



Oregon

John A. Kitzhaber, M.D., Governor

Department of Fish and Wildlife

Northwest Region
4907 3rd Street
Tillamook, OR 97141
(503) 842-2741
Fax (503) 842-8385
www.dfw.state.or.us



January 16, 2015

Richard Chong
Project Manager (CENWP-OD-G)
U.S. Army Corps of Engineers
P.O. Box 2946
Portland, OR 97208-2946
richard.chong@usace.army.mil

Subject: Oregon Department of Fish and Wildlife comments on Oregon LNG's application for permits under Clean Water Act Section 404 (33 U.S.C. 1344), Rivers and Harbors Act Section 10 (33 U.S.C. 403), and the Marine Protection, Research and Sanctuaries Act of 1972 Section 103 (33 U.S.C. 1413). Army Corps of Engineers Joint Permit Application NWP-2005-748.

Mr. Chong:

This letter represents the Oregon Department of Fish and Wildlife's (hereafter "ODFW") comments regarding Oregon LNG's (hereafter "OLNG" or "applicant") Joint Permit Application (JPA) to the United States Army Corps of Engineers (hereafter "Corps") seeking authorization for its proposed liquefied natural gas (LNG) export terminal adjacent to the Skipanon River near Warrenton, Oregon and an 86-mile segment of pipeline in Oregon extending from the terminal to approximately Deer Island. ODFW comments are submitted under provisions of the Fish and Wildlife Coordination Act (FWCA) ([16 U.S.C. 661-667e](#); the Act of March 10, 1934; Ch. 55; 48 Stat. 401) which, as amended in 1946, requires consultation with the Fish and Wildlife Service and the fish and wildlife agencies of States where the *"waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted . . . or otherwise controlled or modified"* by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of *"preventing loss of and damage to wildlife resources."* to allow the Corps to consider state fish and wildlife agencies concerns.

The proposed project consists of marine facilities, LNG storage tanks, LNG vaporization facilities, natural gas liquefaction facilities, and associated support facilities to be constructed at the terminal site in Warrenton, Oregon; 86.8 miles of pipeline from the terminal to the Northwest Pipeline Interconnect near Woodland, Washington; and an electrically driven gas compressor station at milepost 80.8. The pipeline would be routed through Clatsop, Tillamook,

and Columbia counties in Oregon, and Cowlitz County in Washington. ODFW response includes the area within the Oregon portion of the project only.

ODFW has identified several issues that may result in substantial impacts to fish, shellfish, wildlife, their habitats, as well as potential reductions in opportunities for recreational harvest of fish and shellfish associated with construction and operation of the marine terminal in the marine waters of the Lower Columbia River (LCR) estuary. ODFW's review and comments is apportioned into twelve sections; (1) Terminal and Support Facilities; (2) Marine Facilities; (3) Dredging; (4) Pipeline and Associated Facilities; (5) Fish Passage; (6) Water Use and Discharge; (7) Wetland Impacts; (8) Fishing, Shellfishing, and Hunting Impacts; (9) Future Habitat Restoration and Conservation; (10) Work Periods; (11) ODFW Permits and Authorizations; (12) Notification and Coordination Protocol.

1. Terminal and Support Facilities

This review section applies to the land-based portion of the terminal which includes the terminal footprint, terminal access road, and new water supply and wastewater disposal pipelines to connect to City of Warrenton water and wastewater systems.

1.1 Terminal Siting

- A) In their alternatives analyses, OLNG first identified the preferred location of the terminal and then identified a suitable corresponding pipeline alignment. As such, the cumulative environmental impacts of combined terminal/pipeline scenarios were never evaluated. ODFW recommends that the alternatives analysis be completed for joint terminal/pipeline scenarios with discussion of how environmental impacts compare among the sites considered.
- B) The environmental history of the proposed terminal site is not well explained. ODFW recommends that the Corps confirm that existing fill material at the site was deposited in accordance with laws applicable at the time the fill occurred.
- C) Given the amount of soil disturbance proposed, ODFW recommends a thorough analysis of existing contaminants (if any) present at the proposed terminal site.

1.2 Impervious Surfaces

- A) It is not clear from the project description if all of the run-off from newly-created impervious surfaces (30.5 acres) within and around the terminal area will be routed to the storm-water treatment system. ODFW recommends the use of bio-swales or other passive treatment systems for all run-off that is not processed through the storm-water treatment system.

1.3 Ground Improvements and Foundations

- A) ODFW recommends that OLNG provide a spill containment plan for the cement deep soil mixing (CDSM) ground improvements.

2. Marine Facilities

2.1 Pile Driving: OLNG proposes to drive steel cylinder piles using a barge-based impact hammer. ODFW recommends that pile driving Best Management Practices (BMP's) such as use of vibratory hammers, air bubble curtains or other sound attenuation devices be incorporated into the construction phase of the project to reduce the potential impact to aquatic and terrestrial species.

2.2 Cast-In-Place Concrete Pilings: In the event of a spill, use of uncured concrete for cast-in-place structures presents a risk to aquatic resources. ODFW recommends that OLNG have an approved spill prevention and clean-up plan in-place prior to approval of the permit application.

2.3 Exclusion of Perching Birds: ODFW recommends that all pilings and lighting structures should be fitted with devices to prevent perching by birds, in particular piscivorous species.

2.4 Marine Structure Decking: The OLNG describes the primary decking construction components of the 2,128-foot-long by 23-foot wide marine trestle as open-grid steel decking and cast-in-place concrete decking; however, it is not clear in the application to what extent each will be used. ODFW recommends using a deck design that minimizes the quantity of over-water shaded areas to 50%. This will reduce potential negative effects on aquatic macrophytes, epibenthic algae and pelagic phytoplankton and also minimize conditions that are favorable for ambush predators.

2.5 Terminal Lighting. OLNG indicates that the terminal would be lit to provide an average of 5-footcandles of lighting at each unloading arm, 5 foot-candles at each active access point, and an average of 1 foot-candle throughout the remainder of the Terminal. Lighting along the waterside of the terminal and on the pier would be located or shielded to avoid confusing or interfering with navigation on the adjacent waterways. ODFW is concerned that the potential biological effects of the proposed terminal lighting system has not been thoroughly evaluated. There is much data regarding fish behavior in shadows and predation interactions under different lighting regimes. Artificial lighting that is often present on over-water structures may disorient migrating juvenile salmonids, compromise their ability to avoid nocturnal predators, and affect the photosynthesis of aquatic vegetation. There is also evidence that artificial lighting affects birds, mammals, reptiles and amphibians. Artificial lighting can disrupt foraging behavior, influence the timing of breeding behavior, increase risk of predation, and movement patterns of wildlife. Migrating and nocturnal birds in particular can be negatively affected by artificial lighting. Lighted towers have been known to attract, confuse and kill birds. Some species may at times benefit from artificial lighting (e.g., foraging opportunity for bats). As such, ODFW requests that the applicant provide a thorough analysis of these and other potential biological effects of all proposed project lighting (terminal and associated facilities) on fish and wildlife resources, during project construction as well as project operations phases. ODFW also requests that the applicant include measures to avoid and minimize potential harmful effects of project lighting on fish and wildlife (e.g., light intensity, light color, directional lighting, timing of artificial lighting, etc.).

3. Dredging

3.1 Scope: The application indicates that the spatial footprint for the proposed dredge area is about 109 acres, and the dredging activity will remove about 1.2 million yd³ of subtidal sediment. The proposed dredge area is composed of soft sediment located in the subtidal zone of the LCR estuary at a depth of about 20 to 30 feet below Mean Lower Low Water (MLLW), and represents ecologically valuable subtidal aquatic habitat for estuarine fish, juvenile Dungeness crab, estuarine invertebrates, and other communities of aquatic organisms.

3.2 Potential Effects: Dredging activities often negatively affect ecological conditions and productivity for a number of aquatic organisms, most typically by the disturbance and restructuring of benthic substrata. For example, disturbance of non-cohesive and unconsolidated soft sediments generally results in increased turbidity in the water column and reduced penetration of light which suppresses primary production by submerged aquatic vegetation in shallow benthic habitats. Dredging activities are also associated with redistribution of bottom materials and unnatural loadings of fine sediment to the recently excavated areas of the benthos, which affects numerous ecological communities and processes. The primary ecological impacts associated with dredging, siltation and unnatural loadings of suspended sediment in estuaries include: (a) reduced survival and growth of estuarine phytoplankton and zooplankton; (b) decreased feeding capacity and subsequent reduction in planktivorous organisms; (c) direct disturbance and entrainment of bottom fish and benthic epifaunal and infaunal invertebrate communities; (d) smothering and burial of clams, oysters, crab, shrimp, and other shellfish; and (e) decreased survival and growth of submerged aquatic vegetation such as native eelgrass (*Zostera marina*) and macrobenthic algae.

3.3 Habitat and Species Use: Subtidal soft-sediment habitats provide a series of diverse, productive, and dynamic ecological functions and values in the LCR estuary. These ecological functions include (among others) provision of habitat for foraging by invertebrates, fish, birds, and marine mammals. In addition, some species of fish may use the soft-sediment habitat as a nursery area, and the subtidal zone provides an important source of detritus, which serves as a food source for a number of species. Soft-sediments also play an important role in the microbial and biogeochemical transformations of organic materials/compounds for nutrient cycling, and they typically serve as a sink or reservoir for the deposition of water-borne particles. In some benthic zones large quantities of nutrients (*i.e.* phosphorus) and organic material are essentially stored for a period and subsequently released in pulses with seasonal current and thermal variations. Diverse communities of motile, epifaunal, and infaunal invertebrates inhabit subtidal soft-sediments, and the communities of arthropods, annelids, cnidarians, mollusks, echinoderms, and other invertebrates are specifically adapted to survive, feed, grow, and reproduce themselves in the unconsolidated sediments. Microbial activity and deposition of organic matter associated with fine-grained sediments together support a complex food web that includes resident (infaunal, epifaunal, motile) and transitory (seasonal, migratory) species. Mixed communities of shellfish, such as Dungeness crab, bay shrimp, seastars, gaper clams, butter clams, littleneck clams, softshell clams, cockles, and many other species may occur in the subtidal areas of Oregon estuaries, and many of these species may inhabit the proposed OLNG dredge impact area. Some of these shellfish are motile (e.g. crabs, shrimp, snails, seastars, etc.) and may inhabit or migrate through the subtidal zone, while others are sessile (e.g. cnidarians, bivalves, etc.) and remain in place over the duration of their adult lives. Ambient environmental conditions such as the composition and organic content of

the substratum, salinity, depth, water temperature, depth of the aerobic layer, sedimentation rate, and degree of disturbance are often critical factors that determine the specific locations where shellfish occur. The mixed communities of living bivalves and the beds of their non-living shells (*e.g.*, shell rubble or shell hash) function to help stabilize unconsolidated sediments and provide heterogeneous habitat for numerous species of adult and juvenile fishes, crabs, shrimp, amphipods, worms, and other estuarine organisms. In some cases, filter-feeding populations of bivalves play an important role in the removal of phytoplankton and smaller particulate materials, thereby decreasing turbidity and increasing light penetration throughout the water column.

Several species of demersal fishes inhabit Oregon estuaries, and many of these (*e.g.*, Starry flounder, English sole, sand sole, staghorn sculpins, sturgeon) are benthic feeders that utilize subtidal habitat to locate their prey, as well as for spawning and rearing. Subtidal habitat is also used by many species of migratory fishes such as fall Chinook salmon, coho salmon, steelhead, chum salmon, coastal cutthroat trout, eulachon, topsmelt, Pacific herring, longfin smelt, surf smelt, northern anchovy, etc., and other species (*e.g.*, lingcod, greenling, rockfishes, gobies, sand lance, surfperches, threespine stickleback, Pacific tomcod, and sturgeons). As stated by the applicant (Section 4 / Description of Resources in Project Area) the OLNG terminal portion of the project could potentially impact salmonid rearing and migration habitat, lamprey migration habitat, eulachon rearing, spawning and migration habitat, and green sturgeon feeding habitat within the LCR estuary. As estuarine fish grow they typically move into deeper subtidal areas (often as their ability to avoid predation increases) to meet their survival needs. Species such as sole, sand lance, and sculpin create burrows in subtidal soft-sediments to escape predation and to forage for benthic food resources. Salmonids and other fish species also rear and migrate through subtidal soft-sediment habitats to access high energy, primary, or alternate food sources such as burrowing amphipods and other epibenthic or benthic invertebrates. Soft-sediment habitat is also utilized by numerous shallow-water fish (*i.e.*, sculpins) during periods of low tide when they seek refuge in the deeper subtidal areas that are continuously under water. The subtidal habitat zone provides a critically important food source (*e.g.*, epibenthic and infaunal invertebrates) for these species during low tides.

3.4 Mitigation for Dredging Impacts: ODFW recommends that OLNG provide a mitigation plan designed to offset any short- and long-term losses aquatic species and of ecological functions and processes associated with the subtidal dredging activities conducted in the project area. ODFW disagrees with OLNG's statement that the newly exposed surface of dredged area will be high quality benthic habitat. In ODFW's opinion, the new depth will result in habitat conversion and continued disturbance to retain depth will result in decreased habitat quality. ODFW recommends the applicant propose shallow water/estuary habitat mitigation for the dredged area from actions that will result in conversion and degradation.

3.5 Dredge Material Disposal: Table 6-10 and Figure 2-4 of the application identify the proposed placement sites for dredged materials. Dredged material removed from the OLNG turning basin and berth is proposed for placement at two EPA-designated ocean dredged material disposal sites (Shallow Water Site: SWS; and Deep Water Site: DWS), and one Section 404 CWA- authorized location (SJS). The application states that sites SWS and SJS are given priority for placement of the dredged material (as long as capacity remains within them) because of the benefits associated with utilizing nearshore sites that keep sediment in the active littoral system. While the application mentions beach nourishment effectiveness on the

south jetty it does not provide a description of the other on-going projects that investigate whether beach nourishment is effective when sediments are deposited offshore at the SWS site. ODFW recommends that more information from OLNG be provided evaluating whether beach nourishment is really necessary and/or ecologically beneficial at that site (*i.e.*, see the Lower Columbia Solutions Group).

4. Pipeline and Associated Facilities

4.1 Pipeline Siting

- A) **Conflict with Astoria Marine Construction Company Clean-up:** The proposed HDD alignment between Stations 135 and 170 (Pipeline Milepost 3.0 approx.) may conflict with ongoing remedial site investigations and future contaminant clean-up at the Astoria Marine Construction Company (AMCC) on the Lewis and Clark River. This site was recently deferred from the Environmental Protection Agency's National Priorities List and is currently under the purview of Oregon Department of Environmental Quality's, Environmental Clean-up Program. ODFW recommends that OLNG coordinate directly with DEQ regarding HDD alignment in this area.
- B) **Compressor Station Location (Station ~4280+00):** The proposed location for the compressor station along the waterbody at Hwy 30 may adversely impact riparian vegetation. ODFW recommends that alternate sites be investigated to reduce habitat impacts.
- C) **Micrositing at Stream Crossings:** The applicant states that clearing crews will be given specifications for minimizing riparian clearing to accommodate stream size, terrain, and existing vegetation conditions, and to avoid removal of significant trees, where possible, at the margins of the temporary construction zone. ODFW recommends that prior to any construction of the pipeline the applicant work with ODFW and other natural resource agencies to develop additional micrositing details for each stream crossing site so that significant stream resources and other habitat features are retained wherever possible.

4.2 Stream Crossings

- A) **Salvaging Large Woody Debris (LWD):** The OLNG states that existing LWD will be salvaged for reinstallation, and a sufficient quantity of large-diameter conifer logs will be stockpiled for post-construction aquatic habitat enhancement for the benefit of fish and wildlife. Use of LWD for stream restoration should be approved in advance by ODFW. As such, ODFW request that the Corps include, as a condition of the permit, that OLNG coordinate any LWD removal or placement in advance with ODFW.
- B) **Temporary Crossings:** ODFW recommends temporary equipment crossings (*e.g.* bridges) be used at all stream channels regardless of flow levels in the stream at time of construction. This will minimize impacts to the stream bed and banks and will reduce direct mortality on wildlife species. If temporary equipment crossings are not feasible because of topography, mats or other crossing techniques to protect the streambed, topography, and bank vegetation should be utilized.

- C) **Water Diversion at Open-Cut Trench Pipeline Construction:** As stated in the application, this method is applicable to intermittent and ephemeral streams that are not fish-bearing, fish-bearing intermittent or ephemeral streams that are dry at the time of construction, and perennial streams that are minor, nonfish-bearing but are not directly tributary to a fish-bearing stream. ODFW recommends that water diversion equipment be installed at all perennial stream crossings, or that it is immediately available at intermittent or ephemeral stream crossings (in the event of precipitation), so that regardless of the hydrologic characteristic of the stream, flowing water is always bypassed around the work area consistent with Oregon fish passage law (see Section 5).
- D) **Trenching at Bedrock Stream Crossings:** It is not clear to ODFW how bedrock streams would be trenched or how the stream would be restored following trenching. ODFW recommends that OLNG provide additional information regarding this methodology describing how the trench will be cut, how it will be filled to restore channel function, and how it will be monitored to ensure that the trench fill does not scour or result in diversion of flow.
- E) **Spawning Gravel:** Any spawning gravel removed from the streambed should be stockpiled and placed back in the channel at the conclusion of the crossing construction.

4.3 New Roads and Modification of Temporary Access Roads: From the information provided in Appendix Table L1 and the pipeline/road alignment sheets, there is a substantial amount of new or modified access roads related to pipeline construction. However, it is not clear to ODFW what the habitat characteristics are at these sites or if any additional waterways are going to be crossed or modified. ODFW requests that OLNG summarize the habitat characteristics for all lands and waterways impacted by access road construction or modification, and categorize habitats using ODFW's Fish and Wildlife Habitat Mitigation Policy (see Section 7.2 below).

4.4 Cathodic Protection: ODFW has some concerns regarding the use of the proposed impressed-current cathodic protection system. ODFW suggests that clarification be provided in the following areas prior to approval of the system:

- A) What will be the operational range of the voltage and amperage of the ICCP system?
- B) Is there a protective coating on the outside of the pipeline to prevent fish from contacting the exterior of the pipe, specifically lamprey?
- C) How deep will the pipe be placed underneath the stream beds?
- D) Is it possible to stop the electrical current transmission at each stream crossing?
- E) Electrical fields being transmitted into the substrate of a stream or the water in a stream may have detrimental effects on native fish. Has this system ever been used under fish bearing streams? If so, was a study or monitoring plan implemented for the project?
- F) What is the repair method if the pipeline coating becomes exposed to stream flow and is damaged?

4.5 Natural Gas Pipeline Shut-Off Valves: ODFW remains concerned about potential impacts to fish, wildlife, and their habitats from unanticipated gas releases from the pipeline or associated facilities. Therefore, ODFW recommends frequent and strategically located shut-off valves, to the extent practicable, in order to minimize damage to natural resources. The

Operations and Maintenance (O&M) plan should clearly identify actions needed repair and maintenance in and around sensitive aquatic habitats such as waterway crossings.

4.6 Exposure of Pipeline: ODFW is concerned about the potential for the pipeline at stream crossings to become exposed as a result of vertical scour or lateral migration of the channel. ODFW recommends that the Corps include as a condition of the permit that accidental exposure of the pipeline at stream crossings requires OLNG to immediately notify ODFW and develop a site-specific remediation plan that addresses both habitat concerns (per ODFW's Habitat Mitigation Policy- OAR 635-415-0000 through 0025) and ODFW fish passage requirements – ORS 509.585 and OAR 635-412-0005 through 0040 (see also Section 5.3).

4.7 Soil and Erosion Control: OLNG's Erosion Prevention and Sediment Control Plan outlines reasonable BMP's for managing stormwater run-off during construction. ODFW recommends that the Corps include a condition that sediment containment devices such as sediment fences are removed from work areas once construction has been completed and site conditions have stabilized. This is particularly important for sediment fences located near waterways, as they often end up in the stream if not removed when no longer needed.

4.8 Potentially Unstable or Landslide-Prone Terrain: Before construction of the pipeline, OLNG proposes to conduct more detailed geotechnical investigations in the area along and adjacent to the pipeline corridors to further evaluate the potential for landslide hazards. This regional-level evaluation will consist of additional aerial reconnaissance, interpretation of aerial photographs, and further evaluation of available geologic hazard mapping. ODFW encourages thorough analysis of landslide risk particularly in those areas where landslide risk is exacerbated by pipeline construction and where streams are located at the base of the at-risk slope.

4.9 Additional Temporary Work Space (ATWS): The applicant notes that during discussions with USFWS and NMFS, it was agreed that, unless otherwise approved by USFWS, NMFS, and ODFW, ATWS will be set back 150 feet from streams and wetlands. The applicant then goes on to state that they have made extensive efforts to locate the ATWS at least 50 feet from wetlands and other waterbodies. Despite these efforts, there appears to be several ATWS locations within 50 feet of wetlands and waterbodies shown on the pipeline alignment sheets (Appendix C). ODFW requests that the applicant describe in more detail how many of the proposed ATWS areas fall within 150 feet of sensitive wetlands and waterbodies, and explain why they cannot be sited further away. This will help ODFW better determine the potential impacts to fish and wildlife resources. ODFW also requests that all ATWS be replanted as needed to restore or improve the pre-disturbance habitat type and combat invasive weed establishment.

4.10 Riparian Tree Protection:

- A) Before vegetation clearing operations begin OLNG states that they will identify individual trees in the temporary work space that are significant for their habitat attributes, and will attempt to retain and protect them. These individual trees will be removed only if attempts to work around them during construction are unsuccessful. In limited and special cases where the removal of individual trees would cause a significant habitat impact, Oregon LNG will consider using stovepipe and/or drag-section installation techniques for short pipeline lengths to minimize clearing of trees. ODFW recommends that prior to any construction of the pipeline the applicant work

with ODFW and other natural resource agencies to identify significant riparian resources that can be protected as outlined for pipeline micro-siting details in comment 4.1(C) above.

- B) **RMA Tree Removal:** The OLNG states that vegetation clearing for the pipeline on state and private forest lands will generate merchantable timber that will be cleared in accordance the specifications of the Oregon Forest Practices Act (OFPA). ODFW recommends that OLNG follow existing OFPA notifications procedures for any harvest proposed, particularly for any area where harvest is proposed within an ODF-designated RMA. If retention trees are proposed for removal in the pipeline right-of-way (*i.e.* permanent easements, TWS, and ATWS), the trees should be salvaged for subsequent placement on upland wood-deficient soil surfaces or in stream channels in accordance with ODF and ODFW wood placement guidelines. ODFW recommends that OLNG develop an alternative harvest plan (via ODF) that shows how these trees will be used for habitat enhancement either as instream LWD or downed wood. This should apply as well for any riparian trees not used for commercial purposes.
- C) **Steep Slope Easement Width:** OLNG indicates that there may be a need for wider riparian easements to accommodate steep terrain. ODFW recommends that no wider riparian easement width is allowed unless demonstrated that no other installation technique can be used.
- D) **Revegetation Plans:** OLNG states that they will revegetate disturbed riparian areas with conservation grasses and legumes or native plant species, preferably woody species. They also indicate that streambanks will be revegetated to stabilize soils and prevent erosion. ODFW requests that site specific revegetation and riparian mitigation plans be developed and approved by ODFW as a condition of the Corps permit. In ODFW;s judgment, it will be important that the plans be consistent with local native plant communities, represent no net loss from preconstruction habitat conditions, and be consistent with existing landowner agreements and regulatory requirements.

To further reduce impacts, ODFW recommends minimizing grubbing to the permanent easement areas only so root systems can remain intact, hold soil in place, and re-sprout quickly along the entire easement. ODFW also recommends, use of jute matting or other matting to cover bare soil on steep slopes over entire easement. OLNG should also use wattles, plantings, and native seed as needed as part of their comprehensive revegetation plan. ODFW recommends a minimum five year monitoring period to ensure revegetation is successful and plants are established with woody plant survival rate of 80% or greater by the end of year 5. ODFW recommends that an annual report is submitted until revegetation objectives are met; beyond five years if necessary.

4.11 Noxious/Invasive Weed Plan: Invasive Species (e.g. noxious weeds) have been identified as one of the seven key conservation issues (threats to conservation) in Oregon in the Oregon Conservation Strategy (*ODFW 2006*). ODFW recommends that the OLNG complete a more comprehensive weed management plan as a condition to issuance of a Corps permit. Components of a proactive weed management plan for this project should include strategies for (1) limiting the introduction of weed parts and seeds into an area (*i.e.* cleaning of equipment); (2) early detection and eradication of small patches of weeds; (3) minimizing disturbance of desirable vegetation along access roads and waterways; (4) managing land

within the project footprint to maintain healthy communities of native and desirable plants that will compete with weeds; (5) regular monitoring for at least five years of high-risk areas such as disturbed areas or bare ground in the pipeline easement; (6) re-vegetating disturbed sites with native plants; (7) annual monitoring, and adaptive management. Performance metrics should also be included in the plan as a means of measuring success or failure of the plan. We recommend that the Corps require a contingency that additional mitigation be undertaken if the final state of the pipeline is not satisfactory relative to the approved performance metrics. Lastly, ODFW recommends pipeline easement maintenance include annual control of invasive weeds including blackberry, scotch broom and other habitat degrading non-native invasive plant species

4.12 Pipeline and Associated Facilities Maintenance Activities: Maintenance of the pipeline and associated facilities can inadvertently harm wildlife, especially species and certain age classes that are unable to easily move out of harm's way (e.g. nesting birds, fawns/calves, and reptiles and amphibians). ODFW recommends maintenance mowing and other vegetation removal practices take place outside of critical bird nesting season and fawning/calving season. Protected reptiles and amphibians may need to be captured and moved out of harm's way (see Section 11.1). Maintenance activities should occur in a manner that does not result in the "take" of protected wildlife species.

5. Fish Passage

5.1 ODFW Fish Passage Authority: The owner or operator of an artificial obstruction located in waters in which native migratory fish are currently or were historically present must address fish passage requirements prior to certain trigger events. Laws regarding fish passage may be found in ORS 509.580 through 910 and in OAR 635, Division 412. In the OLNG project proposal, potential trigger events include installation of pipeline through fish streams, replacement of culverts or bridges, temporary and new permanent road/stream crossings, temporary fish/water bypass structures or diversions, fundamental change in permit status (*i.e.* new water right), levee breaching, tidegate removal or replacement, and potentially other activities that have not yet been thoroughly described by OLNG. The State of Oregon's fish passage authority is included as a condition of the Corp's nationwide permits.

5.2 Fish Passage Plan: OLNG has not yet provided a complete fish passage plan addressing the above-listed activities. ODFW will need crossing-specific information (location, crossing methods, water management, fish salvage & recovery, crossing design plans, etc.) for all project components that trigger and invoke ODFW's fish passage authority (design plan review and approval). To make the permitting process most efficient, ODFW is willing to work directly with OLNG on performance design standards for different components and design facets of the project. ODFW recommends that the Corps include approval of a comprehensive fish passage plan by ODFW as a condition of any permit issued for this project. The following information will be needed to demonstrate compliance with Oregon Fish Passage Statutes:

- A) Each project pipeline and/or associated road-stream crossing shall require the submittal of an individual fish passage plan to ODFW for review and approval. ODFW may consider a programmatic or a batched approval(s) of the new pipeline crossings contingent on: 1) downstream fish passage is provided during construction,

2) work is completed during the ODFW in-water work window, 3) post construction monitoring and reporting for 5-years (post treatment). *These specific items needs to be further discussed between the Department and the Applicant.*

- B) HDD Crossings - If HDD's are completed outside jurisdictional waters of the State (no work at or below the ordinary high water elevation also defined as the "active channel width") and the HDD is below the critical scour depth (*see footnote # 1, page 4 below*) at each crossing, then there may be no fish passage trigger. ODFW will require site specific HDD crossing plans for each stream crossing to ensure these actions meet the above requirements and do not trigger Oregon's fish passage policy. All Horizontal Direction Drilling operations (HDD's) shall have a spill prevention and containment plan both for the staged operation area and in the event fracking occurs into a waterbody.
- C) ODFW Fish Passage Plan Applications are located on the ODFW Fish Passage web site (*see above*). These applications should be submitted for all project related pipeline or road-stream crossings. For all project related bridge and stream crossings, the applicant should refer to the March 2008 ODFW Clarification of Fish Passage Triggers and Guidelines for Bridges.
- D) The information necessary to include in each site and crossing specific fish passage application includes:
- a. Engineered plan sheets depicting proposed project pipeline or road-stream crossing in both cross section and plan views.
 - b. Plan sheets and detailed information must identify the following information necessary for ODFW's review and fish passage approval:
 - i. Location of proposed (site map and lat – long positional information or GPS coordinates)
 - ii. All type, size and location information relevant to crossing
 - iii. Identification of "Total Scour" elevations at all pipeline crossing
 - iv. Identification of elevation (top of pipe) and orientation of pipeline (See 5.3 below)
 - v. Identification of existing and proposed ground and stream channel elevations, with particular emphasis on ordinary high water elevations and corresponding active channel widths for each site
 - vi. Identification of composition and depth of streambed materials used to cover pipelines
 - vii. Cross section and plan view of proposed post-project streambed elevations to ensure no discontinuity in streambed elevations through the project area for each stream and pipeline crossing
 - viii. Other design details necessary to demonstrate stream simulation design criteria for fish passage (*OAR 635-412-0035(3)*) are achieved at each site
 - ix. Outline of long-term operation and maintenance plans for the project that clearly describe and demonstrate how the project will ensure the long-term maintenance of all stream crossings such that fish passage is provided (*see fish passage monitoring and reporting requirement section 5.4 below*)

5.3 Scour Analysis: A calculation of Total Scour as referenced in 5.2(D)b(iii) (above) is needed to provide assurance, particularly at scour prone sites, that the top of the pipe is set at an appropriate elevation such that if and when the stream degrades vertically or laterally, the pipe is never exposed or causes issues with fish passage or channel hydraulics. Total Scour is comprised of three components, long-term aggradation and degradation of the river bed, General site scour (contraction scour and other general scour), and Local scour associated with other structures located at the site (pier or abutment scour). *USDOT Publication No. FHWA NHI 01-001, May 2001. Hydraulic Engineering Circular # 18 – Evaluating Scour at Bridges.* ODFW requests that the scour analysis be completed for all steam crossing sites by the applicants engineering team.

5.4 Fish Passage Monitoring and Reporting Requirements

- A) ODFW requests that OLNNG monitor and report the effectiveness of fish passage throughout construction and after completion of the project. This shall include providing ODFW with site specific post-construction report that clearly details the methods used during construction with a narrative describing the de-watering procedures used (if applicable). OLNNG should also provide a report to ODFW regarding the condition of the project site and fish passage status after the first channel forming hydraulic event (flows of bankfull or greater) post construction. All monitoring should be performed by a qualified fisheries biologist to determine that fish passage at the site is unchanged (or improved) from conditions that existed pre-construction, paying special attention to scour and erosion around and related to the project area. Monitoring and reporting should be based on visual observations and stream flow conditions as they relate to fish passage performance throughout the project area.
- B) Monitoring reports should be completed and submitted by projects applicants, to the ODFW Fish Passage Program Coordinator and the appropriate District Fisheries Biologist for a period of five years (5-years) after completion. These reports should be submitted by June 30th for the previous year's reporting period.
- C) If, as a result of the project, monitoring indicates that upstream or downstream passage of native migratory fish is compromised or fish passage criteria are not met, projects applicants shall be responsible to resolve any fish passage problem(s), as required in *ORS 509.610*.

6. Water Use and Discharge

6.1 Scope: OLNNG proposes to use a substantial quantity of surface water resources for both construction and permanent operational use. This includes proposals for direct withdrawal from the mainstem Columbia River, the lower Skipanon River, tributaries along the pipeline route, and use of Warrenton's municipal water supply that originates from water diversions in the Lewis and Clark River. Total proposed use from all water sources during the initial construction and operational phases of the terminal and pipeline combined approaches 180 MG/y (million gallon per year) with ongoing operational uses estimated at 3,911 MG/y from multiple sources.

6.2 Water Rights Review: ODFW primary means of review of water use requests from OLNG will be through the State of Oregon Water Resources Department (OWRD) and the Division 33 review process for applicable water right applications. OLNG has indicated that they will apply for a Limited Water Use Licenses from (OWRD) for the withdrawal of water for hydrostatic testing and presumably for other proposed uses of water resources subject to OWRD jurisdiction (although this is not explicitly stated). Given the substantial amount of proposed water use and the potential risks to aquatic resources, ODFW provides the following comments, many of which are related to potential impacts to species and habitats not covered under a Division 33 review.

- A) **Mitigation for water use:** OLNG has not thoroughly described potential biological impacts from proposed water withdrawals nor have they proposed any mitigation actions specifically addressing the potential impacts. ODFW requests that OLNG provide additional analyses with an emphasis on biological impacts related to localized reduction in surface water flows during low stream flow periods. Once an assessment has been completed, ODFW requests that OLNG identify appropriate mitigation to offset impacts identified.

- B) **Hydrostatic Testing:** Hydrostatic testing is proposed for the LNG storage tanks (35 MG/y), wastewater pipeline (0.2 MG/y), and pipeline (3.0 MG/y). This represents a substantial amount of water use from a variety of sources including surface water sources that provide important habitat for fish and wildlife species. ODFW's has concerns regarding fish screening of surface water intakes that are covered in Section 6.2(E) below. ODFW also has concerns regarding the quality of water discharged from hydrostatic testing and the location to where it is discharged. Specifically, ODFW requests to know if there will be any water temperature changes or if contaminants will be introduced into the water and if so, how the discharge water would be treated to avoid adverse impacts to aquatic species. While OLNG states that details of hydrostatic testing will occur on a case by case basis, this does not allow for us to fully evaluate the potential impacts to fish, wildlife and their habitats. As such, ODFW requests that the above referenced information be provided and approved by ODFW prior to issuance of the Corps permit.

- C) **Water Use and Between-Basin Discharge:** OLNG should also be advised that ODFW will generally oppose discharge of water into drainages other than those from which the water was originally obtained. Discharge of chemically-treated municipal into surface water sources is also opposed by ODFW. All discharge should be treated in accordance with ODEQ rules.

- D) **Water Discharge – Reverse Osmosis:** OLNG states that reverse osmosis (RO) concentrate will be discharged to the source water (either the Skipanon River or Columbia River) that feeds the temporary RO system. ODFW requests that OLNG provide additional discussion and analysis regarding the potential biological effects from the discharge of the concentrate to the Columbia or Skipanon rivers.

- E) **Fish Screening at Points of Diversion:** Fish screening and bypass devices prevent or reduce the loss of game fish, food fish, or fish that are listed as threatened or Endangered under the federal or state Endangered Species Act. Fish screens or bypass devices are necessary at gravity and pumped water diversions and are often required as

a condition for a Water Use Permit or Transfer. OLNNG proposes both construction-related and ongoing permanent operational use of State of Oregon's water resources in the project area. In ODFW's review of any applicable water use requests from the Oregon Water Resources Department (OWRD) for this project, ODFW will request use of fish screening systems at all surface water point(s) of diversion (POD). To maintain consistency, we also request that the Corp's include as conditions of the permit the following requirements: (1) OLNNG screen all applicable water intakes in accordance with NOAA Fisheries screening guidance as found in NOAA Fisheries Fish Passage Design Criteria Report (http://www.habitat.noaa.gov/pdf/salmon_passage_facility_design.pdf), and (2) that all water intake screens be inspected and approved by ODFW prior to the withdrawal of any water. All of the surface water intakes should have approved screening, including but not limited to the following uses: ballast and cooling water, terminal fire system, re-deluge fire pumps, reverse osmosis, hydrostatic testing, concrete mixing, road construction and soil maintenance.

7. Wetland Impacts

7.1 Scope: The applicant states that the project will result in permanent and temporary impacts to 145.14 acres of wetlands. This includes 38.07 acres of permanent and temporary impacts from construction of the terminal and associated facilities and 107.07 acres (permanent and temporary) from the pipeline. To offset direct loss and ecological damages to wetlands associated with construction and operation of the terminal, pipeline, and associated facilities, OLNNG has proposed three general strategies for compensatory mitigation. These include dike breaching at a 120-acre diked parcel located at the mouth of the Young's River, floodplain and side channel restoration at a 75-acre parcel on the Nehalem River, and in-lieu-fee mitigation in an undetermined location(s) in the Lower Columbia/Clatskanie HUC. It is important to note that OLNNG has not surveyed all properties associated with the pipeline, so it is likely that impacts will be somewhat different than those described in the application.

7.2 ODFW Fish and Wildlife Habitat Mitigation Policy: The purpose of the ODFW Fish and Wildlife Habitat Mitigation Policy (FWHMP) as described in OAR 635-415-000 through -00025 is to further the Wildlife Policy (ORS 496.012) and the Food Fish Management Policy (ORS 506.109) of the State of Oregon through the application of consistent goals and standards to mitigate impacts to fish and wildlife habitat caused by land and water development actions such as OLNNG. The policy provides goals and standards for general application to individual development actions, and for the development of more detailed policies for specific classes of development actions or habitat types.

As early as 2007, ODFW has requested that OLNNG utilize standards identified in the FWHMP to characterize the quality and quantity of wetlands/waterways and other habitat types affected by the project. ODFW remains concerned that the applicant has not provided a complete categorization of habitats per the FWHMP for ODFW review. ODFW considers this to be important information for us to be able to adequately assess the potential effects of the project on fish and wildlife and their habitats. ODFW recommends that the applicant refine the mitigation plan to address all anticipated impacts to fish and wildlife and their habitats relative to ODFW's FWHMP. We suggest that OLNNG organize impacts and mitigation measures by

Habitat Category (1-6) consistent with the policy. ODFW recommends that the mitigation plan demonstrate that proposed mitigation will achieve the mitigation goals and standards consistent with ODFW's FWHMP. ODFW recognizes that the applicant has initiated habitat categorization for some aspects of the project, but from ODFW's review of draft Resource Report 3 (dated August 2012), it appears that even some of those habitats may have been categorized incorrectly.

7.3 Terminal Wetland Impacts and Mitigation:

- A) **Terminal Wetland Impacts Characterization:** The proposed wetland impacts at the terminal and ancillary facilities consist of 3.15 acres of temporary impacts and approximately 34.92 acres of permanent impacts. ODFW's understanding is that DSL has reviewed and approved the OLN terminal wetland delineation report. The proposed wetland impacts at the terminal occur primarily in estuarine intertidal emergent marsh habitat (29.35 ac.) which in this area ODFW considers to be Category 3 Habitat per the FWHMP. This shallow-water habitat is critical for rearing habitat for several ESA-listed salmonids and is also used by a variety of other estuarine-dependent species. For this habitat category, ODFW recommends (1) no net loss of either habitat quantity or quality; (2) avoidance of impacts through alternatives to the proposed development action; or (3) mitigation of impacts, if unavoidable, through reliable in-kind, in-proximity habitat mitigation to achieve no net loss in either pre-development habitat quantity or quality.
- B) **Proposed Mitigation for Terminal Wetland Impacts:** The information provided in the application regarding the proposed 120-acre mitigation site at the mouth of the Young's River is not sufficient for ODFW to assess its merits as a site to mitigate for loss of wetlands habitats at the proposed terminal site. At a minimum, ODFW recommends that the applicant provide the following additional information for review and approval:
- a. Site map showing key features such as dikes, tidegates, developed structures, existing waterways and drainages, wetland features, existing unique habitats, etc.
 - b. Description of goals and how they will be measured.
 - c. Restoration plan showing how the proposed mitigation actions restore natural hydrologic function and habitats at the site, including an accounting of anticipated quality and quantity of wetlands, waterways and other habitat types (per ODFW FWHMP)
 - d. Project timeline.
 - e. Monitoring plan with reporting schedule (see Section 7.5 below).

Given the lack of information provided in the application, ODFW cannot determine if the proposed mitigation meets the "reliable in-kind, in-proximity" standard identified in the FWHMP for Category 3 Habitat. As ODFW understands the proposal, the mitigation approach will seek to re-establish native freshwater tidal marsh as compensation for the loss and destruction of predominantly estuarine emergent tidal wetlands. It is not clear to what extent OLN investigated the availability of mitigation options that would provide a better fit with the types of wetland habitats impacted by the proposed OLN terminal construction and operation activities.

To further strengthen the mitigation proposal, OLNK should identify an appropriate undisturbed reference area (or multiple reference areas) to serve as a target and baseline for the evaluation of mitigation success. For example, the Wetland Mitigation Plan should include a nearby un-diked tidal wetland reference area that already has hydrodynamic connections to the LCR estuary and provides high ecological values for communities of emergent plants, fish, and wildlife. A potential un-diked reference area exists at the mouth of Cook Slough (immediately downstream from the proposed mitigation area) where stands of emergent marsh are routinely inundated by the tidal waters of Young's Bay and the marsh habitat is incised with numerous tidal channels. A monitoring program (see Section 7.5 below) should be designed to periodically determine the extent to which ecological conditions within the mitigation area emulate ecological conditions within the nearby reference area.

7.4 Pipeline Wetland Impacts and Mitigation:

- A) **Pipeline Wetland Impacts Characterization:** Permanent and temporary wetland impacts from pipeline construction extend over four 4th field HUCs (*i.e.* Lower Columbia, Lower Columbia- Clatskanie, Lower Willamette, and Nehalem River). Of the 107.07 acres of impacts, 84.37 acres are characterized as temporary, construction-related impacts. Approximately half of all the potential wetland impacts have not been evaluated for hydrogeomorphic class or functionality because of lack of access. Of those that have been evaluated, freshwater emergent marsh and agricultural wetlands comprise the majority of temporary impacts (86%) and forested wetland comprises the majority of permanent impacts (56%). OLNK has not provided a complete characterization of the habitat categories impacted per ODFW's FWHMP (see Section 6.2 above). ODFW requests that this information be provided and approved prior to issuance of the Corps permit.
- B) **Proposed Mitigation for Pipeline Wetland Impacts:** To offset unavoidable permanent changes to wetlands associated with the pipeline in the Nehalem and Lower Columbia\Willamette River basin, OLNK proposes to work with property owners to restore, create, and enhance approximately 75 acres of wetland habitat in the floodplain at a site adjacent to the Nehalem River in the Nehalem subbasin. OLNK has not provided sufficient detail regarding actions to be implemented at the proposed mitigation site. ODFW requests a detailed restoration plan with a characterization of habitat categories (per ODFW FWHMP) by hydrogeomorphic class that will be created as a result of the work. ODFW also requests that, if the Nehalem site is used, the restoration work be protected by a permanent conservation easement.

Because there are no known mitigation banks with forested wetland components located in the Lower Columbia/Clatskanie subbasins, OLNK is proposing compensatory mitigation for pipeline wetland impacts to occur through in-lieu fee programs. OLNK suggests that they will coordinate with local watershed councils to implement mitigation at multiple sites and that detailed mitigation planning will be completed prior to issuance of removal-fill permits. ODFW is unable to evaluate the impacts on fish and wildlife and their habitat in the Lower Columbia - Clatskanie HUC without a detailed mitigation plan and without a characterization of the habitats impacted or enhanced per ODFW's FWHMP. As such, ODFW request that this information be provided and approved by ODFW prior to issuance of any permit.

7.5 Wetland Monitoring: Another primary shortcoming of OLNG's Wetland Mitigation Plan is that it does not include a detailed monitoring plan to evaluate the efficacy of the actions taken to meet the goals for the mitigation. The applicant should be required to develop a detailed monitoring plan to evaluate changes within the wetland mitigation area and to assess the recovery of wetland ecological functions and processes. For example, ODFW suggests that iterative monitoring be conducted over a period of 8-10 years by a qualified wetlands ecologist to ensure that the flooded wetlands at the proposed Young's Bay mitigation site are sufficiently inundated during a significant proportion of the high tides, that the flooded pasturelands are relatively free from opportunistic invasive species and noxious weeds, that the emergent plant communities are composed primarily of native species, that the restorative actions return sufficient ecological structure and function to 2,600 feet of side channels and tidal sloughs, and that the restored area actually provides new rearing habitat for juvenile salmon. For all mitigation sites, ODFW recommends that ecologically intact reference areas be used and include permanent transects, archival photos and measurements of several parameters that are important to the assessment of wetland ecological performance (*i.e.* species composition and density of emergent wetland plants, above and below-ground biomass, productivity, pore-water salinity and nutrient concentrations, organic content of soils, etc.) in reference area(s) and mitigation site. ODFW requests that the monitoring plan be approved by ODFW prior to issuance of any permits.

8. Fishing, Shellfishing, and Hunting Impacts

8.1 Fishing and Shellfishing: The Skipanon Marina and Warrenton Deep Sea facilities are an important harbor and marina complex for recreational and commercial vessels. As a result, many commercial and recreational fishing vessels transit through the area identified for the proposed marine terminal berthing area during their exit and return to the Skipanon Marina. The applicant recognizes that "the Pacific Ocean, Columbia River, and other rivers crossed by the pipeline support diverse commercial and recreational fishing industries whose harvests include sturgeon, salmon, steelhead, bottomfish, and crabs" (Section 4-40 / Commercial and Recreational Fishing). However, the application does not do a sufficient job of characterizing the local importance of the commercial and recreational fisheries or how they will be affected during construction and operation of the OLNG terminal, berthing dock, and other facilities.

The applicant does acknowledge the extremely popular recreational fishery for Chinook and coho salmon that occurs near the mouth of the Skipanon River (Buoy 10 Fishery), and that the proposed OLNG terminal is located in the mid-region of this popular fishing salmon area. However, the application does not adequately characterize the potential for substantial disruption of this socially and economically important fishery during construction and operation of the marine terminal complex. For instance, this fishery experienced 107,700 angler trips in 2014 with a combined catch of nearly 84,500 salmon.

Recreational crabbing is a popular activity within the LCR (see ODFW website: <https://nrimp.dfw.state.or.us/CRL/Reports/Info/2012-04.pdf>), and sport crabbers make a total of 1,500 to 2,200 trips into the estuary each month during the peak season of September, October, and November. Between 12,000 and 28,000 Dungeness crab are harvested from the LCR by sport crabbers each month during the period from September to November. Although most of the sport crabbing activities are focused in the marine-dominated waters outside of the

Hammond Marina (about 4 km downstream from the proposed OLNG marine terminal), some sport crabbing occurs in the estuarine waters in the vicinity of the proposed OLNG berthing terminal and in the area located outside the mouth of Young's Bay. The application does not explain how recreational crabbing in this area will be affected. ODFW recommends that OLNG provide information on impacts to both recreational and commercial crabbing as a condition of the Corps permit.

ODFW suggests that the construction and operation of the OLNG and associated facilities should avoid unreasonably interfering, now or in the future, with recreational angling, commercial fishing, and shellfishing activities in the Columbia River or any of the other waterways associated with the project. ODFW recommends that the applicant complete a thorough analysis of the potential impacts of the OLNG operations on commercial and recreational boat-based activities in the LCR, including a description of all proposed safety/security zones, with and without LNG ships docked at the berthing terminal, and during transit. OLNG should then identify the steps and actions that will be taken to account for the loss of these recreational and commercial opportunities. The Corps should include these actions as a condition of the permit.

8.2 Hunting Conflicts: Waterfowl hunting occurs in the tidal waters surrounding the proposed terminal site and near several of the waterway crossed by the pipeline in Young's Bay. Development and operation of the terminal will result in a permanent loss of hunting opportunity in an area that is one of on a few areas open to waterfowl hunting within the Warrenton City limits. While dispersed hunting occurs along the pipeline route, it is not clear to what extent hunting opportunity might be impacted. ODFW suggests that the Corps include as a condition of the permit, a provision that OLNG will provide a plan to mitigate for any loss of hunting opportunity stemming from the implementation of the project.

9. Future Habitat Restoration and Conservation

ODFW remains concerned that the proposed permanent footprint of the OLNG terminal and pipeline will interfere with planned and future fish and wildlife habitat restoration activities in the project area. In ODFW's view, OLNG should provide assurances that presence of the pipeline in particular, will not unreasonably hinder future habitat restoration actions in the project area. For example, OLNG should ensure that the pipeline is sufficiently deep along the entirety of the route so that it does not interfere with stream restoration/enhancement activities such as restoration of hydrologic processes, placement of large woody debris, restoration of tidal processes and floodplain connectivity.

10. Work Periods

10.1 In-Water Work Windows: ODFW's in-water work windows are specifically designed to consider the life-history characteristics and presence (or lack thereof) for species of fish and wildlife that inhabit estuaries, bays, streams, and water bodies that are considered as critical for production. For fishes, the periods of egg incubation until hatching, juvenile residence in natal areas, and early juvenile rearing are the times when the potential for negative impacts from human disturbance are greatest. For shellfish and other invertebrates, the periods of

spawning, embryonic and larval development, settlement, recruitment, and early juvenile growth in estuarine habitats are considered as particularly sensitive stages in the life-histories.

For the proposed project, ODFW recommends that the Corps include the ODFW recommended in-water work periods as a condition for all instream work activities: (http://www.dfw.state.or.us/lands/inwater/Oregon_Guidelines_for_Timing_of_InWater_work2008.pdf). OLNG's proposal to dredge the turning basin and berth in one 4-month in-water work window beginning June 1, 2016, through September 30, 2016 is well outside the recommended in-water work window for the area (November 1 to February 28) and has the potential to substantially interfere with recreational angling in the lower Columbia River (Buoy 10) salmon fishery (See Section 7.0 Recreation Impacts). ODFW recommends against any deviation from the preferred in-water work period for dredge operations in the Columbia River.

10.2 Wildlife Protective Periods (Timing of land clearing to avoid impacts with wildlife):

ODFW recommends all upland and wetland habitat, no matter the quality, be cleared outside of critical bird nesting period (April 1- July 15) to lessen impact to nesting migratory birds. With the exception of eagles, trees with known or the potential for raptor nests should be cleared post-nesting season and before January 1. Regardless of time of year, protected birds and their active nests are protected by federal law (*e.g.* Migratory Bird Treaty Act).

11. ODFW Permits and Authorizations

11.1 Fish and Wildlife Take Permits: ODFW will require OLNG to obtain a Fish Scientific Take Permit (covers salvage efforts) and a Wildlife Capture, Holding, Transport, and Relocation Permit. These permits will allow OLNG to conduct fish and amphibian capture and relocation (and other less-mobile non-game protected species) from stream crossings and wetland areas, and upland habitats (*e.g.*, terminal, pipeline, roads, ATWS, etc.) where these species are expected to occur based on known presence or habitat suitability.

11.2 In-Water Blasting: While not currently identified as a project need, it behooves OLNG to be aware that ODFW will require in-water blasting permits for blasting activities that potentially affect fish and wildlife species or their habitats in or adjacent to aquatic areas. It is the policy of the Oregon Fish and Wildlife Commission to discourage in-water blasting unless it is the only practicable method to accomplish the project goals. ODFW will issue in-water blasting permits only if they contain conditions for preventing injury to fish and wildlife and their habitat (OAR 635-425-0015). For purposes of ODFW permit requirements, "in-water blasting" means the use of explosives on, under, or in waters of this state, or in any location adjacent to the waters of this state where blasting would have an impact on fish and wildlife or their habitat (OAR 635-425-0010(7)). For purposes of this permit application, ODFW recommends a condition that the Corps requires that any blasting occur outside the nesting season for raptors (December 1-August 31) and that all blasting be coordinated through ODFW and USFWS.

12. Notification and Coordination Protocol

12.1 Instream Work Notification: ODFW requests that the Corps require as a condition of the permit that OLNG contact ODFW by email 24-hours prior to the beginning of any Columbia River dredging operation or pipeline-related instream work activities including HDD. Notification should be made to the following individuals: art.c.martin@state.or.us; chris.j.knutsen@state.or.us; and tom.murtagh@state.or.us.

12.2 Emergency Response: ODFW recommends that emergency procedures include immediate notification of any turbidity exceedance, frac-outs, and spills and leaks for both the terminal facility and pipeline. Sensitive fish and wildlife habitats can be severely impacted by these types of occurrences. Impacts can be greatly minimized if ODFW biologists can quickly and accurately assess potential damages and recommend remediation actions. Should a spill or leak incident occur, the project should contact Oregon Emergency Response System immediately (1-800-452-0311). ODFW recommends that emergency response plans include a complete Natural Resource Damage Assessment including surveys for fish and wildlife injury/mortality as soon as possible following an incident.

Thank you the opportunity to comment on this permit application. Please direct any further questions to Chris Knutsen at 503.842.2741 or Art Martin at 503.947.6082.

Sincerely,

Regards,



Chris Knutsen
District Fish Biologist - Tillamook

c: ODFW (Hurn; Bowles; Apke; Martin; Murtagh; Biederbeck; VandeBergh; Vaughn; Fox; Hunter; Rumrill; Barnes; North)
Oregon Department of State Lands (Cary)
Oregon Department of Environmental Quality (Christensen)
Oregon Department of Land Conservation and Development (Snow)
Oregon Department of Forestry (Astoria-Bangs, Tillamook-Skinner, Columbia City)
Oregon Department of Energy (Henry)
Oregon Water Resources Department (French)
NOAA – Fisheries (Anderson)
USFWS (Young)
EPA (Vallette)