to public land resources as a result of the proposed project, it is plain that these amendments are in fact "significant" and therefore require additional analysis.²⁵ The DEIS whittles the forest plans down piece by piece without having to go through the rigor of public input and review of developing a new Forest Plan. *League of Wilderness Defenders, et al. v. Connaughton, et al.*, No. 3:12-cv-02271, *50 (D. Or. 2014) ("the ROD and final EIS do not adequately articulate a rational connection between the characteristics of the project area and the choice to adopt site-specific, rather than forest-wide, amendments").

Reliance on site-specific forest plan amendments in this fashion violates NFMA's requirement that forest plans "form one integrated plan for each unit of the National Forest System, incorporating in one document or one set of documents, available to the public at convenient locations, all of the features required by this section." 16 U.S.C. § 1604(f)(1).

NFMA imposes substantive constraints on management of forest lands, such as a requirement to insure biological diversity. *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 898 (9th Cir. 2002). The NFMA and its implementing regulations subject forest management to two stages of administrative decision making. At the first stage, the Forest Service is required to develop a Land and Resource Management Plan, also known as a Forest Plan, which sets forth a broad, long-term planning document for an entire national forest. At the second stage, the Forest Service must approve or deny individual, site-specific projects. These individual projects must be

²⁵ Because the BLM does not have the authority to implement site-specific forest plan amendments, there are no standards by which to gauge whether the amendments are significant. *Contrast, Lands Council v. Martin*, 529 F.3d 1219, 1227-1228 (9th Cir. 2008) ("Under the relevant statute and regulation, the correct procedure depends on the scope of the amendment: "Significant" amendments require a lengthy and detailed amendment process; otherwise, a simpler notice and comment process suffices. 16 U.S.C. § 1604(f)(4); 36 C.F.R. § 219.10(f) (2000). Specifically, the statute provides that, if the Forest Service chooses to amend a forest plan, the forest plan "shall...be amended in any manner whatsoever after final adoption after public notice, and, if such amendment would result in a significant change in such plan, [after procedures in addition to public notice have taken place]." 16 U.S.C. § 1604(f)(4)").

consistent with the Forest Plan. *Great Old Broads for Wilderness v. Kimbell*, 709 F.3d 836, 851 (9th Cir. 2013) (“the NFMA prohibits site-specific activities that are inconsistent with the governing Forest Plan”); *see also Neighbors of Cuddy Mtn. v. Alexander*, 303 F.3d 1059, 1062 (9th Cir.2002) (“[s]pecific projects ... must be analyzed by the Forest Service and the analysis must show that each project is consistent with the plan”). The Forest Service’s “interpretation and implementation of its own forest plan is entitled to substantial deference.” *Great Old Broads*, 709 F.3d at 850 (9th Cir. 2013) (internal quotation marks omitted).

The agency must articulate a “rational connection between the facts found and the choice made” to enact a geographically-limited, site-specific amendment rather than a general amendment to the Forest Plan as a whole. *Lands Council v. Martin*, 529 F.3d 1219, 1228 (9th Cir. 2008). Any Forest Plan amendment that results in a “significant change” requires the agency to prepare an EIS; non-significant amendments only require the simpler notice and comment process. *Lands Council v. Martin*, 529 F.3d at 1227.

2. Survey and Manage Forest Plan Amendments Are Significant.

The contention on page 4-40 of the DEIS that proposed survey and manage plan amendments are not significant is in error. The proposal to directly impact habitat at 386 known survey and manage sites involving 62 rare species is a major change in management direction and will directly impact a significant number of high value species.

3. Soil Forest Plan Amendments Are Significant.

The DEIS proposes to violate/amend soil standards to facilitate pipeline construction. As acknowledged on page 4-49 the negative effects to soils from project activities that violate the existing forest plans are both significant and “long term.” Many of these negative impacts to soils will occur in previously protected land use allocations such as LSRs, riparian reserves and Key Watersheds. Additional (but unanalyzed and undisclosed) soil compaction will be associated with road widening throughout the project area and yarding activities to facilitate forest clearing. The cumulative impacts of violating existing soil protection standards through clearcutting, pipeline construction, road widening and yarding activities are significant, irreversible and long term. Please note that page 4-66 of the DEIS indicates that no road decommissioning mitigation measures are proposed on the Winema National Forest to compensate for the proposed plan amendments to allow for additional significant long-term soil damage associated with the project.

4. Forthcoming Forest Service and BLM Environmental Impact Statements and Record of Decisions.

Given the proposed impacts to LSRs, riparian reserves, and ACS objectives, the BLM and Forest Service must conclude that the proposed project does not conform with existing land use plans and will result in significant, irreversible and irretrievable impacts to its resources and programs. We understand that the land management agencies will be preparing separate NEPA analysis and approval for forest plan amendments and other impacts on federal lands under their jurisdiction. This comment letter should be considered as a formal expression of interest in this process, and

we request that each signatory receive notice and relevant documents associated with any additional environmental analysis and public comment undertaken by the Forest Service and/or BLM.

H. Compliance with the Northwest Forest Plan.

Although the DEIS outlines several forest plan amendments to exempt the Pacific Connector pipeline from compliance with applicable forest plans, in particular the requirements of the regional Northwest Forest Plan (NFP), it is clear that the pipeline will violate additional provisions of the NFP. In particular, it appears that the project is inconsistent with all nine Aquatic Conservation Strategy (ACS) Objectives (ACSOs), as well as standards and guidelines pertaining to the Survey and Manage program, late-successional reserves, key watersheds, matrix land allocation, occupied marbled murrelet sites, and riparian reserves. NFP Standards and Guidelines, B-1 – C-61.

Across the Pacific Northwest within the range of the northern spotted owl, the land management agencies and the consulting agencies have relied on the NFP as the basis for listed species conservation and conservation of regional biodiversity, water quality, and other public land amenities. Exempting a single linear project from compliance with NFP requirements undermines the regional framework, and casts into doubt the legality of any historic and subsequent projects. For example, FWS and NMFS rely on the inviolable nature of the ACS and Riparian Reserve standards and guidelines when assessing the effects of timber harvest and other land management decisions on listed species and their habitat. However, if the requirements of the ACS and the NFP are no longer assured, then the agencies cannot rely on the conservation benefit from these requirements, and will be required to create a new framework against which to gauge environmental impacts.

The DEIS must fully analyze the pipeline's compliance with the many provisions of the Northwest Forest Plan.

1. Aquatic Conservation Strategy.

Implemented in 1994, the Aquatic Conservation Strategy of the Northwest Forest Plan was designed to restore and maintain ecological processes for aquatic and riparian area conservation on federal lands in the western portion of the Pacific Northwest. In the first approximately 10 years of strategy implementation, watershed condition scores changed modestly, but conditions improved in over half of 250 sampled watersheds, declined in over a quarter, and remained relatively the same in the remainder. Notably, much of the increase in watershed conditions is related to improved riparian conditions. Likewise, positive recovery areas had increased numbers of large trees, and there were substantial reductions in tree harvest and other disturbances along streams.

These preliminary results make a compelling case that protection of aquatic resources from *any* disturbance, in addition to *continuous restoration* of key watersheds, is essential to not only compliance with Aquatic Conservation Strategies under the NWFP, but the ultimate survival of species like salmon. As described below, the Project's pipeline and contemplated upstream

actions will violate numerous ACS by creating or inciting impacts that will significantly inhibit crucial elements of the ACS, and therefore cannot be authorized.

We remind FERC that the Aquatic Conservation Strategy (ACS) is a scientifically based framework for ensuring that land-disturbances will not damage salmon watersheds. It recognized the destructive impacts of bad land-use practices—particularly clear-cutting on steep slopes, fragile soils, and in streamside corridors. In the past, such land-use practices have choked salmon streams with sediment, caused landslides that dump mud and debris on salmon spawning beds, raised stream temperatures, and precipitated a decline in salmon populations.

Dr. Jim Sedell, a Forest Service fisheries biologist, who was instrumental in developing the Aquatic Conservation Strategy, pointed out: "The best habitat that remains, remains on public lands, and that land . . . is probably some of the most fragile parts of the landscape that we have left... The protection of the best habitat of what we have left is going to be crucial to anchor the maintenance and recovery of these stocks." In turn, the Aquatic Conservation Strategy responded to the decline of Pacific salmon. It was designed to maintain and restore functional habitat for salmon and other aquatic species by managing public forests on a watershed-wide basis, and prohibiting projects that do not maintain existing conditions or lead to improved watershed conditions.

The Strategy includes:

- establishing streamside buffers where logging generally may not occur
- performing watershed analyses to create a scientific record to direct logging and restoration activities
- protecting key watersheds containing fish strongholds or priority restoration areas
- encouraging comprehensive and pro-active watershed restoration to speed ecosystem recovery

Applicable to the Project and its proposed pipeline are the “Factors of Decline” under the ACS, especially those elements found under the Physical Habitat, Water Quality, Water Quantity, and Biological Condition categories. For instance, objective number one, which directs management actions to “Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted” is all encompassing in that it logically results in most elements within the four categories being addressed.

Other ACS objectives are more specific and can be directly linked to Factors for Decline within the Physical Habitat, Water Quality, and Water Quantity categories. For example, objectives three, five, and eight promote maintenance and restoration of channel morphology, natural sediment regimes, and riparian and in-stream habitat features, respectively. Further, objectives four, six, and seven emphasize water quality, in-stream flows, and timing and duration of flood events, respectively. Finally, objective two emphasizes uninterrupted riparian and stream channel connections within and among watersheds, while objective ten promotes well distributed populations, both of which promote or relate to fish passage issues.

2. Riparian Reserves.

Riparian Reserves are a key component of the ACS for salmon. They help maintain the integrity of aquatic ecosystems by (1) influencing the delivery of coarse sediment, organic matter, and woody debris to streams (2) providing root strength for channel stability (3) shading the stream, and (4) protecting water quality. The USFS has estimated that approximately 20% (1,342 miles) of all coho-bearing streams and 10% (131 miles) of all HIP streams are currently afforded protection (passive restoration) under the Riparian Reserve network.

The relative percentage of HIP streams on BLM and FS-administered lands actually available to coho maybe greater than 10%. The total number of stream miles identified as having HIP includes all streams that currently provide, have the potential to provide, or once had the potential to provide quality over-winter habitat for juvenile coho. For instance, a percentage of HIP streams may never serve as over-wintering habitat into the foreseeable because they have been significantly altered through urban or rural development. The majority of HIP stream miles on BLM and FS-administered lands offer suitable over-wintering habitat or are being managed under the ACS to promote such habitat. Therefore, maintenance of these Riparian Reserves or improvement thereof is of critical importance to improving salmon health and compliance with the NWFP, particularly as the current and future condition of non-federal HIP streams is not subject to control of agencies, meaning there is an increased degree of importance for ACS administered streams in terms of coho recovery.

As discussed *supra*, the Project and its pipeline will incite or create significant, negative impacts on riparian habitat within Riparian Reserves. The DEIS fails to accurately account for those impacts and assess their significance in light of the ACS' foci and the NWFP's mandates as regards salmon. For example, the DEIS fails to attribute significance or analyze the impacts arising from destabilization of upstream headwaters and riparian zones that contribute large woody debris essential to salmon viability.

Specifically, there are 21,312 miles of non coho-bearing streams on BLM and FS-administered lands that can contribute coarse woody debris to coho-bearing streams. Many of these streams are fish-bearing and are well suited for steelhead and other native resident fish species. Further, all of these streams, which are managed under the ACS, occur throughout the Oregon Coastal coho ESU, most of which occur in the Umpqua monitoring area, followed by the Mid Coast, Mid- South Coast, then North Coast monitoring areas. Even though these streams may not offer habitat to coho salmon, they provide large woody debris to such species' habitat.

Proving this theory, the Forest Service Pacific Northwest Research Station (Forestry Sciences Laboratories) studied the Smith River watershed, located in the Umpqua River basin, to describe the importance of contributions of large wood to streams from various land ownerships and in turn, to salmon habitat. The results showed that 85% of all large wood (>50cm dbh) from debris flows—having direct connections to coho-bearing streams—will originate on BLM and FS administered lands. Because 55% of the debris-flow prone areas are under BLM and FS ownership, that study demonstrated that the ACS Riparian Reserves would produce disproportionately more large wood (compared to other land ownerships) during storm events for recruitment into ESU streams.

Because Riparian Reserves will contribute disproportionately more large wood to streams than most other land owners throughout the ESU, there is a special need for ACS objectives to be strictly maintained. Put another way, the Project's pipeline will destroy or negatively affect, directly, indirectly, and cumulatively, the availability of woody debris in ACS Riparian Reserves. In turn, the decrease in large woody debris from ACS areas that would be affected by the Project will disproportionately affect necessary protection of salmon habitat requirements.

This is but one example of how ACS Riparian Reserves contribute vital habitat and other ecological factors key to salmon viability and recovery; as further described below the DEIS fails to use sound science and analyze these impacts or rationally consider science demonstrating how the Project will adversely affect maintenance of Riparian Reserves under the ACS and NWFP.

The DEIS failed to account for four key reasons its Project will violate the ACS by impairing the management of Riparian Reserves. First, the pipeline will negatively affect maintenance of existing Riparian Reserve conditions required under the ACS. The pipeline would decrease the presence of riparian buffers and large wood, increase sediment from roads and landslides, and decrease fish passage at road crossings. Second, the pipeline would negatively affect restoration of in-stream habitat. Specifically, by altering and degrading already degraded riparian zones, the pipeline ignores the ACS' emphasis on the neutralization of threats, on providing for quality freshwater habitat during times of poor ocean survival, and promoting widespread distribution of appropriate habitat conditions. Indeed, the pipeline will further degrade – not restore - Riparian Reserves and thus retard any attempts at passive restoration and significantly diminish those areas' ability to attain appropriate habitat conditions necessary for salmon recovery.

Third, human activities influence stream temperature by affecting one or more of the following: riparian vegetation, channel morphology, hydrology, and surface/subsurface interactions. The ACS Riparian Reserves passive management and non-degradation approach is intended to promote continued growth of riparian vegetation along stream channels, which intercepts solar radiation—the principle energy source for stream heating. In addition, passive management and non-degradation ensures large woody debris inputs and bank stability that help creates desired—narrow and deep—channel dimensions, decreasing the surface area/volume area and rate of temperature increase. The Project's pipeline will negatively affect achievement of those objectives by virtue of its inherently degrading nature. The pipeline will destabilize riparian zones, cut swaths and edge-effect through intact canopy and riparian areas, affect the stability of steep slopes, contribute unnatural sediment loading and thus incite many of the effects increased sediment loading entails for salmon, habitat, and water quality (*see supra*). Furthermore, the pipeline's construction and maintenance ensures new road networks on BLM and FS-administered lands, intensively used, which will detract from desired surface/subsurface interactions.

Last, Riparian Reserves are managed for the importance of building a connection between lowland and upland riparian areas. Management of lowland riparian zones that halts disturbances and degradation in conjunction with like efforts on adjacent uplands is needed to maintain the dynamics of riparian structure and function across the landscape. Indeed, the ACS guidance recognizes “[p]rotection of intact, functional aquatic habitats should be the first priority

for salmonid recovery efforts.” It logically follows that protecting and improving buffered streams will serve as an integral element to the creation of functional riparian corridors across land ownerships that, together, support salmon propagation and recovery. As described in three above, the pipeline’s many impacts will in fact degrade and halt, not enhance, connectivity between lowland and upland areas. The DEIS wholly fails to account for the dubious effectiveness of BMPs (an issue discussed in-depth *supra*) and thus cannot be reconciled with the ACS’ focus on connectivity, nor any other element key to protection and management of Riparian Reserves.

3. Key Watersheds.

Supplemental to the protections afforded salmon under Riparian Reserves in the ACS are “Key Watershed” denominations. There are 34 Key Watersheds distributed throughout the four monitoring areas under the ACS and NWFP: North Coast (4), Mid-Coast (10), Umpqua (14), and Mid-South Coast (6). Further, the Key Watersheds are concentrated within 13 population units, covering 1,358,105 acres.

Widespread distribution of salmon populations in watersheds and appropriate habitat conditions must be achieved during periods of good survival to provide a buffer against subsequent periods of poor survival. Key Watersheds help address this issue in that they are widely distributed across and offer or, where managed successfully, will offer quality habitat through the Riparian Reserves. Therefore, these watersheds are logically priority areas for targeted restoration and protection.

The 34 Key Watersheds play a role in maintaining or securing meta-population groups distributed throughout the salmon’s range. For instance, most federal lands in Key Watersheds have significant miles of coho-bearing streams, but most of the HIP stream reaches are concentrated on non-federal lands. For this reason, it can be assumed that most core areas are concentrated in the non-federal lowlands while the satellite areas are supported by the federally owned portions of the watersheds. If the HIP stream miles on non-federal lands are in a degraded condition however, which many are, the coho-bearing streams under ACS management (or satellite areas) offer the best available habitat for a group of coho within a meta-population. Thus Key Watersheds must be managed proactively for protection and restoration under the ACS.

Truly, riparian buffers, large woody debris inputs, sediment from roads and landslides, and fish passage at road crossings are the most important habitat issues related to the recovery of salmonids in western Oregon forests. The ACS recognizes that all stream channels and riparian areas in the NWFP area are in a continual process of restoration, either through active restoration, passive restoration, or both. Thus, on a very base level, the Project’s pipeline is inconsistent with the management directives applicable to Key Watersheds. The pipeline’s construction and maintenance will upset the delicate ecological gains achieved in some areas and, in others, further degrade conditions where restoration is essential. As the ACS guidance has recognized, maintaining and restoring productivity and resiliency of riparian and aquatic ecosystems is the cornerstone of the NWFP’s strategy for salmon. The Riparian Reserves serve as a restorative foundation for all streams and riparian areas on BLM and FS-administered lands,

while the Watershed Restoration programs target Key Watersheds. Here, the Project's pipeline threatens to undermine both strategies by further degrading important waterways and watersheds, and therefore is wholly inconsistent with the ACS under the NWFP.

Stressing the importance of faithful implementation and compliance with the ACS, Judge William Dwyer cautioned in upholding the NWFP in 1994 that: "[i]f the plan as implemented is monitoring, watershed analysis, and mitigating steps called for by the [Record of Decision] will have to be faithfully carried out, and adjustments made if necessary." Here, FERC must recognize that the Project pipelines is without doubt incompatible with protection and recovery of salmon or their habitat and, as Judge Dwyer noted, uphold the NWFP by denying any pipeline authorization.

4. Late Successional Reserves.

As acknowledged on page 3-63 of the Jordan Cove DEIS, the Northwest Forest Plan (NWFP) requires that developments (such as pipelines) in LSRs must be neutral or beneficial "for the creation and maintenance of late-successional habitat." That substantive requirement of the NWFP is not met by the proposed action.

As stated on page 4-15 of the DEIS, the NWFP ROD (at C-17) requires that "Developments of new facilities that may adversely affect LSRs should not be permitted...pipelines...may be approved when adverse impacts can be minimized and mitigated. These [projects] would be planned to have the least possible adverse impacts on LSRs." It is critical to note that the NWFP ROD anticipated pipeline construction and specifically addresses it at C-17. Hence if pipeline construction was intended to be exempt from LMPs, the NFP ROD would have indicated that. The NWFP ROD does not provide for plan amendments that exempt pipeline construction from standards and guidelines pertaining to riparian reserves, survey and manage, soil protections or LSRs. Rather, the ROD anticipated pipeline construction and indicated that it should not be permitted unless the impacts could be mitigated and would achieve a neutral or beneficial result for LSR management. Yet the Jordan Cove DEIS calls for amending forest protection LMP standards that conflict with the financial desires of the project applicant.

Here the pipeline project has not been planned so as "to have the least possible adverse impacts on LSRs." As will be discussed later in these comments, the Rogue River-Siskiyou National Forest proposed a "Roads Route" action alternative that would have significantly reduced impacts to LSR 227 (managed by the Forest Service) but it was not carried forward for analysis in the DEIS. Instead the proposed action in the DEIS calls for actions that will remove forests and increase habitat fragmentation in the LSR. Hence the project has not been designed to have the least possible adverse impacts to LSRs and the decision maker and the public cannot know the tradeoffs associated with implementing the project in the manner suggested by the Forest Service as having the least possible adverse impacts on LSRs.

The habitat removal and modification associated with project implementation would retard the creation and maintenance of late-successional habitat in the LSRs. Mitigation would not result in the project having a neutral or beneficial outcome for LSRs.

Page 4-161 of the DEIS indicates that through forest clearing (clearcutting) and increased forest fragmentation (edge effects) the pipeline project will adversely affect 1,760 acres located on federal LSRs that are intended to be managed to retain and promote late-successional forest habitat. Please note that the DEIS acknowledges on page 3-64 that “unavoidable impacts on LSRs would require mitigation measures that in the long run would make the project neutral or beneficial” to LSR habitat. The proposed mitigation measures contained in the DEIS fail to result in a neutral or beneficial project to LSRs for the reasons delineated below. Please note that on page 4-164 the DEIS analysis of project mitigation illegally tiers to a “Compensatory Mitigation Plan (CMP)” that is allegedly contained in Appendix O of the project Biological Assessment (BA). The content of this CMP cannot inform the project as the BA is unavailable for public or agency review during the DEIS commenting period.

The LSR mitigation measures that are described in the DEIS (we cannot know if they track the content of the CMP) establish that the negative impacts of project activities on LSRs significantly outweigh the alleged benefits of the proposed mitigation as disclosed in the DEIS.

Page 4-188 of the DEIS indicates that the pipeline project will adversely impact 198 acres of LSR 223 managed by the Roseburg District BLM. Page 4-189 then concludes: “There are no proposed amendments to reallocate Matrix lands to LSR 223 in the BLM Roseburg District. This is due primarily to the lack of suitable LSOG forest habitat in the Matrix near the LSR and the pipeline. There is, however, a proposed amendment to reallocate Matrix lands to LSR 223 in the Umpqua National Forest, which borders the east side of the BLM Roseburg District.” In other words, the DEIS indicates that the pipeline project will directly harm LSR function on Roseburg BLM lands in a portion of the landscape that has been so heavily fragmented by past federal and private logging that no LSOG habitat of value exists near the planning area that can mitigate for the additional loss of LSR habitat. Converting unlogged LSOG habitat in the Umpqua National Forest to the LSR land use allocation will not mitigate or resolve the severe fragmentation and habitat loss problems associated with BLM management of the “checkerboard” land use pattern in LSR 223.

Please also note that the DEIS fails to disclose whether or not the matrix land that will be converted to LSR on the Umpqua National Forest was scheduled for logging. Given survey and manage requirements and wildlife, recreation and ACS objectives, it is highly likely that the Umpqua National Forest would continue to manage the matrix LSOG as LSOG for the foreseeable future. As the DEIS repeatedly states, very little LSOG has been converted to fiber plantations since the inception of the Forest Plan. Are survey and manage species present in the matrix lands at issue? It may be that the pipeline proposal calls for logging BLM LSR habitat in a highly fragmented landscape (in which such habitat is disproportionately valuable to LSOG associated species) in return for reallocating matrix lands that would not have been logged anyway and which are located significantly away from the impacts associated with the pipeline clearcut logging on BLM lands.

Page 4-202 of the DEIS indicates that (in direct contradiction to the Forest Service proposal contained in the “Roads Route” alternative suggested in their scoping comments) the pipeline will bisect and fragment habitat across the entirety of LSR 227 managed by the Rogue River-Siskiyou National Forest while only adding an isolated stand of matrix forest to the LSR. It

appears that interior forest habitat essential to the function of LSR 227 will be removed while an isolated parcel well to the north of the bulk of the LSR habitat will be reallocated from matrix to LSR. Page 4-206 of the DEIS acknowledges that logging associated with the pipeline “would create edge impacts that may affect interior stand microclimates and cause habitat fragmentation within LSR 227 that cannot be avoided.”

The DEIS fails to disclose the likelihood of the LSOG LSR 227 mitigation matrix lands reallocation stands being logged if the project does not occur. The Rogue River-Siskiyou National Forest simply does not log existing LSOG habitat. Are Survey and Manage species present on the matrix lands that would preclude there logging regardless of the project?

Page 2-206 of the DEIS indicates that a total of 822 acres in LSR 227 will be negatively impacted by the pipeline project. Yet only 512 acres of matrix is proposed for reallocation to the LSR land use allocation. Similarly, 435 acres of LSOG in the LSR will be negatively impacted but only 333 acres of LSOG located in the matrix (not all of which would be logged under the NW Forest Plan) is proposed for protection as mitigation. These figures make clear that the impacts of the project (including the proposed mitigation) are negative (and not neutral or beneficial) to the achievement of LSR goals and objectives and violate the NWFP.

Please further note that page 4-204 of the DEIS indicates that additional undisclosed LSR acres will be logged and additional forest fragmentation will occur in order to widen existing logging roads in the LSR to facilitate the use of oversized trucks and loads associated with the pipeline project. The impacts, location, and acreage of this proposed additional logging are not analyzed or disclosed in the DEIS.

The DEIS relies heavily on hypothetical road decommissioning to mitigate for significant new LSR forest fragmentation proposed in the Little Butte Creek Tier 1 Key Watershed. Please note that it has long been the policy of the Forest Service to reduce road density in LSRs and Key Watersheds and that a travel management planning effort is currently underway that will foreseeably further reduce the size of the Forest Service transportation system in Little Butte Creek. The DEIS fails to analyze or disclose how many of the roads proposed for decommissioning (as project mitigation) would have been decommissioned anyway. The DEIS ignores that over time the Forest Service would have conducted road decommissioning in the LSR/Key Watershed as recommended by the NW Forest Plan, the Watershed Analysis and the Travel Rule.

Please note that page 4-229 of the DEIS indicates that “Adverse impacts [from pipeline clearcutting] would occur at the time of construction whereas the beneficial effects of edge reduction would occur over several decades.” In other words, the project would result in immediate, significant, additional fragmentation and harm to LSR habitat objectives in return for speculative, future road decommissioning activities that likely would have occurred anyway. Similarly, the project will result in immediate, significant and additional loss of forest habitat located in LSRs in return for the “protection” of some matrix forest stands in which logging might never have occurred anyway due to wildlife, social and watershed objectives.

Figure 4.1-40 indicates that the pipeline will result in 1,152 acres of immediate additional edge effects in LSR 223 and 227, yet only 1,041 acres of long-term (speculative) edge reduction (which may have occurred anyway) is proposed. This does not constitute a positive or neutral impact on LSR function.

Figure 4.1-43 directly acknowledges that the project will have negative (rather than neutral or beneficial) impacts to LSOG located in LSRs in both the Oregon Coast and Oregon Western Cascades provinces in violation of the NW Forest Plan.

Page 2-53 of the DEIS indicates that project planners intend to mitigate the impacts of pipeline associated logging through LSRs by conducting up to 6,000 acres of additional logging. The DEIS fails to disclose any of the impacts of logging, yarding or log hauling associated with the proposed additional logging activities. Page 2-53 claims that “mostly smaller trees would be removed” but “smaller trees” are not defined, the term “mostly” is ambiguous, and the number of large trees to be removed to accomplish stand objectives or to facilitate yarding or landing activities is not analyzed or disclosed. Page 2-54 of the DEIS indicates that subsequent site-specific planning and analysis would demonstrate compliance of this logging with the respective LMPs despite the fact that proposed pipeline action attempts to establish precedent that the proposals of pipeline proponents can and will violate the LMPs for Federal land management.

5. Increased Fire Hazard in LSRs.

Page 2-59 of the DEIS acknowledges that “The pipeline would create fire suppression complexity by creation of a continuous corridor of early seral plant communities.” Similarly, Page 4-220 of the DEIS states that “Construction of the pipeline and associated activities would remove both mature and developing stands and increase fire suppression complexity.” By converting mature forest stands to into a continuous corridor of early seral plant communities the project increases fire hazard and decreases options for fire management in the LSRs. This is a direct and significant negative (as opposed to neutral or beneficial) impact on the ability of the LSR land use allocation to achieve its management objectives.

Rather than avoid or address the impacts of increasing fire hazard in the LSRs, the DEIS proposes “mitigation” measures that attempt to facilitate fire suppression and fire exclusion. As described on pages 4-220 and 4-221 of the DEIS these mitigation measures in Middle Fork Coquille Watershed include establishment of a fuel break, construction of heli-ponds and installation of dry hydrants all of which will be used to continue to attempt to exclude fire from BLM LSRs.

It is widely recognized that fire exclusion and fire suppression in fire dependent forests (such as those in southwest Oregon) increases fire hazard and fire severity over time due to changes in forest species and seral composition. Attached to these comments is an article entitled Ecology and Management of Fire-prone Forests of the Western United States that we hereby submit to the record for this project.

By creating a continuous corridor of early seral vegetation and by facilitating additional fire exclusion and fire suppression through LSRs the pipeline project will increase fire hazard and

may contribute to high severity wildfire effects that inhibit the retention of late-successional habitat characteristics.

6. A Reasonable Action Alternative For LSR Management Should Have Been Developed.

Project proponents and project planners have refused to develop and consider action alternatives that would be consistent with the respective LMPs in the project area. Please note that page 3-52 of the DEIS indicates that representatives of the Rogue River-Siskiyou National Forest proposed a “Roads Route Alternative” to project planners in which pipeline construction would have paralleled existing roads and would have avoiding logging, clearing and construction activities within the Late Successional Reserve 227. FERC and the public cannot contrast this reasonable action alternative with the proposed action because project proponents and project planners refused to develop the alternative for consideration in the DEIS. Hence the tradeoffs, benefits and challenges of implementing the Forest Service proposed alternative on Forest Service managed lands cannot be known. Please further note that the Forest Service is entitled to substantial legal deference in questions of professional judgment concerning management of Forest Service lands and resources. The preferences of project proponents to construct the pipeline directly through Federal LSRs do not relieve FERC of its duty to develop, consider and contrast reasonable alternatives to the proposed action as suggested by the Forest Service during project scoping.

7. The Project Will Violate the Aquatic Conservation Strategy

Page 4-77 of the DEIS indicates that the project will remove (clearcut) 91 acres of vegetation located in riparian reserves including 32 acres of mid-seral forest and 32 acres of LSOG forest stands. The impacts of associated edge effects and yarding activities on riparian reserve management objectives is not disclosed or analyzed.

At 4-238 and 4-239 the DEIS indicates that the project will mitigate harm to ACS and riparian forest resources through road decommissioning, road resurfacing, instream LWD placement and culvert replacement. All of these activities are already occurring on Federal lands within the project area, especially in Key Watersheds and LSRs. The Rogue River-Siskiyou, Umpqua and Winema National Forests have robust track records and foreseeable proposals for all four of these restoration/mitigation strategies. The Medford, Roseburg and Coos Bay BLM Districts also regularly propose and implement these activities. Road decommissioning, road resurfacing, instream LWD placement and culvert replacement would all occur regardless of the Pacific Connector project.

Implementation of the action proposed in the DEIS will violate the LRMPs regarding riparian management and directly harm ACS management objectives while relying on mitigation measures that are common and ongoing regardless of whether the pipeline is constructed or not.

K. Compliance with the Oregon and California Lands Act.

The Pacific Connector pipeline will cross 40 miles of BLM lands. DEIS, 4-21. On those lands, the Oregon and California Lands Act (O&C Act) proscribes the purposes for which those lands may be utilized. The O&C Act states that the O&C lands

...shall be managed...for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal [principle] of sustained yield for the purpose of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, and providing recreational facilities: Provided, That nothing herein shall be construed to interfere with the use and development of power sites as may be authorized by law.

43 U.S.C. § 1181a. The case law interpreting the O&C Act indicates that the O&C lands must be managed for “permanent forest production.” *Headwaters v. BLM*, 914 F.2d 1174 (9th Cir. 1990). In *Headwaters*, the Ninth Circuit held that “There is no indication that Congress intended “forest” to mean anything beyond an aggregation of timber resources.” *Id.* at 1183.

The DEIS acknowledges that the pipeline right-of-way will be managed to be free of vegetation over a 15 feet in height, which will preclude the reforestation of the cleared right-of-way. DEIS, 4-22, 4-77. The right-of-way will no longer produce trees for “forest production” as required by the O&C Act. Consequently, these acres will be permanently lost to forest production, in violation of the Act. 43 U.S.C. § 1181a; 5 U.S.C. § 706(2)(A).

L. Visual Impacts.

Visual Resources on BLM Lands – KOP-P2 Trail Post Office (Near MP 123.0) is essentially the view from the Crater Lake Highway (62). The simulated view of the near ridgeline from the heavily traveled Highway 62 is dramatic and will not meet the Scenic Integrity Objective (appears unaltered) or the BLM Visual Resource Management Class II definition (The nature of this class is to retain the existing character of the landscape). The DEIS acknowledges (4-782) that “the pipeline does not meet VRM Class II objectives in the short term (less than 5 years)” at this location and notes that mitigation developed in the Aesthetics Management Plan would help the area reach VRM Class II objectives in the long term (5 to 10 years). The purpose of having a VRM and Scenery Integrity Objective is to retain visual impact. The Aesthetics Management Plan must specifically address the steps that will be taken to restore the view at this location in the short term.

IV. DIRECT CLIMATE IMPACTS.

The DEIS quantifies the amount of greenhouse gases that will be directly emitted by the project: 2,165,897 tons of CO₂e per year. DEIS 4-894 to 4-895. As we explain below, this is a small fraction of the total greenhouse gas emissions that will be caused by the project, because of the significant “upstream” emissions associated with supplying natural gas to the project as well as the emissions resulting from end use of exported gas. Even for the direct greenhouse gas emissions acknowledged in the DEIS, however, the DEIS fails to take the hard look NEPA requires.

As a threshold issue, even the DEIS's 2,165,897 tons of CO₂e figure is improperly calculated, because the DEIS understates methane's impact on the climate. The DEIS GHG emissions estimates rely on a 100-year GWP of 21 for methane (i.e.; 21 times more potent than carbon dioxide) from the IPCC Second Assessment, which was released in 1995.²⁶ Yet the DEIS acknowledges that GWP "...best estimates have been updated over time."²⁷ The DEIS acknowledges that in 2013 the EPA updated the 100-year GWP used for GHG reporting of methane to 25 based on the IPCC Fourth Assessment (2007), and that the IPCC Fifth Assessment (2013), which is based on the most current science, further raised the estimate of methane's potency. As we explained in comments on DOE's Environmental Addendum regarding LNG exports, the current scientific consensus is that fossil methane has a 100-year global warming potential of 36 when climate feedbacks are included (as they should be). NEPA requires FERC to acknowledge this recent science. Although the EPA uses the 2007 estimate for purposes of the reporting rule, nothing in that rule or EPA's discussion thereof provides any justification for FERC to ignore the current scientific consensus regarding methane's impacts. Nor has FERC provided an adequate justification for using the 100 year global warming potential instead of the 20 year potential.

More fundamentally, NEPA requires more than merely identifying the tonnage of GHGs that will be emitted. NEPA requires discussion of the "ecological . . . , aesthetic, historic, cultural, economic, social, [and] health" effects of proposed actions. 40 C.F.R. § 1508.8. The DEIS does not attempt any analysis of greenhouse gas emissions' impacts on these issues, instead concluding that "[a]lthough the Project emissions would contribute to the overall amount of atmospheric GHG, it is impossible to quantify the impacts that the emissions of GHG from construction and operation of the Project would have on climate change." DEIS 4-1043. NEPA regulations provide that where "information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known," the agency must include, *inter alia*, "the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community." 40 C.F.R. § 1502.22(b)(4). In addition, FERC has an affirmative obligation to "identify and develop methods and procedures . . . which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations." 42 U.S.C § 4332(2)(B).

Here, there are at least two tools available to ensure necessary context for and consideration of the projects' greenhouse gas emissions: estimates of the "social cost" of greenhouse gas emissions, and assessment of the consistency of project emissions with federal emission reduction targets.

One way to illustrate the impact of greenhouse gas emissions is to use estimates that have monetized the harm done by each ton of greenhouse gases emitted. The 2,165,897 tons per year of CO₂e emissions identified by the DEIS are composed primarily of carbon dioxide. The federal Interagency Working Group on Social Cost of Carbon estimates "the monetized damages associated with" emission of a ton of carbon dioxide. EPA, which played a central role in

²⁶ https://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml

²⁷ DEIS at 4-894

developing the social cost of carbon estimate, recently reiterated that this social cost of carbon estimate is an appropriate tool for assessing impacts of greenhouse gas emissions in NEPA reviews.²⁸ CEQ's recent draft guidance on discussing greenhouse gas emissions specifically identifies the social cost of carbon as a tool to use to provide context for discussion of greenhouse gas emission impacts.²⁹ Use of the social cost of carbon is therefore a "generally accepted" for illustrating the impact of greenhouse gas emissions.

The biggest flaw in the Interagency Working Group's estimate is that it is almost certainly too low. The most recent (2013) report estimates that the monetized impact of a ton of carbon dioxide emitted in 2030 (roughly the midpoint of the expected lifetime of the Jordan Cove project), amount to \$52.³⁰ This midpoint value also reflects the average impact over the lifetime of the project. Thus, under the Interagency Working Group's estimate, the monetized impact of just the greenhouse gases directly emitted by the Jordan Cove Project (i.e., those identified in the DEIS) amounts to \$109 million per year, or \$2.18 billion for the 20-year period conditionally authorized by the Department of Energy. EPA has recognized, however, that it is 'very likely that [the social cost of carbon estimate] underestimates the damages" caused by carbon dioxide emissions, because "[t]he models used to develop SCC estimates . . . do not currently include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature."³¹ Sierra Club offered comments on the 2013 interagency estimate (which we incorporate by reference here) explaining that it was potentially orders of magnitude too low.³² Most recently, a peer-reviewed paper published by a pair of Stanford University researchers concluded that the Interagency Working Group's estimate drastically underestimates the impacts of carbon dioxide emissions.³³ Discussing emissions in 2015, rather than 2030, one of the paper's authors explained the conclusion of the work: "We estimate that the social cost of carbon is not \$37 per ton, as previously estimated, but \$220 per ton."³⁴ Thus, while there is some uncertainty as to the precise monetization of harm done by carbon dioxide emissions, it is clear that the value is not \$0, and cannot be ignored. *See, e.g., Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1198 (9th Cir. 2008). Although NEPA does not require agencies to monetize environmental impacts in every instance, where a tool for

²⁸ U.S. EPA, *EPA Comment Letter on Keystone XL Project DEIS* at 2, PDF available at <http://www.epa.gov/oecaerth/nepa/keystone-xl-project-epa-comment-letter-20130056.pdf> (last visited Jan. 22, 2014).

²⁹ 79 Fed. Reg. 77802, 77827.

³⁰ Interagency Working Group on Social Cost of Carbon, United States Government, *Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866* (Nov. 2013) at 2-3 (\$52 is the value at the middle of the three discount rates presented, 3%), available at <http://www.whitehouse.gov/sites/default/files/omb/assets/inforeg/technical-update-social-cost-of-carbon-for-regulator-impact-analysis.pdf>

³¹ *See* U.S. EPA, *The Social Cost of Carbon*, available at <http://www.epa.gov/climatechange/EPAactivities/economics/scc.html> (last visited Jan. 23, 2014).

³² Sierra Club, *Comments on the Interagency Working Group's (IWG) Technical Support Document: Social Cost of Carbon (SCC) for Regulatory Impact Analysis Under Executive Order 12866* (Docket Not. OMB-2013-0007-0083) (Feb. 25, 2014), available at <http://www.regulations.gov/#!documentDetail;D=OMB-2013-0007-0083>

³³ Frances C. Moore and Delavane B. Diaz, Temperature impacts on economic growth warrant stringent mitigation policy, *Nature Climate Change* (Jan. 12, 2015), DOI: 10.1037/NCLIMATE2481, available at http://www.eenews.net/assets/2015/01/13/document_cw_01.pdf

³⁴ Ker Than, Estimated social cost of climate change not accurate, Stanford scientists say, *Stanford Report* (Jan. 12, 2015), available at <http://news.stanford.edu/news/2015/january/emissions-social-costs-011215.html>

monetizing the impact of carbon dioxide emissions exists, and where the agency has not identified any other way to assess the impact of those emissions, failing to use that tool violates NEPA. *Columbia Basin Land Prot. Ass'n v. Schlesinger*, 643 F.2d 585, 594 (9th Cir. 1981).

FERC must also assess “whether the emissions being discussed are consistent with” applicable “goals for GHG emission reductions.”³⁵ As the DEIS recognizes, Oregon has adopted emission reduction targets.³⁶ The 2020 target is for emissions 10 percent below 1990 levels and 15 percent below 2005 levels, or roughly 50 million metric tons of CO₂e per year.³⁷ Oregon’s emissions currently exceed 60 MMT per year, so achieving this target will require a reduction of more than 10 MMT.³⁸ Thus, the direct emissions from the Jordan Cove project would consume or offset more than 20% of the emission reduction Oregon is attempting to achieve. Put differently, Jordan Cove would increase statewide emissions by 3.5% when the state is endeavoring to reduce emissions by 17%. Oregon’s targets for after 2020 are even more ambitious, requiring extensive further reduction. The DEIS must investigate whether adding an additional 2 MMT of year to Oregon’s emission total will preclude achievement of the state’s targets, and if not, explain why not.

When these tools are used to provide context regarding impacts of greenhouse gas emissions, it is clear that these impacts are significant. Impacts with a monetary value of over \$2 billion, or offsetting 20% of the emission reductions Oregon is trying to achieve, are impacts that cannot be deemed “insignificant” in any meaningful sense of the word.

V. INDIRECT EFFECTS OF INDUCED GAS PRODUCTION, GAS PRICE INCREASES, AND END USE OF LNG

NEPA requires consideration of “indirect effects,” which are “caused by the action” but:

are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effect on air and water and other natural systems, including ecosystems.

40 C.F.R. § 1508.8(b).

³⁵ *Id.* at 77826.

³⁶ See <https://olis.leg.state.or.us/liz/2007R1/Downloads/MeasureDocument/HB3543>

³⁷ DEIS 4-893; See, e.g.,

<http://www.puc.state.or.us/docs/2014%20Greenhouse%20Gas%20Reduction%20Goal%20Rate%20Impact%20Report%20per%20SB%20101.pdf>.

³⁸ The DEIS only provides emission data through 2010, and only in graph form, but the 2010 total exceeds 60 MMT. DEIS 4-893. The Oregon Public Utilities Commission provides more recent data, showing an increase, rather than decrease, since 2010.

<http://www.puc.state.or.us/docs/2014%20Greenhouse%20Gas%20Reduction%20Goal%20Rate%20Impact%20Report%20per%20SB%20101.pdf> at page 7.

The Jordan Cove project will have numerous indirect and cumulative effects due the fact that it will constitute a major new source of gas demand. Gas exported as LNG must come from somewhere. The only options are an increase in North American supply to match this new demand or a decrease in other North American consumption to free up gas that would otherwise be used elsewhere. As explained in the Energy Information Administration's January 2012 LNG Export Study and in numerous subsequent analyses, a combination of both is likely.³⁹ The predominant effect will be an increase in supply as gas producers increase output in response to new demand. The extra demand will also cause increases in domestic gas prices, which will cause some domestic consumers (primarily in the electricity generating sector) to reduce their consumption (according to EIA, primarily but not exclusively by switching to coal). Both this increase in production and this shift in the power sector will have environmental impacts. Additional environmental impacts will result from the consumption of exported LNG by end users.

These environmental impacts are all indirect effects that must be included in the NEPA analysis. As commenters explained in their prior protests, extensive Circuit Court authority explains that for this type of infrastructure project—provision of a significant new connection between sources of fossil fuel supply and demand—NEPA requires consideration of the effects of the changes in ‘upstream’ production and ‘downstream’ consumption that would indirectly result from the project. *N. Plains Resource Council v. Surface Transp. Bd.*, 668 F.3d 1067, 1081-82 (9th Cir. 2011), *Mid States Coalition for Progress v. Surface Transportation Board*, 345 F.3d 520 (8th Cir. 2003). Recently, both the Council on Environmental Quality and the Environmental Protection agency have reiterated this requirement. CEQ's Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts explicitly calls on agencies to consider both the “upstream” and “downstream” effects of projects. 79 Fed. Reg. 77802, 77826. EPA has specifically called for consideration of these projects' effects on gas production. EPA, *Scoping Comments – The Jordan Cove Energy Project LP*, FERC Dkts. PF12-7 and PF12-17, at 14 (Oct. 29, 2012). Most recently, in commenting on the analogous NEPA review of the proposed Keystone pipeline project, EPA explained how available modeling indicated that the Keystone project would likely increase tar sands oil production, that this increase would have adverse environmental impacts, and that these impacts needed to be considered in the NEPA indirect effects analysis.⁴⁰

The draft EIS's refusal to consider these effects therefore violates NEPA. As we explain below, the reasons given for excluding upstream production from analysis are contrary to the available evidence and FERC's legal obligations. Moreover, while the draft EIS states that it is uncertain whether exports will be supplied by induced gas production, the draft EIS completely fails to address the impacts of any other possible source of gas, such as gas-to-coal shifting in the electric power sector.

³⁹DOE/FE has commissioned a two part study of the economic impacts of LNG exports. Energy Information Administration, *Effect of Increased Natural Gas Exports on Domestic Energy Markets*, (2012) (“EIA Export Study”), (EIA, 2012a); NERA Economic Consulting, *Macroeconomic Impacts of LNG Exports from the United States* (2012). (NERA, 2012)

⁴⁰ EPA, Comments on Final SEIS for the Keystone XL Project (Feb. 2, 2015).

A. Environmental Impacts of Induced Gas Production

NEPA regulations, caselaw, and CEQ guidance all demonstrate that inducement of additional gas production is the type of effect that falls within NEPA's indirect effects rubric. The draft EIS fails to justify excluding these effects from analysis.

Multiple available tools can predict the amount of additional production that will be induced by the Jordan Cove project. Central among these is EIA's National Energy Modeling System. In January of 2012 EIA, using the National Energy Modeling System, estimated that roughly 63% of exported gas will come from new production.⁴¹ The EIA study addressed both regional and technique differences in production. The National Energy Modeling System divides the continental 48 states into twelve distinct modeling regions.⁴² Similarly, EIA's 2012 study regarding the effects of LNG exports reported predicted production increases in six distinct regions.⁴³ NEMS also allows predictions regarding the type of additional production. EIA's 2012 export study further identified the share of additional gas production attributable to each type of production (shale gas, tight sands, coalbed methane, etc.).⁴⁴

More recent studies, using different tools have estimated an even higher increase in production in response to exports: for example, ICF International estimates that between 80 and 88% of export supply will come from additional gas production.⁴⁵ ICF provides a state-by-state forecast as to increased production volumes.⁴⁶ Similarly, Deloitte Marketpoint has estimated the extent to which gas production would increase in response to LNG exports.⁴⁷

The Department of Energy has found that both the EIA and Deloitte models are sufficiently reliable to be used in predicting the nationwide effects of gas infrastructure changes.⁴⁸ In discussing the Jordan Cove project, DOE "observe[d] that more natural gas is likely to be

⁴¹ EIA Export Study, at 10.

⁴² EIA, Model Documentation Report: National Gas Transmission Module of the National Energy Modeling System, p.25 (July 2013), *available at* [http://www.eia.gov/forecasts/aeo/nems/documentation/ngtdm/pdf/m062\(2013\).pdf](http://www.eia.gov/forecasts/aeo/nems/documentation/ngtdm/pdf/m062(2013).pdf)

⁴³ EIA, Lower 48 Natural Gas Production and Wellhead Prices by Supply Region, *available at* <http://www.eia.gov/oiaf/aeo/tablebrowser/#release=FE2011&subject=16-FE2011&table=72-FE2011®ion=0-0&cases=rflhexslw-d090911a,rflhexrpd-d090911a,rflhexslw-d090911a,rflhexrpd-d090911a,ref2011fe-d020911a>.

⁴⁴ EIA Export Study at 6, 10.

⁴⁵ ICF International, *U.S. LNG Exports: State-Level Impacts on Energy Markets and the Economy*, at 14 (November 2013), *available at* <http://www.api.org/~media/files/policy/lng-exports/api-state-level-lng-export-report-by-icf.pdf>. (International, 2013)

⁴⁶ *Id.* at 15.

⁴⁷ See *Sierra Club Protest* at 13-14 and Deloitte MarketPoint, Analysis of Economic Impact of LNG Exports from the United States (Deloitte, 2013); *see also* Deloitte Marketpoint, Made in America: The Economic Impact of LNG Exports from the United States (2011), [http://www.deloitte.com/assets/Dcom-UnitedStates/Local percent20Assets/Documents/ Energy_us_er/us_er_MadeinAmerica_LNGPaper_122011.pdf](http://www.deloitte.com/assets/Dcom-UnitedStates/Local%20Assets/Documents/Energy_us_er/us_er_MadeinAmerica_LNGPaper_122011.pdf); Deloitte, Natural Gas Models, http://www.deloitte.com/view/en_US/us/Industries/power-utilities/deloitte-center-for-energy-solutions-power-utilities/marketpoint-home/marketpoint-data-models/b2964d1814549210VgnVCM200000bb42f00aRCRD.htm.

⁴⁸ To our knowledge, DOE has not expressed an opinion regarding the validity of ICF's model.

produced domestically if LNG exports are authorized than if they are prohibited.”⁴⁹ More specifically, DOE’s conditional authorization of the Jordan Cove project endorsed the EIA study, and its predictions of production increases in response to exports, as “fundamentally sound,” and DOE relied on EIA’s predictions of market response to exports—including increased production—to conclude that exports would not cause price increases inconsistent with the public interest.⁵⁰ DOE’s Environmental Addendum on LNG exports explicitly endorses EIA’s prediction of the extent to which production will increase if exports occur.⁵¹ Separately, DOE has found Deloitte’s North American Integrated Model sufficiently reliable to provide useful predictions of how gas production and pipeline transportation will respond to increased electric power sector demand as a result of greenhouse gas regulation.⁵² Deloitte’s model in particular is a *North American* model, which includes supply, transportation, and demand in Canada as well as the United States.⁵³

In light of these tools, FERC cannot conclude that increased gas production “is not a ‘reasonably foreseeable’ indirect effect of the Project.” DEIS at 1-21. The fact that “other factors . . . such as regional domestic market demands, permitting for new gas wells, or technologies and efficiencies in exploration, may also influence production,” *id.*, does not change the fact that, as DOE has recognized, “more natural gas is likely to be produced domestically if LNG exports are authorized than if they are prohibited,” and that available tools can model the likely effect of LNG exports. Forecasts produced with these models contain some inherent uncertainty, but “[r]easonable forecasting and speculation” are inherent in the NEPA process, *Scientists’ Inst. for Pub. Info., Inc. v. Atomic Energy Comm’n*, 481 F.2d 1079, 1092 (D.C. Cir. 1973), and DOE has found these models to be adequate to inform evaluation of agency decisionmaking. Moreover, although the forecasts discussed above generally concern scenarios in which gas is exported from the Gulf of Mexico, the underlying tools are capable of modeling the effects of exports from the Pacific Northwest.

This additional gas production will have significant environmental impacts that must be discussed in FERC’s NEPA review. One impact of this additional production will be significant greenhouse gas emissions. In discussing the project’s indirect effects related to increased gas production, FERC must quantify the greenhouse gases emitted by this production. As explained by DOE’s Environmental Addendum regarding LNG exports, and in the accompanying National Energy Technology Lab reports, natural gas production emits significant volumes of methane and other greenhouse gases.

⁴⁹ DOE, Conditional Authorization of Jordan Cove, DOE/FE Order No. 3413, Docket 12-32-LNG, at 99 (March 25, 2014).

⁵⁰ DOE, Conditional Authorization of Jordan Cove, DOE/FE Order No. 3413, Docket 12-32-LNG, at 141 (March 25, 2014).

⁵¹ DOE Addendum at 1, 4-5.

⁵² DOE, *Natural Gas Infrastructure Implications of Increased Demand from the Electric Power Sector* (Feb. 2015), available at http://energy.gov/sites/prod/files/2015/02/f19/DOE%20Report%20Natural%20Gas%20Infrastructure%20V_02-02.pdf. (DOE, 2015)

⁵³ Deloitte MarketPoint, Deloitte MarketPoint, 2011, http://www.deloitte.com/assets/DcomUnitedStates/Local%20Assets/Documents/us_er_marketpoint_marketbuilder011411.PDF.

NETL concluded that U.S. gas extraction, processing, and pipeline transmission of 1 bcf of gas emitted roughly 14,000 metric tons of carbon dioxide equivalent, using a 100-year time horizon to convert methane to CO₂e.⁵⁴ As we explained in comments on the DOE Environmental Addendum and NETL report (comments which we incorporate herein by reference), this estimate is almost certainly far too low, and it is more appropriate to use the 20-year GWP for methane. Nonetheless, we use this estimate for illustration here. If, as EIA predicts for Gulf Coast export projects, at least 63% of the 0.8 bcf/d of gas exported by Jordan Cove is sourced from new production, then the producing, processing, and transportation of this additional 0.5 bcf/d of gas will emit 2.6 million metric tons of CO₂e per year.⁵⁵

In addition to quantifying greenhouse gas emissions that will be caused by induced gas production, FERC must, as discussed above, assess the impact of these emissions. One way to do so is to use the social cost of greenhouse gases. The social cost of carbon, discussed above, provides one tool. Although a comprehensive estimate of the social cost of methane has not yet been developed, a peer-reviewed analysis by EPA economists recently estimated the social cost of a short ton of methane emitted in 2015 at \$880.⁵⁶ This figure was derived using the same methodology used for the estimates of the social cost of carbon. Subsequent research indicates that this estimate is also too low. Since the social cost of methane paper's publication, two inputs to that study—estimates of methane's global warming potential and the 2010 estimate of the social cost of carbon—have been revised dramatically upward. The social cost of methane study used the IPCC Fourth Assessment Report's estimates of methane's global warming potential,⁵⁷ but the IPCC Fifth Assessment Report increased the estimate of methane's global warming potential by 21% to 44%. The social cost of methane analysis also used an older, 2010 estimate of the social cost of carbon: the 2013 study discussed above increased estimates by 50%.⁵⁸ As noted above, even this revised figure is too low. For these reasons, the true social cost of methane certainly exceeds \$880 per short ton.

⁵⁴ NETL, Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States, p. 11 (figure 6-3) (May 29, 2014) (100 kg CO₂e per MWh equivalent). NETL's calculations assume a natural gas fired power plant efficiency of 46.4%. *Id.* at 4. One cubic foot of natural gas provides 1,025 Btu, and 1 kilowatthour is equivalent to 3,412 Btu, http://www.eia.gov/EnergyExplained/?page=about_btu, so under this assumed efficiency, one bcf of gas generates 139,390 MWh of electricity.

⁵⁵ We emphasize that this represents only a small fraction of the GHG emissions associated with the project. This estimate only considers a portion of the emissions associated with only 63% of the proposed export volume—consideration of the entire gas lifecycle, and of the provision of gas for the remainder of the export volume, drastically increases the total greenhouse gas impact of the project.

⁵⁶ See Marten, A.L., and Newbold, S.C., *Estimating the social cost of non-CO₂ GHG emissions: Methane and nitrous oxide*, 51 Energy Policy 957 (2012). As with the social cost of carbon, this estimate uses a 3% discount rate. (Marten & Newbold, 2012)

⁵⁷ *Id.* at 16.

⁵⁸ Compare *id.* at 13 (citing Interagency Working Group on Social cost of Carbon, *Technical Support Document: Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866* (Feb. 2010)), available at <http://www.whitehouse.gov/sites/default/files/omb/inforeg/for-agencies/Social-Cost-of-Carbon-for-RIA.pdf>), with the 2013 update to this document, *supra* n.62, at 3. Under the middle 3% discount rate, the 2013 study's estimate of the social cost of a ton of carbon emitted in 2010 is 50% higher than the 2010 study's estimates, and the 2013 study's estimates increase by even greater percentages for subsequent years.

When considering the greenhouse gases emitted by production caused by the project, as well as the cumulative effect of emissions from production induced by other export projects, FERC must also take a hard look at whether these overall emission increases are consistent with U.S. climate targets. President Obama has set the goal of reducing U.S. greenhouse gas emissions, relative to 2005, by at least 17% by 2020, 42% by 2030, and 83% by 2050. These targets were announced in Copenhagen in 2009,⁵⁹ the President committed to them in Cancún in 2010,⁶⁰ and the President reiterated the 2020 goal in the Climate Action Plan announced in 2013.⁶¹ Under the most optimistic projections from the EPA and EIA regarding the current trajectory of U.S. greenhouse gas emissions, the U.S. will exceed the Administration's 2020 target by over 800 million metric tons of CO₂-equivalent.⁶² FERC must assess whether the emissions *increases* caused by Jordan Cove and other LNG export projects can be reconciled with efforts to achieve significant emission *reductions* nationally.

Another impact of this additional gas production will be increases in ozone precursor emissions. "Jordan Cove proposes to acquire its gas from western Canadian and Rocky Mountain sources." DEIS 3-6, *see also* DEIS 1-13. It is likely that additional production induced by the project will also occur in these regions, although FERC the tools summarized above can provide a more informed prediction. These regions have experienced significant declines in air quality as a result of ozone attributable to increased natural gas production. On July 20, 2012, the US EPA designated Wyoming's Upper Green River Basin as a marginal nonattainment area for ozone.⁶³ In an extended assessment, the Wyoming Department of Environmental Quality ("WDEQ") found that ozone pollution was "primarily due to local emissions from oil and gas . . .

⁵⁹ United States Department of State, Letter to Executive Secretary of United Nations Framework Convention on Climate Change Confirming U.S. Copenhagen Targets, (Jan. 28, 2010), *available at* https://unfccc.int/files/meetings/cop_15/copenhagen_accord/application/pdf/unitedstatescphaccord_app.1.pdf. (State, 2010)

⁶⁰ United States Framework Convention on Climate Change, Compilation of economy-wide emission reduction targets to be implemented by Parties included in Annex I to the Convention (June 7, 2011), *available at* <http://unfccc.int/resource/docs/2011/sb/eng/inf01r01.pdf>. (UN, 2011)

⁶¹ Executive Office of the President, *The President's Climate Action Plan* (June 2013), *available at* <http://www.whitehouse.gov/sites/default/files/image/president27climateactionplan.pdf>.

⁶² This estimate is calculated from table 5-1 of the 2014 U.S. Climate Action Report to the UN Framework Convention on Climate Change, *Projected Greenhouse Gas Emissions* (2014), *available at* <http://www.state.gov/documents/organization/218993.pdf>, (USCAR, 2014). Table 5-1 uses outdated global warming potentials for methane and other non-CO₂ pollutants taken from the IPCC's 1996 Second Assessment Report. This same report explains, however, that going forward, the U.S. will make reports using the IPCC's 2007 Fourth Assessment Report estimates of 100-year global warming potentials. *First Biennial Report of the United States of America*, Table 1, *available at* <http://www.state.gov/documents/organization/219039.pdf>, (Anon., 2014). *See also* <http://www.state.gov/e/oes/rls/rpts/car6/> (summary page with links to each chapter of this report). While we have used these global warming potentials for consistency with Climate Action Report's stated intentions with regard to reports made under this program, we note that the actual global warming potentials are likely to be significantly higher, as reflected in the IPCC's 2013 Fifth Assessment Report.

⁶³ EPA, *Air Quality Designations for the 2008 Ozone National Ambient Air Quality Standards*, 77 Fed. Reg. 30088, 30157 (May 21, 2012), attached as Exhibit 21; *see also* Schnell, R.C., et al. (2009), "Rapid photochemical production of ozone at high concentrations in a rural site during winter," *Nature Geosci.* 2 (120 – 122). DOI: 10.1038/NGEO415, (Schnell, 2009).

development activities: drilling, production, storage, transport, and treating.”⁶⁴ In the winter of 2011, the residents of Sublette County suffered thirteen days with ozone concentrations considered “unhealthy” under EPA’s current air-quality index, including days when the ozone pollution levels exceeded the worst days of smog pollution in Los Angeles.⁶⁵ In 2013, a Wyoming Department of Health study linked elevated levels of ozone pollution to increased visits at two local health clinics for respiratory-related complaints.⁶⁶ In the past, residents have faced repeated warnings regarding elevated ozone levels and the resulting risks of going outside⁶⁷ and WDEQ has drafted a plan, which includes weather forecasting, public updates and short-term ozone emission reduction measures, in anticipation of elevated ozone levels in 2014.⁶⁸

Gas production is causing ozone problems in other Rocky Mountain states as well. In recent years Northeastern Utah’s Uintah Basin has experienced severe ozone pollution. In the winter of 2012 to 2013, this region suffered over fifty days where air quality monitors measured ozone in excess of federal standards and some days where ozone levels were almost twice the federal standard.⁶⁹ The Utah Department of Environmental Quality has determined that “Oil and gas operations were responsible for 98-99 percent of volatile organic compound (VOC) emissions and 57-61 percent of nitrogen oxide (NOx) emissions,” the primary chemical contributors to ozone formation.⁷⁰ The Bureau of Land Management (BLM) has similarly identified the multitude of oil and gas wells in the region as the primary cause of the ozone pollution.⁷¹

Natural gas production induced by the Jordan Cove project will emit ozone precursors that exacerbate this pollution. Ozone is largely a regional problem, and is primarily addressed at the

⁶⁴ Wyoming Department of Environmental Quality, Technical Support Document I for Recommended 8-hour Ozone Designation of the Upper Green River Basin (March 26, 2009) at viii, *available at* http://deq.state.wy.us/out/downloads/Ozone%20TSD_final_rev%203-30-09_jl.pdf, (WDEQ, 2009).

⁶⁵ EPA, *Daily Ozone AQI Levels in 2011 for Sublette County, Wyoming*, *available at* http://www.epa.gov/cgi-bin/broker?msaorcountyName=countycode&msaorcountyValue=56035&poll=44201&county=56035&msa=1&sy=2011&flag=Y&_debug=2&_service=data&_program=dataprog.trend_tile_dm.sas, (EPA, 2009a); *see also* Wendy Koch, *Wyoming’s Smog Exceeds Los Angeles’ Due to Gas Drilling*, USA Today, *available at* <http://content.usatoday.com/communities/greenhouse/post/2011/03/wyomings-smog-exceeds-los-angeles-due-to-gas-drilling/1>, (Koch, 2011).

⁶⁶ State of Wyoming, Department of Health, *Associations of Short-Term Exposure to Ozone and Respiratory Outpatient Clinic Visits — Sublette County, Wyoming, 2008–2011* (Mar. 1, 2013) at 3, *available at* <http://www.health.wyo.gov/phsd/ehl/index.html>, (WDEQ, 2013).

⁶⁷ *See, e.g.*, 2011 DEQ Ozone Advisories, Pinedale Online! (Mar. 17, 2011), <http://www.pinedaleonline.com/news/2011/03/OzoneCalendar.htm> (documenting ten ozone advisories in February and March 2011), (DEQ, 2011a); Wyoming Department of Environmental Quality, Ozone Advisory for Monday, Feb. 28, Pinedale Online! (Feb. 27, 2011), <http://www.pinedaleonline.com/news/2011/02/OzoneAdvisoryforMond.htm>, (DEQ, 2011b).

⁶⁸ *DEQ plans for the 2014 winter ozone season*, Pinedale Online! (Dec. 19, 2013), *available at* <http://www.pinedaleonline.com/news/2013/12/DEQplansforthe2014wi.htm> (DEQ, 2013).

⁶⁹ *See, e.g.*, Utah Dept. of Environmental Quality, *Utah’s Environment 2013: Planning and Analysis: Uintah Basin Ozone Study* (updated Jan. 17, 2014), *available at* <http://www.deq.utah.gov/envrpt/Planning/s12.htm> (UDEQ, 2014a).

⁷⁰ Utah Dept. of Environmental Quality, *Uinta Basin: Ozone in the Uinta Basin* (Updated Jan. 28, 2014), *available at* <http://www.deq.utah.gov/locations/uintahbasin/ozone.htm>, (UDEQ, 2014b).

⁷¹ BLM, *GASCO Energy Inc. Uinta Basin Natural Gas Development Draft Environmental Impact Statement* (“GASCO DEIS”), at 3-13, *available at* http://www.blm.gov/ut/st/en/fo/vernal/planning/nepa/_gasco_energy_eis.html, (BLM, 2010).

state or regional level in other contexts.⁷² Thus, once FERC uses the above modeling tools to determine the amount of gas production that will potentially be added in a play or region, several tools allow FERC to predict the amount of ozone precursors that will be emitted by that regional production. Sierra Club illustrated one such method in its protest: using estimates of methane leak rates as a surrogate for the amount of raw natural gas that leaks, together with EPA estimates of the amount of VOC contained in natural gas, Sierra Club provided estimates of the amount of VOCs that would be emitted by production induced by Jordan Cove's exports.⁷³ NETL provides another method of estimating these impacts, illustrated by NETL's bottom-up estimate of NOx emissions.⁷⁴ NETL estimates that the cradle to transmission NOx emissions for natural gas used in combined cycle power plants are roughly 0.6 kilograms of NOx per megawatt hour generated, with roughly 0.5 kilograms specifically from production rather than transport.⁷⁵ Using NETL's assumption of a combined cycle power plant efficiency of 46% and EIA's estimate of a natural gas heat content of 1025 British thermal units per cubic foot,⁷⁶ NETL indicates that production and transmission of natural gas emits 87 metric tons of NOx per bcf of gas. Thus, once FERC determines the amount of additional production that would occur in the Rocky Mountain region, for example, FERC can estimate the amount of VOC and NOx emissions that would be emitted by this production in that region. This emissions estimate would provide a basis for meaningful discussion regarding impacts on regional ozone levels.

Additional gas production induced by the Projects will have numerous additional harmful impacts, as discussed in the protests previously filed in this docket, DOE's Environmental Addendum regarding LNG exports, and the undersigned's comments on the DOE addendum. FERC must also consider these additional impacts as part of its hard look at the indirect and cumulative effects of the project.

B. Indirect effects on U.S. electricity generation.

As we explained in our comment on DOE's materials regarding the environmental effects of LNG exports, a foreseeable effect of exports will be increases in greenhouse gas emissions from the U.S. electricity generation sector.⁷⁷ The extent of this impact is likely to be inversely correlated with the effects of induced production: if gas doesn't come from production that would not otherwise occur, then it must come from displacement of demand that would otherwise consume that gas. EIA's 2012 export study suggests that when the market "frees" gas for export by causing electricity producers to switch from gas to coal, this has significantly higher climate impact than when the market provides gas for export by increasing gas production.

C. Impacts from other slices of the LNG lifecycle.

⁷² See, e.g., EPA, Cross-State Air Pollution Rule (CSAPR), <http://www.epa.gov/crossstaterule/>.

⁷³ Sierra Club Protest, Docket CP13-483, Submittal 20130621-5004, at 15.

⁷⁴ NETL Gas LCA at 52-54.

⁷⁵ *Id.* at Figure 4-19, "Life Cycle NOx Emissions for Natural Gas Power Using Domestic Natural Gas Mix."

⁷⁶ <http://www.eia.gov/tools/faqs/faq.cfm?id=45&t=8>

⁷⁷ Sierra Club, et al., Comments on DOE Export LCA at 4-5.

In addition to the effects caused by production and liquefaction of gas for export, the export project will have environmental effects associated with the vessel transport of LNG and consumption by end users. The DEIS fleetingly acknowledges these impacts on page 4-895.

Looking at one additional segment of the lifecycle, the DEIS estimates the greenhouse gas emissions associated with combustion of gas exported by 90 1480,000 m³ tankers per year. We note that this appears to amount to 275 bcf per year of gas, less than the 292 bcf per year for which Jordan Cove has received conditional non-free trade agreement export authorization, and thus may understate the total impact of these exports.

The DEIS also offers cursory discussion of studies regarding the entire lifecycle. DEIS 4-895. The DEIS summarizes an older Oregon Department of Energy study on the lifecycle greenhouse gas emissions associated with LNG imports, which concluded that impacts “were between 6 and 12 percent higher than those associated with domestic gas sources.” We note that more recent work, which has looked at exports rather than imports, has found that LNG’s lifecycle emissions are much more than 6-12% higher than domestic pipeline gas. For example, in considering Gulf Coast exports to Asia, on the 100-year timeframe, NETL finds that steps associated with the LNG process (liquefaction, transport, and regasification) increase the lifecycle greenhouse gas emissions by 22%.⁷⁸ Similarly, recent studies have shown that LNG’s lifecycle emissions are much more than the “39 to 48 percent less than those associated with coal” estimate the DEIS takes from the 2008 ODE report. More recent work has demonstrated both that ODE underestimated the amount methane emitted from the gas production process and that the impact of each ton of methane emissions (e.g., methane’s global warming potential). We summarized the recent science regarding lifecycle impacts of natural gas in comments on the DOE Addendum, and incorporate those comments here by reference.

Finally, the DEIS repeats NETL’s comparison of the lifecycle impacts of U.S. LNG exports to China to the lifecycle impacts of Russian pipeline gas exported to china or to coal. DEIS 4-895. Providing this comparison, without more, is misleading, because it implies that if U.S. LNG is not exported, these other fossil fuels will be consumed instead. Nothing in the record indicates that this is the case. Instead, as explained in our comment on the DOE Addendum, U.S. LNG exports will increase overall energy use and displace renewables in addition to displacing use of these fossil fuels.

D. Cumulative Effects to Wildlife Species.

40 C.F.R. § 1508.7 requires the FERC to consider the cumulative impacts of the proposal. FERC’s analysis, therefore, is not limited to the region directly adjacent to the terminal and pipeline. Nor is the review limited to short-term impacts, but it must consider the long-term impacts on the estuary and the entire length of the pipeline. The terminal, along with the proposed pipeline and potential lateral pipelines, will have a tremendous adverse impact on each of the factors listed above.

⁷⁸ NETL, LNG GHG LCA, at 11 (Figure 6-3). 629 kg CO₂e per MWh for LNG, 110 kg of which are from liquefaction, tanker transport, tanker berthing/deberthing, and LNG regasification.

The FERC must adequately accord weight to important past, ongoing, and future actions that will create significant adverse impacts for local and regional ecosystems, as well as negatively affect the recovery of sensitive wildlife, fish, and their habitats. Further, the FERC must likewise accord weight to significant upstream disturbances, particularly road-building and the long-term use of access and logging roads, have and will have in National Forests. The proposed pipeline will also disturb upstream forestland; the FERC must consider the cumulative effects on headwater, riparian, and wetland areas within contemplated and reasonably foreseeable pipeline construction areas.

As part of the cumulative effects analysis, the FERC must specifically consider the project's degradation of fish habitat in light of the already tenuous state of salmon, sturgeon and groundfish in the Pacific Northwest. First, the wetland and shallow water habitat in Coos Bay has been significantly degraded over the last century. The remaining habitat, therefore, takes on added importance. The proposed massive channel deepening will fundamentally alter the Bay, further eroding and undermining the integrity of shallow water habitats. In addition, the FERC must consider the cumulative economic effect of the project on the fishing and oyster industry and communities dependent upon fishing and shellfish revenue. The direct harm to the Bay will harm the fishing and shellfish industries, as will the lack of access to traditional fishing areas. Finally, the FERC must consider the impacts of increased natural gas production that will result from this project.

Forests play an essential role in water purification.⁷⁹ Scientific literature clearly establishes the link between percent forest cover and water quality; for example, reductions in forest cover are directly correlated with negative changes in water chemistry, such as increased levels of nitrogen, phosphorus, sodium, chlorides, and sulfates as well as reduced levels of macroinvertebrate diversity.⁸⁰ Reducing forest cover decreases areas available for aquifer recharge, increases erosion, stormwater runoff, and flooding, and adversely affects aquatic habitats.⁸¹ Already in Pennsylvania, researchers have correlated areas of high natural gas well density with decreased water quality, as indicated by lower macroinvertebrate density and higher levels of specific conductivity and total dissolved solids.⁸²

Both deforestation and pipeline construction and operation lead to greatly increased levels of erosion, sedimentation, and stormwater runoff affecting surface water quality. Excess sedimentation is associated with a number of detrimental effects on water quality, stream morphology, and aquatic life, and has been identified by the EPA as one of the primary threats to

⁷⁹ Robert A. Smail & David J. Lewis, Forest Service, U.S. Dep't of Agric., Forest Land Conversion, Ecosystem Services, and Economic Issues for Policy: A Review 12 (2009), available at <http://www.fs.fed.us/openspace/fote/pnw-gtr797.pdf>

⁸⁰ Jackson, J.K. & Sweeney, B.W., "Expert Report on the Relationship Between Land Use and Stream Condition (as Measured by Water Chemistry and Aquatic Macroinvertebrates) in the Delaware River Basin," Stroud Water Research Center, Avondale, PA, available at <http://www.state.nj.us/drbc/Sweeney-Jackson.pdf>

⁸¹ State of N.J. Highlands Water Prot. and Planning Council, Ecosystem Management Technical Report 39 (2008).

⁸² Academy of Natural Sciences of Drexel University, "A Preliminary Study of the Impact of Marcellus Shale Drilling on Headwater Streams," available at <http://www.ansp.org/research/pcer/projects/marcellus-shale-prelim/index.php>

US surface waters.⁸³ Furthermore, heavy truck traffic on rural roads, especially unpaved roads, that were not built to withstand hundreds or thousands of truck trips also leads to significant erosion and sedimentation problems.⁸⁴ The prospect of industrial equipment and trucks are required to not only construct necessary pipeline roads, but also to maintain such. Ditches and natural watercourses along rural roads are the primary pathways for the conveyance of polluted runoff bearing sediments and nutrients to streams, and increase runoff volume and energy as well, contributing to flooding.⁸⁵ In addition, access roads constructed or modified to enter gas exploration or extraction facilities contribute significantly to sedimentation and surface water quality degradation.

Pipeline construction and right-of-way maintenance creates significant land use impacts. Pipelines also create significant erosion and sedimentation problems during construction as well as over the decades-long maintenance of cleared rights-of-way. In joining well pads to transmission infrastructure, a single gathering line may cross numerous streams and rivers, especially in states such as Pennsylvania with a high density of stream mileage per unit of land. Stream and wetland pipeline crossings cause erosion and sedimentation whether implemented through dry ditch or wet ditch crossings.⁸⁶ Though erosion and sediment control permits may be required for stream crossings—indeed, in practice permit requirements are routinely violated.⁸⁷ Both dry and wet ditch crossings necessitate the clearing of area stream banks. Because riparian vegetation functions as a natural barrier along the stream edge, both removing sediment and other pollutants from surface runoff and stabilizing stream banks,⁸⁸ its clearing necessarily increases a stream's susceptibility to erosion events. Cumulatively, the construction of numerous crossings across a single watercourse may significantly degrade the quality and flow rate of the water body.⁸⁹ Erosion and sedimentation problems are often exacerbated by the staging of construction, during which soils are exposed for long periods and over long distances by clearing, grading, and trench cutting before final pipeline installation and revegetation.⁹⁰

⁸³ Entrekin, S. *et al.*, "Rapid expansion of natural gas development poses a threat to surface waters," *Frontiers in Ecology and Environment* 2011, 9(9), 503-11 (Oct. 6, 2011), at 507, 509, available at <http://www.esajournals.org/doi/abs/10.1890/110053>

⁸⁴ See C.J. Randall, *Hammer Down: A Guide to Protecting Local Roads Impacted by the Marcellus Shale* (Dec. 2010), available at http://www.greenchoices.cornell.edu/downloads/development/marcellus/Marcellus_Randall.pdf

⁸⁵ Yen Hoang & Keith Porter, *Stormwater Management in the Rural New York Headwater Areas of the Chesapeake Bay Watershed*, *Journal of Water Law* 21:6 (2010) at 8.

⁸⁶ The Nature Conservancy, "Natural Gas Pipelines," Excerpt from Report 2 of the Pennsylvania Energy Impacts Assessment, December 16, 2011, at 7, available at <http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/pennsylvania/ng-pipelines.pdf>

⁸⁷ Beth Brelje, *Pike Conservation Official Fed Up With Gas Company's Violations*, *Pocono Record*, Sept. 20, 2011, <http://www.poonorecord.com/apps/pbcs.dll/article?AID=/20110920/NEWS/109200330/-1/rss01> (noting numerous violations documented on Tennessee Gas Pipeline Company project).

⁸⁸ David J. Welsch, Forest Service, U.S. Dep't Agric., NA-PR-07-91, *Riparian Forest Buffers: Function and Design for Protection and Enhancement of Water Resources* (1991), available at http://na.fs.fed.us/spfo/pubs/n_resource/buffer/cover.htm

⁸⁹ Canadian Association of Petroleum Producers, Canadian Energy Pipeline Association, and Canadian Gas Association, "Pipeline Associated Watercourse Crossings," 1-4 (2005).

⁹⁰ Comments on Environmental Assessment of MARC I Hub Line Project, Exhibit G, FERC Docket No. CP10-480-000, Submittal 20110711-5189 (filed Jul. 22, 2011) (statement of Susan Beecher, Executive Director, Pike County PA Conservation District (Jul. 8, 2011)), available at http://elibrary.ferc.gov/idmws/docket_sheet.asp

The FERC must also consider cumulative impacts to conservation, aesthetics, and environmental concerns. These include the cumulative impacts to wetlands, fish and wildlife values, flood hazards, floodplain values, water supply and conservation, and water quality. As discussed above, the proposed project will have significant and far-reaching impacts on all of these values, throughout southern Oregon and beyond.

VI. ALTERNATIVES

The alternatives analysis is “the heart of the environmental impact statement,” designed to offer a “clear basis for choice among options by the decisionmaker and the public.” 40 C.F.R. § 1502.14. Fundamentally, an agency must “to the *fullest* extent possible . . . consider alternatives to its action which would reduce environmental damage.” *Calvert Cliffs’ Coordinating Comm. v. U. S. Atomic Energy Comm’n*, 449 F.2d 1109, 1128 (D.C. Cir. 1971) (emphasis in original). Absent this comparative analysis, decisionmakers and the public can neither assess environmental trade-offs nor avoid environmental harms. *See id.* at 1114.

The alternatives analysis must include an adequate range of alternatives. This includes “reasonable alternatives not within the jurisdiction of the lead agency,” as well as “appropriate mitigation measures not already included in the proposed action or alternatives.” 40 C.F.R. § 1502.14. One way in which this requirement can be violated is where an agency defines the purpose and need of the project so narrowly as to preclude alternatives other than the preferred project.

The alternatives analysis must be deep as well as broad. Alternatives must be “rigorously explore[d].” 40 C.F.R. § 1502.14(a). Rigorous exploration requires that the degree of analysis devoted to each alternative must be substantially similar to the degree of analysis devoted to the proposed action.⁹¹ Because alternatives are so central to decisionmaking and mitigation, “the existence of a viable but unexamined alternative renders an environmental impact statement inadequate.” *Oregon Natural Desert Ass’n v. Bureau of Land Mgmt.*, 625 F.3d 1092, 1100 (9th Cir. 2010) (internal alterations and citations omitted).

The alternatives analysis is informed by the purpose and need of the project. Alternatives are measured, in part, by their ability to satisfy the project purpose and need. Here, FERC improperly relies upon an implicit statement of purpose and need that is unlawfully narrow. Based on this unlawfully narrow view of purpose and need, FERC improperly rejects the alternative of a smaller marine berth. FERC also improperly rejects several system alternatives that would use existing gas liquefaction “peak shaving” facilities, which would thereby likely avoid many of the liquefaction and pipeline construction impacts. Finally, FERC’s of discussion of alternatives regarding use of electric power both at the South Dunes Power Plant and the Klamath Compressor Station fails to adequately consider potentially environmentally preferable alternatives.

A. The DEIS Improperly Rejects a Smaller Marine Slip Alternative

⁹¹ Council on Environmental Quality, “Forty Most Asked Questions Concerning CEQ’s National Environmental Policy Act Regulations,” 46 Fed. Reg. 18026, 18027, 18028 (1981), Question 5.

The proposed design includes marine berths far in excess of what Jordan Cove actually proposes to use. This design a marine berth for tugs and escort boats, a berth sufficient to handle LNG vessels as large as 217,000 m3 in capacity, and a third berth for “unspecified commercial ships.” DEIS 3-14. As recognized by the Army Corps of Engineers, an alternative design with lower impacts would be to omit the third berth and reduce the size of the LNG vessel berth to the minimum needed to accommodate the vessels that can use the Coos Bay navigation channel, the 148,000 m3 capacity vessels Jordan Cove actually plans to use. FERC improperly rejected this alternative.

Nothing indicates that this alternative would be infeasible, inconsistent with the purpose and need of the project, or that full consideration is otherwise unwarranted. Beginning with the third marine berth, the DEIS explicitly concludes that this berth is unlikely to actually be used. The alternatives discussion states that this berth is intended to accommodate “plans to increase the commercial use of Coos Bay,” including “a proposed dry bulk cargo terminal, a coal export terminal, an intermodal container terminal, a sea wind turbine assembly area at Henderson Marsh, using the western berth of the Jordan Cove slip, all considered under the general rubric of the Port’s ‘Oregon Gateway Marine Complex.’” DEIS 3-15. Yet the DEIS explicitly concludes that none of these project are likely to come to fruition in the near future. The DEIS explains that “The Port recently lost its partners for the coal export terminal concept.” DEIS 4-1020. “[T]he Port has not secured customers for any of its proposals under its Oregon Gateway Marine Terminal Complex. At this time, no developer has approached Jordan Cove with a request to use the western berth. Therefore, it is not likely that the western berth would be developed any time in the near future” DEIS 4-1021. Because this berth is entirely ancillary to the stated purpose of the Projects, DEIS 1-13, and may never be needed, FERC was required to “rigorously explore” an alternative that would omit this berth. 40 C.F.R. § 1502.14(a). The DEIS is deficient because it provides no discussion of the benefits of this alternative.

Similarly, FERC must fully analyze an alternative that would reduce the size of the LNG vessel slip to the minimum needed to accommodate the vessels Jordan Cove actually plans to use.⁹² The mere possibility that in the future, the Coos Bay navigation channel will be expanded to accommodate larger vessels, and that the Coast Guard might approve the use of such vessels, is not a reasonable basis for excluding this alternative from analysis. This is especially true where, as here, the DEIS acknowledges that these events are merely “possible,” 3-15, but there are no definite plans to undertake any of these actions. Certainly, in discussing a design using a smaller LNG vessel slip, FERC can and should consider the impacts that would occur if this smaller slip was later expanded (i.e., take a hard look at the extent to which constructing and then expanding a slip has greater impact than simply building a larger slip in the first place), but this discussion must include specific information and analysis, and must consider the possibility that future expansion may never be needed or occur.

In addition, FERC must consider an alternative configuration for the area. The DEIS should also evaluate an alternative that evaluates a berth that does not involve the slip dock design. As

⁹² We join the Corps of Engineers in advocating a single alternative that both reduces the size of the LNG vessel slip and omits the third slip.

originally proposed before 2007, LNG tankers would be docked alongside the shore (not perpendicular to it in a slip dock as is now proposed). Jordan Cove must justify why alternative designs – less impactful both in location and size – are impracticable in this project.

Finally, we note that if FERC does select an alternative of providing future capacity for larger LNG vessels or additional traffic at a third berth, FERC must consider the impacts of utilization of that capacity. The purported benefit of this design is that it facilitates these future activities. If the project is built specifically to accommodate these activities, then they are plainly “reasonably foreseeable future actions,” the impacts of which must be discussed in the cumulative impacts analysis. Yet the DEIS contains essentially no discussion of these impacts.⁹³

B. The DEIS Improperly Rejects Several “System” Alternatives Using Existing Peak-Shaving Liquefaction Facilities.

DEIS discusses potential alternate terminal sites as “system alternatives.” Although the DEIS enumerates several such alternatives, it fails to support its basis for rejecting them. In particular, the DEIS does not take the required look at two possibilities that would use existing gas liquefaction facilities as the foundation for LNG export: use of the Gig Harbor, Washington, and Newport, Oregon “peak shaving” liquefaction and LNG storage facilities.

FERC acknowledged the “possibility of converting one of the existing peak shaving LNG storage plants into an LNG export terminal.” DEIS 3-8. Although FERC does not discuss the benefits of these alternatives, use of an existing liquefaction facility is potentially environmentally superior because it would avoid the impacts associated with constructing new liquefaction equipment at the Coos Bay site. Such an alternative would also likely avoid many of the impacts associated with construction of the Pacific Connector Gas Pipeline. Existing liquefaction facilities by definition already have robust connections to the gas pipeline network. Even if existing pipeline infrastructure cannot supply both peak shaving and export needs, it is likely that expansion of existing pipeline networks to meet these needs would have lower overall impacts than construction of the greenfield Pacific Connector Gas Pipeline.

In light of these potential benefits, FERC’s fleeting reasons for rejecting the Gig Harbor and Newport alternatives fall short of the hard look NEPA requires. For Gig Harbor, FERC’s sole basis for rejecting this alternative is that “The PSE peak shaving plant . . . is located about 1 mile from the harbor and would not be accessible to LNG vessels. While it may be feasible to construct a pipeline to transmit LNG from the harbor to the PSE peak shaving facility, such a pipeline would have additional associated environmental impacts.” DEIS 3-8. A one-mile LNG pipeline is certainly feasible. The existing Cove Point, Maryland, LNG import terminal uses a greater than one-mile pipeline to transfer LNG between an offshore pier and LNG storage tanks.⁹⁴ Indeed, the proposed Jordan Cove project itself involves a nearly half-mile pipeline,

⁹³ The only discussion of these impacts commenters have found is a fleeting acknowledgment that, if the Oregon Gateway Project is ever undertaken, this could impact certain sturgeon populations. DEIS 4-1032. The DEIS does not describe these impacts.

⁹⁴ See Environmental Assessment for the Cove Point Liquefaction Project, Docket CP13-113, FERC Accession No. 20140515-4002, Figure 1.2.1-2 (May 15, 2014), available at <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13546236>

DEIS 1-5. The fact that Gig Harbor alternative would require a slightly longer LNG pipeline than the preferred alternative, and thus have environmental impacts from the pipeline itself, is not a basis for rejecting this alternative from detailed discussion. FERC provides no basis for concluding that this additional half mile of LNG pipeline would have greater environmental impact than construction of an entirely new liquefaction facility—to say nothing of the likely reduction in natural gas supply pipeline construction.

Similarly, for Newport, FERC identifies an additional environmental drawback that would be associated with the Newport alternative—impacts dredging the shipping channel to a greater depth—but no discussion of the environmental benefits of this alternative, much less any comparison of the benefits and drawbacks. The DEIS simply asserts that “with channel depths ranging from 20 to 30 feet[,] [t]he port at Newport could not accommodate LNG vessels without extensive dredging.” DEIS 3-8.

FERC does not assert, or even suggest, that these system alternatives are infeasible or inconsistent with the purpose and need of the project. On the contrary, FERC’s only discussion of the technical capacities of the Gig Harbor and Newport projects suggests that their capacities (1 and 3 bcf/d, DEIS 3-8) have the capacity to provide the 0.8 bcf/d that the Jordan Cove proposes to export. Even if expansion of these facilities was required in order to meet the demands of exports in conjunction with peak shaving (although the record does not indicate that these facilities are currently fully utilized), FERC’s rigorous exploration of these alternatives must address whether expanding these existing projects has lower impacts than construction of an entirely new facility.

C. FERC Must Consider A Hybrid Alternative of Using Electricity from the Grid and a Smaller South Dunes Power Plant.

The DEIS briefly discusses and rejects an alternative of using existing electric power infrastructure to power liquefaction equipment. The DEIS adopts Jordan Cove’s conclusion “that the local public utility system could not meet the power needs for the LNG export terminal if it relied *solely* on [the Bonneville Power Administration] to provide electricity.” DEIS 3-16 (emphasis added). Assuming that this is correct,⁹⁵ FERC should have considered a hybrid alternative that would rely on the public utility system to the greatest extent possible. The fact that the system cannot *solely* meet Jordan Cove’s needs in no way suggests that it cannot *partially* meet these needs. The following page of the DEIS recognizes that the project can combine multiple sources of electricity to reduce reliance on the South Dunes Power Plant, as it explains that the Jordan Cove project will use 30 MW of wind-generated electricity provided by the Principal Power Project if that project is funded and constructed. DEIS 3-17. Similarly, Jordan Cove plans to use grid power “to provide power during times when the South Dunes Power Plant may be temporarily shut down.” DEIS 3-16.

The DEIS should have explored whether increased reliance on the grid, to use whatever electricity the grid *could* provide, would enable either design or operational alternatives that

⁹⁵ The DEIS does not provide any analysis to support this conclusion, nor does it cite any particular document articulating such analysis. As such, commenters and the public are unable to determine whether Jordan Cove’s conclusion is well supported.

would either decrease the size of, or decrease utilization of, the South Dunes Power Plant. It is likely, even though the public utility system cannot reliably provide the full 420-MW of power Jordan Cove desires, the utility system can reliably provide a fraction of this power, which would enable a reduction in size of the South Dunes Power Plant. Reducing the capacity of this plant would, in turn, reduce the need for natural gas delivery to the site, which may enable a decrease in pipeline or pipeline compressor station size. Alternatively, if FERC concludes (after a rigorous exploration) that reduction in the capacity of the South Dunes Power Plant is infeasible, FERC must consider an operational alternative that would prioritize use of the grid for power, using the South Dunes Power Plant only to provide electricity needed to supplement that available from the grid, rather than the apparently proposed plan to principally rely on the South Dunes Power Plant and only use the grid as a second choice.

Use of the grid instead of the South Dunes Power Plant has the potential to reduce environmental impact of the project. Of course, if the size of the South Dunes Power Plant can be reduced, this will reduce impacts associated with project construction. Operationally, it is likely that the impacts associated with generating electricity on the broader grid are—and will become—less than the impacts associated with generating electricity onsite. As part of its rigorous exploration of this alternative, FERC must use EPA's Emissions & Generation Resource Integrated Database (eGRID),⁹⁶ to estimate air pollution impacts associated with adding marginal units of electricity demand from the project. eGRID can model demand addition at the level of subregions, states, or by utility.⁹⁷ The eGRID database uses detailed information on historical emissions from electric generating units throughout the United States and associated transmission constraints to define emission rates for each subregion. The database conveniently provides emission rates in units of lb/MWh for the three main greenhouse gases (CO₂, CH₄, and N₂O) as well as for the 2 primary air pollutants associated with power production (SO₂ and NO_x, with NO_x given in annual NO_x rates and ozone season NO_x rates). On a simplistic analysis, eGRID indicates that deriving electricity from the South Dunes Power Plant would have greater greenhouse gas impacts than would using electricity from the grid: eGRID indicates that the CO₂ rate for the WECC Northwest region is 842.58 lbs CO₂/MWh,⁹⁸ whereas the DEIS indicates that the emission rate for the SDPP is at least 922 lbs CO₂e/MWh.⁹⁹ Thus, to the extent that electricity provision can be shifted from the South Dunes Power Plant to the grid, this is likely to reduce greenhouse gas emissions. Of course, eGRID enables FERC to take a harder look at the problem.

⁹⁶ See <http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html>. Information for 2010, for example, is provided at http://www.epa.gov/cleanenergy/documents/egridzips/eGRID_9th_edition_V1-0_year_2010.zip. (EPA, 2010a)

⁹⁷ EPA, *How to use eGRID for Carbon Footprinting Electricity Purchases in Greenhouse Gas Emission Inventories* (July 2012), available at <http://www.epa.gov/ttnchie1/conference/ei20/session3/adiem.pdf>. (EPA, 2012a)

⁹⁸ eGRID 9th edition Version 1.0 Year 2010 GHG Annual Output Emission Rates (note that this figure includes only CO₂, rather than the CO₂e equivalent of all emissions. However, electric generating unit emissions of other greenhouse gases do not significantly skew the comparison between this figure and the South Dunes Power Plant's direct emissions.

⁹⁹ The EIS states that power plant turbines will emit 1,538,170 metric tonnes of CO₂e per year. DEIS 4-895. If this figure assumes round the clock operation at full capacity, this equates to 0.418 MT per MWh: 1,538,170 MT per year / 365 days / 24 hours / 420 MW = 0.418 MT per MWh. If the DEIS's emission estimate assumes less than full capacity, the emission rate would be higher. 0.418 metric tonnes is 922 pounds.

A further benefit of shifting electricity demand to the grid is that the grid, unlike the South Dunes Power Plant, will get cleaner during the lifetime of the project. EPA's Clean Power Plan, the proposed Clean Air Act section 111(d) rule for greenhouse gas emissions from power plants, as proposed, would require the average emission rate for existing sources in Oregon to meet a target of 372 pounds of carbon dioxide per megawatt hour by 2030¹⁰⁰--*significantly* more efficient than the proposed South Dunes Power Plant.

Although we have discussed climate benefits of using the grid in lieu of the South Dunes Power Plant, this shift likely provides significant other benefits as well. For example, emissions of other air pollutants are broadly correlated with emissions of greenhouse gases.

D. THE DEIS IMPROPERLY REJECTS THE ALTERNATIVE OF USING ELECTRIC POWER AT THE KLAMATH COMPRESSOR STATION

The DEIS also improperly rejected the alternative of using electric power, instead of gas fired turbines, for the Klamath pipeline compressor station. DEIS 3-72. The DEIS improperly concludes, without any supporting analysis, that "[d]epending on its fuel source, the indirect emissions from [any] power plant [supplying an electric compressor] may or may not be higher than the direct emissions from the gas-fired compressors at Klamath Compressor Station." *Id.* As we explain above, eGRID and other available tools allow FERC to make informed predictions as to the likely emissions that would result from use of electric power, and preliminary review of these tools indicates that use of electric power would likely have significantly lower emissions than use of gas fired turbines. Mere speculation as to the possibility of a higher impact from this alternative is not the hard look NEPA requires. The other reason given for rejection of an electric compressor alternative is the need to construct an additional electricity line to deliver power to the site. The DEIS acknowledges, however, that Pacific Connector has not verified that existing lines could supply the power needed for the gas fired alternative either: a new power line may need to be constructed either way. DEIS 3-71. More fundamentally, cursory identification of one drawback associated with an alternative is not a valid reason for excluding that alternative from detailed study. Instead, FERC must take a hard look at the two options, to inform an assessment as to whether the environmental benefits of an electric alternative outweigh the costs.

E. Alternatives Relocating Terrestrial Activities to Reduce Disturbance of Aquatic Sites.

Multiple alternatives exist that satisfy the basic project purpose while reducing disturbance of special aquatic sites. A proposed activity is not water dependent if it does not require access or proximity to or siting within a special aquatic site in order to fulfill its basic purpose. 40 C.F.R. § 230.10(a)(3). While the LNG terminal itself may be water-dependent, many other activities proposed in the DEIS are not.

For example, the proposed North Bend worker's camp, the Southwest Oregon Regional Safety Center, and the South Dunes Power Plant all involve discharge of fill material to special aquatic

¹⁰⁰ EPA, Clean Power Plan Proposed Rule Technical Documents, Appendix 1: Proposed Goals (June 2, 2014), available at http://www2.epa.gov/sites/production/files/2014-06/20140602tsd-state-goal-data-computation_1.xlsx. (EPA, 2014a)

sites, but do not require access or proximity to or siting within the special aquatic sites that will be impacted.

For non-water dependent activities, practicable alternatives that do not involve special aquatic sites are presumed to be available. *Id.* In other words, a non-water dependent activity necessitates a more persuasive showing than otherwise concerning the lack of alternatives. Here, the DEIS fails to “clearly demonstrate” that practicable alternatives for non-water dependent activities are not available to overcome this presumption. The workers’ camp proposal includes construction of a 3-span, 235 feet long and 43 feet wide bridge to span a tidal mudflat in Coos Bay. The bridge will require placement of fill in two wetlands and impacts to tidal waters of Coos Bay. The DEIS does not include a discussion of any alternatives to this alignment, let alone analysis clearly demonstrating that no practicable alternatives to these impacts are available.

F. Alternatives to Size and Design of Key Project Elements

The alternatives analysis presented in the DEIS fail to assess important project design alternatives. For instance, the application should evaluate in detail a terminal design that involves a much smaller footprint, rather than assuming that the project must be sized for 1bcf/d and very large LNG tankers. Additionally, the FERC should evaluate an alternative in detail that uses only the 12-inch Coos County pipeline (which would entail reducing the scale of the LNG project).

The DEIS does not evaluate offshore design alternatives. The applicants should evaluate an offshore design in detail and describe why areas that regularly face harsh weather, such as hurricanes, are successfully sited and built. NMFS argues in its previous comments that the analysis, and rejection of an offshore proposal as an alternative is inadequate “[g]iven existing or proposed terminals or other similar structures located in harsh environmental conditions elsewhere (e.g. Calypso LNG terminal off the eastern coast of Florida, Troll Natural Gas Fields in the North Sea with depths of 1,100 feet).” The applicants should explain further why the placement of terminals offshore is not feasible. Proposals currently exist to site wind and wave energy structures off the coast of Oregon and Washington. In fact, an offshore wind project is proposed for location 3 miles offshore from Coos Bay. The DEIS acknowledges and describes this Principle Power project. DEIS at 3-17. The DEIS does not adequately address this potential alternative and fails to weigh the significant reduction in public safety risks and disturbance to the Coos Bay Estuary against potential added costs.

The DEIS does not provide an adequate analysis of dredging method alternatives and a clear indication of why the proposed methods will minimize impacts. The DEIS indicates that both mechanical and hydraulic dredging may be used. Hydraulic pipeline dredging has the potential to impact aquatic species through entrainment and impingement. Additionally, other dredge methods will result in significant turbidity in Coos Bay. Although some specially designed hydraulic cutterhead dredges may reach 0.5 percent spillage, the DEIS fails to disclose what kind of cutterhead dredge will be used for dredging. This is vitally important information for the public and the agencies to assess the veracity of the applicant’s statements, because without knowing what type of cutterhead dredge will be used, the public cannot begin to evaluate what kind of sedimentation dredging activities will cause. Furthermore, any modeling conducted on behalf of the Project is suspect until a spillage rate can be determined. All cutterhead dredges are

not the same. Studies indicate that conventional cutterhead dredging “can liberate considerable amounts of turbidity and associated contaminants to overlying water.” Cooke, 2005.

Selection of the proper cutterhead for the type of sediment, in addition to correct rotational speed and hydraulic suction, to obtain reduced suspension rates of sediments is rarely achieved. Herbich, 2000. Therefore, knowing not just the type of dredge used but also the anticipated methods of using the dredging equipment are important factors that must be disclosed for the public and agencies to properly analyze the effects of dredging at the proposed project. The FERC must make specific findings on the types of dredging equipment. The DEIS should present an analysis of alternative methods in order for the FERC to fully analyze the impacts dredging will have on turbidity and overall pollution. In addition the DEIS does not discuss alternative locations for the disposal of dredged material.

The DEIS does not evaluate alternatives to avoid impacts to estuarine oysters. The pipeline route across Haynes Inlet between MP 1.7 and 4.1 has the potential to significantly impact both native Olympia oysters and commercially grown Pacific oysters. The proposed route would be directly adjacent to commercial oyster beds. The use of the open cut pipeline installation method in this area and the associated plumes in turbidity, as well as release of any existing contaminants in the bay muds, could have significant impacts on these oysters and the economic values they produce to the Coos Bay community. While Jordan Cove proposes to utilize turbidity curtains as practicable to prevent sediment transport, these measures cannot control release of bacteria or other contaminants that may be present. The DEIS does not discuss alternatives to avoid impacting these oyster species or the economic impacts that could result from these activities.

The DEIS fails to present a comprehensive description of alternative fish screen designs and their impacts. The current proposal appears to dismiss fish screening, totally ignoring ODFW’s prior comments stating, the “Coast Guard's concerns should not be interpreted to mean that ballast and cooling water screening cannot occur. Screening can and should occur to reduce negative impacts to fish as a result of this project. Additional marine industry review and permitting may be necessary, but this has not eliminated the opportunity to develop and use fish screens.” State of Oregon 2009 FEIS comments at 37. The DEIS should evaluate clearly fish screen alternatives and the impacts of the proposed screening alternative, which would negatively impact ESA protected Coho salmon.

The application does not adequately evaluate alternatives in timing of construction activities. The DEIS states that “in general” construction of the pipeline would be timed to avoid periods of major juvenile or adult anadromous salmonid migrations in freshwater based on allowed in-water work periods, but notes that there may be modifications to the timing of construction. DEIS at 4-596. The application fails to justify why certain crossings will be constructed outside of in-water work windows.

The DEIS also fails to provide adequate information regarding alternatives for stream crossings. The application does not justify the widespread use of open-cut crossings. Additionally, the application fails to adequately evaluate alternatives that will be necessary if HDD crossings fail. Mitigation measures for HDD failures are completely inadequate, and the Williams pipeline company’s own data show that HDDs for 36-inch pipelines fail unacceptably often. *See* FLOW

2008 DEIS Comments at 102-103. In its own experience, recent HDDs for this size of pipeline have failed one out of every three attempts – that’s a full 33% of the time. *See* Williams Sept. 2007 Presentation, Williams Sept. 2007 documentation of its HDD Experience. The DEIS does not include adequate information on alternative measures that will be used if the proposed crossing methods are unsuccessful.

The HDD failure issue is particularly critical for the Rogue River HDD. The ODFW has repeatedly commented that the HDD contingency plan for the Rogue River crossing is inadequate, and that a wet open-cut crossing of the Rogue River is not currently permissible. The ODFW commented: “ODFW does not consider a wet open-cut to be an acceptable alternative due to the impacts to fish, fish habitat, the river, as well as impacts to the sport fishery and the economy of upper river communities. ODFW strongly disagrees with the wet open-cut as an alternative crossing method on the Rogue River.” State of Oregon 2009 FEIS comments at 40.

The DEIS fails to provide an adequate analysis of mitigation alternatives. For instance, proposed mitigation measures to avoid and minimize sedimentation and erosion in stream crossings are inadequately site-specific and are generally outlined in the ECRP. FERC’s analysis and the DEIS indicate that details of mitigation would depend on the source of the problem. According to the State of Oregon’s 2008 DEIS comments, the lack of detailed mitigation measures and alternatives is inadequate. “In order to be effective, a mitigation measure must be supported by analytical data demonstrating why it will constitute an adequate buffer against the negative impacts that may result from the authorized activity. The DEIS’s reliance on future modifications does not provide enough protection under this standard. The public must be able to review, in advance, how specific measures will bring projects into compliance with environmental standards.” State of Oregon 2008 DEIS comments at 32. The DEIS does not resolve this outstanding issue.

Given the lack of analysis on the efficacy of mitigation measures, it is also unclear whether the pipeline should have been rerouted or altered to avoid key resources. For instance, proposed measures may be inadequate to avoid increased turbidity, temperature discharges, erosion and sedimentation in the proposed crossing of the Coquille River and other streams and rivers. The DEIS does not show that riparian clearing has been avoided and minimized in all areas. The ECRP includes general methods, but does not justify why limitations on construction activities in riparian areas cannot be increased. The State of Oregon noted that the 2008 DEIS did not include adequate analysis of avoiding impacts to waterbodies. “At some crossings, PC would reduce the construction ROW width to 75 feet at the crossing of forested and scrub shrub wetlands to minimize impacts to these resources. Alternative methods of crossings with less or no impact must be explored and presented. Boring underneath the forested wetlands could avoid impacts to high functioning wetlands.” State of Oregon 2008 DEIS comments at 95. These issues remained unresolved in the current DEIS, and have not been adequately addressed in the alternatives analysis for stream crossings and mitigation measures in the DEIS.

The DEIS application does not provide adequate information to justify its route selection through Coos Bay. The selection of the route through Coos Bay unduly impacts the Coos Bay Estuary and Haynes Inlet, a sensitive area for both shellfish and fish habitat, as well as the economies that rely on those areas (such as oyster growers). The State of Oregon recommended, “Find

another (upland) route to avoid impacts to the Coos Bay estuary to the maximum extent possible. This proposal maximizes impacts to waters of the state. More thorough alternatives analysis is required.” State of Oregon 2008 DEIS comments at 94. The current proposal does not minimize impacts to the estuary. It also does not explain why an alternative involving a significantly reduced construction impact area would not be practicable.

In summary, the applicants do not provide sufficient reasoning or detail to justify its dismissal of many design and project alternatives that could have a less adverse impact on the aquatic ecosystem. In particular, little consideration of the relative costs, technologies, and logistics is present in the alternatives rejected or disregarded by the project proponents. The applicants provide cursory and inaccurate analysis of the impacts of its dredge/fill activities, and the FERC must find that practicable alternatives exist to severely degrading the Coos Bay Estuary, wetlands and rivers impacted by the terminal and pipeline. “An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” 40 C.F.R. § 320.10(a)(2). The alternatives analysis fails to address many alternatives, and some alternatives are given such cursory consideration that it is impossible to realistically conclude they are not practicable. This includes changes to terminal design, turning basin size and design, alternative LNG sites, and both major and minor route variations on the pipeline route.

G. Alternative Rogue River Crossing.

Pete Samarin, a lead Oregon Department of Fish and Wildlife (ODFW) biologist for the project reports that ODFW proposed crossing the Rogue River upstream of Lost Creek Lake to avoid wild salmon habitat and potential water quality issues in the Rogue basin. We cannot find any reference to such a proposal in either the import FEIS or the export DEIS. The FERC must evaluate the feasibility of this alternative in the EIS or identify where it was evaluated in the export DEIS. What was the name of the ODFW suggested route?

VII. INCOMPLETE AND MISSING INFORMATION

There are many instances of missing information in the DEIS that make public review and comment impossible.

For example, the biological assessment, which is referenced dozens of times in the DEIS, was not available to the public for review prior to the close of the public comment period. The regulations implementing the National Environmental Policy Act (NEPA) state that

If an agency prepares an appendix to an environmental impact statement the appendix shall:

- (a) Consist of material prepared in connection with an environmental impact statement (as distinct from material which is not so prepared and which is incorporated by reference (§ 1502.21)).
- (b) Normally consist of material which substantiates any analysis fundamental to the impact statement.

- (c) Normally be analytic and relevant to the decision to be made.
- (d) Be circulated with the environmental impact statement or be readily available on request.

40 C.F.R. § 1502.18. The NEPA regulations also stated that if the agency elects to incorporate by reference material relevant to the environmental impact statement (EIS):

Agencies shall incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. The incorporated material shall be cited in the statement and its content briefly described. No material may be incorporated by reference unless it is reasonably available for inspection by potentially interested persons within the time allowed for comment. Material based on proprietary data which is itself not available for review and comment shall not be incorporated by reference.

40 C.F.R. § 1502.21 (emphasis added). Taken together, these provisions require FERC to make available, during the public comment process, information that is referenced in the EIS and is material to the public's understanding of the environmental consequences of the proposed action.

The failure to provide information relevant to the public's review of an EIS, and is referenced in – and has been incorporated by reference by – the EIS, violates the National Environmental Policy Act. The Oregon Federal District Court recently held based on similar facts that the failure to provide specialist reports – similar to the biological assessment for the Jordan Cove/Pacific Connector project – violates the law. *League of Wilderness Defenders v. Connaughton*, No. 12-2271-HZ (D. Or. Dec. 9, 2014). Failure to make this information available to the public is arbitrary, capricious, and not in accordance with law. 5 U.S.C. § 706(2)(A).

To be clear, commentors are not arguing that biological assessments *per se* are subject to notice and comment. Instead, based on NEPA case law, if the DEIS relies on information for its conclusions and analysis, then that material must also be available to the public. In this case, the BA is not even complete, much less made available for public review, even though FERC relies on it for the vast majority of its effects analysis and conclusions. Not only does this violate 40 C.F.R. § 1502.18 and 40 C.F.R. § 1502.21, but also suggests that FERC has made a pre-determined conclusion without adequate support in the record. 5 U.S.C. § 706(2)(A).

Another example of missing information is the incomplete draft Hydrostatic Testing Plan. The DEIS states that the plan, “includes measures to prevent the transfer of aquatic invasive species and pathogens from one watershed to another.” DEIS at 4-397. However, this draft Hydrostatic Testing Plan has not been provided to the public. Further, it does not appear from this brief description, that the draft plan includes the information related to discharge locations and dissipation measures necessary to evaluate the potential effects on water quality standards.

Other information was also omitted from the DEIS. For example, the DEIS notes that a great deal of information was lacking or not yet available, and provides several recommendations regarding providing FERC with that information. We request that that information be made

publicly available as well, particularly submissions filed with the Secretary per recommendations 14 through 26, and 48 through 52, should be subject to a minimum of a 30 day public comment period with public comments taken into account before issuance of the Final EIS and any approval of the project by FERC. Please note that the numbering of Recommendations is incorrect. There are two separate Recommendations listed for numbers 17, 18 and 19.

We also note that on February 12th 2015, one day before the end of the comment period, the applicant filed additional information associated with recommendations (pertaining to missing information) 15, 16, and 45. Commenters are unable to review this information before the close of the comment period, and again reiterate that NEPA requires that any information relied upon by the agency must be available for public review before a decision is made. 40 C.F.R. § 1502.21. We therefore renew our request for an extension of the comment period for this DEIS, even though such a request is futile.

VIII. CONCLUSION

For the reasons set forth above, the DEIS fails to take a hard look at the impacts of the proposed projects. The DEIS fails to support its conclusions that the projects would have only “some limited adverse environmental impacts,” that “most of impacts would be reduced to less-than-significant levels,” or that the projects “would be an environmentally acceptable action.” DEIS 5-1. FERC therefore cannot proceed without revising its analysis. Because of the extent of revisions necessary, any revised analysis must be made available for further public comment prior to any FERC decision to grant the pending applications. More broadly, the undersigned continue to contend that the adverse environmental and other impacts of these projects demonstrate that the projects are contrary to the public interest and should be denied.

Sincerely,

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