

27 October 2019

Comments of Michael Graybill on Coos County Land use application HBCU 19-003 submitted by Jordan Cove Energy Project LP .

Below are comments addressing the proposal by the Jordan Cove Energy Project LP (the applicant) to install a rock apron in the 5 DA zone of the Coos Estuary.

On Page 20 of the 11 April 2019 application to Coos County (HBCU 19-003 PDF page 24), the applicant states the following:

5-DA Zone - Allowed Uses - CCZLDO 3.2.271

CCZLDO 3.2.271 permits within the 5-DA zone, subject to an ACU process, riprap shoreline stabilization. Riprap shoreline stabilization in the 5-DA zone is also subject to certain special conditions of the zone, the zone's management objective, and to the general development standards of CCZLDO 3.2.100.

RESPONSE: CCZLDO 2.1.200 defines "shoreline stabilization" as "the protection of the banks of tidal or non-tidal streams, rivers or estuarine waters by nonstructural (vegetative) or structural (riprap, bulk heading, etc.)." The same section defines "riprap" as "a layer, facing, or protective mound of stones randomly placed to prevent erosion, scour or sloughing of a structure or embankment; also, the stone so used." JCEP proposes to install a pile dike rock apron as described above to protect Pile Dike 7.3 from degradation. **The proposed rock apron satisfies the definition of riprap shoreline stabilization in CCZLDO 2.1.200.** Therefore, the pile dock rock apron qualifies as riprap shoreline stabilization and is allowed in the 5-DA zone subject to an ACU process and compliance with the 5-DA zone's management objective, special conditions, and the general development standards of CCZLDO 3.2.100. The pile dike rock apron complies with those criteria, as follows. **(emphasis added)**

Comments of Michael Graybill in response to information provided by the applicant.

1. The rock apron fails to satisfy the definition of shoreline stabilization

The applicant asserts that the rock apron satisfies the definition of "shoreline stabilization" as presented in CCZLUDO 2.1.200. This assertion is not supported by the evidence provided by the applicant. The rock apron proposed by the applicant angles away from the shoreline of the estuary (See Exhibit 7; 11 April 2019 application PDF page 439). The applicant has failed to demonstrate how a rock fill structure placed at an angle to the shoreline in a qualifies as "shoreline stabilization". Only the northernmost extent of the proposed rock apron will contact the existing shoreline. Virtually the entire length of the rock apron projects away from the shoreline of the estuary. The southern extent of the 1,100 foot long rock apron will terminate in a sub tidal portion of the estuary at a depth greater than 30 feet below the mean of the lower of the low tides; hundreds of feet away from the existing shoreline. The applicant provides no evidence why placement of thousands of cubic yards of rock at depths up to and exceeding 30' MLLW is necessary to stabilize the shoreline.

If the objective of the rock apron is to stabilize the shoreline, a more direct method would be to place riprap along the existing shoreline. The applicant has not substantiated why the method proposed will stabilize the shoreline more effectively than placement of similar rip rap material directly onto the

shoreline. I assert that the purpose of the proposed rock apron is not “shoreline stabilization” and that the applicant’s proposed action fails to satisfy the definition of riprap shoreline stabilization in CCZLDO 2.1.200. The proposed rock apron is being built for a purpose other than to stabilize the shoreline of the estuary. The argument provided by the applicant is not sufficient to satisfy the definition of riprap shoreline stabilization. On page 20 of the 11 April, 2019 application, the applicant states the purpose of the rock apron as follows:

“The purpose of the pile dike rock apron is to protect Pile Dike 7.3, which is located immediately west of the access channel. The rock apron will arrest slope migration (or equilibration) before it progresses to a condition that has potential negative impacts on Pile Dike 7.3.”

Exhibit 26 of the applicant’s 14 October, 2019 submittal to hearings officer Andrew Stamp (PDF page 5448) includes information provided by the applicant on 30 August, 2019 to the Oregon Department of State Lands regarding fill and removal actions associated with the Jordan Cove Energy Project. In this exhibit, the applicant states the purpose of the rock apron as follows:

“The purpose of the rock apron is to arrest potential slope migration from access channel dredging, or equilibration, before it can progress to a condition that could potentially impair the long-term ability of the Pile Dike 7.3 rock apron to protect the FNC and impact the adjacent intertidal and shallow sub-tidal areas.”

“Shoreline stabilization” is not included in the applicant’s stated purpose of the rock apron. CCZLDO 2.1.200 defines “shoreline stabilization” as “the protection of the banks of tidal or non-tidal streams, rivers or estuarine waters by nonstructural (vegetative) or structural (riprap, bulk heading, etc.).” The applicant has stated the purpose of the rock apron is “to protect Pile Dike 7.3”. Pile Dike 7.3 is an existing in-water structure that runs roughly perpendicular to the existing shoreline. The stated purpose includes no reference to “shoreline stabilization”. The placement of structural fill material (riprap) will not be place on the bank of estuary it will project into the estuary away from the shoreline.

If the purpose of the rock apron is to protect a Pile dike structure, it is informative to understand the purpose and function of a Pile Dike. Pile dikes are structures used widely in shallow flowing water settings to entrain water and enhance circulation in the adjacent channel. The US Army Corps built and maintains Pile Dike 7.3 as part of the infrastructure associated with maintenance of the federal navigation channel in the Coos Estuary. The US Army Corps of Engineers waterways experiment station provides a definition of “Pile Dike” (see Page 5: US Army Corps of Engineers Technical Report REMR-HY-6 Entitled “Inventory Of River Training Structures In Shallow-Draft Waterways” by David L. Derrick, Herbert W. Gern and, James P. Crutchfield Hydraulics Laboratory Department Of The Army Waterways Experiment Station, Corps of Engineers 3909 Halls Ferry Road, Vicksburg, Mississippi 39180-6199 October 1989) as follows:

“PILE DIKE - A permeable structure built of from one to five rows of piles or clumps usually angled normal to riverflow. Designed to reduce the water velocity as streamflow passes through the dike so that sediment deposition occurs, mostly downstream of the dike. This causes the main channel to carry a larger proportion of water, thereby increasing currents and sediment transport capacity. As a result, a more efficient section and greater depth are maintained in the main channel.” (emphasis added)

Evidence provided here supports a conclusion that the primary purpose of the Pile Dike system installed by the US Army Corps of Engineers along the Jarvis turn of the Coos Estuary, including Pile Dike 7.3, is to entrain water and accelerate current velocities in the adjacent federal navigation channel. The primary purpose of the Pile Dike System in the Jarvis turn is to support maintenance of the federal navigation channel. The primary function of the pile dike system is to alter hydraulic conditions in the navigation channel, not to protect the shoreline.

In addition to the Pile Dike structures in the Coos Estuary, the US Army has constructed hundreds of Pile Dikes in the Columbia River estuary and thousands of pile dikes in waterways throughout the United States. Similar to the Pile Dike system in the Coos Estuary, the primary purpose of these Pile dikes is to increase currents in the navigation channel in order to stabilize the location of the channel and to improve maintenance efficiency of the channel. The Portland District office of the Corps of Engineers provides a statement of the purpose of the Pile Dike system in the Columbia river estuary at Sand Island [See Page 28 (PDF page 101) Hans R. Mortiz, P.E. Hydraulic Engineer National Coastal Structures Asset Management Program, Mouth of the Columbia River Infrastructure Status and Ranking; Annual Dredging and Resource Agency Coordination Meeting Portland District 20 March 2015]: the purposes of these pile dikes systems are provided here for illustrative purposes:

*“Maintain the location and depth of the navigation channel.
Decrease Currents in the immediate vicinity of the structure, reducing erosion.
Increase Currents near the navigation channel thus preventing lateral migration.”*

The applicant also provides information in its application to Coos County which also affirms that the primary function of Pile Dike 7.3 is to support the Federal Navigation channel. On PDF page 25 of the 11 April 2019 application, the applicant includes the following statement:

“Supporting navigation channels is one of the primary functions of pile dikes, including Pile Dike 7.3.”

If the primary purpose of the applicant’s proposed rock apron riprap installation is to protect Pile Dike 7.3, then the primary purpose of the rock apron is to assure that the function of Pile Dike 7.3 is not negatively impacted. Because the primary purpose of Pile Dike 7.3 is to maintain the federal navigation channel the applicant’s assertion that the proposed rock apron satisfies the definition of riprap shoreline stabilization in CCZLDO 2.1.200 is unsupported. The purpose of the proposed rock apron is not shoreline stabilization. The applicant has failed to demonstrate that the proposed rock apron satisfies the definition of riprap shoreline stabilization in CCZLDO 2.1.200. The application should be denied.

2. The applicant’s assertion that the project does not involve fill is false.

On PDF page 27 of the application, the applicant includes a response related to the conformance of the proposed rock apron with Policy #27

“The pile dike rock apron does not involve fill. Therefore, this general condition does not apply to the Application”.

This statement is false and does not provide evidence of compliance with policy #27. The construction of the proposed rock apron will require placement of an estimated 6,500 cubic

yards of rock fill material into the waters of the estuary. In fact, the entire rock apron structure involves placement of fill into tidally influenced intertidal and subtidal portions of the estuary. The applicant provided Exhibit 26 to the Hearings officer which includes information regarding the applicant's proposed project related fill and removal actions. Exhibit 26 was provided to the Oregon Department of State lands on 30 August 2019. (Applicant's exhibit 26 PDF page 5448) The Department of State Lands would not be considering the rock apron as a permitted use unless the proposed action involved fill or removal of material in waters of the state. The rock apron involves fill material. The applicant's assertion that it does not is false. Information provided fails to demonstrate how the proposed action satisfies the requirements of Policy #27.

3. The applicant has not demonstrated it has satisfied Coos County's Policy #9

The proposed rock apron must be consistent with Policy #9. The 23 September 2019 staff report and analysis of HBCU-19-003 (Page 22), prepared by the Coos County planning department includes the following:

"• Policy #9 states where it is shown to be necessary, water and erosion control structures such as jetties, bulkheads, seawalls and similar protective structures and fill whether located in the waterways or on shorelands above ordinary high water mark shall be designed to minimize adverse impacts on water currents, erosion and accretion patterns.

I. Further, where listed as an "allowable" activity within the respective management units, riprap may be allowed in Development Management Units upon findings that:

a. Land use management practices and nonstructural solutions are inadequate;

and

b. Adverse impacts on water currents, erosion and accretion patterns are minimized; and

c. It is consistent with the Development management unit requirements of the Estuarine Resources Goal.

This policy itself directs that structural shoreline stabilization is allowed subject to three criteria." (emphasis added)

The applicant has failed to demonstrate that "land use management practices and nonstructural solutions are inadequate to attain the desired outcome. The applicant submitted "Exhibit 26" in materials provided to the hearings officer reviewing HB-19-003 dated 14 October 2019. Exhibit 26 is correspondence submitted to the Oregon Department of State Lands (DSL) in response to comments received related to the applicant's request for a permit to place and/or remove material from wetlands of the State. The DSL directed the applicant to substantiate why the applicant proposed a structural solution to achieve protection of Pile Dike 7.3 (See applicant's Exhibit 26 page 75 of 133; pdf page 5448).

DSL stated that comments received regarding the Pile Dike Rock Apron raised concerns that no alternatives were presented regarding the proposed placement of 6.500 cubic yards of riprap fill to protect Pile Dike 7.3 against erosion. In requesting additional information regarding the slip and access channel location, depth and dimensions, the agency states the following (see reference cited in prior paragraph):

"With no alternatives presented on the dimensions or design alignment of the slip and access channel, no reasonable range of alternatives can be considered. There is no discussion on impact avoidance, minimization, and/or mitigation to offset any adverse impacts to waters of the state. Please address:

- *Why 6,500 cy?*
- *Why not more?*
- *Why not less?*
- *Why any at all?"*

The applicant has yet to provide publicly available information to substantiate why it selected the proposed access channel alignment and design. I provided comments to DSL and the Federal Energy Regulatory Commission to point out that alternate access channel alignments and dredged slope configurations were not considered as means to minimize or avoid unwanted slope migration that may negatively impact adjoining estuarine habitats and Pile Dike 7.3. In the absence of this analysis and justification, the applicant's assertion that it is necessary to place riprap, a structural solution, is the only practical alternative is unfounded. The applicant has yet to provide evidence to demonstrate why the proposed access channel alignment and dredged cut bank slope geometry was selected as the preferred alternative. In the absence of a response from the applicant to this matter, it is not possible for the applicant to demonstrate that it complies with the Policy #9 directive to demonstrate that "Land use management practices and nonstructural solutions are inadequate".

I have asserted elsewhere and will assert here that changing the alignment and/or slope geometry of the dredging cutline on the western margin of the proposed access channel holds potential to avoid project related impacts to Pile Dike 7.3 without requiring the placement of riprap as proposed by the applicant. In a separate project related permit request, the applicant has proposed to dredge the margins of the federal navigation channel at four separate locations in the estuary. These proposed dredge areas are commonly referred to as "Navigation Reliability Improvement areas or NRI's. While all of the NRI dredge areas involved dredging at the margin of the federal navigation channel, none of the proposed NRI's require placement of structural fill (riprap) to control post dredging "slope migration" suggesting that it is possible to design a dredged cut bank that does not require placement of structural fill material to control post dredging "slope migration". If it is possible to model the anticipated response of the adjoining estuarine sediments to the dredging activity proposed by the applicant, this response should be incorporated into the initial design of the project in a manner that avoids the need for a structural solution to control post dredging "slope migration". The design of the access channel should include nonstructural "slope migration" considerations into the project design as appears to be the case for the applicant's proposed NRI dredging operations.

Exhibit 26 of the applicant's 14 October 2019 submittal to the Hearings Officer includes figure 14 entitled "LNG Carrier Docking Maneuvers" (See applicant's Exhibit 26 page 91 of 133; pdf page 5,464). Figure 14 is a conceptual rendering of how an LNG carrier would be maneuvered from the federal navigation channel into the slip. This figure was provided as part of the applicant's response to comments received by DSL related to the design of the proposed LNG slip and access channel. Comments received by DSL:

"raised the concern of a lack of discernable alternative analysis for the precise dimensions and location of the slip and access channel. The slip and access channel are designed for a ship class of 217,000 cubic meters, yet the Coast Guard Waterway Suitability Analysis recommends allowing ships no larger than a "nominal" 148,000 cubic meters." (Exhibit 26 PDF page,5,456) (emphasis added)

The DSL specifically asked the applicant to address five questions related to the LNG carrier slip and navigation access channel. One of the five questions is as follows:

“...whether the access channel dimensions can change, as no alternatives discussion exists, it is just one option, take it or leave it. Any reduction in the size of the slip or access channel would reduce water impacts and reduce the required mitigation. Any reduction in size or depth would also reduce adverse impacts associated with this project. The need should be substantiated, and a robust alternatives analysis prepared to address these issues. (emphasis added)”

The applicant’s response to the DSL includes figure 14 referenced above but the response fails to answer the question asking the applicant if the access channel dimensions could change. On Page 84 of 133 of the applicant’s Exhibit 26, (pdf page 5,457) the applicant provides table 13 which describes the three slip and access channel alternatives that were reviewed. Each of the alternatives evaluated focus on various designs for the terminal/slip. The alternatives reviewed do not address the question of whether the access channel dimensions can change. The alternatives presented in the applicant’s response to DSL involve variants of the proposed slip/carrier berth design. Two of the alternatives consider only the material to be used to stabilize the margins of the LNG carrier slip (see Applicant’s Exhibit 26 pdf pages 5,459 and 5,460). The alternatives evaluated make no reference to indicate that variations in the orientation size or shape of the access channel were evaluated. As an illustrative example, the applicant could have evaluated how shifting the orientation of the access channel cutline on the western side of the access channel or altering the slope of the cutline on the western flank of the access channel might reduce “slope migration” or the likelihood that project related dredging will impact pile dike 7.3. Further, the applicant could conceivably have evaluated how altering the location of pile dike 7.3 could achieve the project related objectives without requiring the installation of a 1.100 foot long riprap structural fill.

Figure 14 (Applicant’s Exhibit 26 PDF page 5,464) is a conceptual rendering illustrating how an arriving LNG carrier will be maneuvered from the federal navigation channel into the LNG carrier berth/cargo loading facility. This figure does not provide evidence to support a conclusion that the orientation of the western flank of the access channel must be configured in the manner proposed by the applicant. Nothing in this figure indicates that the proposed orientation or slope of the cutline along the western margin of the access channel could not be altered to avoid impacts to Pile Dike 7.3. Figure 14 indicates a large area of the proposed access channel will not be used to maneuver LNG carriers into the berth. Conceptually, the western margin of the cut bank could be altered without impacting vessel turn presented in figure 14. Further, by allowing LNG carrier vessels to enter the proposed access channel further to the east could conceptually further reduce any interaction between the arriving vessels and the western flank of the access channel.

The applicant has failed to provide evidence to demonstrate that it evaluated alternative alignments of the access channel and non-structural approaches to protect Pile Dike 7.3 from project related impacts as required by Policy #9. As presented, applicant’s request is incomplete and should be denied.

Thank you for providing this opportunity to comment.