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Subject: NWP-2017-41 Clean Water Act 404 and 401 Public Comment

Dear Mr. Stine and Mr. Krug:

We are grateful for this opportunity to submit these comments on behalf of Oregon Physicians for Social Responsibility (Oregon PSR). Guided by the values and expertise of medicine and public health, Oregon PSR works to protect human life from the gravest threats to health and survival. We represent over 2,000 health professionals and public health advocates. We work with community partners to educate and advocate for societal and policy change that protects human health at the local, state, national and international level. We seek a healthy, just, and peaceful world for present and future generations.

Please note that Oregon PSR submitted scoping comments to FERC on July 7, 2017 on Docket # PF 17-4-000 related to this project. We also submitted comments to the Army Corps of Engineers on proposed dredging operations, which we consider to be related actions inextricably tied to this project in and around Coos Bay. We ask that you incorporate by reference these Oregon PSR comments and interventions with FERC as they apply to the DEQ and Corps permitting.

Oregon PSR has strong concerns about the severe, negative, unmitigable impacts to water and water resources of the State of Oregon and the U.S. which will result from the proposed Pacific Connector Gas Pipeline and the Jordan Cove Energy Project. We therefore oppose the project and request that Oregon DEQ and the Army Corps of

Engineers deny Clean Water Act 401 and 404 permits. Our reasons include, but are not limited to, the following concerns:

The proposed Pacific Connector Gas Pipeline and Jordan Cove Energy Project will have direct, indirect and cumulative impacts on water and water resources, on water quality and quantity, on our supporting ecosystems, on our climate and our health, including the health of the most vulnerable among us. The proposed pipeline and LNG terminal will adversely affect public health and safety through construction, maintenance, operation, and decommissioning when the LNG terminal and/or the related pipeline fail and/or become stranded assets. The impacts of the entire project will include irreversible effects to our climate causing degradation of wetlands, rivers, streams and coastal waters of the US, threatening the health and safety of our people and the ecosystems upon which we all depend for life.

Construction of the proposed pipeline to serve the LNG terminal would result in deforestation, air pollution, water pollution, erosion, degradation of fish habitat and water quality, hazardous spills, importation of invasive and non-native species (e.g. from ships, boats and construction equipment) and contamination of community water supplies. Construction of the 229-mile pipeline would disturb nearly six miles of wetlands and waterways in at least 485 locations, violating water quality standards (e.g. bio-criteria, temperature, turbidity, and toxics). Construction of the pipeline would disturb and re-suspend contaminated material in and around the waters of the state. Construction of the pipeline would harm beneficial uses through blasting; construction outside Oregon Department of Fish and Wildlife designated work periods; loss of forested wetlands; release of chemicals and other contaminants into rivers and streams; pollution of fish spawning and rearing habitat; temperature increases in streams and rivers that support threatened and sensitive fish; reduction of stream flows; and other serious changes in hydrology, including those due to test-water withdrawals. Access roads and other construction activities associated with the construction and operation of the pipeline would pollute both public and private drinking water sources.

#### Endangered Species

Construction of the pipeline will adversely modify or destroy critical habitat for threatened and endangered species. Stream crossings and vegetation removal for pipeline construction will increase turbidity, injury and mortality during fish salvage, and result in long-term habitat destruction. Using dry open-cut methods to cross fish bearing streams would adversely affect the ability of fish to migrate, reproduce, and grow in Oregon's waters. Horizontal directional drilling increases the threat of rupturing the riverbeds of five iconic Oregon rivers, releasing drilling lubricants, fouling fish habitat and degrading downstream drinking water supplies.

## Chemical Applications

Herbicides would be used to clear vegetation along the pipeline route, and fertilizer would be used to reseed pipeline project areas. Runoff of these applications into wetlands, rivers and streams can be toxic to native fish and aquatic invertebrates. Addition of nutrients in fertilizer can lead to outbreaks of toxic cyanobacteria. Increased water temperatures from removal of riparian vegetation, forest canopy and climate disruption resulting from fossil fuel production, transport, processing and use will harm fish and fish habitat, as well as having a cascading negative effect on the quality and quantity of drinking water and the cost of treatment.

## Blasting

There are 36 streams with bedrock conditions in the path of the pipeline where blasting through solid rock would be necessary to install the pipeline. Blasting has the potential to harm forests and natural areas that regulate and stabilize water quality and quantity of streams, wetlands and provide high quality wildlife habitat. In the FEIS, FERC states that “Blasting could alter the in-channel characteristics and hydrology of the stream, potentially decreasing flows due to increased infiltration where bedrock would be fractured.” [FERC Final Environmental Impact Statement (FEIS) P. 4.3-34] Water flow to underground aquifers may be altered and decrease water quantity and quality to public and private drinking water wells.

## Tribal Nations and Environmental Injustice

Construction and operation of the pipeline through and near tribal lands and waters would negatively impact tribal hunting and fishing as a result of the disruption of rivers, streams, and wildlife habitat. Contamination of the water in Coos Bay will negatively impact shellfish harvesting and gathering of wild foods and plant materials for basketry. Construction and operation of the pipeline and terminal would cause the destruction of sacred places, including burial grounds, village sites and culturally important places. It would result in decreased access to healthy traditional foods, loss of cultural practices, destruction of clean air, soil and water resources, and the worsening of impacts of global warming. It would further exacerbate racial and health disparities. The destruction of sacred places could have negative, multigenerational impacts on the psyche and world view of native peoples. Approval of this project would constitute an environmental injustice to multiple Tribal Nations. (Please see separate detailed comments submitted by Oregon PSR on this issue.)

## Drinking Water

The construction and operation of the proposed pipeline would degrade rivers and streams that are drinking water sources for over 12 public drinking water systems. Water quantity

and water quality for private drinking water sources would be harmed as well. (Please see separate detailed comments submitted by Oregon PSR on this issue.)

### Public Safety

The siting of the proposed pipeline is a threat to public safety. The Pipeline and Hazardous Materials Safety Administration reported that between 1997 and 2016 there were 1038 significant safety incidents at natural gas transmission pipelines, which were mostly caused by corrosion, equipment failure, and flooding. These incidents led to 48 fatalities and 179 injuries and cost \$1,600,000,000. The three-year average for 2014-2016 was 60 significant incidents with 3 fatalities and 6 injuries per year. In the first half of 2017, there were 21 incidents costing \$7,000,000 dollars. [<https://www.phmsa.dot.gov/hazmat-program-management-data-and-statistics/data-operations/incident-statistics>]

### Fire

Above-ground and below-ground portions of the pipeline would be located in wildfire-prone areas of Oregon. It is well documented that pipelines do and will fail. Wildfires have increasingly significant impacts on air and water quality for the state in recent years, with many losses to beneficial uses of resources. Fire and emergency response risks along the pipeline route have not been comprehensively addressed. What will be the true costs to clean water, communities and landowners along the pipeline route? How will the fatalities and injuries, loss of livelihood and property resulting from incidents be prevented?

Prevention of incidents is the only way to prevent fatalities, injuries, and loss of livelihood and property. The only way to prevent serious losses to communities and individuals, and damage to the waters of the state and the US is to **not** build the pipeline and terminal. The cost is too high and, in large part, cannot be expressed in monetary terms. These losses could be catastrophic and irreversible.

### Earthquake(s) and Fire

Remote areas of Oregon could be impacted by earthquakes with significant damage to the pipeline and release of flammable and explosive methane gas and VOCs to the air. Any ignition source could lead to wildfire(s). Pipeline breaks and failures can cause massive fires, severely impacting dry, rugged, rural lands and the people who live there. Remote areas may not be accessible for emergency response. Fires can cause erosion, landslides, and debris flows affecting rivers and streams. Wildfires often burn out of control and damage small, large, and contiguous watersheds that support multiple beneficial uses of water.

### Earthquakes and Tsunamis: Coos Bay

Siting an explosive LNG export facility with its connected pipeline in a subduction earthquake zone and a tsunami evacuation area is foolhardy. The proposed Jordan Cove Energy Project and gas pipelines would be located in areas of Oregon predicted to suffer the most destructive seismic incident and tsunami in US history. We are at very high risk of experiencing these catastrophes during the lifetime of the proposed facilities. Please consider that the LNG/LPG storage plant in Chiba, Tokyo Bay, was cracked by the Tohoku-Fukushima earthquake, producing a fireball and blaze that took 11 days to extinguish.

#### Water Quality and Quantity during Testing of Pipeline

Testing of the pipeline to determine if it will hold fracked gas would utilize enormous quantities of fresh water in an area (or areas) that today are designated as drought areas. Testing could require over 60 million gallons of fresh water. If the project re-uses water to test multiple segments of pipe, it could still consume at least 15 million gallons of water across the entire route. Where will test water come from? For example, the Klamath Basin and those who rely on Klamath water (irrigators, endangered species, Wildlife Refuges and associated wildlife) already experience extreme strain on water resources. Where and when will test water be released? Discharged test water would be contaminated with materials used to construct the pipeline. Will it be released to land or to streams and rivers? If approved, this pipeline could damage multiple beneficial uses and water quantity and water quality in the states of Oregon and California.

#### Impacts of the LNG Terminal on Water Quality and Quantity

Construction and operation of the terminal will require massive dredging operations and would degrade the Coos Bay Estuary. Coos Bay is critical habitat for coho salmon and is home to thriving oyster farms, traditional shellfish gathering areas, as well as other beneficial aquatic and estuarine life. Dredging and disposal of dredged material will increase turbidity, degrade the shoreline and the bay, and negatively impact habitat in the area. The project will remove some 18 million cubic yards of material from the Coos Bay Estuary. Suspended sediment will make the water murky and increase turbidity. Dredging of this scope and scale would stir up contaminated sediments from past industrial activities in the Coos Bay Estuary. Heavy metals, petrochemicals, pesticides and other persistent and toxic contaminants would enter the food chain and accumulate in the tissues of animals and fish, and present significant health risks to people consuming these foods.

Polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs) are persistent toxins and bind to sediment until disturbances release them back into the water. Moreover, contaminated sediments pose a major threat to shellfish – such as oyster beds – a major local industry in the area. Threatened Oregon Coast Coho salmon will also be negatively impacted. Impacts on one stock of salmon can degrade fishing throughout Southern Oregon and Northern California, threatening loss of livelihood and food source to communities in the area and the region.

The related Pacific Connector Pipeline will further degrade salmon habitat with negative impacts on fishing, a beneficial use, in Oregon. Degradation of salmon populations and decreased access to salmon and shellfish will further harm tribal nations and their protected resources, exacerbating injustices to these and other underserved communities that rely on aquatic resources for their lives and livelihoods.

#### Water Quality and Temporary Housing on North Spit of Coos Bay

Construction of the terminal will require a large influx of workers. The plan is to house these workers in camps on the Spit. It is not clear how temporary housing for the large temporary labor force will be serviced by utilities including water supply and sewage/waste disposal. There is serious potential for negative impacts to the water quality of Coos Bay, the estuary, and the ocean shore. Oregon DEQ and the US Army Corps of Engineers must identify and analyze the potential negative impacts of this new large population on the waters of the state and the US.

#### Potential Rupture of Tanks and Tankers

Should there be a rupture of a tank or tanks on the North Spit or rupture of a tanker ship from any cause, there would be an immediate and dramatic temperature drop in the bay as LNG spreads. This would immediately harm or kill aquatic organisms, fish, shellfish and wildlife. It would immediately asphyxiate humans, as well. Should the release of LNG then ignite, there would be further incalculable and irrevocable damage to workers, residents of Coos Bay and multiple beneficial uses of the waters of the state and the US.

#### Climate Impacts of the Proposed Pipeline and LNG Terminal

Because they are essential parts of the supply chain, the proposed pipeline and LNG terminal support and facilitate the extreme extraction, processing, transport, and use of fossil fuels. "Fracking" contaminates waters of the US at fracking sites. The process consumes large quantities of clean water (50 thousand gallons per extraction) and contaminates millions of gallons of that clean water with toxic substances, making the water untreatable and unusable in a time of increasing stress on availability of clean water.

By encouraging the use of fossil fuels and the development of fossil fuel infrastructure, this project exacerbates climate disruption and presents obstacles to the rapid and necessary conversion to sustainable, clean sources of energy. Severe health and safety risks are associated with rising sea level with loss of land and infrastructure, increasing incidence of brutal storms, floods, mudslides/landslides, increasing incidence of water borne and vector borne diseases, heat waves, droughts and wildfires, food and clean water scarcity and insecurity, increasing ocean, river and stream water temperatures, ocean acidification, and loss of aquatic and marine ecosystems and organisms.

In 2015 the international medical journal, *The Lancet*, reported on climate change and health. The Lancet Commission concluded that we have very little time to prevent the very worst impacts of climate change and called climate change a medical emergency because of its pervasive adverse effects on health and life. [Watts, N, Neil Adger, W, Agnolucci, P et al. Health and climate change: policy responses to protect public health. *Lancet*. 2015; 386: 1861-1914]

The 2016 National Climate and Health Assessment described how human health is already being affected by climate change. “Climate change is a significant threat to the health of the American people. The impacts of human-induced climate change are increasing nationwide. Rising greenhouse gas concentrations result in increases in temperature, changes in precipitation, increases in the frequency and intensity of some extreme weather events, and rising sea levels. These climate change impacts endanger our health by affecting our food and water sources, the air we breathe, the weather we experience, and our interactions with the built and natural environments. As the climate continues to change, the risks to human health continue to grow. Every American is vulnerable to the health impacts associated with climate change.” [The Impacts of Climate Change on Human Health in the United States: A scientific assessment. <https://health2016.globalchange.gov>]

The 2018 Lancet Countdown on Health and Climate Change provides an independent, continuing assessment of the health impacts of climate change through a collaboration of climate scientists, ecologists, economists, engineers, and experts in energy, food, and transport systems, geographers, mathematicians, social and political scientists, public health professionals, and doctors from 24 academic and intergovernmental organizations from around the world. They find the following:

- “The human symptoms of climate change are unequivocal and potentially irreversible—affecting the health of populations around the world today.”
- “The impacts of climate change are disproportionately affecting the health of vulnerable populations... By undermining the social and environmental determinants that underpin good health, climate change exacerbates social, economic, and demographic inequalities, ...”
- “...exposure to more frequent and intense heatwaves is increasing...”
- “...the frequency of weather-related disasters has increased by 46% since 2000...”
- Altered climatic conditions are contributing to growing vector capacity for the transmission of disease.
- “The delayed response to climate change over the past 25 years has jeopardized human life and livelihoods.”
- Climate change acts as a threat multiplier, compounding existing pressures such as poverty and food and water insecurity. [Watts, N. et al, *Lancet*. 2018 391:10120: 581-630. [https://doi.org/10.1016/S0140-6736\(17\)32464-9](https://doi.org/10.1016/S0140-6736(17)32464-9)]

Recent data on methane emissions from the U.S. oil and gas supply chain indicate they are higher than previous estimates, and are equal to 2.3% of US gas production. “Methane emissions of this magnitude, per unit of natural gas consumed, produce radiative forcing over a 20-year time horizon comparable to the CO<sub>2</sub> from natural gas combustion.” Moreover, the climate impact of methane emissions from the US oil and gas supply chain roughly equals that from the annual CO<sub>2</sub> emissions from all U.S. coal-fired power plants operating in 2015. [R.A. Alvarez et al. *Science* 10.1126/science.aar7204 (2018)]

Compressor station(s) along the proposed Pacific Connector Gas Pipeline pose significant risks. Compressor stations along pipelines are major sources of greenhouse gas emissions and thus exacerbate climate change and extreme weather, with associated adverse impacts on water quality and quantity, through changes in weather and rainfall patterns and increased drought and heat conditions.

Compressor stations are known to be methane super emitters where intended releases are a dominant source of methane emissions even without including blowdowns. [Johnson, DR, Covington, AN, Clark, NN (2015) *Environmental Science and Technology* 49:8132-8138] Self-reports of emissions have been found to underestimate actual emissions by 3.8 times. Compressor stations have higher leaks of methane gas than well pads. [Lavoie, TN et al. (2015) *Environmental Science and Technology* 49:7904-7913]

Methane gas will leak from seals, valves, and connections. Methane will be released through deliberate venting during routine operations and maintenance. [Subramanian, R et al. (2015) *Environmental Science and Technology* 49:3252-61] Blowdowns used to control pressures and empty systems, are significant sources of methane releases to the atmosphere with 86 times the heat trapping characteristics of carbon dioxide. Blowdowns typically release 90 to 180 foot plumes of gas and can last as long as three hours. These intermittent releases of gas are at much higher concentrations and their impacts are not reflected in annual averaged emissions data.

According to the Northwest Fisheries Science Center, ocean acidification is primarily caused by human-derived increases in atmospheric carbon dioxide (i.e., burning of fossil fuels) that is then absorbed by the ocean, leading to chemical changes that make the ocean more acidic. Increases in ocean acidity can make it harder for many marine creatures to develop normally and survive, because ocean acidification disrupts the calcification process of shell-producing organisms -- particularly krill, oysters, sea urchins and corals. These changes can lead to a ripple of effects up the marine food chain to other species of commercial and conservation concern.

Marine waters along the Pacific Northwest coast are naturally more acidic than those of other regions, making this region more vulnerable to the effects of acidification. Many species of regional economic importance, such as oysters and crabs, as well as primary producers such as phytoplankton, are likely to experience direct effects from ocean acidification.

Economically, ocean acidification poses a threat to the health and prosperity of the \$100 million a year shellfish industry, with additional indirect losses to the finfish industry because of declines in fish prey species. Wind patterns, ocean currents, and upwelling all affect marine organisms. All of these can be altered by climate change.

[<https://www.nwfsc.noaa.gov/research/hottopics/oceanacidification.cfm>]

Now we have information indicating that we are not only in a medical emergency but in a life or death struggle, that due to feed-back mechanisms in the earth's global systems, changes already in place may cause domino effects in key carbon and heating-related systems, leading to irreversible heating of the planet beyond what can support human life.

[Steffen, W. et al, Proceedings of the National Academy of Sciences (PNAS) August 2018. [www.pnas.org/cgi/doi/10.1073/pnas.1810141115](http://www.pnas.org/cgi/doi/10.1073/pnas.1810141115)]

We cannot look at the Pacific Connector Gas Pipeline and Jordan Cove Energy Project in isolation – it will contribute significantly to a global climate emergency. We now know it is necessary to make immediate changes to our human activities to accelerate the transition to an emission-free world economy. In order to make this transition, we must invest our resources in clean renewable sources of energy, not in this or any other fossil fuel infrastructure, which would irredeemably delay an effective response to this climate emergency.

The size and scope of the Pacific Connector Gas Pipeline and the Jordan Cove Energy Project pose multiple severe direct and indirect threats to beneficial uses of the waters of the state of Oregon and the US and to the health and safety of its residents. We request that Oregon DEQ and the Army Corps:

- Deny permits because Jordan Cove and Pacific Connector Gas Pipeline do not comply with the Clean Water Act and will degrade beneficial uses of the waters of Oregon and the US;
- Deny permits because Jordan Cove and Pacific Connector Gas Pipeline will exacerbate a history of environmental injustice;
- Extend the comment period until all relevant material is available for review and analysis (Note: the applicant submitted material to FERC during the week of July 14 which indicates that significant information will be provided to agencies in September, 2018);
- Host public hearings in impacted communities along the pipeline route; and
- Host public hearings in Portland to ensure that residents of the largest city and most populous county in the state have access and opportunity to attend and comment on this project of significant statewide and national interest.

Finally, please incorporate by reference coalition comments and individual comments submitted by Oregon Nurses Association, Rogue Riverkeeper, Rogue Climate, Western Environmental Law Center, Waterkeeper Alliance, Sierra Club, Sierra Club-Oregon Chapter, CRAG, Cascadia Wildlands, Oregon Wild, League of Women Voters, Center for Sustainable Economy, 350-Eugene, 350-Pdx, Stop Fracked Gas Pdx, Francis Eatherington, Jody McCafree, Deb Evans, Bill Walsh and Shirley Weathers.

Thank you for consideration of our comments.

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