*Coos Bay Pilots Association*

*686 N. Front Street*
*Coos Bay, Oregon 97420*
*Tel. 541-267-6555*

April 25, 2019

Henry O. Hearley
Assistant Planner
Lane County of Governments
859 Willamette Street, Suite 500
Eugene, OR 97401
hhearley@lcog.org

**Re: City of Coos Bay Land Use Application #187-18-000153 – Jordan Cove Energy Project Navigation and Efficiency and Reliability of the Coos Bay Deep Draft Navigation Channel**

Dear Mr. Hearley:

On behalf of the Coos Bay Pilots Association ("Pilots"), please consider this additional letter of support for the Jordan Cove Energy Project navigation reliability improvements ("NRIs") for *City of Coos Bay Land Use Application #187-18-000153 – Jordan Cove Energy Project Navigation and Efficiency and Reliability of the Coos Bay Deep Draft Navigation Channel* ("Application"). The Application seeks approvals that will allow dredging of submerged areas (one within the City of Coos Bay and three within Coos County, under a separate applications) lying adjacent to the federally authorized Coos Bay Navigation Channel ("Channel"). The Application will provide navigation enhancements necessary to improve safety, efficiency and navigability for vessels transiting Coos Bay.

**Background**

The Pilots, regulated and approved by the State of Oregon, are responsible for providing local knowledge and expertise to deep sea vessel Masters by supporting them to navigate their vessels into and out of Coos Bay safely and efficiently. The Pilots serve a vital function for maritime commerce in Coos Bay as they use visual, radar, and other means to safely guide vessels through the bay, which is known as pilotage. Pilotage is mandatory in Oregon; therefore, the Pilots are onboard all inbound and outbound vessels transiting the bay. Pilots are specifically trained for the Channel they transit, learning the bathymetric and unique visual references. With this detailed local knowledge, the Pilots provide pilotage to the Masters of all foreign-flagged vessels, all U.S. vessels under registry.

Maritime commerce in Coos Bay includes the export/import of commodities from thirteen terminals handling deep-sea vessels and barges. Marine terminal facilities in Coos Bay are grouped into two categories: 1) the Lower Bay terminals from the entrance up to River mile ("RM") 9.0 and 2) the Upper Bay terminals upstream of RM 9.0. The railroad swing bridge at RM 9.0 limits the size of vessels that can pass through the bridge opening to Panamax class vessels. There are currently four terminals in operation along the Channel in the lower bay. These include:

vessels. There are currently four terminals in operation along the Channel in the lower bay. These include:

- Cape Arago Dock/Sause Brothers (RM 5.4, utility/work dock for tug and barge traffic)
- D.B. Western Inc. (RM 5.6, utility/work dock, smaller vessel repair and construction)
- Southport Lumber Company/Southport Forest Products (RM 6.3, deadload barge slip for importing logs and exporting wood chips)
- Roseburg Forest Products Chip Terminal ("Roseburg") (RM 7.9, export woodchips)

There are 10 terminal and dock facilities located on the Channel in the upper bay. Currently only 3 of these terminals handle deep draft vessels. Of the remaining seven terminals, four are currently inactive. The following are the currently active terminals in the upper bay:

- Merrill & Ring at Ocean Terminals Dock (RM 11, inbound and outbound logs)
- Ocean Chip Terminal (RM 12.5, outbound woodchips)
- Bayshore Dock/Sause Brothers (RM 12.7, tug and barge berths)
- USACE Coos Bay Moorage Dock (RM 13.2, USCG and USACE vessel berths)
- K2 Export (RM 11.5, outbound logs)
- Georgia Pacific Ship Terminal Dock (RM 14.6, tug and barge inbound and outbound logs)

**Increased Vessel Size**

The Channel serves a vital purpose as it provides the only safe vessel access for these marine terminals located within Coos Bay. The Channel was initially authorized in 1899 and over the years has undergone ten subsequent modifications. Most recently, the Channel was expanded in 1997 from -35 feet to -37 feet to allow for the safe navigation and transit of Coos Bay for the size of ships prevalent during that time period. However, over the last 20 years the dimensions and tonnage of ships serving terminals in Coos Bay has increased. The table below demonstrates the increasing trend in large bulk carrier vessels transiting Coos Bay.

**Table 1: Larger Bulk Carrier Vessels Calling at the Port of Coos Bay, Oregon 1973 - 2015**

| | | LENGTH | BEAM | DRAFT | DEADWEIGHT |
|---|---|---|---|---|---|
| Pre-1998 Channel Deepening | Average of Large Vessels | 193.8 | 31.8 | 10.2 | 45,422 |
| | Largest Vessel Call | 222.0 | 35.0 | 11.0 | 59,300 |
| Post Channel Expansion 1998-2000 | Average of Large Vessels | 192.6 | 31.9 | 11.2 | 45,750 |
| | Largest Vessel Call | 200.0 | 32.0 | 11.6 | 49,580 |
| Mid 2000 Period 2005-2008 | Average of Large Vessels | 197.4 | 31.8 | 11.0 | 46,938 |
| | Largest Vessel Call | 205.0 | 32.0 | 11.5 | 54,350 |
| Recent Period 2012-2018 | Average of Large Vessels | 200.6 | 33.3 | 11.3 | 52,894 |
| | Largest Vessel Call | 229.0 | 35.0 | 11.6 | 62,800 |

| | | | | | |
|---|---|---|---|---|---|
| Near Term Future 2019 | Largest Vessel Call (Roseburg) | 215.4 | 37.0 | 12.8 | 70,400 |
| *Note: All dimensions in meters, Deadweight in Metric Tonnes | | | | | |

This table demonstrates that the size of vessels typically calling on Coos Bay terminals has increased from an average of 45,422 Metric Tonnes to an average of 52,894 Metric Tonnes with a projected near-term vessel size of 70,400 Metric Tonnes. Safe and efficient vessel transport considerations due to environmental conditions, including wind, fog, and currents, coupled with the increasing ship size has caused the Pilots to impose ever more limiting restrictions on when vessels may safely transit the bay.[1] These restrictions in turn cause significant delays and increases pressure on the Pilots. Delays are measured in the total transit time, from the time the vessel arrives off the coast of Coos Bay until it returns offshore after calling at its local Coos Bay destination. These delays decrease the efficiency and competitiveness of maritime commerce on a global scale, thereby jeopardizing continued success for maritime commerce in Coos Bay.

The Pilots estimate that the completion of the NRIs will increase the operational window to safely transit any vessel by approximately 20%. Minimizing delays is a pressing concern because companies, such as Roseburg Forest Products, have identified potential new customers in Asia that desire to export woodchips from their terminal using bulk carriers that are slightly larger than the ships typically calling today. Roseburg's, and others, business plans requires enhanced assurances that terminals will be able to safely and efficiently accommodate larger dimension bulk carriers in the immediate term.

In response to these concerns, the Pilots strongly support efforts to improve the navigability and margin of safety for vessels transiting the bay by widening extremely restrictive, unavoidable turns in the Channel.

**Navigational Enhancements**

The purpose of the Application (and related NRI applications with Coos County) is to improve safety and efficiency of navigation for existing deep draft vessels by reducing the existing navigation constraints at four key turns in the Channel by carrying out the following NRI enhancements:

- **NRI Enhancement #1 Coos Bay Inside Range channel and Right Turn to Coos Bay Range** – Reduce the constriction to vessel passage at the inbound entrance to the Coos Bay Inside Range for a ship making the 95 degree turn from the Entrance Range through the Entrance Turn and Range while continuously carrying to the east side of the channel. After making this 95 degree turn then the ship has the need to center itself in the channel and prepare to make a 21 degree right turn into the Coos Bay Range within a distance of about 2.0 ship lengths, which is much less than the minimum of 5.0 ship lengths

[1] These limitations include lower environmental limits including wind speed and current speeds and a higher minimum visibility limit in the channel during transit.

recommended by US industry guidance (US Army Corps of Engineers Engineering and Hydraulic Design of Deep-Draft Navigation Projects (EM 1110-2-1613) Chapter 8-2). Address these challenges by widening the Coos Bay Inside Range channel from the current 300 feet to 450 feet. Lengthen the total corner cutoff on the Coos Bay Range side of the 21 degree turn from the current 850 feet to about 1400 feet from the turn's Apex. This enhancement will allow vessels to navigate through this area in a much safer manner.

- **NRI Enhancement #2 Turn from Coos Bay Range to Empire Range channels** – The current corner cutoff distance from the apex of this turn of only 500 feet, which is much less than one ship length and makes it difficult for all vessels needing the utilize the Channel to start their turn early enough to safely make the turn and be positioned in the center of the next channel. Widening the turn area from the Coos Bay Range to the Empire Range from the current 400 feet to about 600 feet at the apex of the turn. Lengthening the total corner cutoff area of the turn from the current 1000 feet to about 3500 feet, or about 4 ship lengths, will allow vessels to commence their turn much earlier and make this turn much safer.

- **NRI Enhancement #3 Turn from Empire Range to Lower Jarvis Range channels** – During inbound transits it is very difficult to make this 16 degree left turn without crossing the boundary of the Channel on the west side. Adding a corner cut about 1150 feet in length on the west side to enhance inbound vessel navigational safety during the left turn from the Empire Range into the Lower Jarvis Range will provide the additional room necessary to safely make this turn for today's larger vessels.

- **NRI Enhancement #4 Turn from Lower Jarvis Range to Jarvis Turn Range channels** - During outbound transits it is difficult to make this 35 degree turn from the Jarvis Turn Range, which is 400 feet wide, to the Lower Jarvis Range, which is only 300 feet wide, due to the very short length of the existing corner cutoff of only 1125 feet. Widening the turn area from the current 500 feet to 600 feet at the apex of the turn and lengthening the total corner cutoff area of the turn from the current 1125 feet to about 1750 feet will allow the Pilots to commence their turn earlier. This will greatly improve the ability of today's larger ships to make this turn safely on a consistent basis.

The NRI enhancements are designed to reduce entry and departure delays and to allow for safer vessel transit through the bay for the size of vessels entering the Port today. Although log export vessels serving the upper bay are smaller, the proposed enhancements also benefit these vessels by broadening the tidal and environmental limit (wind and current) windows for transiting the bay, which provides an enhanced margin of safety and improved efficiency in the loaded vessel departure schedule. The proposed actions are needed to ensure the current and future viability for maritime commerce in Coos Bay. The NRIs address a need to improve the safety of navigation for current size deep draft vessels. The safety enhancements also allow companies to engage in emerging opportunities to export products with today's larger vessels. These vessels are bulk carriers of up to 223 meters in length and 40 meters in beam with a cargo carrying capacity up to 70,400 deadweight tonnes.

**Tidal Dynamics**

Jordan Cove has shared the results of project studies with the Pilots that conclude that tidal dynamics will essentially remain unaffected by the proposed channel improvements. Calculation of the tidal prism is useful in determining the residence time of water (or sediments) in an estuary. A larger tidal prism indicates more water exchange between mean high tide and mean low tide, which infers a better water quality in the estuary. Project modeling results show that the tidal prism is slightly larger with the channel improvements, an increase of 0.07% and 0.05% on flood and ebb tides, respectively. The changes in the tidal prism, less than 0.1% in all cases, are so small that the effects of the proposed channel improvements can be considered negligible. Tidal hydraulics (tidal range and tidal currents) were calculated at the jetty tips and seven locations in the Coos Bay estuary below river mile 7.5. Project modeling results showed that changes to tidal hydraulics are insignificant and therefore, impacts due to the proposed NRI improvements are negligible.

**Dredge Prism Design**

The Pilots used the latest sounding data, data from vessel transit position tracking systems (Portable Pilot Units or PPU's), computerized simulations of the Coos Bay Port channel, and years of site-specific pilotage experience to determine areas where safety enhancements are needed most to support the transit of both current size and future larger dimension vessels. The dredge prism design is then influenced by environmental considerations and the physical characteristics (i.e., length, beam, and draft) of the vessels transiting the bay, both today and in the near-term future.

Environmental factors include wind, current, fog, and tide level. Marine winds from the north, south, and west push against the side of the vessel during the transit, forcing the vessel to the eastern and southern sides of the existing navigation channel. This issue is particularly important at the transition from the Entrance Range and Turn to the Coos Bay Inside Range (NRI Location 1). The Pilots must balance the vessel transfer with the force of wind and current while maintaining the optimum speed through the large turn within the Entrance Turn and Range channel. Subsequently, nearing the end of the turn, speed must be slowed to line up the vessel for the entrance into the first range, the Coos Bay Inside Range. The slower speed is required to correctly make the turn within the navigation channel limits. The enhancement dredge area footprints are necessary to manage the influence of wind and current on larger vessels and will provide a greater navigation safety buffer for smaller vessels that already navigate through the channel today.

Larger vessels are influenced more noticeably by wind and current due to their increased hull wind surface area and underwater hull area. Additionally, longer and wider vessels have less maneuverability space in the existing navigation channel, simply because they occupy more of the channel and cannot turn as quickly as smaller vessels. Therefore, larger ocean-going vessels being used now, and in the future, require a larger turning radius.

Based on the foregoing, the Pilots support the NRIs and approval of the Application as a necessary public navigational enhancement to Coos Bay.

Respectfully,

Captain George Wales
Coos Bay Pilots Association

CC: Jake Callister (via email @ jcallister@lcog.org)

## HEARLEY Henry O

**From:** Coos Bay Pilots Association <pilotcb12@frontier.com>
**Sent:** April 24, 2019 3:45 PM
**To:** HEARLEY Henry O
**Cc:** CALLISTER Jacob (LCOG)
**Subject:** City of Coos Bay Land Use Application #187-18-000153 - Jordan Cove Energy Project NRI
**Attachments:** 20190424 CB Pilots Assoc. Letter of Support.pdf

Good Afternoon,

Please see attached letter of support for Land Use App. #187-000153 – JCEP NRI.
Thank you,
Capt. George Wales