

SUMMARY OF KEY STATE AGENCY COMMENTS ON THE BRADWOOD LANDING FINAL ENVIRONMENTAL IMPACT STATEMENT

Process issues, inaccuracies, assertions of technical quality

1. The FEIS ignores a significant number of comments provided on the DEIS thus failing to provide adequate and accurate information on which the Commission must make their decision. (ODOE)
2. Need analysis fails to incorporate accurate information about other projects that may provide natural gas at lower cost to the region. (ODOE)
3. Detailed comparative analysis of LNG import terminal and pipeline projects currently proposed in the region and the potential for domestic supply/pipeline alternatives is necessary to determine whether the Bradwood Landing LNG import terminal and pipeline represents a superior facility from an economic, environmental and social perspective (ODOE/DLCD/DEQ).
4. The condition in the FEIS concerning CZMA consistency prior to construction is inadequate. Although this condition may prevent beginning terminal and pipeline construction prior to CZMA certification, other construction activities, such as dredging, could proceed. (DLCD)
5. Requirements for screening of ballast and cooling water are part of Oregon's coastal program. These conditions must be included in the FERC license and applied to any docked vessel. (ODFW)
6. Northern Star asserted that over 80% of the project capacity would go to end users in Oregon or Washington. FERC inappropriately accepted this assertion as fact. (ODOE) (*link to Gov. Ltr. "a. Need for Facility"*)
7. SL cannot make a removal-fill determination due to inadequate information in the FEIS. (DSL) (*link to Gov. Ltr. "d. ... adverse impacts on air and water quality"*)
8. The FEIS provide no mechanism to ensure that the Emergency Response Plan meets state standards for protecting the health and safety of Oregonians in the event of an emergency at the terminal or along the 38-mile transit route. FERC approval without the necessary equipment, systems, and personnel resources to implement the plan puts the lives of Oregonians at risk. (ODOE) (*link to Gov. Ltr. "e. .. emergency preparedness"*)
9. A number of Limited Licenses for use of water for drilling or boring activities are required prior to any FERC certification of this project. Limited Licenses are for uses within a single drainage basin, so several will be needed. Two examples are surface water for ballast water and ship cooling (public comment required) and use of water for boring and drilling at 23 water body crossings. (OWRD)
10. All improvements on U.S. Highway 30 and on Clifton Road must be completed before any permits will be issued allowing construction at the terminal site which would result in increased traffic at the intersection of Clifton Road. (ODOT)
11. The Columbia River is classified as water quality limited under the Clean Water Act, Section 303(d). The FEIS did not adequately address comments on the analysis of potential water quality and beneficial use impairments which may result from implementation of the project. (DEQ)

Italicized references refer to unresolved issues raised in Governor Kulongoski's letter of December 13, 2007 on the Bradwood Landing DEIS

12. Total Maximum Daily Loads (TMDLs) have been developed and approved by EPA in the Columbia River only for Dioxin and Total Dissolved Gas. Development of a TMDL for Temperature is underway by EPA (not DEQ) but has not been completed. Other parameters are already 303(d) listed, which is critical because projects which can be expected to degrade water quality parameters are not permissible. Also, new sources of pollutants which will impair listed parameters for which a TMDL has not been developed are not permissible. The potential for any project aspect to impair water quality standards must be considered and addressed by project changes, imposed limitations, or mitigation, in order to show compliance with the Clean Water Act. (DEQ)
13. The FEIS states that Bradwood has obtained a permit from WRD for use of well water for construction purposes and facility operation. This is **incorrect**. There are significant substantive issues that are not yet resolved to assure the project is or will be consistent with the enforceable policies of the Oregon Coastal Management Program. (WRD)
14. The Coastal Zone Management Act Consistency Certification is required prior to FERC approval/license. And this Consistency Certification requires approval of several permits from other agencies and authorities. (DLCD)

Impact analysis, mitigation issues

[FEIS fails to provide enforceable mechanisms to ensure consistency with state standards.](#)

1. FERC discusses greenhouse gas emissions at length under a discussion on Air Quality. They conclude that LNG carriers would emit about 19,000 tons per year of CO₂ and that tugs would emit another 14,000 tons per year. Combustion vaporizers will emit another 65,000 tons per year. **No mitigation is proposed** to offset the effects of this 100,000 tons per year. (ODOE) (*link to Gov. Ltr. "c. .. assertions that mitigation will be provided"*)
2. The FEIS does not adequately discuss mitigation requirements for the project. Complete compensatory wetland, compensatory non-wetland and temporary impacts mitigation plans **have not been submitted** to DSL as stated within the FEIS. DSL concerns with the DEIS have not been addressed. Final mitigation plans, appropriate to meet all federal, state and local requirements, should be completed prior to FERC approval, not prior to construction. (DSL) (*link to Gov. Ltr. "c. .. assertions that mitigation will be provided"*)
3. The FEIS is not adequate in identifying Compensatory Wetlands Mitigation to replace functions for the wetland conversions due to the pipeline. If Palustrine Forested wetland is being permanently converted, there is a loss of function. Mitigation needs to be "in-kind" replacement. (DSL) (*link to Gov. Ltr. "c. .. assertions that mitigation will be provided"*)
4. We recommend that additional compensatory mitigation measures be considered for impacts to waters, including annual maintenance dredging and aquatic impacts. The comments DSL provided in the DEIS were not adequately addressed within the FEIS. Final mitigation plans appropriate to meet all federal, state and local requirements should be completed and concurred with, prior to FERC approval. (DSL) (*link to Gov. Ltr. "c. .. assertions that mitigation will be provided"*)
5. DSL requires authorizations for use of state-owned land. Portions of the terminal and pipeline will affect state-owned land and require proprietary authorizations from DSL. The FEIS did not adequately address DSL comments regarding proprietary authorizations that will be required. This requirement was not addressed within FERC recommendations. (DSL)

6. The FEIS does not address alternatives for dredge disposal. There should be a short and long-term disposal plan for the maintenance dredging material. Wahkiakum County Sand Pit should not be the only option proposed. (DSL/DEQ) (*link to Gov. Ltr. "d. ... adverse impacts on air and water quality"*)
7. The impacts of dredging a 46 to 58 acre area within a sensitive estuarine reach of this area have not been adequately evaluated. Oregon concerns include habitat alteration, turbidity, effects of on-going maintenance dredging, inadequate entrainment mitigation, single modeling of hydraulics alteration, side slope slumping, pile driving and dredging scheduled at the same time without analysis of combined effects. (DEQ)
8. FEIS neglects to make clear that DEQ's Solid Waste Program will determine whether determine the dredged sediment could be used as unrestricted clean fill or be treated and disposed. (DEQ)
9. The FEIS does not adequately address withdrawals from ballast and cooling water totals given the reality that onboard exchange of these waters is not currently possible on any LNG carriers. (DEQ, ODFW)

Public safety, emergency preparedness, retirement

[FEIS fails to provide enforceable mechanisms to ensure public health and safety for Oregonians and instead defers to already economically stressed counties and communities to pay the bill.](#)

1. The FEIS is silent on CO2 mitigation, retirement, and financial assurance. (ODOE) (*link to Gov. Ltr. "f... mitigate CO2 emissions and provide financial assurance to retire the facility"*)
2. Slope stability is only addressed during pipeline construction. Long-term stability of a pipeline through a region with historical landslides and proximity to mouths of sensitive tributaries needs to be addressed. (DEQ)
3. The FEIS assumes needed public safety infrastructure will be made available but does not specify conditions required to meet local and state standards. (ODOE)
4. Liquefaction and Lateral Spreading Hazard: the FEIS recognizes the potential for liquefaction potential and proposes certain mitigating steps in facility preparation and design. However, DOGAMI continues to recommend that these mitigation activities and the overall facility design should be factored into new liquefaction analyses that take these items into consideration in order to document that they are adequate. (DOGAMI)
5. Debris Flow Hazards in Hunt Creek Drainage: the FEIS asserts that “debris flows or landslides ... could not reach the terminal facilities.” DOGAMI continues to recommend a detailed study by a qualified engineer to analyze the hazard and risk. (DOGAMI)
6. Locally-derived Tsunami Hazards, such as from a large landslide into the Columbia River: the FEIS recognizes the potential for a landslide-induced wave to be a life safety hazard, as the fatality on Puget Island in 1965 demonstrates, yet the FEIS asserts that the likelihood of such ground failures is believed to be extremely low. DOGAMI continues to recommend a detailed study by a qualified engineer to analyze the hazard and risk. (DOGAMI)
7. Rock Fall Runout Hazards: the FEIS asserts that “rock fall runout ... is not considered likely....” DOGAMI continues to recommend a detailed study by a qualified engineer to analyze the hazard and risk. (DOGAMI)
8. Flood Hazards: the FEIS has added a review of the Army Corps of Engineers’ analysis of flood hazard from upstream dam failure, yet the FEIS continues to rely on FEMA FIRM maps as the basis for design and flood hazard mitigation. DOGAMI continues to recommend that the

objective should be to perform adequate studies to ensure adequate flood hazard mitigation, independent of the FEMA maps. (DOGAMI)

9. Known Earthquake Faults in the Vicinity of the Bradwood Landing Project: the FEIS does not include certain known faults. DOGAMI continues to recommend comprehensive literature review in order to fully analyze the related hazards and risks. (DOGAMI)

Final design unknown

FEIS does not provide adequate information on project design and pipeline route.

1. Alternative site designs are not discussed in detail in the FEIS to support why the chosen alternative layout is the most practicable with least adverse effects. Even though FERC does not choose the “best” environmental site, DSL statutes require a thorough analysis to the chosen alternative. DSL recommended in the DEIS that more information was needed on how each element of the proposed project represents the practicable alternative with the least impacts to the aquatic resources. This information was not included in the FEIS. (DSL)
2. Without final design specified, impact due to air emissions cannot be estimated or mitigation approaches evaluated. We recommend a final design to minimize impacts be presented prior to licensing. FERC's decision must be conditioned on vaporization being done through a closed-loop system. Bradwood's water right application for an open-loop system is pending and there is no land use approval for the open-loop system. (ODOE/OWRD)
3. **DSL concurrence is required for a wetland delineation** if Lower Svensen Island is proposed as part of Compensatory Wetlands Mitigation site. (DSL)
4. The pipeline route needs to be field-verified prior to pipeline construction. A revised wetland delineation needs to be submitted to DSL for concurrence prior to licensing. (DSL)
5. Each stream (including the Columbia River) crossed by the pipeline will need Oregon Department of Fish and Wildlife (ODFW) approval as to the location, type of crossing method, timing, and pipeline depth. In addition, fish passage approval from ODFW is required for stream crossings. **This approval has not been issued** to Bradwood Landing. (ODFW)

Omissions

1. Energy facilities in Oregon are required to provide an analysis of their carbon footprint and how they might offset that impact. FERC failed to include specific condition regarding how the applicant would manage CO2. FERC’s failure to include specific condition language requiring the applicant to meet this very specific state required environmental mitigation strategy is an egregious oversight that should be corrected during the decision process. FERC’s oversight in this instance may also hinder Oregon’s ability to meet prescribed greenhouse gas emission targets. This oversight is magnified by FERC’s lack of lifecycle analysis of the CO2 emissions generated by the LNG process (liquefaction, transport and gasification) that is not required for North American natural gas resources. These facts should have been incorporated in FERC’s response to Oregon’s comments filed on the DEIS.
2. Bradwood has filed requests for six separate water authorizations from OWRD. Three Limited Licenses have been issued for various portions of the project. **These Limited License will expire at the end of 2011.** Three permit applications have been filed seeking permanent authorizations for various aspects of the proposed project. These applications are in various

stages of review. The FEIS states that permits have been issued by OWRD. **No permits have been issued for the Bradwood project. It is unknown at this time whether necessary water right permits for the project can be issued.** (WRD)

3. DEQ Solid Waste program needs to make a determination before sediments can be disposed of upland. This involves more than a simple comparison to in-water disposal criteria. DEQ cannot draw conclusions due to absence of data. (DEQ)
4. Without certainty of the pipeline route, impacts at the actual waterbody crossings and locations cannot be analyzed. (DEQ)
5. The FEIS does not adequately address withdrawals from ballast and cooling water totals given the reality that onboard exchange of these waters is not currently possible on any LNG carriers. (DEQ)
6. No measures are provided to prevent transfer of non-native aquatic organisms from ship hulls, anchors, propeller, incidental ballast, etc. (ODFW)

Compilation of Oregon Agency Comments on FEIS

Oregon Department of Energy (ODOE) Comments

FERC's response to Oregon's comments failed to close the many gaps commented on in the DEIS regarding need, alternatives, retirement and emergency preparedness.

Need Analysis

The analysis for need presented remains poorly developed in the FEIS. Rather than develop a comprehensive analysis of need, FERC relied on arguments by Northwest Gas Users Association (NWGA), and a study performed by Dr. Philip Romero for Northern Star. In the FEIS FERC glosses over easily found statements presented in other FERC proposed projects to provide natural gas to the region. This seems to indicate a predisposition by staff to preliminarily conclude a positive finding for the project. This appears contradictory to FERC's own statement that other, lower cost options may be available, as FERC recognized that the price of LNG on the West Coast will be driven primarily by the Asian market, specifically Japan.

We also find FERC's conclusion that natural gas from the facility would primarily serve the Washington and Oregon markets incongruous with the market dynamics discussed in the reports. The ultimate end user of the gas is not known, as the supply contracts have not been written. Therefore to make the statement that some percentage of the gas would supply Oregon and Washington markets is unfounded. The gas will be consumed by the contract holder based on regional operations protocols.

In the end, FERC reiterated its position that the NEPA requirement is to "briefly specify the purpose and need" for the facility, which ignored a significant number of the comments provided on the DEIS, and fails to inform the Commission about other projects that may provide natural gas at lower cost to the region.

Alternative Analysis

The analysis of alternatives to the proposed project lacks regional focus and fails to compare and contrast the other two LNG terminals proposed for Oregon, or the three interstate gas pipelines, all of which would serve the purported need for natural gas in the Pacific Northwest and California. Additionally, FERC failed to provide a robust analysis of how the recently constructed and expandable Costa Azul project may serve the California market.

FERC also overlooked statements from the Williams pipeline company that their line lacked the capacity to accept the output from the Bradwood Landing site. It is not made clear to the reader why FERC would assert "***just because a pipeline is fully subscribed does not mean that pipeline capacity is never available for new entrants***". This is an example of why the analysis presented by FERC is poorly developed and lacks a credible and logical analysis to support the conclusions presented in the FEIS.

FERC also constrained the alternatives analysis by accepting Northern Star's assertion that over 80% of the project capacity would go to end users in Oregon or Washington. FERC accepted this assertion as fact, and stated that "To be considered a reasonable alternative to the Bradwood Landing Project, a project should provide comparable volumes of natural gas to Oregon and Washington." Either of the other two LNG Terminal proposals, or any of the three pipeline proposals could assert that same and therefore become viable alternatives. As such, we conclude FERC's analysis of alternatives to be woefully inadequate to support informed decision making.

Although FERC did discuss the Ruby, Bronco and Sunstone pipelines as alternatives to Bradwood Landing, they concluded that pipelines offered no environmental advantage over Bradwood because of their length. This is a superficial and conclusory statement; to presume that pipeline length is a proxy for environmental impact is without merit. FERC made no effort to consider the actual facts regarding impacts to limited and essential estuary habitat, desert habitat, late succession forest reserves and the myriad of other habitats present with each of the projects placement and pipeline routing.

Lastly, FERC stated that the greater consideration of need will be done not by FERC staff but by the Commission, whose conclusions will be more fully disclosed in their Final Order. Given the paucity of analysis in the FEIS, it would be difficult for the commissioners to fully grasp the magnitude of projects proposed in Oregon and to meaningfully reflect market considerations that are not provided by the analysis present in the FEIS. As such, we believe the FEIS still lacks key information that must be provided to the decision makers to support informed decision making. We continue to recommend that additional information be provided prior to decision making.

Carbon Dioxide Offsets

Although Northern Star has voluntarily offered to meet key state and local requirements, the FEIS does not discuss many of the state standards that would have to be met for this type of project. Energy Facilities in Oregon must meet strict standards related to how they manage the impact of CO2 emissions. We note that FERC did estimate emission from different methods of vaporization, and lists CO, NOX and particulates emissions. FERC also estimated that the impact to the lower Columbia airshed would be about 100,000 tons of CO2 annually, however no mitigation is proposed for the CO2 impact, as required by Oregon rules. And we still don't know the final design of the facility so definitive CO2 outputs cannot be calculated and modeled. Thus, it is not possible to understand how this facility would comply with state standards, nor is the facility required or conditioned in the FEIS to meet the states requirement.

Additionally, FERC provide little analysis regarding LNGs greater CO2 footprint than domestic supplies of natural gas. We maintain that the supply process (liquefaction, transport, and gasification) would emit a greater quantity of CO2 than from natural gas supplied from north American resources. Further, the incorporation of sequestration into an analysis of CO2 management is at best premature since no industrial scale sequestration demonstration have been document. If sequestration was viable, it would be applicable to a combustion process regardless of fuel type. Thus, FERC using sequestration to demonstrate how "clean" coal can be is not well founded, nor a valid comparison basis.

FERC acknowledges Oregon's conclusion that importation and vaporization of LNG might hinder Oregon's effort to meet 1990 levels of GHG by 2020. FERC goes on to say that this conclusion is

subject to a number of assumptions regarding sequestration technology, what kind of energy the LNG would displace, and future cap-and-trade rules imposed by Congress. FERC concurs that "it is certainly possible that LNG might delay meeting Oregon GHG targets" but goes on to say that "under systems such as cap-and-trade or a carbon tax regulatory framework, it may accelerate Oregon's ability to meet its GHG goals by 2020."

Retirement

The FEIS is silent on Oregon's requirement that energy facilities provide an estimate of retirement costs and provide a financial mechanism to pay those costs. Acknowledging that the county may require retirement bonding outside the agreement fails to provide the state and local agencies a meaningful avenue for resolution in the event the facility must be dismantled and the site restored. Additionally, if retirement was agreed to outside the FERC license, then there is the question of enforceability since it is outside FERC jurisdiction. Thus, we recommend the Commission include a finding that Northern Star must meet state standards for facility retirement.

Emergency Planning

The FEIS language did not appreciably change from the DEIS despite our comments. The FEIS does not meaningfully respond to Oregon's concern regarding emergency planning for the facility. FERC did recognize that a Cost-Sharing Plan is needed to ensure funding to state and local agencies for all project-specific safety and security management costs. However, FERC failed to include within the an enforceable mechanism or permit conditions that ensures that the final Bradwood Emergency Response Plan meets state standards. FERC is obligated to protect the health and safety of Oregonians in the event of an LNG emergency at the terminal or along the 38-mile transit route involving the vessel. By disregarding Oregon's comments in the DEIS, FERC allowed a process flaw that allows for a final Emergency Response Plan to be received and approved by FERC without input on the necessary equipment, systems, and personnel resources to implement a plan protects the lives of Oregonians.

FEIS needs to require the following conditions:

- Northern Star will meet state and NFPA standards for response to an industrial facility fire. This includes providing adequate fire resources to ensure a four-minute response to a 1st Alarm Fire for an industrial facility including at least three pumpers, one ladder truck (or combination apparatus with equivalent capabilities), other specialized apparatus as may be needed or available, no fewer than 16 fire fighters, one chief officer, one safety officer, and a Rapid Intervention Team (four-five fire fighters on standby at event scene).
- Northern Star will work with the U.S. Coast Guard, state, and local emergency response agencies to develop a detailed response plan to effectively address ship board fires along the 38 mile channel. This includes re-considering Tiers 1, 2, and 3 to ensure adequate resources are committed and dedicated for response to Bradwood Landing emergencies only. Upon commencement of this work, Northern Star will provide a comprehensive resource list for response to shipboard fires with Coast Guard, state and local signature approval with the draft Bradwood ERP to be submitted to FERC for final review

- Northern Star will provide a detailed draft plan for response to forest and brush fires as a result of a Bradwood Landing emergency for state and local review and approval. This includes information on likely scenarios, response actions, and resources needed to implement response actions. Upon commencement of this work, Northern Star will provide a comprehensive resource list for response to forest and brush fires with state and local signature approval with the draft Bradwood ERP to be submitted to FERC for final review.
- Northern Star will provide a public warning system for the region that includes but is not limited to Reverse 911 (24-Port) System for Clatsop County, Sirens, Reader Boards (details are contained in the draft Emergency Response Plan).
Upon commencement of this work, Northern Star will provide a comprehensive resource list for a public warning system with state and local signature approval with the draft Bradwood ERP to be submitted to FERC for final review.
- Northern Star will provide a draft detailed plan for a remote gas detection system for the region. The proposed remote gas detection system plan will include information about, but is not limited to, Fixed Gas Detectors along the entire 38 mile transit route in Clatsop County, Portable Gas Detectors (specific standards and locations are contained in the draft Emergency Response Plan).
Northern Star will include a list with a breakdown of all proposed fixed and portable gas detectors and designated locations for the equipment for state and local review. Upon commencement of this work, Northern Star will provide a comprehensive resource list for a remote gas detection system with state and local signature approval with the draft Bradwood ERP to be submitted to FERC for final review.
- Northern Star will provide a draft detailed plan for an interoperable communications system for the region. The proposed interoperable communications system plan will include information about, but is not limited to, Repeaters and Cell Towers, Incident Command, Emergency Operations Centers (details on standards and locations are contained in the draft Emergency Response Plan).
Upon commencement of this work, Northern Star will provide a comprehensive resource list for an interoperable communications system with state and local signature approval with the draft Bradwood ERP to be submitted to FERC for final review.
- Northern Star will work with the Clatsop County Sheriff's Office to identify a location for an alternate EOC outside of the three zones of concern. Northern Star will ensure the pre-designated alternate EOC has sufficient work space to accommodate affected federal, state, and local emergency responders reporting to Clatsop County to respond collectively to an LNG emergency at Bradwood Landing. This includes equipping the pre-designated alternate EOC with the same capabilities as the primary Clatsop County EOC to ensure a seamless transition to the alternate EOC if a LNG mishap prevents the use of the primary Clatsop County EOC. Pre-designating and equipping an alternate EOC ensures Clatsop County can maintain direction and control of county protective actions and decisions, providing a sustained response throughout the duration of a Bradwood event.
- Northern Star will expand, modify, and equip the existing Clatsop County EOC located at 355 Seventh Street in Astoria at the Clatsop County Sheriff's Office to ensure sufficient work space to accommodate affected federal, state, and local emergency responders reporting to Clatsop County to respond collectively to an LNG emergency at Bradwood Landing. (see details in draft Emergency Response Plan)

- Northern Star will designate and equip a JIC in Clatsop County outside of the three zones of concern. The JIC will provide adequate work space and access to communications and information systems to support public information officers from Bradwood as well as federal, state, and local public information officers responding to the event. The JIC will also be designed to accommodate news conferences and phone teams addressing public concerns.

Northern Star will work with state and local emergency response organizations to determine the appropriate location, design and layout, and equipping the facility for response to a Bradwood emergency. Upon commencement of this work, Northern Star will provide a comprehensive resource list for the Clatsop County JIC with state and local signature approval with the draft Bradwood ERP to be submitted to FERC for final review.

- Northern Star will provide a draft detailed training plan designed to meet the specific needs of this region's first responders and decision-makers. This includes, but is not limited to, Construction of an LNG Fire Training Center in Clatsop County . Type of training to include, but is not limited to: 1) Incident Command System; 2) facility security; 3) oil & hazmat spill response; 4) LNG for fire fighters, emergency responders, and law enforcement; 5) marine fire fighting; 6) general LNG training; 7) advanced LNG fire fighting; 8) hospital training; 9) tabletops, drill, and exercises and other training as appropriate.
- Northern Star will provide funding to the Clatsop County Sheriff's Office to hire a full-time County LNG Planner & Fire Response Coordinator. The County LNG Planner & Fire Response Coordinator will work with first responders to prepare for LNG vessel arrivals and departures, work with first responders, the state, and Northern Star to conduct plan review, coordinate training, exercises, public outreach, and perform other LNG emergency preparedness activities as appropriate.
- Northern Star will work with Columbia Memorial Hospital to draft a detailed draft plan to address burn victims as a result of a Bradwood emergency for state and local review and approval. The plan will be consistent with the capabilities outlined in the Burn Mass Casualty Plan for the Oregon Burn Center at Legacy Emanuel Hospital. Specifically, Northern Star will provide Columbia Memorial Hospital with the personnel and resources necessary to implement the Burn Mass Casualty Plan's 72 Hour Burn Plan - Care of Burn Patients in a Non-Burn Hospital.

Upon commencement of this work, Northern Star will provide a comprehensive resource list for Columbia Memorial Hospital with state and local signature approval with the draft Bradwood ERP to be submitted to FERC for final review.

- Northern Star will cover all project specific safety, security, and emergency preparedness and management costs imposed on the state and local emergency response organizations as a result of the proposed Bradwood Landing Import Terminal.
- USCG will reconvene a new WSA Validation Committee for the proposed Bradwood Landing Import Terminal with the appropriate local, county, and state emergency response officials to review and discuss appropriate safety and security measures as a result of the new modeling completed for the larger (260,000 cm) LNG vessels.
- Northern Star will revise the 38 miles transit maps for the three zones of concern to include an increase based on modeling results. Northern Star will provide an updated list of safety and security resource commitments for review and discussion by the WSA Validation Committee. Northern Star will implement measures as outlined in the revised WSR.

- Northern Star will immediately notify the Oregon Department of Energy of all non-scheduled events at Bradwood Landing

Oregon Department of State Lands (DSL) Comments

Section 1.1, page 1-5, Purpose and Need: DSL Removal-Fill Law Requirements - Although, the FEIS does elaborate more than the DEIS, a more detailed justification is still needed on how the proposed project's purpose and need is the best use of the water resources of this state and within the public need. (If existing terminals on the East Coast are only operating at 50% capacity, how is the need justified here (Section 1.0, page 1-3))?

A third party market analysis has not been completed to determine if the project fulfills the purpose and need. Section 3.1.3 does not adequately demonstrate that the purpose and need of Bradwood Landing is the best use of the water resources of the state, and the most practicable alternative for the PNW.

The FEIS does not adequately analyze or address the significant potential impacts of the project and how they will interfere with the public health and safety, navigation, public recreation, and fisheries. If the NWGA states that the existing natural gas interstate pipeline and local storage facilities are adequate to meet PNW demand until 2012, what is the current need for the project? Given that the future demand of natural gas is predicted, how is the increased demand for alternative energy accounted for, given the climate change initiatives taking place?

A west coast-regional analysis of the need and demand for natural gas should be provided. The placement of a LNG terminal, pipeline and associated impacts within Columbia River Estuary cannot be compared to the associated impacts of LNG terminals and pipelines on the East Coast, or other parts of the country.

Per OAR 141-085-0029(3) and ORS196.805, "the Department must determine that the proposed removal-fill activity will not be inconsistent with the protection, conservation and best use of the water resources of this state, and would not reasonably interfere with the paramount public policy of this state to preserve the use of its waters for navigation, fish and public recreation".

The FEIS did not adequately address DSL comments related to the project's purpose and need submitted within the DEIS.

Section 2.4.1, page 2-40, 2-41, Section 3.1.9.2: Dredging and dredge material placement alternatives, Table 3.1.9-1 states that permitting for in-water disposal is more rigorous than upland placement. This statement is not justification for demonstrating that this alternative is not practicable. If the dredged material meets the standards for inwater disposal, this option should be considered as the preferred alternative.

Have there been regional studies documenting the effect of dredging 24 hours a day for up to 72 days? This should be accounted for in the cumulative impacts to waters, fisheries, habitat and the whole project's total footprint. (SA1-54)

The compensatory mitigation that is being proposed is not commensurate with the impacts, both short and long term, for the dredging impacts, as well as other impacts on waters. Given that the Columbia River is sediment starved, and such a large amount of removal is proposed for the construction and maintenance, more justification is needed as to why inwater disposal is not practicable. The FEIS does not adequately address alternatives for dredge disposal. There should be a short and long-term disposal plan for the maintenance dredging material. Wahkiakum County Sand Pit should not be the only option proposed.

Section 1.3.11, p. 1-17, 1st paragraph, Section 2.1.5, p. 2-28 and 2-29: DSL Removal-Fill Law/Compensatory Mitigation Requirements, Temporary Impacts and Restoration Plan - Compensatory mitigation is required for projects within both wetlands and waters of the state (OAR141-085-0025 (4)). Compensatory wetland mitigation (OAR141-085-0121, -0126, -0136, -0141, -0151), Compensatory mitigation (OAR141-085-0115) and mitigation for temporary impacts (OAR 141-085-0171) are needed. Per OAR 141-085-0121 (4), for projects over 0.2 acres, on-site CWM first has to be considered.

The mitigation proposal should be commensurate with impact, and in-kind mitigation. Compensatory mitigation is also required for impacts to water resources per OAR 141-085-0115. The FEIS lacks a clear compensatory mitigation plan for impacts from dredging (including maintenance dredging) and wharf construction activities. The proposed mitigation should show an increase in function to offset the impacts to waters of the state.

Comment FA1-18 in the FEIS is not accurate; mitigation is required by DSL for temporary impacts (OAR 141-085-0171).

Although, the alternative analysis has improved since the DEIS, the FEIS has not demonstrated an adequate alternatives analysis for the mitigation sequence per OAR 141-085-0029(7). The FEIS does not adequately discuss mitigation requirements for the project. DSL concerns with the DEIS have not been addressed. Final mitigation plans, appropriate to meet all federal, state and local requirements, should be completed prior to FERC approval, not prior to construction (p.5-26 (13)).

A complete compensatory wetland, compensatory non-wetland and temporary impacts mitigation plans have not been submitted to DSL, as stated within the FEIS. DSL has not reviewed the mitigation plans to concur that DSL requirements are met and specific metrics identified.

Section 2.4.2.2, p. 2-49 and 2-50, Sections 4.0, 4.4.1.2 and 4.4.1.3, p.4-110, p.4-116, Section 5.1.4, p.5-6: Pipeline Route/Wetland Crossings, Temporary Impacts - Conversion of wetlands is not a temporary impact (i.e. Palustrine Forested wetland (PFO) converted to Palustrine Emergent (PEM)). The FEIS still defines the conversion temporary, which is incorrect. Appropriate mitigation should be provided for this conversion. Page 4-1 of the FEIS also defines an impact (short term) as taking longer than 3 years to restore. SA1-60 states that PFO will return to PFO, however, this is not true since the pipeline ROW will remain mowed, which most likely would be PEM.

The FEIS is not adequate in identifying CWM to replace functions for the wetland conversions due to the pipeline. If PFO is being permanently converted, there is a loss of function; mitigation needs to be “in-kind” replacement.

Section 3.0, Section 3.1.6.2, Section 3.1.9.2, p 3-71, Section 3.1.2.2, p.3-16 and Section 5.1.12, p.5-20 through 5-22: Alternatives Analysis, Total Project Impacts within Wetlands/Waters - Per OAR 141-085-0029(4 and 5) and ORS 196.825, the Department will issue the practicable alternative with the least adverse effects.

Sections 3.1.2.2 and 5.1.12, the FEIS states that the Palomar, Bronco and Ruby Project have no clear environmental advantages over Bradwood Landing Project. However, since there is not detailed data about the environmental impacts (p3-16), this is an assumption by FERC (since FERC lets the market decide) and not an adequate statement demonstrating the support of the alternatives analysis. It is an assumption that the preferred alternative is the most practicable-even though a thorough analysis has not been completed.

Alternative site designs and layouts with a smaller footprint are not discussed in adequate detail in the FEIS as to why the chosen alternative layout is the most practicable with least adverse effects. Even though FERC does not choose the “best” environmental site (Comment FA3-14), DSL statutes require a thorough analysis to the chosen alternative. DSL recommended that project impacts provide more specific discussion as to how each element of the proposed project represents the practicable alternative with the least impacts to the aquatic resources.

The alternative analysis for dredge disposal options is not adequate. Other in-water disposal options should be considered. There should be a long-term disposal option for the maintenance dredging identified as well.

The FEIS alternatives analysis is based on assumptions due to a lack of environmental data. The FEIS does not adequately address alternatives to all aspects of the proposed project or mitigation (compensatory and temporary) concerns that DSL commented on within the DEIS.

The FEIS Comment SA1-42 is not accurate. DSL will review per the appropriate OARs, however, each element of the project that was chosen as the preferred alternative, within DSL jurisdiction, should be the least adverse impact on waters of the state.

Section 4.4.1.3, p. 4-109, Section 4.5.2.1, p.4-150, .4-159, Section 4.7.2.2, p. 4-318: Terminal site Impacts and CWM/CM Proposal, Conservation-in-Lieu Proposal - The FEIS states the in-water work activities will occur during the ODFW in-water timing, however, DSL was under the assumption that no work would occur within Hunt Creek, below HMT (p.2-42).

On page 4-150, Hunt Creek and Svensen Island are proposed for mitigation for dredging impacts. This is not adequate mitigation to meet all the permanent impacts being proposed. Mitigation should be in-kind and there should be a no net loss of habitats.

Preservation of Hunt Creek does not seem adequate to fit within the CIL mitigation credit per OAR 141-085-0131(4). Comment FA3-3 of the FEIS is not accurate. CIL credit will not be given unless the specific criterion is met. Also, on page 4-109, although DSL discussed the option of using CIL with Bradwood, DSL did not concur that the site fit within the CIL requirements. If the Hunt Creek Preservation Area is already protected as Aquatic Natural zoned lands by Clatsop County, the requirements with the OARs would not be met.

DSL recommends that additional compensatory mitigation measures need to be considered for impacts to waters, including annual maintenance dredging and aquatic impacts. The comments DSL provided

in the DEIS were not adequately addressed within the FEIS. Final mitigation plans, appropriate to meet all federal, state and local requirements, should be completed and concurred with, prior to FERC approval.

Section 4.5.2.1, p.4-170: CWM on Lower Svensen Island, And Middle Svensen Island - The proposal to use Lower Svensen Island for CWM CIL credit must meet the OAR 141-085-0131(4). The FEIS indicates this site and Middle Svensen Island are proposed for enhancement credit; the requirements of OAR 141-085-0126 (7) must be met.

If Lower Svensen Island is proposed as part of CWM site, a wetland delineation will be required and DSL concurrence is needed.

The FEIS did not elaborate on the mitigation proposal since Bradwood has not finalized the mitigation plans. FERC recommendations to coordinate with appropriate agencies are not adequate to ensure compliance and consistency with federal, state and local agencies.

Appendix B, Comment SA1-181, Section 4.4.1.2, p.4-104: Wetland Delineation - DSL concurred with the wetland delineation for the pipeline route contingent upon conducting field surveys once access to the pipeline route was obtained to verify the wetland boundary (currently mostly based on aerials).

The FEIS states that FERC has not reviewed the Clifton Road or Construction Worker Parking area. DSL received two wetland delineations, WD2006-0738 (Clifton) and WD2007-0233 (construction parking), which were concurred with as having no wetlands or waters present. If there are modifications that extend outside the study area of these reports, addendums will be required from DSL.

FERC recommendations included vague language that “agency clearances” must be filed with FERC prior to pipeline construction. The pipeline route needs to be field verified prior to pipeline construction. A revised wetland delineation needs to be submitted to DSL for concurrence.

Section 4.12, p. 4-504, 3rd paragraph: Cumulative Impacts - The FEIS states (p4-504) that “the only resources that have potential for cumulative impacts would be air quality, certain socioeconomic resources, and in the case of OR LNG, resources that could be affected by dredging and LNG marine traffic”. This statement is not accurate.

There are additional reasonably expected adverse impacts, which can be cumulative in nature, to water quality (permanent loss of habitat due to the maintenance dredging), fisheries habitat, terrestrial habitat, estuaries, and wetlands as well.

FERC does not have all the supporting environmental and other data regarding the project’s cumulative impacts. For example, the FEIS assumes that the mitigation proposed will offset the impacts. However, the mitigation for all aspects of the project has not been available or adequate per agency requirements.

DSL Proprietary Issues - DSL requires authorizations for use of state owned land. Portions of the terminal and pipeline will affect state owned land and require proprietary authorizations from DSL.

The FEIS did not adequately address DSL comments regarding proprietary authorizations that will be required. This requirement was not addressed within FERC recommendations.

Oregon Water Resources Department (OWRD) Comments

Comment Summary: Bradwood has filed requests for six separate water authorizations from OWRD. Three Limited Licenses have been issued for various portions of the project. **These Limited License will expire at the end of 2011.** Three permit applications have been filed seeking permanent authorizations for various aspects of the proposed project. These applications are in various stages of review. The FEIS states that permits have been issued by OWRD. No permits have been issued for the Bradwood project. **It is unknown at this time whether necessary water right permits for the project can be issued.**

Page 5-3, Section 5.1.3, Conclusion and Recommendations

First paragraph mentions use of well water for construction purposes and facility operation. This paragraph ends with the statement that Bradwood has obtained a permit from ODWR. This is incorrect. This comment was submitted after reviewing the resource reports. Bradwood has applied for a permit for the use of 0.334 cfs from a well for industrial/manufacturing uses, which would include construction. OWRD has proposed that a permit be issued. The final permit has not been issued. (reference application G-16632)

Proposed solution

Final authorization should be obtained by Bradwood for construction water before they receive FERC Certification.

Page 5-4, Section 5.1.3, Conclusions and Recommendations

Paragraph 2 on this page mentions dredging operations. Bradwood has applied for and received Limited License LL-948 from OWRD for this activity.

Paragraph 3 on this page mentions hydrostatic testing of tanks and hydrostatic testing of the pipeline. Limited License LL-947 has been issued for the use of 4400 gallons per minute from the Columbia River for tank testing, and 150 gallons per minute from a well for the testing of associated pipelines. Limited License LL-949 has been issued for use of Columbia River water for testing of the transmission pipeline.

It is important to remember that Limited Licenses, unlike permits, are temporary water use authorizations, that are authorized for a specific period of time. At the end of this period of time, a Limited License is of no further force or effect and a new Limited License must be applied for. In this instance, all three referenced Limited Licenses will expire on December 31, 2011. If construction is anticipated to continue beyond this date, new Limited Licenses will need to be applied for well in advance of the expiration date.

Paragraph 3 on this page also mentions use of water from the Columbia River for weekly testing of the fire suppression system, and that Bradwood has obtained a permit from OWRD for these appropriations. A permit has not been issued. A Limited License, (temporary authorization) has been issued for tank, pipes and pipeline testing.

Bradwood has applied for a permit under Application S-86521. A protest was filed by Columbia Riverkeepers and a Contested Case Hearing (CCH) will need to be held to determine whether a permit should be issued. Bradwood Landing LLC has not indicated to OWRD that they are ready to proceed with the CCH.

Proposed solution

Authorization for use of water for testing of a fire suppression system needs to be obtained by Bradwood prior to FERC Certification.

The Limited Licenses that have been issued for various project purposes will expire at the end of 2011. Additional authorizations will be needed if water use is planned for these uses beyond 2011.

Paragraph 4 on this page mentions ballast and cooling water taken on during unloading of LNG.

Proposed solution

On April 23, 2008, Bradwood Landing LLC applied for a surface water application (file S-87154) for 66.8 CFS for industrial use for ballast water and ship cooling. OWRD has not determined whether to propose permit issuance. Comments are expected from other state agencies. If OWRD proposes to issue a permit any person or entity will have an opportunity to file a protest.

Page 5-5, Section 5.1.3, Conclusions and Recommendations

Paragraph 4 on this page speaks to HDD or conventional bore method for pipeline installation at up to 23 water-body crossings. These procedures often require water to be mixed with a slurry or "boring mud" to facilitate the drilling and boring. Such a use of water most likely will require authorization from OWRD. Water obtained from a municipal supplier would not require additional authorization.

Proposed solution

A Limited License for use of water for drilling or boring activities could be applied for. Limited Licenses are for uses within a single drainage basin, so several might be needed. Enough lead time should be allowed for processing the Limited License before water is needed for the proposed use. This should take place before any FERC Certification.

Oregon Department of Environmental Quality (DEQ) Comments

Waterway listing status (FEIS page 4-67 and throughout analysis portions of the document)

The FEIS did not adequately address DEQ comments related to the analysis of potential water quality and beneficial use impairments which may result from implementation of the project as proposed.

The information is incorrect. Total Maximum Daily Loads (TMDLs) have only been developed and approved by EPA in the Columbia River for the parameters of Dioxin and Total Dissolved Gas. Development of a TMDL for Temperature is underway by EPA (not DEQ), but has not been completed. Multiple other parameters are 303(d) listed. This is critical because projects which can reasonably be expected to degrade water quality parameters are not permissible. Further, new sources of pollutants which will impair listed parameters for which a TMDL has not been developed and

implemented, are not permissible. The potential for any project aspect to impair water quality standards must be considered and addressed by project changes, imposed limitations, or mitigation, in order to show compliance with the Clean Water Act.

The Columbia River is classified as water quality limited under the Clean Water Act, Section 303(d), for the parameters of: Temperature; DDE (DDT metabolite); PCB; and Arsenic. An Environmental Protection Agency (EPA) approved Total Maximum Daily Load (TMDL) has been developed for the parameters of: Dioxin and Total Dissolved Gas. Other parameters listed for potential concern include: Cadmium; Copper; Iron; Lead; Mercury; Nickel; Silver; Tributyltin; Zinc; Aldrin; Alpha-BNC; Benzo(a)anthracene; Benzo(g, h, i)perylene; Bhc; Chlordane; Chrysene; Cyanide; DDD; DDT; Dieldrin; Endrin; Hexavalent Chromium; pH; Phenol; Polynuclear Aromatic Hydrocabons (PAHs); Pyrene; and Radionuclides.

Dredging (FEIS pages 4-150-153)

The FEIS does not adequately address DEQ's comments on the DEIS regarding the potential effects of dredging related activities in this highly dynamic location. DEQ has requested significant information from the applicant for review and evaluation for issuance of a 401 Water Quality Certification decision.

The impacts of dredging a 46 to 58 acre area within a sensitive estuarine reach of this area have not been adequately evaluated. The area is a highly complex confluence of the 9th order main channel, Clifton Channel, and Cathlamet Channel. Flows bifurcate around Puget Island, Ryan Island, Tenasillahe Island, Hunting Islands, and unnamed smaller islands and confluences with tributaries from Oregon, Washington, and the islands.

The area is also tidally influenced. Adding to the complexity of the immediate area are: on-going USACE navigation channel deepening and maintenance dredging; private dredging; and the many in-stream structures installed by the USACE, drainage districts, and private land owners to aid in flow control for navigation, flood protection, and bank stabilization.

Habitat alteration is inadequately characterized and proposed mitigation is therefore inadequate as well as too distant to replace limited habitat directly in the immediate area.

Turbidity background levels are insufficiently characterized without accounting for natural variation and cumulative impacts.

Water quality and beneficial use impacts from on-going maintenance dredging is not adequately analyzed. Stated recovery rates of benthic organisms are not applicable as maintenance dredging and facility operation will result in continual disturbance equating to a total loss of the habitat functions of the area.

Entrainment is inadequately mitigated as the ODFW in-water work window does not mean that fish abundance is least, nor does the timing preference lessen impacts to all other resident species. The analysis does not adequately address the benthic organisms, juvenile anadromous species, and egg and larval stages which are most susceptible to entrainment.

The hydraulics alteration analysis based on a single modeling exercise is inadequate.

Side slope slumping and potential impacts to the navigation channel are not addressed.

Pile driving and dredging are both slated to occur during the in-water work window. The combined effects of these actions must be analyzed.

Dredge spoil placement locations have changed. The FEIS references the Wahkiakum Sand Pit and the terminal site. Various submittals by the applicant state that all material will be placed at the terminal and maintenance dredging spoils will be placed at the sand pit.

The following information is missing in the FEIS: Although some analysis has been done with a focus on a sensitive beneficial use, endangered salmonid species, DEQ finds no intended focus or interpretation on elements DEQ must consider in evaluating potential impacts to water quality parameters, policies and programs, and all beneficial uses per OAR 340-048-0020. Further, DEQ is concerned that the applicant's analysis relied on limited historic data, studies prior to 2000, and modeling interpretations, and is inadequate to accurately predict the potential changes in all aspects of fluvial geomorphology within this highly dynamic and complex area. This approach is inappropriate given that dredging and terminal construction are proposed to occur in: (1) one of only 7 EPA designated "Nation's Great Waterbodies", (2) upstream of sensitive habitat areas of the Lewis and Clark National Wildlife Refuge, (3) downstream of known erosional areas on Puget Island, (4) adjacent to a yet-to-be deepened section of the navigation channel, (5) amid multiple in-stream flow control structures, and (6) wholly within the Columbia River Estuary (one of 27 in EPA's national program).

FERC's analysis should be based on a well-informed postulation, developed by a qualified fluvial geomorphologist, of the potential hydraulic alterations up- and down-stream in all channels and with focus on detriments to water quality and beneficial uses, which may result from such alterations. Primary concerns which must be analyzed include: Side-Slope Adjustments; Shoal Dredging at Clifton Channel; Aquatic Habitat Loss; Ship-Induced Shoreline Erosion; Turning Basin and Berth Sedimentation and Maintenance Dredging; Quantifying Sediment Transport and Bed Elevation Changes; and Disposal of Dredged Material.

A Regional Sediment Management Plan is under development for the Columbia River which lacks sediment in downstream areas. Additional beneficial use placement of dredge spoils must be considered.

Disposal of dredged sediments (FEIS page 162)

FERC did address DEQ's comments but they missed the point that the Solid Waste Program would review sediment data and determine if the sediment could be used as unrestricted clean fill and that the applicant should factor into their plans the process for us to do that. FERC understood DEQ's comments to be that they or their consultants could make this determination. Their response to DEQ comments is that they find the sediment to be clean fill. The technical flaw is that DEQ makes the determination as to whether the sediment meets clean fill criteria and this has not been factored into the process. In addition, DEQ does not have a reference for which specific set of criteria they used to make the determination that the sediments to be dredged are clean fill and we don't know

what data they collected, the quality of the data or the screening values they used to make their determination.

Since the role of the DEQ Solid Waste Program in reviewing sediments prior to upland disposal has not been factored into the preferred alternative as described in the FEIS, FERC could rule before we have had the opportunity to make our determination. Future dredged materials are also subject to our review if disposed of in Oregon. Without recognition of our process, we may not get the opportunity to review that material either.

DEQ would make the resources available to do the necessary work given the magnitude of the project. DEQ's work would be in two parts: 1) together with our WQ program, we would review sediment sampling protocol, review sample results of sediment to be removed and placed upland and review and oversee proper upland disposal of the sediment to be used to raise the terminal height and 2) review of subsequent dredged materials from maintenance that are disposed of in Oregon. The work consists of communicating with the applicant on what data is available and what data is needed, reviewing data the applicant submits, making a determination and communicating that determination. If the determination is that the material can be disposed of under a Solid Waste Letter of Authorization (SWLA), the applicant must apply for an SWLA, the SWLA must be written, sent to the applicant and followed up on.

Note: DEQ DEIS comments submitted on the need for DEQ to evaluate the dredged material prior to upland disposal were not picked up in the Governor's cover letter to the combined state comments but the comments are, with some rewording and reorganization, found on page 19 of the supplement signed by Janet Prewitt, Assistant Attorney General, Natural Resource Section, DOJ, that accompanied the Governor's letter.

These comments clearly say that our Solid Waste program needs to make a determination about the sediments before they can be disposed of upland (see page K-451 of the FEIS for FERC's response to these comments). FERC, who responded to the comments, took these comments to mean that the sediments simply need to be compared to in-water disposal criteria so they feel that has been done and that the sediments pass. DEQ does not have the data and cannot draw our own conclusion.

In the preferred alternative in the FEIS (page 5-3) the following statement is made about disposal of dredged material:

"Construction of the LNG terminal would require the dredging of about 700,000 cubic yards of sediment for the ship berth and maneuvering area. Northern Star proposes to place up to the entire 700,000 cubic yards of the dredged material on the LNG terminal site to raise the grade to an elevation of up to 25 feet NAVD 88. Any dredged material not placed at the terminal would be primarily used for beach nourishment at the Wahkiakum County Sand Pit site, located at the northern end of Puget Island. About 80,000 cubic yards of material would be removed from the ship berth and maneuvering area approximately every 2 to 4 years as part of maintenance dredging and placed at the Wahkiakum County Sand Pit (WA) site or another approved dredged material disposal site."

DEQ does not know if future maintenance dredging would lead to materials placed in Oregon. It could all go to Washington but we'd want to be in a position to review that placement. DEQ review of the sediment is an issue that has still not been addressed (See table 1.3-1 where state permits and authorizations are listed. The Solid Waste Program is missing from this table)

Terminal Mitigation (FEIS pages 4-169, 4-158, 4-159, 4-157); Pipeline Mitigation & Unaddressed Impacts to Water Quality (FEIS pages 4-183, 4-185, 4-186, 4-188, 2-32)

The FEIS does not adequately analyze mitigation for water quality impacts.

The FEIS does not discuss the adequacy of preservation as mitigation. The FEIS does not acknowledge that proposed mitigation at Hunt Creek is inappropriate as impacts there appear to degrade existing water quality function.

The FEIS does not address mitigation for dredging in the turning basin which will result in a loss of shallow, mid and deep water habitats through continual operation of the terminal and frequently maintenance dredging.

The FEIS should look at more information before making general assumptions which lack fact.

The FEIS does not adequately analyze the potential impacts to water quality and beneficial uses from the combined impacts of billions of gallons of withdrawal per year from interfacing surface waters, subsurface waters and wetlands.

The FEIS does not adequately address withdrawals from ballast and cooling water totals given the reality that onboard exchange of these waters is not currently possible on any LNG carriers.

The FEIS does not address intake of water for water curtains or discharge back to the river following running over the ship deck and hull.

The FEIS does not address open-loop submerged combustion vaporization as an option. Will the FEIS be re-opened if the applicant changes to this method which is more taxing on water resources in the region?

The FEIS does not address the fact that LNG carriers are not currently able to meet this requirement and that this is out of the applicant's control.

The FEIS makes no assignment as to what agency will be responsible for assuring compliance with the performance standards and reviewing monitoring. How will these performance standards be meaningfully implemented? What operational actions will be required in the event performance standards are not met? By what agency?

Water quality impacts (temperature, turbidity, dissolved oxygen, etc.) are proposed in non-fish bearing streams without minimization efforts or mitigation. Water quality standards must be met in waters of the state, despite the probability of there being no fish present, as there are other beneficial uses to support.

Svenson Island is too distant, offers out-of-kind mitigation, and is already functioning for water quality benefits. This proposal does not offer an improvement to water quality function even at the distant site, while losses of water quality function will be sustained at the terminal and pipeline sites.

Hunt Creek is proposed as mitigation through avoidance and conservation easement protection. A 30 foot buffer from the re-aligned railroad will be established.

Devegetation at the crossings along the pipeline route will result in sedimentation, turbidity and temperature degradation. These impacts will occur with trenching, boring, and horizontal directional drilling.

Re-vegetation of 25 feet along the corridor with only herbaceous species for 10 feet in the centerline is inadequate for stability and water quality.

Sedimentation and erosion control from de-vegetation in the long term is not addressed.

Slope stability is only addressed during pipeline construction. Long term stability of a pipeline through a region of highly variable topography, with historical landslides and proximity to mouths of sensitive tributaries needs to be considered and addressed.

Lateral pipelines are discussed in the FEIS, but no information about routes or potential water quality impacts is provided or analyzed.

The Alternatives Analysis lacks information on other potential pipelines. Despite this, the FEIS makes the assumption that more length will result in more impacts.

The mitigation plans and information submitted to date are inadequate for evaluation regarding water quality impacts and proposed mitigation for the following reasons:

The mitigation plans and information submitted to date are inadequate for evaluation regarding water quality impacts and proposed mitigation for the following reasons:

1. The mitigation plan document is a draft which implies incompleteness. FERC must require a final plan which addresses adequate compensation for all unavoidable impacts, particularly to water quality concerns.
2. Functional analysis and proposed mitigation measures are focused on fish functions and not directly linked to water quality standards and the beneficial uses impacted. Although some beneficial uses can be interpreted to be covered by this analysis, others, particularly anthropogenic uses, are not.
3. Although some of the wetland impacts are rated as to some water quality functions, these are incomplete and waterways are not rated for water quality function at all.
4. Mitigation proposed at Svenson Island appears to be out-of-kind and too distant from the impacts to replace local water quality function lost. In particular, in-kind and locally available habit replacement of the log pond wetlands is not addressed. Although mitigation is proposed at Svenson Island, 14 miles away is too distant to replace this off channel area used by fish transiting to and from the Clifton Channel.
5. Hunt Creek is proposed as mitigation through avoidance and conservation easement protection. However, the applicant must demonstrate how this replaces any lost water quality function, because it appears that the current functions may be degraded by the following elements of the applicant's proposal:
 - a. Moving the railroad tracks to within close proximity (unspecified distance in documents submitted),

- b. Inadequate vegetated buffer to protect water quality function (30 feet is proposed, but 50 to 100 feet is recommended in the Oregon Forest Practices Act and DEQ typically recommends up to 150 feet dependant on site conditions);
 - c. Inadequate stormwater treatment from the new bridge and roadway (vegetation of an unspecified length, width, grade, and underlying soil type cannot be determined to provide adequate pollutant removal); and
 - d. Questionable habitability for beneficial fish use due to ongoing operations of the terminal.
6. Mitigation for losses of water quality function and shallow-water, and mid- to deep-water habitat due to dredging the berth and turning basin near the entrance to the Clifton Channel are not addressed. Please provide an analysis of these potential losses and how they will be replaced in-kind at the entrance to this critical channel accessing state and national refuge areas. This analysis must incorporate the hydraulic analysis information as specified in the Dredging comments above, and analyze both short term impacts and potential long term impacts.
7. Without certainty of the pipeline route, impacts at the actual waterbody crossings and locations cannot be analyzed. At a minimum, DEQ would need specifics of crossing techniques and impact minimizations measures defined by specific categories of streams (sizes, flow regime, fish-bearing, water quality status, etc.) anticipated to be crossed and demonstrating water quality impacts are reduced to the maximum extent practicable. Please provide a finalized route with all applicable delineations and impact avoidance, minimization and mitigation.
8. Water quality functional losses and their mitigation are not analyzed for temporal losses of riparian trees and wetland vegetation temporarily disturbed and then restored, or for permanent losses of riparian trees and vegetation at waterway crossings along the pipeline route and permanent access corridor. One half of the existing riparian trees are proposed for removal in the access corridor. Even with total replacement by replanting, temporal losses of wetland and water quality function would be experienced for 1-3 years for wetland shrubs and up to 20 years for trees in forested wetland areas and riparian areas. A 25-foot wide corridor is proposed to remain unplanted, resulting in permanent functional losses and contributing to on-going water quality degradation. This riparian vegetation, and in particular trees, is essential to providing water quality and habitat function. Such services as shade to reduce stream temperature, pollutant up take, stormwater treatment and infiltration, and bank stabilization through root structure and evapotranspiration will be lost in the impacted areas for years to decades. The proposed route of the pipeline parallels the Columbia River through tidal wetlands and tributary mouths, which are important spawning, rearing and predator avoidance areas for listed as well as resident species. Loss of riparian vegetation in these areas is directly contradictory to the applicable Water Quality Management Plan for the North Coast Total Maximum Daily Load (TMDL) which requires preservation and restoration of riparian areas in tributaries to address temperature and other water quality parameters. Please analyze these impacts and provide adequate, localized mitigation.
9. Upland impacts – Associated with the pipeline and powerline corridors include the permanent removal of mature trees aging 20 to 80 years old, as well as old growth stands and other vegetation. This could potentially contribute to slope instability, reduced infiltration ability, and additional erosion leading to water quality problems down slope. Multiple citizens who have commented on upland impacts have expressed concerns with geologic instability along the pipeline route leading to landslides into tributaries feeding the Columbia River in both Oregon and Washington. Additionally, these upland impacts are contrary to EPA’s strategic target to protect and restore 3,000 acres of upland habitat in the Columbia River basin, because mitigation is not proposed for these significant impacts to mature trees along the corridors, which will result in spatial and

temporal losses of multiple functions. Please demonstrate avoidance, minimization or mitigation for these impacts, particularly with respect to potential water quality functional losses.

The proposed location of the Bradwood pipeline, crossing multiple sensitive tributaries and wetlands, along one of the Nation's Great Waterways, within one of the National Estuary Program estuaries, inhabited by multiple endangered aquatic and terrestrial species may have far greater impacts to water quality and beneficial uses than a much longer pipeline crossing few if any waters or wetlands.

Hydrology Alterations (FEIS page 4-188, 2-7)

The FEIS does not adequately analyze the potential impacts to water quality and beneficial uses from the combined impacts of billions of gallons of withdrawal per year from interfacing surface waters, subsurface waters and wetlands.

The FEIS does not adequately address withdrawals from ballast and cooling water totals given the reality that onboard exchange of these waters is not currently possible on any LNG carriers.

The FEIS does not address intake of water for water curtains or discharge back to the river following running over the ship deck and hull.

The FEIS does not address open-loop submerged combustion vaporization as an option. Will the FEIS be re-opened if the applicant changes to this method which is more taxing on water resources in the region?

The FEIS does not address the fact that LNG carriers are not currently able to meet this requirement and that this is out of the applicant's control.

The FEIS makes no assignment as to what agency will be responsible for assuring compliance with the performance standards and reviewing monitoring. How will these performance standards be meaningfully implemented? What operational actions will be required in the event performance standards are not met? By what agency?

Appropriation of water from the Columbia River for hydrostatic testing is concluded to have no effect. Cumulative effects of all water withdrawals from all interacting sources must be analyzed.

Screening on ballast and cooling water intakes for ships are proposed by the applicant.

The applicant proposes incentives to LNG carriers to retrofit ships to be able to connect to a screened water intake at the terminal.

Performance standards for entrainment and temperature along with monitoring will be required.

The following information is missing in the FEIS:

A hydrologic analysis for the total potential project impacts to water quality parameters is required in order to evaluate potential degradation of water quality and beneficial uses. This analysis must include the complex interaction of surface waters, subsurface waters and wetlands.

1. FERC must require an analysis of potential impacts to water quality parameters (particularly Temperature) in the Columbia River, Hunt Creek and other nearby tributaries resulting from the combined effects of the various alterations to hydrology proposed in the immediate area of the terminal. Hydrology alterations include, but may not be limited to:
 - a. Filling of wetlands and surface waters;
 - b. Initial and on-going withdrawals of groundwater for construction and operations;
 - c. Initial and on-going water withdrawals from surface waters for terminal fire suppression systems and ship ballast and cooling systems; and
 - d. Discharges of submerged combustion vaporization condensate and other operations process waters.

Per c. above, proposed water withdrawal amounts for ballast/cooling total is in excess of 6 billion gallons annually for 125 ship visits. However, none of the worldwide fleet of LNG ships potentially delivering cargo to Bradwood are currently able to accomplish either of the options requiring transfer of cooling and ballast water between the independent onboard systems, as presented in the application and DEIS materials, and it is unlikely that LNG ships will be retrofitted to do so. Therefore, FERC must require the applicant to submit information incorporating surface water withdrawals for both ballast and cooling water and include this in the analysis on hydrology alteration.

2. DEQ has received information indicating that a “water curtain” or constant stream of water pumped from the berthing area, running along the deck and back to the stream, is a standard operating procedure during the full duration of each unloading event of LNG cargo. Although the applicant’s response to comments from FERC (revised *Description of the Proposed Action*) indicates that berthing and unloading facilities will be designed and operated per codes and standards from entities such as Oil Companies International Marine Forum, Society of International Gas Tanker and Terminal Operators, International Navigation Association, American Petroleum Institute, and the American Society of Civil Engineers, DEQ (as a non-member) was unable to access any information from these organizations pertaining to standards and codes for design and operation of the proposed facilities. FERC must require the applicant:
 - a. Submit credible information regarding use of a water curtain during cargo unloading,
 - b. Identify the source of withdrawal,
 - c. Quantify the amount of water anticipated to be withdrawn,
 - d. Incorporate this information into the overall analysis of combined impacts from all hydrologic alterations, and
 - e. Discuss intake screening to protect designated beneficial uses (aquatic life) in the Columbia River.
3. Comments received by DEQ and official applicant filings with FERC indicate that open-loop submerged combustion vaporization may be considered in lieu of the methodology of closed-loop submerged combustion vaporization, as proposed by the applicant in materials submitted to DEQ. FERC must require the applicant to submit a detailed analysis of potential surface water withdrawals and discharges associated with this open-loop technology, as this may significantly alter the hydrology at the site.
4. Associated with surface water withdrawals is the entrainment of aquatic life, a sensitive beneficial use in the Columbia River and tributaries. The FEIS indicates that all intakes will be screened per Oregon Department of Fish and Wildlife (ODFW) and NMFS requirements to minimize

entrainment and related impacts to salmonids and other (but not all) aquatic species. However, the official documentation of the *Response of NorthernStar LLC and Bradwood Landing LLC to the FERC Staff's Recommended Mitigation Measure 24 in the DEIS*, dated April 8, 2008, indicates that screening of ship water intakes will likely not occur. FERC must require the applicant to submit an analysis which demonstrates how additional annual, unscreened water withdrawals from the Columbia River, in excess of 12 billion gallons (or amount clarified by applicant), for ballast and cooling of 125 ships per year (or amount expected at full buildout as clarified by the applicant), which do not currently transit the Columbia River, will not degrade the sensitive beneficial uses (particularly juvenile stages of salmonids, sturgeon, lamprey and their prey species) or degrade water quality parameters.

Post-Construction Stormwater Management (FEIS pages 4-167, 2-42)

The FEIS analysis of post-construction stormwater management is inadequate to address water quality concerns.

The stormwater management plan is inadequate for review. The stormwater management plan must take into account all impervious surfaces including roadways and bridges. Inadequate information is reviewed in the FEIS.

The conceptual plan provided lacks details. Specific treatment techniques and designs based on anticipated volumes calculated using an appropriate design storm for both water quality and water quantity, and all impervious surface areas, which demonstrates pollutant removal prior to discharge to surface or subsurface waters is required to demonstrate protection of water quality and beneficial uses.

National Pollution Discharge Elimination System (NPDES) Permit for wastewater discharges (DEQ SA1-73)

(FERC response on SA1-73: "This case is for a different project")

The FERC response does not address the relevance of the findings in this case as it applies to the Federal Clean Water Act and Oregon waters. The response did not address the temperature requirement and assurance of meeting the requirement. If they cannot receive an NPDES permit to discharge they cannot to forward with the project. SA1-73 has to be addressed.

For wastewater discharges from the Bradwood Landing facility, temperature will probably be the only issue. Columbia River Total Maximum Daily Loads (TMDLs) are already in place for dioxin and total dissolved gas, but TMDLs are still needed for temperature, arsenic, DDT, and Polychlorinated biphenyls (PCBs). Bradwood Landing's NPDES permit application showed non-detect levels for arsenic, but the detection limit was probably too high (this can be easily remedied). EPA is in the lead on developing the Columbia River temperature TMDL, but work has been stalled for several years. Bradwood Landing's NPDES permit application lists the following three outfalls and maximum expected temperatures: 1) LNG vaporization discharge, 68 degrees F summer and winter, 2) Firewater system testing, 47 degrees F winter, 74 degrees F summer, and 3) Hydrostatic testing, 60 degrees F winter, 75 degrees F summer. Outfall 1 would be the ongoing LNG operation discharging 0.2 million gallons per day (MGD). The firewater system would be tested for one hour each week with a maximum flow of 4,400 gallons per minute. Hydrostatic testing of tanks would occur once during

the construction period using 30 million gallons for each of two tanks. Hydrostatic testing of piping would occur once during the construction period. A total of 1.5 million gallons would be discharged in several episodes over a two year period.

DEQ's understanding of the Friends of Pinto Creek ruling suggests that we could not issue a permit without requiring that temperature water quality standards be met at the end of the pipe before a TMDL was issued. Outfall 1 discharges may not need any cooling according to the application. However, for outfalls 2 and 3, it might be possible and necessary to cool the water before discharge.

Ballast water (DEQ SA1-74)

(FERC response on SA1-74: "As described in section 4.5.2.1, water withdrawals associated with operation of the project would average less than 80cfs. More specifically, water withdrawals for ballast and engine cooling water would occur at a rate of about 95 cfs. This is a small fraction of the average annual mean streamflow of the Columbia River as measured at the Beaver Army Terminal, which is 233,575 cfs. Therefore, although reduced downstream flows as a result of the proposed project are expected, the reduction would not be significant. See also our response to comment PM1-31.")

The FERC response does not address the relevance of the 9th Circuit Court ruling as it applies to the Federal Clean Water Act and Oregon waters. The response did not address the heated discharge.

No analysis is offered as to impacts of reduced water flows for withdrawal of up to 6.3 billion gallons annually of ballast water from the Columbia River at the berthing area. The applicant proposes contract incentives to LNG ships outfitted with appropriate screening to reduce impacts to organisms and re-circulating capabilities to address ship cooling issues and prevent additional withdrawals as well as discharges of heated water. However, this is not standard equipment on the existing LNG ships worldwide and no assurance is given that these retrofit measures will be required. The 9th Circuit Court recently ruled that NPDES discharges to a stream cannot be permitted prior to analysis and load allocations being finalized under a TMDL when the stream is limited for a parameter in the discharge. As the Columbia River temperature TMDL has not been completed, there are no load allocations and therefore no discharge of heated water can be allowed.

In 4.5.1.1, FERC has recommended that cooling water discharge performance standards (for water temperature impacts of elevated temperature discharge) be developed within 30 days after issuance of the FEIS. It has also been recommended that standards be developed for use of biocides (sodium hypochlorite) that are injected in cooling water system, and therefore discharged into surrounding waters, for the purpose of preventing marine fouling growth. Although these recommendations have been made, there is still no clear guidance for what acceptable standards are, or protocols for a monitoring component. In addition, there is still much unresolved about whether or not the vessels will be able to implement screening requirements on ballast and engine cooling intakes such that entrainment of juvenile fish can be minimized.

The EPA recently issued its proposed NPDES Vessel General Permit (VGP) for discharges incidental to normal operation of commercial vessels. The VGP specifically addresses ballast water management practices, cooling water discharge, and would provide technology-based and water-quality-based effluent limits for other types of discharges including deck runoff, bilgewater, gray water and other

types of pollutants. **The FEIS needs to address how the new Vessel General Permit would apply to the LNG vessels.**

Invasive Species (DEQ SA1-75)

(FERC Response: “Additional information on the potential for the introduction of invasive species to the lower Columbia River through hull fouling has been added to section 4.5.1.1.”)

In section 4.5.1.1, additional attention was given to concerns over non-ballast water vectors for introducing non-native aquatic organisms. **No measures are provided to prevent transfer of non-native species from ship hulls, anchors, propeller, incidental ballast, etc., other than rinsing of anchors and chains prior to leaving the port of origin.** These measures would not be adequate to remove organisms from the vessel hull, its components or incidental ballast that were acquired at the port of origin or other waters encountered on the journey to Oregon.

Spill contingency planning (Table 1.3-1 of the FEIS)

FERC did not address DEQ’s recommendation in our draft comments letter to add requirements for vessel and facility State of Oregon spill contingency planning requirements pursuant to ORS 468B.300 (Need to add the State of Oregon requirement for preparation of vessel and facility spill contingency planning requirements. ORS 468B.300 et. seq., amended by 2007 Legislature, requires Oregon DEQ review and approval of LNG vessel and facility spill contingency plans.)

Note: Earlier communications from Northern Star indicated their recognition that spill contingency planning requirements apply to the proposed facility.

Air Quality

DEQ has no comments on the Air Quality section of the FEIS.

Oregon Department of Fish and Wildlife (ODFW) Comments

General Comments

Included in several places in the document, it mentions that the railroad re-alignment is scheduled to have a minimum 30-foot undisturbed vegetation zone left along the stream, with the width at 50 feet or more for most of the length of the track. Unless geography or other compelling reasons are specified, the alignment should seek to leave an undisturbed area of a minimum of 50 feet from the stream for the length of the track.

Each stream (including the Columbia River) crossed by the pipeline will need Oregon Department of Fish and Wildlife (ODFW) approval as to the location, type of crossing method, timing, and pipeline depth. ODFW does not believe that adequate coordination has occurred, to date, with the Department on the Bradwood Landing project in order to assure adequate avoidance and minimization of impacts to native fish at each stream crossed by the pipeline. In addition, per Oregon Revised Statute 509.585 and Oregon Administrative Rule 635-412-0020, fish passage approval from ODFW is required for stream crossings. This approval has not, as of yet, been issued to Bradwood Landing. This approval

would apply to pipeline crossings, potential lateral crossings, or other road crossings (e.g., Hunt Creek Bridge). Even though the pipeline will be placed beneath streams, it fully crosses them and has the potential to be an artificial obstruction, if exposed through stream grade changes.

Executive Summary

Page ES-3 Water and Wetlands. ODFW supports the following Federal Energy Regulatory Commission (FERC) language on screening ballast and cooling water:

“Permanent and temporary surface water intakes that withdraw water from the Columbia River would be screened in accordance with the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS) and ODFW requirements to minimize impacts on aquatic resources.”

FERC then recommends that NorthernStar require Liquefied Natural Gas (LNG) carriers to retrofit ships to accept “filtered” water. ODFW recommends that FERC change the word “filtered” to “screened” to minimize impacts to aquatic resources. ODFW also recommends that FERC make this a requirement for all LNG ships rather than a recommendation. Screening must meet NMFS and ODFW screening standards and criteria.

Section 1 - Introduction

Table 1.3-1 Page 1-23 – Major Permits, Approvals, and Consultations for the Bradwood Landing Project. Under ODFW, there is no mention of the fish screening requirement under Oregon statutes or as required by Oregon Water Resources Department (OWRD) for a water right. ODFW actions should also include review of screen designs.

Section 2 – Description of Proposed Action

2.1.1.5 LNG Carriers/Ballast and Cooling Water – Page 2-7. For ballast and cooling water screening, providing contract incentives for retrofitting ships to accept screened water does not assure adequate protection to aquatic species. ODFW supports FERC’s position later in the document to require screening on ballast and cooling water intakes, and looks forward to reviewing plans for this system.

Section 4 – Environmental Analysis

4.3.2.3 Water Resources/Surface Water/LNG Terminal/Construction Impacts and Mitigation/Access Roads and Hunt Creek Bridge Replacement – Page 4-79. The FEIS describes methods for servicing and fueling equipment to prevent leaks and spills of hazardous materials. The focus is on inspection and fueling (4th bullet). However, it does not specify a plan for addressing leaks/spills that develop while equipment is operating. The FEIS should detail methods that would seek to minimize these types of problems (diapering, immediate removal of equipment, spill containment, etc.) if they occur.

4.3.2.3 Water Resources/Surface Water/LNG Terminal/Construction Impacts and Mitigation/Access Roads and Hunt Creek Bridge Replacement – Page 4-80. FERC recommends that water clarity not exceed "approximately" 10% above baseline. This language is unclear and does not lead to consistent

administration and implementation. ODFW recommends deleting the word “approximately” from this sentence. The recommendation should be not to exceed 10%.

4.3.2.3 Water Resources/Surface Water/LNG Terminal/Operation Impacts and Mitigation/Stormwater Runoff – Page 4-82. The fourth paragraph discusses runoff from the Hunt Creek Bridge, with the suggestion that construction swales "could" be retained to enhance runoff control on the steeper side of the bridge. ODFW recommends replacing the word “could” with the word "would" to add certainty to the action, and that NorthernStar explore any post-construction opportunities for runoff control/filtering to reduce sediment transport to Hunt Creek. ODFW also recommends including regular maintenance of any swales constructed.

4.3.2.3 Water Resources/Surface Water/LNG Terminal/Operation Impacts and Mitigation/Water Appropriation and Discharge/Ballast Water and Engine Cooling – Page 4-84. Again, ODFW recommends that FERC change the word “filtered” to “screened” to minimize impacts to aquatic resources. ODFW also recommends that FERC make this a requirement for all LNG ships rather than a recommendation. Screening must meet NMFS and ODFW screening standards and criteria.

4.3.2.4 Water Resources/Surface Water/Pipeline Facilities/Impacts and Mitigation/Operation and Maintenance of the Pipeline – Page 4-100. The FEIS states that NorthernStar would allow a riparian buffer at least 25 feet wide to revegetate with native plants to minimize impacts on water quality and riparian vegetation. This language is vague, and potentially inappropriate over the variety of waterbody crossings (stream sizes). Riparian buffer width should vary with stream width, with larger streams receiving larger buffer widths. Also, there is no mention of how the riparian buffers would revegetate. If the intent is to let riparian buffers revegetate naturally, then NorthernStar should provide some assurance that these sites contain native species, and not allow them to revegetate into non-native/invasive plant communities.

4.4.1.1 Wetlands and Terrestrial Vegetation/Wetlands/Waterway for LNG Marine Traffic – Page 4-103. The first paragraph states that palustrine emergent wetlands are of relatively low quality, with dominant vegetation consisting of reed canary grass and other non native weedy species. Although reed canary grass dominated wetlands do not provide as high quality habitats as wetlands dominated by native vegetation, these wetlands do provide structure and function for a variety of fish and wildlife species. If this is the only vegetation type available, fish and wildlife species will utilize these areas for foraging and cover. Although reed canary grass is non-native, it does provide a high level water quality function by filtering sediment, organic material, nutrients and chemicals carried in runoff.

4.4.1.2 Wetlands and Terrestrial Vegetation/Wetlands/LNG Terminal/Impacts and Mitigation – Page 4-107 and 4-108. The FEIS uses mitigation definitions which refer to the Procedural Provisions of the NEPA (40 CFR 1508.20). ODFW recommends using ODFW’s Fish and Wildlife Habitat Mitigation Policy as the guide for determining adequate mitigation.

4.4.1.2 Wetlands and Terrestrial Vegetation/Wetlands/LNG Terminal/Impacts and Mitigation – Page 4-108. The FEIS states that to minimize the potential for spills and leaks, NorthernStar will inspect all equipment for leaks before entering the wetlands. ODFW recommends that NorthernStar inspect the equipment for sources of non-native vegetation (seeds, etc.), and remove any that are found before the equipment is allowed to enter wetlands.

4.4.1.2 Wetlands and Terrestrial Vegetation/Wetlands/LNG Terminal/Compensatory Mitigation – Page 4-108. ODFW recommends following ODFW’s Fish and Wildlife Habitat Mitigation Policy to ensure adequate mitigation measures. NorthernStar states that they will provide a significant net benefit to the environment of the lower Columbia River ecosystem. NorthernStar should address and mitigate for each impacted habitat type separately. The FEIS states that FERC recommends that the NorthernStar consult with ODFW and other appropriate agencies to finalize the Compensatory Wetland Mitigation Plan. This should be a requirement, not a recommendation.

4.4.1.3 Wetlands and Terrestrial Vegetation/Wetlands/Pipeline Facilities – Page 4-109. NorthernStar states that they identified and delineated wetlands along the pipeline where access was granted. There is no mention of verification from DSL. ODFW recommends that this occur and be documented.

4.4.1.3 Wetlands and Terrestrial Vegetation/Wetlands/Pipeline Facilities/Impacts and Mitigation – Page 4-110. NorthernStar states that there will be temporary impacts to palustrine scrub shrub (PSS) and palustrine forested (PFO) wetlands. NorthernStar should address and mitigate for the temporal loss associated with temporary impacts according to ODFW’s Fish and Wildlife Habitat Mitigation Policy.

4.4.1.3 Wetlands and Terrestrial Vegetation/Wetlands/Pipeline Facilities/FERC’s Staff Procedures – Page 4-117. Comments were made on the DEIS that the proposed wetland mitigation monitoring plan is not adequate to ensure the success of wetland revegetation. FERC recommends that NorthernStar continue to consult with NMFS, COE, FWS and other agencies. A recommendation does not mean that NorthernStar will follow through. ODFW recommends that consulting with these resource agencies be a requirement, not a recommendation.

4.4.2.1 Wetlands and Terrestrial Vegetation/Upland Vegetation/LNG Terminal/Impacts and Mitigation/LNG Terminal – Page 4-123 and 4-124. FERC states that 2.5 acres of deciduous forest and 2.1 acres of scrub shrub habitat that would be lost at the terminal site would not have a significant impact regionally due to adjacent existing habitat with similar vegetation structure and function. Although adjacent habitat exists, this is direct, permanent loss of habitat. The effects are cumulative, and FERC should not discount them. NorthernStar should avoid all vegetation clearing and invasive vegetation management during bird nesting season (April 1 - August 15), and should comply with the Migratory Bird Treaty Act.

4.4.2.3 Wetlands and Terrestrial Vegetation/Upland Vegetation/Pipeline Facilities/General Impacts and Mitigation/Pipeline Right-of-way – Page 4-128. The pipeline restoration plan states that additional restoration activities would occur if there are "excessive" noxious weeds after the first or second growing season. The FEIS does not define “excessive.” Invasive species establishment along the pipeline route can become a vector for spreading invasive species to other areas, and negatively impact native habitats. ODFW recommends that FERC require that NorthernStar develop and implement a plan to control non-native species along the entire pipeline route as part of the routine maintenance of the pipeline for the life of the project.

4.5.1.1 Wildlife and Aquatic Resources/Waterway for LNG Marine Traffic/Aquatic Resources/Commercial and Recreational Fisheries – Page 4-134. The FEIS states that terminal fisheries were developed to provide fishing opportunity "without" impacting wild runs. ODFW recommends that FERC change this language to read, “These types of fisheries minimize impacts to

wild runs.” This section also talks about declining fisheries for salmon due to declining stocks. This is misleading. Fishing effort in the lower Columbia likely varies from year to year based on a number of factors, including run size, weather, gas prices, etc. If it is true in the short term that fishing effort has declined, then it is also very possible that the trend reverses very quickly.

4.5.1.3 Wildlife and Aquatic Resources/Waterway for LNG Marine Traffic/Terrestrial Wildlife/Unique or Sensitive Wildlife Habitats – Page 4-146 -. ODFW recommends that this section also address habitats identified in the Oregon Conservation Strategy.

4.5.2.1 Wildlife and Aquatic Resources/LNG Terminal/Aquatic Resources/Existing Aquatic Resources – Page 4-148. ODFW recommends including a discussion on aquatic wildlife in this section. Then, ODFW also recommends addressing project impacts on aquatic wildlife in the impact sub-sections (e.g. in-water construction activities impacts to herptiles, aquatic wildlife resources in the log pond, wildlife salvage plan for filling the log pond, aquatic wildlife resources issues associated with the access roads and Hunt Creek Bridge Replacement, effects of accidental spills on aquatic wildlife, etc.).

4.5.2.1 Wildlife and Aquatic Resources/LNG Terminal/Aquatic Resources/Impacts on Aquatic Resources/Water Appropriation and Discharge/Entrainment and Impingement – Page 4-161. The FEIS does not specify what criteria NorthernStar will use for ballast and cooling water screens. A plan based on contract incentives alone is not an adequate strategy to meet the State’s fish screening requirements.

4.5.2.1 Wildlife and Aquatic Resources/LNG Terminal/Aquatic Resources/Mitigation Measures/Svensen Island Mitigation Sites – Page 4-169. The FEIS states that permanent impacts on aquatic resources would be mitigated by restoring habitat with “similar ecological functions” in areas larger than that lost to permanent impacts. The location of Svensen Island is approximately 15 miles downriver from the Bradwood Landing site. Svensen Island is located in the estuary mixing zone, while the habitat that will be lost is a known freshwater rearing area for juvenile salmonids. These ecological areas are different and Bradwood Landing should complete an analysis of the values of habitats to be destroyed and created to determine whether all affected biological functions are mitigated in-proximity and in-kind, as called for in ODFW’s Fish and Wildlife Habitat Mitigation Policy for Categories 2 and 3 habitat.

4.5.2.1 Wildlife and Aquatic Resources/LNG Terminal/Aquatic Resources/Mitigation Measures/Hunt Creek Mitigation Site – Page. 4-171. ODFW commented in their December 6, 2007 letter on the DEIS that ODFW does not consider preservation as mitigation. NorthernStar’s proposal to count preservation of Hunt Creek as mitigation is still proposed in the FEIS. ODFW recommends that NorthernStar conduct some amount of restoration or enhancement on the property as mitigation. The FEIS also states that the stream provides spawning habitat for Lower Columbia River (LCR) Coho. ODFW recommends that the FEIS also recognize the spawning habitat for LCR fall Chinook, as well as the possibility for use by chum salmon.

4.5.2.1 Wildlife and Aquatic Resources/LNG Terminal/Aquatic Resources/Mitigation Measures/Monitoring and Adaptive Management – Page 4-171-172. This section states that no monitoring is proposed for noxious weed control at the Hunt Creek mitigation site. ODFW recommends monitoring necessary to determine whether noxious weeds are, or develops into, an issue.

4.5.2.2 Wildlife and Aquatic Resources/LNG Terminal/Essential Fish Habitat – Page 4-172. Since initial dredging of the proposed turning basin and ship berth will remove approximately 45 acres of bottom habitat and maintenance dredging may need to occur every two years and benthic communities that salmonids depend on for food may take as long as two to three years to recolonize, the habitat in question should be considered permanently lost and not temporarily disturbed. This permanent loss of habitat should be addressed in the discussion on compensatory mitigation.

4.5.2.3 Wildlife and Aquatic Resources/LNG Terminal/Terrestrial Wildlife/General Impacts on Terrestrial Wildlife – Page 4-175. The FEIS states that impacts on wildlife and their habitats from construction of operation of the LNG terminal would be mitigated for in accordance with recommendations from USFWS, ODFW, and WDFW. This should be a requirement from FERC. ODFW also recommends that the FEIS address all Federal- and State-listed threatened and endangered, State-listed sensitive, and Oregon Conservation Strategy species in the assessment of impacts to terrestrial wildlife. NorthernStar should have conducted surveys for and reported on the presence/absence of these species in the project-affected area.

This section lacks an impact analysis for terrestrial wildlife associated with the filling of the log pond (herptiles, birds, and mammals), access roads (affects of access roads on wildlife movement, and direct mortality resulting from increased traffic), and Hunt Creek Bridge Replacement (use by birds and bats, herptile use in the stream at the bridge footings, etc.). ODFW recommends that the FEIS address existing use/value of these areas by wildlife, the potential impacts of the proposed project, and propose appropriate mitigation according to ODFW’s Fish and Wildlife Habitat Mitigation Policy.

ODFW recommends including the following additional mitigation measures:

- Incorporate exclusion methods to minimize/prevent disturbance to birds and bats prior to construction;
- Design the new bridge to provide bat habitat;
- Incorporate wildlife movement/passage into the new bridge design.

4.5.2.3 Wildlife and Aquatic Resources/LNG Terminal/Terrestrial Wildlife/General Impacts on Terrestrial Wildlife/Terminal Fencing – Page 4-176. ODFW suggests incorporating a buried perimeter fence into project plans to preclude burrowing wildlife from digging under the fence and potentially entering/becoming entrapped within terminal facility.

4.5.2.3 Wildlife and Aquatic Resources/LNG Terminal/Terrestrial Wildlife/General Impacts on Terrestrial Wildlife/Power Line – Page 4-176 and 4-177. ODFW recommends incorporating power line impact minimization measures from the Federal Avian Protection Plan Guidelines (a link to this document can be found at:

http://www.eei.org/industry_issues/environment/land/wildlife_and_endangered_species/AvianProtectionPlanGuidelines.pdf) into the FEIS. There should be a reference to the guidelines document in Sections 2-29 and 4.6.2.2 as well. Following the guidelines would minimize potential negative impacts from the power lines to birds. Also, potential impacts from power lines are not limited to disturbance during maintenance and electrocution of nesting birds as stated at the top of page 4-177. Potential impacts include electrocution to perching birds and flying birds. The FEIS should address these potential impacts as well.

4.5.3.1 Wildlife and Aquatic Resources/Pipeline Facilities/Aquatic Resources/Impacts on Aquatic Resources – Page 4-183. ODFW recommends including aquatic wildlife resources in this discussion.

4.5.3.1 Wildlife and Aquatic Resources/Pipeline Facilities/Aquatic Resources/Impacts on Aquatic Resources/Suspended Sediments and Turbidity – Page 4-185. ODFW recommends that the FEIS address potential effects on amphibians and their egg masses.

4.5.3.1 Wildlife and Aquatic Resources/Pipeline Facilities/Aquatic Resources/Impacts on Aquatic Resources/Vegetation and Habitat Removal – Page 4-185. ODFW recommends that the FEIS address the potential effects of vegetation and habitat removal to herptiles (e.g., changes in micro-climate to amphibians such as red-legged frogs), and over-wintering/aestivating native turtles (e.g., direct mortality, short-term impacts).

4.5.3.3 Wildlife and Aquatic Resources/Pipeline Facilities/Terrestrial Wildlife/General Impacts on Terrestrial Wildlife – Page 4-191. The FEIS states, in general, impacts on terrestrial wildlife due to construction of the pipeline and proposed mitigation measures would be similar to those described for the construction of the LNG terminal. The temporary impacts may be similar. However, the long-term impacts associated with the pipeline right-of-way will have additional impacts. The pipeline right-of-way will cause further habitat fragmentation, and will create a barrier to some wildlife movement.

ODFW recommends that this section address impacts in a manner similar to the Aquatic Resources section. The discussion should address impacts from construction as well as from maintenance activities, short-term impacts as well as long-term and permanent impacts. This section should discuss the following issues in more depth:

- Vegetation and habitat removal;
- Changes in micro-climate habitats;
- Erosion;
- Introduction of exotic species (plants and animals);
- Accidental spills/leaks of hazardous materials; and
- Wildlife movement patterns.

4.5.3.3 Wildlife and Aquatic Resources/Pipeline Facilities/Terrestrial Wildlife/Unique or Sensitive Wildlife Habitats – Page 4-194. ODFW recommends that this section include a discussion on Oregon Conservation Strategy Habitats.

4.6.1.1 Threatened, Endangered, and Other special Status Species/Current Status of Species/Federally Listed T&E Species/Oregon Silverspot Butterfly – Page 4-216. ODFW recommends that this section include information on hatch period and larvae stage (requirements, threats, limiting factors) for the Oregon Silverspot Butterfly.

4.6.1.3 Threatened, Endangered, and Other special Status Species/Current Status of Species/Other Special Status Species – Page 4-219. ODFW recommends that this section include a species summary table similar to Table 4.6.1-1.

4.6.1.3 Threatened, Endangered, and Other special Status Species/Current Status of Species/Other Special Status Species/Western Painted Turtle – Page 4-222. ODFW recommends that this section include additional species information on the Western Painted Turtle.

4.6.2.1 Threatened, Endangered, and Other special Status Species/Impacts and Mitigation/Waterway for LNG Marine Traffic/Federally Listed Species/Fish – Page 4-226. ODFW recommends that the FEIS address the impacts to fish resources (i.e., what species will be affected and in what quantities) sucked into the LNG ships' cooling water intakes while enroute to and from and while docked at the Bradwood Landing facility. Juvenile fish migrate and rear in the Lower Columbia. The FEIS estimates that 125 LNG ships per year will travel through the Lower Columbia River to the Bradwood Landing facility. The impacts to fish from the cooling water intakes could be significant. ODFW believes that impacts to fish from the cooling water intakes should be quantified and that mitigation for these impacts is appropriate.

4.6.2.2 Threatened, Endangered, and Other special Status Species/Impacts and Mitigation/LNG Terminal/Other Special Status Species/Migratory Bird Treaty Act - Page 4-284 and 4-285. ODFW recommended in their December 6, 2007 letter on the DEIS that vegetation clearing and maintenance occur no sooner than August 1. This would also make this section consistent with the MBTA section for the Pipeline Facilities on page 4-298. The Nest Avoidance Plan should minimize impacts on all migratory birds and their nests, not just those birds that are on their nests during the peak nesting season as is implied in the first bullet. Peak nesting season dates are to be used as guidance only. ODFW recommends that the FEIS acknowledge that some bird species nest outside the peak nesting season (e.g. raptors) and address, in accordance with the Migratory Bird Treaty Act, any active nest of a migratory bird that is found regardless of when it is found.

4.6.2.3 Threatened, Endangered, and Other special Status Species/Impacts and Mitigation/Pipeline Facilities/Columbian White-tailed Deer/Impacts and Mitigation – Page 4-289. ODFW recommends that this section address impacts of habitat fragmentation on deer movement patterns and predator-prey relationships (e.g., fawn recruitment).

4.6.2.3 Threatened, Endangered, and Other special Status Species/Impacts and Mitigation/Pipeline Facilities/Other Special Status Species/Sensitive Species/Townsend's Big-eared Bat – Page 4-297. Townsend's big-eared bats are less likely to use bat houses than other bat species in Oregon. They prefer abandoned human structures, caves and mines. Installation of bat houses would not mitigate for impacts to Townsend's big-eared bats, but may benefit other bat species.

4.6.2.3 Threatened, Endangered, and Other special Status Species/Impacts and Mitigation/Pipeline Facilities/Other Special Status Species/Migratory Bird Treaty Act – Page 4-298. ODFW recommends amending this paragraph to read “...due to the importance of the area to migratory birds and because some migratory birds nest outside the peak nesting season, additional measures are necessary...”

4.6.3 Conclusions & Recommendations for T, E, and Other Special Status Species – Page 4-298 and 4-299. ODFW recommends adding a bullet that reads:

- Avoid other Oregon Conservation Strategy Habitats.

4.7.1.4 Land Use, Recreation, and Visual Resources/Waterway for LNG Marine Traffic/Recreation, Public Interest, and Special Use Areas/Fishing – Page 4-311. The FEIS states that the Buoy 10 fishery occurs in August. This fishery extends into September, with some effort even later.

4.8.1.7 Socioeconomics/Waterway for LNG Marine Traffic/Transportation and River Traffic/Charter Boat Services – Page 4-369. The charter boat services listed only includes those boats operating out of Ilwaco. There are many other charter boats operating from Astoria, Warrenton, and Hammond.

4.8.1.8 Socioeconomics/Waterway for LNG Marine Traffic/Recreation and Tourism – Page 4-370. The FEIS downplays the effect LNG ships would likely have on recreation and fishing. The requirement to move at least 500 yards away from either side of the LNG ships would be difficult in some river reaches, particularly if fishing pressure is high. While boats are used to moving out of the way, anglers are not likely to be proficient at identifying LNG carriers from other large cargo ships, at least at distances that would give them sufficient opportunity to move. This would be particularly problematic for boats at anchor or tied to pile dikes. It is likely that LNG ships would pass within 500 yards of those boats. This issue needs more thought and coordination for how it will be implemented.

4.12 Cumulative Impacts – Page 4-500. This section and Table 4.12-1 do not identify the cumulative impacts from the LNG shipping traffic with no screening on intakes while underway, as identified previously.

4.12.2 Cumulative Impacts/Waterbodies and Wetlands – Page 4-506. ODFW recommends that the FEIS identify the impingement/entrainment of aquatic species due to ballast and cooling water intakes as an activity that could have impacts on waterbodies.

Section 5 – Conclusions and Recommendations

5.1.3 Summary of the Staff’s Environmental Analysis/Water Resources – Page 5-4. This is a good discussion of water right issues and ballast/cooling water requirements. ODFW reminds FERC and NorthernStar that fish screening will be an anticipated requirement of the Oregon Water Resources Department’s water right permit and the Endangered Species Act biological opinion, not a recommendation. Therefore, ODFW recommends that the FEIS reflect this as a requirement.

5.1.5 Summary of the Staff’s Environmental Analysis/Wildlife and Aquatic Resources – Page 5-8. ODFW supports FERC’s position to require fish screens for all ballast and cooling water intakes by ships docked at the facility.

5.1.7 Summary of the Staff’s Environmental Analysis/Land Use, Recreation, and Visual Resources – Page 5-11. The FEIS downplays the significance of the disruption that LNG marine traffic will have on boaters and commercial and recreational fishers. The “moving 500-yard safety and security zone around LNG carriers transiting up the waterway” will be significant and likely challenging to enforce.

5.2 FERC Staff’s Recommended Mitigation/No. 33 – Page 5-30. ODFW recommends that NorthernStar provide ODFW the opportunity to review the screened water system design plans.

5.2 FERC Staff's Recommended Mitigation/No. 34 – Page 5-31. ODFW supports FERC's position that NorthernStar shall prepare a plan that addresses fish screening issues for LNG carriers at the Bradwood Landing terminal.

5.2 FERC Staff's Recommended Mitigation/No. 35 – Page 5-31. The final screened water system design plans and performance standards will need to be reviewed and approved by ODFW too, and meet fish screening criteria.

page 4-67 (and throughout analysis portions of the document) Waterway listing status: The information is incorrect. Total Maximum Daily Loads (TMDLs) have only been developed and approved by EPA in the Columbia River for the parameters of Dioxin and Total Dissolved Gas. Development of a TMDL for Temperature is underway by EPA (not DEQ), but has not been completed.

Multiple other parameters are 303(d) listed. This is critical because projects which can reasonably expected to degrade water quality parameters are not permissible. Further, new sources of pollutants which will impair listed parameters for which a TMDL has not been developed and implemented, are not permissible. The potential for any project aspect to impair water quality standards must be considered and addressed by project changes, imposed limitations, or mitigation, in order to show compliance with the Clean Water Act.

The Columbia River is classified as water quality limited under the Clean Water Act, Section 303(d), for the parameters of: Temperature; DDE (DDT metabolite); PCB; and Arsenic. An Environmental Protection Agency (EPA) approved Total Maximum Daily Load (TMDL) has been developed for the parameters of: Dioxin and Total Dissolved Gas. Other parameters listed for potential concern include: Cadmium; Copper; Iron; Lead; Mercury; Nickel; Silver; Tributyltin; Zinc; Aldrin; Alpha-BNC; Benzo(a)anthracene; Benzo(g, h, i)perylene; Bhc; Chlordane; Chrysene; Cyanide; DDD; DDT; Dieldrin; Endrin; Hexavalent Chromium; pH; Phenol; Polynuclear Aromatic Hydrocabons (PAHs); Pyrene; and Radionuclides.

The FEIS did not adequately address DEQ comments related to the analysis of potential water quality and beneficial use impairments which may result from implementation of the project as proposed.

4-150, 4-151, 4-152, 4-153, 4-162 – **Dredging:** The impacts of dredging a 46 to 58 acre area within a sensitive estuarine reach of this complex and dynamic area have not been adequately evaluated. The area is a highly complex confluence of the 9th order main channel, Clifton Channel, and Cathlamet Channel. Flows bifurcate around Puget Island, Ryan Island, Tenasillahe Island, Hunting Islands, and unnamed smaller islands and confluences with tributaries from Oregon, Washington, and the islands. The area is also tidally influenced. Adding to the complexity of the immediate area are: on-going USACE navigation channel deepening and maintenance dredging; private dredging; and the many in-stream structures installed by the USACE, drainage districts, and private land owners to aid in flow control for navigation, flood protection, and bank stabilization.

Habitat alteration is inadequately characterized and proposed mitigation is therefore inadequate as well as too distant to replace limited habitat directly in the immediate area.

Turbidity background levels are insufficiently characterized without accounting for natural variation and cumulative impacts.

Water quality and beneficial use impacts from on-going maintenance dredging is not adequately analyzed. Stated recovery rates of benthic organisms are not applicable as maintenance dredging and facility operation will result in continual disturbance equating to a total loss of the habitat functions of the area.

Entrainment is inadequately mitigated as the ODFW in-water work window does not mean that fish abundance is least, nor does the timing preference lessen impacts to all other resident species. The analysis does not adequately address the benthic organisms, juvenile anadromous species, and egg and larval stages which are most susceptible to entrainment.

The hydraulics alteration analysis based on a single modeling exercise is inadequate.

Side slope slumping and potential impacts to the navigation channel are not addressed.

Pile driving and dredging are both slated to occur during the in-water work window. The combined effects of these actions must be analyzed.

Dredge spoil placement locations have changed. The FEIS references the Wahkiakum Sand Pit and the terminal site. Various submittals by the applicant state that all material will be placed at the terminal and maintenance dredging spoils will be placed at the sand pit.

Although some analysis has been done with a focus on a sensitive beneficial use, endangered salmonid species, DEQ finds no intended focus or interpretation on elements DEQ must consider in evaluating potential impacts to water quality parameters, policies and programs, and all beneficial uses per OAR 340-048-0020. Further, DEQ is concerned that the applicant's analysis relied on limited historic data, studies prior to 2000, and modeling interpretations, and is inadequate to accurately predict the potential changes in all aspects of fluvial geomorphology within this highly dynamic and complex area. This approach is inappropriate given that dredging and terminal construction are proposed to occur in: (1) one of only 7 EPA designated "Nation's Great Waterbodies", (2) upstream of sensitive habitat areas of the Lewis and Clark National Wildlife Refuge, (3) downstream of known erosional areas on Puget Island, (4) adjacent to a yet-to-be deepened section of the navigation channel, (5) amid multiple in-stream flow control structures, and (6) wholly within the Columbia River Estuary (one of 27 in EPA's national program).

FERC's analysis should be based on a well-informed postulation, developed by a qualified fluvial geomorphologist, of the potential hydraulic alterations up- and down-stream in all channels and with focus on detriments to water quality and beneficial uses, which may result from such alterations. Primary concerns which must be analyzed include: Side-Slope Adjustments; Shoal Dredging at Clifton Channel; Aquatic Habitat Loss; Ship-Induced Shoreline Erosion; Turning Basin and Berth Sedimentation and Maintenance Dredging; Quantifying Sediment Transport and Bed Elevation Changes; and Disposal of Dredged Material.

A Regional Sediment Management Plan is under development for the Columbia River which lacks sediment in downstream areas. Additional beneficial use placement of dredge spoils must be considered.

The FEIS does not adequately address DEQ's comments on the DEIS regarding the potential effects of dredging related activities in this highly dynamic location. DEQ has requested significant information

from the applicant for review and evaluation for issuance of a 401 Water Quality Certification decision.

4-169, 4-158, 4-159, 4-157, 4-183, 4-185, 4-186, 4-188, 2-32 - **Terminal Mitigation-Pipeline Mitigation & Unaddressed Impacts to Water Quality:** The Mitigation Plan will not be final until construction.

Water quality impacts (temperature, turbidity, dissolved oxygen, etc.) are proposed in non-fish bearing streams without minimization efforts or mitigation. Water quality standards must be met in waters of the state, despite the probability of there being no fish present, as there are other beneficial uses to support.

Svenson Island is too distant, offers out-of-kind mitigation, and is already functioning for water quality benefits. This proposal does not offer an improvement to water quality function even at the distant site, while losses of water quality function will be sustained at the terminal and pipeline sites.

Hunt Creek is proposed as mitigation through avoidance and conservation easement protection. A 30 foot buffer from the re-aligned railroad will be established.

Devegetation at the crossings along the pipeline route will result in sedimentation, turbidity and temperature degradation. These impacts will occur with trenching, boring, and horizontal directional drilling.

Revegetation of 25 feet along the corridor with only herbaceous species for 10 feet in the centerline is inadequate for stability and water quality.

Sedimentation and erosion control from revegetation in the long term is not addressed.

Slope stability is only addressed during pipeline construction. Long term stability of a pipeline through a region of highly variable topography, with historical landslides and proximity to mouths of sensitive tributaries needs to be considered and addressed.

Lateral pipelines are discussed in the FEIS, but no information about routes or potential water quality impacts is provided or analyzed.

The Alternatives Analysis lacks information on other potential pipelines. Despite this, the FEIS makes the assumption that more length will result in more impacts.

The mitigation plans and information submitted to date are inadequate for evaluation regarding water quality impacts and proposed mitigation for the following reasons:

10. The mitigation plan document is a draft which implies incompleteness. FERC must require a final plan which addresses adequate compensation for all unavoidable impacts, particularly to water quality concerns.
11. Functional analysis and proposed mitigation measures are focused on fish functions and not directly linked to water quality standards and the beneficial uses impacted. Although some beneficial uses can be interpreted to be covered by this analysis, others, particularly anthropogenic uses, are not.

12. Although some of the wetland impacts are rated as to some water quality functions, these are incomplete and waterways are not rated for water quality function at all.
13. Mitigation proposed at Svenson Island appears to be out-of-kind and too distant from the impacts to replace local water quality function lost. In particular, in-kind and locally available habitat replacement of the log pond wetlands is not addressed. Although mitigation is proposed at Svenson Island, 14 miles away is too distant to replace this off channel area used by fish transiting to and from the Clifton Channel.
14. Hunt Creek is proposed as mitigation through avoidance and conservation easement protection. However, the applicant must demonstrate how this replaces any lost water quality function, because it appears that the current functions may be degraded by the following elements of the applicant's proposal:
 - e. Moving the railroad tracks to within close proximity (unspecified distance in documents submitted),
 - f. Inadequate vegetated buffer to protect water quality function (30 feet is proposed, but 50 to 100 feet is recommended in the Oregon Forest Practices Act and DEQ typically recommends up to 150 feet dependant on site conditions);
 - g. Inadequate stormwater treatment from the new bridge and roadway (vegetation of an unspecified length, width, grade, and underlying soil type cannot be determined to provide adequate pollutant removal); and
 - h. Questionable habitability for beneficial fish use due to ongoing operations of the terminal.
15. Mitigation for losses of water quality function and shallow-water, and mid- to deep-water habitat due to dredging the berth and turning basin near the entrance to the Clifton Channel are not addressed. Please provide an analysis of these potential losses and how they will be replaced in-kind at the entrance to this critical channel accessing state and national refuge areas. This analysis must incorporate the hydraulic analysis information from I. of this information request, and analyze both short term impacts and potential long term impacts.
16. Without certainty of the pipeline route, impacts at the actual waterbody crossings and locations cannot be analyzed. At a minimum, DEQ would need specifics of crossing techniques and impact minimizations measures defined by specific categories of streams (sizes, flow regime, fish-bearing, water quality status, etc.) anticipated to be crossed and demonstrating water quality impacts are reduced to the maximum extent practicable. Please provide a finalized route with all applicable delineations and impact avoidance, minimization and mitigation.
17. Water quality functional losses and their mitigation are not analyzed for temporal losses of riparian trees and wetland vegetation temporarily disturbed and then restored, or for permanent losses of riparian trees and vegetation at waterway crossings along the pipeline route and permanent access corridor. One half of the existing riparian trees are proposed for removal in the access corridor. Even with total replacement by replanting, temporal losses of wetland and water quality function would be experienced for 1-3 years for wetland shrubs and up to 20 years for trees in forested wetland areas and riparian areas. A 25-foot wide corridor is proposed to remain unplanted, resulting in permanent functional losses and contributing to on-going water quality degradation. This riparian vegetation, and in particular trees, is essential to providing water quality and habitat function. Such services as shade to reduce stream temperature, pollutant up take, stormwater treatment and infiltration, and bank stabilization through root structure and evapotranspiration will be lost in the impacted areas for years to decades. The proposed route of the pipeline parallels the Columbia River through tidal wetlands and tributary mouths, which are important spawning, rearing and predator avoidance areas for listed as well as resident species. Loss of riparian vegetation in these areas is directly contradictory to the applicable Water Quality Management

Plan for the North Coast Total Maximum Daily Load (TMDL) which requires preservation and restoration of riparian areas in tributaries to address temperature and other water quality parameters. Please analyze these impacts and provide adequate, localized mitigation.

18. Upland impacts – Associated with the pipeline and powerline corridors include the permanent removal of mature trees aging 20-80 years old, as well as old growth stands and other vegetation. This could potentially contribute to slope instability, reduced infiltration ability, and additional erosion leading to water quality problems down slope. Multiple commentors have expressed concerns with geologic instability along the pipeline route leading to landslides into tributaries feeding the Columbia River in both Oregon and Washington. Additionally, these upland impacts are contrary to EPA’s strategic target to protect and restore 3,000 acres of upland habitat in the Columbia River basin, because mitigation is not proposed for these significant impacts to mature trees along the corridors, which will result in spatial and temporal losses of multiple functions. Please demonstrate avoidance, minimization or mitigation for these impacts, particularly with respect to potential water quality functional losses.

This is a flawed assumption. The proposed location of the Bradwood pipeline, crossing multiple sensitive tributaries and wetlands, along one of the Nation’s Great Waterways, within one of the National Estuary Program estuaries, inhabited by multiple endangered aquatic and terrestrial species; may have far greater impacts to water quality and beneficial uses than a much longer pipeline crossing few if any waters or wetlands.

The FEIS does not adequately analyze mitigation for water quality impacts.

The FEIS does not discuss the adequacy of preservation as mitigation. The FESI does not acknowledge that proposed mitigation at Hunt Creek is inappropriate as impacts there appear to degrade existing water quality function.

The FEIS does not address mitigation for dredging in the turning basin which will result in a loss of shallow, mid and deep water habitats through continual operation of the terminal and frequently maintenance dredging.

The FEIS should look at more information before making general assumptions which lack fact.

4-188, 2-7, 4-161, 4-162, 4-167, 2-42 - **Hydrology Alterations - Post-Construction Stormwater Management**

Appropriation of water from the Columbia River for hydrostatic testing is concluded to have no effect. Cumulative effects of all water withdrawals from all interacting sources must be analyzed.

Screening on ballast and cooling water intakes for ships are proposed by the applicant.

The applicant proposes incentives to LNG carriers to retrofit ships to be able to connect to a screened water intake at the terminal.

Performance standards for entrainment and temperature along with monitoring will be required.

The stormwater management plan is inadequate for review.

The stormwater management plan must take into account all impervious surfaces including roadways and bridges. Inadequate information is reviewed in the FEIS.

A hydrologic analysis for the total potential project impacts to water quality parameters is required in order to evaluate potential degradation of water quality and beneficial uses. This analysis must include the complex interaction of surface waters, subsurface waters and wetlands.

5. FERC must require an analysis of potential impacts to water quality parameters (particularly Temperature) in the Columbia River, Hunt Creek and other nearby tributaries resulting from the combined effects of the various alterations to hydrology proposed in the immediate area of the terminal. Hydrology alterations include, but may not be limited to:
 - e. Filling of wetlands and surface waters;
 - f. Initial and on-going withdrawals of groundwater for construction and operations;
 - g. Initial and on-going water withdrawals from surface waters for terminal fire suppression systems and ship ballast and cooling systems; and
 - h. Discharges of submerged combustion vaporization condensate and other operations process waters.

Per c. above, proposed water withdrawal amounts for ballast/cooling total is in excess of 6 billion gallons annually for 125 ship visits. However, none of the worldwide fleet of LNG ships potentially delivering cargo to Bradwood are currently able to accomplish either of the options requiring transfer of cooling and ballast water between the independent onboard systems, as presented in the application and DEIS materials, and it is unlikely that LNG ships will be retrofitted to do so. Therefore, FERC must require the applicant to submit information incorporating surface water withdrawals for both ballast and cooling water and include this in the analysis on hydrology alteration.

6. DEQ has received information indicating that a “water curtain” or constant stream of water pumped from the berthing area, running along the deck and back to the stream, is a standard operating procedure during the full duration of each unloading event of LNG cargo. Although the applicant’s response to comments from FERC (revised *Description of the Proposed Action*) indicates that berthing and unloading facilities will be designed and operated per codes and standards from entities such as Oil Companies International Marine Forum, Society of International Gas Tanker and Terminal Operators, International Navigation Association, American Petroleum Institute, and the American Society of Civil Engineers, DEQ (as a non-member) was unable to access any information from these organizations pertaining to standards and codes for design and operation of the proposed facilities. FERC must require the applicant:
 - f. Submit credible information regarding use of a water curtain during cargo unloading,
 - g. Identify the source of withdrawal,
 - h. Quantify the amount of water anticipated to be withdrawn,
 - i. Incorporate this information into the overall analysis of combined impacts from all hydrologic alterations, and
 - j. Discuss intake screening to protect designated beneficial uses (aquatic life) in the Columbia River.
7. Comments received by DEQ and official applicant filings with FERC indicate that open-loop submerged combustion vaporization may be considered in lieu of the methodology of closed-loop submerged combustion vaporization, as proposed by the applicant in materials submitted to DEQ. FERC must require the applicant to submit a detailed analysis of potential surface water

withdrawals and discharges associated with this open-loop technology, as this may significantly alter the hydrology at the site.

8. Associated with surface water withdrawals is the entrainment of aquatic life, a sensitive beneficial use in the Columbia River and tributaries. The FEIS indicates that all intakes will be screened per Oregon Department of Fish and Wildlife (ODFW) and NMFS requirements to minimize entrainment and related impacts to salmonids and other (but not all) aquatic species. However, the official documentation of the *Response of NorthernStar LLC and Bradwood Landing LLC to the FERC Staff's Recommended Mitigation Measure 24 in the DEIS*, dated April 8, 2008, indicates that screening of ship water intakes will likely not occur. FERC must require the applicant to submit an analysis which demonstrates how additional annual, unscreened water withdrawals from the Columbia River, in excess of 12 billion gallons (or amount clarified by applicant), for ballast and cooling of 125 ships per year (or amount expected at full buildout as clarified by the applicant), which do not currently transit the Columbia River, will not degrade the sensitive beneficial uses (particularly juvenile stages of salmonids, sturgeon, lamprey and their prey species) or degrade water quality parameters.

A conceptual plan lacking details is provided. Specific treatment techniques and designs based on anticipated volumes calculated using an appropriate design storm for both water quality and water quantity, and all impervious surface areas, which demonstrates pollutant removal prior to discharge to surface or subsurface waters is required to demonstrate protection of water quality and beneficial uses. The FEIS does not adequately analyze the potential impacts to water quality and beneficial uses from the combined impacts of billions of gallons of withdrawal per year from interfacing surface waters, subsurface waters and wetlands.

The FEIS does not adequately address withdrawals from ballast and cooling water totals given the reality that onboard exchange of these waters is not currently possible on any LNG carriers.

The FEIS does not address intake of water for water curtains or discharge back to the river following running over the ship deck and hull.

The FEIS does not address open-loop submerged combustion vaporization as an option. Will the FEIS be re-opened if the applicant changes to this method which is more taxing on water resources in the region?

The FEIS does not address the fact that LNG carriers are not currently able to meet this requirement and that this is out of the applicant's control.

The FEIS makes no assignment as to what agency will be responsible for assuring compliance with the performance standards and reviewing monitoring. How will these performance standards be meaningfully implemented? What operational actions will be required in the event performance standards are not met? By what agency?

The FEIS analysis is inadequate to address water quality concerns.

Oregon Department of Transportation (ODOT) Comments

In blue are NorthernStar's responses (letter to The Honorable Theodore Kulongoski Governor of Oregon dated February 8, 2008) to ODOT-Region 2 comments on the Draft Environmental Impact Statement for Bradford Landing.

2.4.2.2; p.2-53; Roads and Railroads;

"The project will comply with ODOT standards as applicable."

and

4.8.2.7; p. 343-345; Transportation and Traffic

"Bradwood Landing accepts responsibility to mitigate for all impacts to the state highway due to our development. We look forward to working with ODOT to secure the necessary permits."

FERC Response to ODOT Comments and ODOT Response:

Section 2.4.2.2, Roads and Railroads; page 2-53.

Page K-445-46

SA1-61: Table 1.3-1 lists the major federal, state, and local codes, ordinances, statutes, rules, regulations, and permits that would apply to the project. NorthernStar would apply for permits to cross state and county roadways and adhere to the conditions of these permits. Section 2.4.2.1 has been revised.

--ODOT appreciates FERC's response and will work with NorthernStar through the permitting process.

Section 4.8.2.7, Transportation and Traffic; page 343-345.

Page K-466-67

SA1-165: the FERC acknowledges the ODOT's concerns regarding Highway 30 and its road approach application process. We will require that NorthernStar's proposed improvements to Clifton Road be reviewed and approved by ODOT prior to construction.

SA1-166: See our response to comment SA1-165. We have included a recommendation that NorthernStar file a final transportation plan, formulated in consultation with Clatsop County and ODOT.

--ODOT appreciates FERC's response, but having a transportation plan will not ensure safety of the traveling public nor will it provide a safe access for workers and construction traffic etc... at the site.

Among others, Region 2 has safety concerns with the left turn Eastbound to Northbound movement from Highway 30; because motorists will be stopping to turn left in the ‘fast lane’ in a passing section of the highway. Any increase in the volume of traffic making this movement definitely raises a safety concern.

Clifton Road is located just over the vertical crest of a grade, so the outside eastbound lane is used as a climbing lane. Gravel trucks and Log trucks travel through this area frequently due to a rock quarry in the vicinity and numerous lumber mills to the east. The vertical grade slows down eastbound trucks, so the slow lane sees heavy use by trucks and other slower moving vehicles such as RV’s. Motorists use the inside lane to get around the trucks and other slower moving vehicles. It is not uncommon for motorists to become impatient due to a lack of passing opportunities along this scenic corridor and therefore be traveling faster than the allowable speed. The combination of high speed traffic and a motorist stopped in the ‘fast lane’ is not a positive aspect.

Due to public safety and operational concerns, ODOT-Region 2 recommends inclusion of the following as a condition of approval:

All improvements on U.S. Highway 30 and on Clifton Road shall be completed before any permits will be issued allowing construction at the terminal site which would result in increased traffic at the intersection of Clifton Road.

Oregon Ocean & Coastal Management Program (DLCD-OCMP) Comments

The following are our comments on the Final Environmental Impact Statement (FEIS) for the Bradwood Landing proposal to site a Liquefied Natural Gas (LNG) import terminal and natural gas pipeline on the Columbia River at Bradwood, Clatsop County, Oregon.

Despite improvements since we reviewed the draft, we remain disappointed with the level of detail in the document. Much of the FEIS contains only general information and conclusions about environmental and resource effects. There is little or no linkage between the factual information supporting the FEIS and the conclusions in the document. In some cases, the conclusions are simply assertions that do not contain important reasoning explaining why the facts lead to the conclusion. We are focusing these comments on issues we raised in our review of the Draft EIS that remain unanswered and other issues related to our federal consistency review pursuant to the Cost Zone Management Act (CZMA). We defer to other agencies for review of issues related to their interests.

Major Issues and Concerns

1. There are significant substantive issues that are not yet resolved to assure the project is or will be consistent with the enforceable policies of the Oregon Coastal Management Program (OCMP). The applicant has not provided complete applications for certain state permits that implement enforceable policies of the OCMP. The most important state permits for this project are the Department of Environmental Quality (DEQ) water quality certification and the Department of State Lands (DSL) removal-fill permits. DEQ’s Section 401 water quality certification is central to the CZMA consistency review and the state’s federally delegated Clean Water Act authority. DSL’s removal fill permit is a key component of the state’s wetland and waterway protection

requirements. These permits are also the vehicle for integration of key fish and wildlife protections under Oregon Department of Fish and Wildlife (ODFW) statutes, rules and policies.

2. We note that although the applicant sought and obtained a number of required county authorizations that implement enforceable policies of the OCMP, the county's approval of a comprehensive plan amendment for the project is currently under appeal to the Land Use Board of Appeals. The OCMP includes the process for review of local land use decisions as an integral element in order to provide a conflict resolution mechanism required by the CZMA. Until the appellate review process is complete, portions of the county's decision are not yet acknowledged. Until these provisions are "acknowledged" as outlined in ORS 197.625, the statewide planning goals directly apply to the project and state agency review. Provisions of DEQ and DSL state agency coordination programs will guide these agencies in dealing with the portions of the project that are not yet acknowledged. However, as outlined above, the lack of complete state agency applications means that we can not now provide a concurrence or conditional concurrence determination for the project. Without a concurrence or conditional concurrence from the state, we believe that the CZMA prohibits FERC from issuing a decision approving a license for the project.
3. We note that the FERC staff recommendation to approve the application conditioned upon the state's issuance of a "concurrence" determination is inadequate for several reasons:
 - a. DLCDC does not agree that FERC is authorized to issue a license prior to completion of CZMA federal consistency review. The CZMA specifically states, "No license or permit shall be granted by the Federal agency until the state or its designated agency has concurred with the applicant's certification or until by the state's failure to act, the concurrence is conclusively presumed, unless the Secretary, on his own initiative or upon appeal by the applicant, finds after providing a reasonable opportunity for detailed comments from the Federal agency involved and from the state, that the activity is consistent with the objectives of this chapter or is otherwise necessary in the interest of national security." (CZMA § 307 (c)(3)(A)). This requirement of the act is implemented by 15 CFR §930.53(d), which states: "No federal license or permit described on an approved list shall be issued by a Federal agency until the requirements of this subpart have been satisfied. Federal agencies shall inform applicants for listed licenses or permits of the requirements of this subpart." Since it is not possible for the FERC to know the outcome of the federal consistency review process, including the potential for conditions or state review to modify a project, it is important for the FERC to allow the federal consistency review to be completed before prematurely issuing a decision. This is further reflected by provisions of 15 CFR 930.62(d), which states: "During the period when the State agency is reviewing the consistency certification, the applicant and the State agency should attempt, if necessary, to agree upon conditions, which, if met by the applicant, would permit State agency concurrence. The parties shall also consult with the Federal agency responsible for approving the federal license or permit to ensure that the proposed conditions satisfy federal as well as management program requirements (see also § 930.4)." 15 CFR § 930.4 further states: "Federal agencies, applicants, persons and applicant agencies should cooperate with State agencies to develop conditions that, if agreed to during the State agency's consistency review period and included in a Federal agency's final decision under subpart C or in a Federal agency's approval under subparts D, E, F or I of this part, would allow the State agency to concur with the federal action." Finally, 15 CFR § 930.64 indicates: "Following receipt of a State agency objection to a consistency certification, the Federal agency shall

not issue the federal license or permit except as provided in subpart H of this part.”

Substantively, as described in more detail below, a decision by FERC to issue a conditional license creates a significant risk of inconsistent federal and state decisions in the event that state and federal conditions conflict.

- b. The proposed CZMA condition (condition 45) seems to be focused on the FERC authorization and does not clearly explain how it relates to the U.S. Army Corps of Engineers permits implementing Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. This condition needs to clearly indicate that construction of any project components requiring FERC or Corps authorization will not begin until a State CZMA concurrence is provided (*See* also (a) above).
- c. The State’s CZMA decision may be a concurrence, conditional concurrence or objection. If the State decision is a conditional concurrence it will likely include county’s conditions and various state agency conditions that will need to be specifically included in the FERC license terms. FERC does not have authority to integrate unknown OCMP conditions through a broadly worded condition, such as is proposed in the FEIS. The CZMA and applicable federal rules provide a structure that specifically anticipates that the Federal agency decision will be made following the State review and will integrate State conditions within its final decision. As noted above, 15 CFR § 930.4(a)(1)-(3) specifically state: “(1) The State agency shall include in its concurrence letter the conditions which must be satisfied, an explanation of why the conditions are necessary to ensure consistency with specific enforceable policies of the management program, and an identification of the specific enforceable policies. The State agency’s concurrence letter shall also inform the parties that if the requirements of paragraphs (a) (1) through (3) of the section are not met, then all parties shall treat the State agency’s conditional concurrence letter as an objection pursuant to the applicable subpart and notify, pursuant to § 930.63(e), applicants, persons and applicant agencies of the opportunity to appeal the State agency’s objection to the Secretary of Commerce within 30 days after their receipt of the State agency’s conditional concurrence/objection or 30 days after receiving notice from the Federal agency that the application will not be approved as amended by the State agency’s conditions; and (2) The Federal agency (for subpart C), applicant (for subparts D and I), persons (for subpart E) or applicant agency (for subpart F) shall modify the applicable plan, project proposal, or application to the Federal agency pursuant to the State agency’s conditions. The Federal agency, applicant, person or applicant agency shall immediately notify the State agency if the State agency’s conditions are not acceptable; and (3) The Federal agency (for subparts D, E, F and I) shall approve the amended application (with the State agency’s conditions). The Federal agency shall immediately notify the State agency and applicant or applicant agency if the Federal agency will not approve the application as amended by the State agency’s conditions.”
- d. There are a number of conditions in the FEIS which are central to state requirements. The conditions as currently drafted are ambiguous, and fail to contain clearly written enforceable requirements that will be monitored by the FERC to ensure compliance. Central to state CZMA concerns are county conditions; DEQ conditions; DSL conditions; ODFW conditions; WRD conditions and any other conditions that are ultimately included in the state’s CZMA decision, should such a decision be a conditional concurrence.
 - i. We are concerned that requirements for fish screening be clarified. We believe the language should require the use of fish screening necessary to protect threatened and endangered fish species. The current language only requires the applicant to

- develop the plans for fish screening as outlined in Condition 34, but this language does not clearly indicate that these plans must be implemented and then monitored to ensure the proper operation of required screening in order to protect threatened and endangered fish species. The project operation must include appropriately designed and functioning fish screening devices. In the event monitoring efforts identify any problems or issues related to the proper functioning of these devices, the screening should be adaptively managed and modified in consultation with resource agencies to ensure fish are protected from impingement and entrainment.
- ii. We are concerned about the adequacy and proper operation of proposed vaporization equipment. During the pendency of this project, several different technologies have been explored, with the resulting current design. As currently configured, the project uses a relatively small amount of Columbia River water. As we understand the Submerged Combustion Vaporization (SCV) system, once functioning, these vaporizers produce condensate which will be discharged into the river (after required treatment). The Submerged Combustion Vaporizers do not require an open loop system or additional river water for cooling. Based on our experience with the evolving changes to the project we want to assure any future changes do not increase the potential for adverse environmental and natural resource impacts. Any change in the project design that has substantially different effects on coastal uses and resources, such as an increased use of Columbia River water or a change to a different method for vaporization requires supplemental federal consistency review. We suggest the FERC add language to its conditions to address this issue.
 - iii. The third party monitoring system described in condition 15 should provide information to the state and public and include provisions for resolving issues, complaints and conflicts to assure the project meets environmental requirements and state/federal conditions.
 - iv. Condition 21 presumes that the initial hydrodynamic modeling for the turning basin is accurate. Although this condition includes monitoring, the condition needs to recognize that DEQ has asked for additional modeling to provide better information. This condition should be modified accordingly.
 - v. Condition 23 related to water quality requirements may require modification based on the state review of this portion of the project (e.g. DSL or DEQ conditions).
 - vi. Condition 44 requires completion of the ESA and MSA consultations with federal agencies. We believe this review could result in significant modification of the project, mitigation, or could stop the project as the result of a jeopardy determination. The FERC should not proceed without these issues being fully resolved.
 - vii. Condition 45 related to CZMA consistency review is addressed in detail above, however, the condition as written should recognize the potential for an objection or significant conditions that may result in the need for project modification. Without completed applications for the DSL and DEQ permits, there is substantial CZMA uncertainty.
 - viii. Condition 49 implies a degree of uncertainty surrounding the railroad relocation agreement. If there are remaining issues related to this project component, they should be clearly identified and addressed. Without this agreement, the project design may require significant modification.

- ix. Condition 50 implies a degree of uncertainty regarding the final traffic management plan and ODOT approval of various transportation related components. These issues should be fully resolved in order to have certainty regarding the project design and environmental effects. ODOT and county transportation requirements should be consistent.
- x. Condition 78 implies some degree of uncertainty regarding the emergency response plan for the project. These issues should be fully resolved before FERC approval and not addressed through a broadly worded condition. Condition 79 regarding a cost sharing plan should also be resolved before FERC approval.

Other Issues Related to the FEIS

Findings-The FEIS is an improvement from the DEIS. However, the document does not contain a detailed analysis or a clearly written explanation of the basis for some of the conclusions, but rather makes conclusions based on a relatively general statement of facts.

Need/Alternatives-The FEIS drafters expanded the discussion of need and alternatives, probably in response to the state comments on the DEIS. Although there is an expanded analysis, the FERC still sets a very low threshold for purpose and need, virtually making the purpose and need component of the FEIS relatively meaningless. FERC essentially relies on general market projection of the need for natural gas over time. Perhaps the most troublesome aspect of the discussion is FERC's conclusion that there is a need for importing LNG as an additional source of gas, without addressing whether this need could be met by other domestic sources and pipeline supply options. FERC's overall conclusion seems to be that more is better and therefore needed. FERC concludes, without substantive analysis, that the Bradwood Landing project has less environmental impact because its 36+ mile pipeline route is shorter than the proposed pipeline routes for Bronco, Ruby and Sunstone. This conclusion simply assumes that shorter is better for a pipeline regardless of the natural environment/ecosystem it crosses or consideration of the costs and effects of the ship transit. As for the analysis of the three terminals in Oregon, the FERC simply concludes that the other projects do not have less environmental impact than the Bradwood Landing project. There is a discussion of each project, but the FERC concludes that each will be evaluated on its own merit, without the consideration of whether one of these projects on the whole will have less environmental effects or can better meet the market demand that is the basis for FERC's need determination. There is still no recognition that, once sited, a terminal and pipeline will fit within a larger regional/national system of natural gas infrastructure. There is nothing other than FERC's reliance on the market to determine which facility or facilities are ultimately constructed, despite the obvious observation that even minimal planning could result in the best option that can meet a prospective need, with less long term costs and environmental effects. FERC makes no attempt to identify and evaluate the relative impacts of each project and determine whether any project is environmentally preferable. The analysis also seems to treat the need for each project independently and implies that each is needed (as evaluated on its own merit) as meeting a slightly different proposed purpose and need. The overall need assessment of this project and the other alternatives is difficult to clearly evaluate without a more comprehensive regional/national strategy for natural gas and its supporting infrastructure.

The document generally addresses national system/capacity issues, but concludes that only the Oregon terminals can meet the northwest need. The document rejects the assertion that existing unused and already approved import terminal capacity in other regions, or the potential for ptjer new and proposed

terminals on the west coast, together with appropriate pipeline infrastructure is a viable alternative to additional import terminals in Oregon.

There is a brief addition to the FEIS addressing the ODOE LNG need analysis and report issued on May 9, 2008. The FERC FEIS for Bradwood does not agree with the conclusions outlined in the ODOE report, without any substantive evidence to support its conclusions.

This purpose and needs/alternatives issue may have some NEPA implications. The FERC could hold these projects to a higher standard, but is not likely to do so. FERC should address purpose and need/alternatives in applying its public convenience and necessity standard.

The FEIS includes project components that require the Corps (Section 404 of the Clean Water Act authority and Section 10 Rivers and Harbors Act authority). Since the Corps is a cooperating agency, I assume they had input into the FEIS. However, the Corps use of the FEIS to inform its review and demonstrate compliance with the RHA and CWA authority is not clear. The Corps is also subject to federal consistency. Nothing in the FEIS or conditions really indicate whether the Corps intends to issue a conditional approval or wait for delegated federal requirements to be completed. The Corps may treat need differently under its requirements, but again, the NEPA process only informs the federal decisions and does not necessarily address their regulatory requirements.

CZMA Consistency Review-The document accurately reflects the current status of the state review. The FEIS includes an inadequate condition requiring state concurrence, as described above. Furthermore, the document does not address our position that the FERC must have our consistency certification before it approves the project (*See* discussion above).

DEQ CWA, CAA Review-There appears to be no parallel condition to the CZMA requirement cited above for DEQ's 401 Certification required under delegated Clean Water Act authority.

Hydrodynamic Modeling-The FEIS is based on the hydrodynamic modeling for the project previously completed by WEST. DEQ has asked for a revised modeling effort involving a more sophisticated model. The applicant's response to this information request is not expected until August 15, 2008 or later. The current modeling indicates that the dredging will not have adverse effects on Clifton Channel. The FEIS addresses issues related to the adequacy of this model and some of the questions about side slope stability and shoreline erosion. There are recommended conditions in the FEIS to monitor and resolve these issues. The new model and potential for DEQ to require a peer review of the modeling should help in resolving these issues. Based on the new modeling, the FERC conclusions may require modification.

Other Issues

Consistency Review Timing-As a separate issue, Bradwood continues to update its consistency certification documents. We have just received additional information from the applicant in response to our information request. However we still do not have all of the information we have requested. As we indicated in our information request, we need adequate time for a public review and comment process before making our CZMA decision. At this point, our decision is due on September 21, 2008. However, if we do not receive the remaining information soon, our review period may need to be further stayed by agreement with the applicant. We note that we have asked for information related to

the DEQ review and current information indicates that the applicant does not expect to file a response to DEQ's information request until August 15, 2008 or later. This will not allow sufficient time for a public review process prior to our current decision date of September 21, 2008.

Biological Assessment-There is considerable information in the applicant-prepared Biological Assessment (BA) that relates to state CZMA enforceable policies. At this point, we have not had time to review all of this information. This information is primarily intended to inform the Endangered Species Act and Magnuson Stevens Act consultations with the National Marine Fisheries Service and U.S. Fish and Wildlife Service. We recommend that FERC wait for the consultation to be completed before making a decision on this project. FERC should not proceed with its review until this important environmental and natural resource information is fully reviewed and these agencies issue their required decisions. These reviews may result in significant conditions or the need for significant modification to the project in order to avoid and minimize impacts. Unavoidable impacts will require mitigation. Although mitigation is generally addressed in the FEIS and addressed in more detail in the BA, significant changes to the mitigation for the project are likely, following a complete review of the project effects and information in the BA.

Summary

We believe that the general nature of the FERC review of the project "purpose and need" and related "alternatives" analysis is inadequate. The FEIS does not sufficiently describe the basis for determining the regional and national need for an LNG import terminal and pipeline project in this location or provide a clear set of objectives that provide a rational basis upon which need can be assessed. The analysis of alternatives is still superficial. Without more detailed comparative analysis of LNG import terminal and pipeline projects currently proposed in the region, and the potential for domestic supply/pipeline alternatives, we can not determine whether the Bradwood Landing LNG import terminal and pipeline represents a superior site for such a facility from an economic, environmental and social perspective.

The FERC should not make a decision until the results of federally-delegated state reviews and federal services agency consultation are complete. These state and federal agency decisions will inform the FERC process resulting in a more complete and responsible federal action. As the lead federal agency for these energy projects, we believe public policy is best served by assuring all environmental issues are fully identified and integrated into the FERC decision.

Oregon Department of Geology and Mineral Industries (DOGAMI) Comments

Our review of the FEIS confirms that certain material improvements have been made in the FEIS as compared to the DEIS concerning geologic hazards. In particular, we note that FERC has recommended that a "Board of Consultants" experienced in the critical disciplines of geotechnical, civil, structural, and mechanical engineering be retained by the applicant to review the final design and to perform inspections. We also note that of the two dozen comments in our DEIS review letter, fully half have been satisfactorily addressed in the FEIS. However, there remain several significant items that either have not been addressed, or were not adequately referenced in the FEIS, including:

1. Liquefaction and Lateral Spreading Hazard: the FEIS recognizes the potential for liquefaction potential and proposes certain mitigating steps in facility preparation and design. However, DOGAMI continues to recommend that these mitigation activities and the overall facility design should be factored into new liquefaction analyses that take these items into consideration in order to document that they are adequate.
2. Debris Flow Hazards in Hunt Creek Drainage: the FEIS asserts that “debris flows or landslides ... could not reach the terminal facilities.” DOGAMI continues to recommend a detailed study by a qualified engineer to analyze the hazard and risk.
3. Locally-derived Tsunami Hazards, such as from a large landslide into the Columbia River: the FEIS recognizes the potential for a landslide-induced wave to be a life safety hazard, as the fatality on Puget Island in 1965 demonstrates, yet the FEIS asserts that the likelihood of such ground failures is believed to be extremely low. DOGAMI continues to recommend a detailed study by a qualified engineer to analyze the hazard and risk.
4. Rock Fall Runout Hazards: the FEIS asserts that “rock fall runout ... is not considered likely....” DOGAMI continues to recommend a detailed study by a qualified engineer to analyze the hazard and risk.
5. Flood Hazards: the FEIS has added a review of the Army Corps of Engineers’ analysis of flood hazard from upstream dam failure, yet the FEIS continues to rely on FEMA FIRM maps as the basis for design and flood hazard mitigation. DOGAMI continues to recommend that the objective should be to perform adequate studies to ensure adequate flood hazard mitigation, independent of the FEMA maps.
6. Known Earthquake Faults in the Vicinity of the Bradwood Landing Project: the FEIS does not include certain known faults. DOGAMI continues to recommend comprehensive literature review in order to fully analyze the related hazards and risks.
7. Overall Peer Review of Geologic Hazard Studies: although the applicant reports that certain qualified firms acting as consultants to FERC have performed peer review of the relevant technical reports, the FEIS does not document this activity.