

# **Shoreline Substantial Development Permit Application**

**Puget Sound Energy  
Tacoma Liquefied Natural Gas Project  
Port of Tacoma, Washington**

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**6 May 2015**

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**Job No. A14.0189.00, Task 100**

# SHORELINE SUBSTANTIAL DEVELOPMENT PERMIT APPLICATION

## Puget Sound Energy Tacoma Liquefied Natural Gas Project Port of Tacoma, Washington

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- Attachment 1: JARPA Form and All Attachments for the Tacoma LNG Project**
- Attachment 2: Site Plan**
- Attachment 3: Map of Flood Hazard and Aquifer Recharge Areas**
- Attachment 4: Ground Improvement Installation Areas (Revised April 2015)**
- Attachment 5: Additional JARPA Information and Exhibits**
- Attachment 6: Water Quality Protection and Monitoring Plan**

# SHORELINE SUBSTANTIAL DEVELOPMENT PERMIT APPLICATION

## Puget Sound Energy Tacoma Liquefied Natural Gas Project Port of Tacoma, Washington

### 1.0 INTRODUCTION

This report is provided in support of an application by Puget Sound Energy (PSE) for a Shoreline Substantial Development Permit (SSDP) for the Tacoma Liquefied Natural Gas (LNG) Project and accessory facilities at the Port of Tacoma in compliance with Tacoma Municipal Code Chapter 13.10 (Shoreline Management).

### 2.0 PROJECT OVERVIEW

The project consists of a small-scale facility for producing LNG to fuel marine vessels and to provide LNG fuel to various industries in the Pacific Northwest via LNG bunkering barges and tanker trucks. The project would also have the capability to convert LNG back into natural gas for reinjection into the PSE natural gas distribution system during periods of high demand (referred to as peak shaving). The project consists of the following components.

- **Tacoma LNG Facility:** Liquefies natural gas, stores LNG, and includes facilities to transfer LNG to the Totem Ocean Trailer Express (TOTE) marine vessel LNG fueling system (described below), bunkering barges in the Hylebos or Blair waterways, or tanker trucks on site. It also includes facilities to regasify stored LNG and inject natural gas into the PSE natural gas distribution system. The Tacoma LNG facility is located within the city of Tacoma.
- **TOTE Marine Vessel LNG Fueling System:** Conveys LNG by cryogenic pipeline from the Tacoma LNG facility to the TOTE site and includes transfer facilities, and an in-water trestle and loading platform in the Blair Waterway to fuel vessels or load bunker barges. These elements are located within the city of Tacoma.
- **Stormwater Outfall Pipe Maintenance, Repair, and/or Replacement:** As part of the project, 10 existing stormwater pipes will undergo maintenance, repair, and/or replacement activities. The pipes are located adjacent and perpendicular to the Hylebos Waterway where they discharge stormwater below the existing timber pile bulkhead. See Exhibits 1 to 3 of Attachment 5 for additional information. Further description of the stormwater outfall pipe work is included in Section 4.3 of this narrative. The outfall work may happen concurrently with installation of the shoreline work (installation of steel pile bulkhead) for the Tacoma LNG facility or in phases. If the work occurs in phases, the stormwater outfall work would be completed as “Phase 1” followed by the installation of the steel pile bulkhead as “Phase 2.”

Normal maintenance or repair activities for stormwater outfalls, by themselves, would typically be exempt from shoreline permitting per TMC 13.10.2.3.3.2, but are being included as part of the overall Tacoma LNG SSDP, which includes non-exempt elements (see TMC 13.10.2.3.2.3).

- **PSE Natural Gas Distribution System:** Conveys natural gas to and from the Tacoma LNG facility. It includes two new distribution pipeline segments, a new Golden Given Limit Station and an upgrade to the existing Frederickson Gate Station. Portions of this system are located within the city of Tacoma.

### **3.0 SHORELINE JURISDICTION**

The Hylebos and Blair waterways are shorelines of the state and activities in or within 200 feet of the ordinary high water mark (OHWM) are subject to the Shoreline Management Act and the Tacoma Shoreline Master Program (TSMP) (see TMC 13.10.1.8 and 2.3.1). The following project elements are located within the City of Tacoma shoreline jurisdiction as defined in TMC 13.10.10.143, and are the subject of this SSDP application.

- **Hylebos Waterway Shoreline Area:** Ground improvement columns, access trestle, replacement pier, and breasting dolphins; aboveground LNG cryogenic pipe and pipe rack attached to the trestle; spillway; a portion of the on-site vehicle circulation system serving pier; northeastern storage area; shoreline stabilization; security fencing and lighting; and stormwater outfall pipe maintenance, repair and replacement activities, and associated work (bulkhead repair and placement of riprap).
- **Blair Waterway Shoreline Area:** Ground improvement columns and TOTE marine vessel fueling system, including a portion of the underground cryogenic pipeline; underground/aboveground pipeline transition point (receiving pit); trestle; loading platform and loading arm; catwalk; and one breasting dolphin.

Please see Site Plan in Attachment 2, Attachment 4, and Exhibits 1 to 3 in Attachment 5, for further information on the location of these shoreline improvements. Refer to Section 4.3 for an expanded description of project elements within shoreline jurisdiction.

For purposes of the remainder of the information presented in this application and attachments, “project” refers to those facilities subject to City of Tacoma shoreline jurisdiction.

The following materials are attached in support of this SSDP application.

- Attachment 1: Joint Aquatic Resources Permit Application (JARPA) for the Tacoma LNG Project (U.S. Army Corps of Engineers Reference No. NWS-2014-1128-WRD) Revised May 2015 and all associated figures and attachments

- Attachment 2: Site Plan
- Attachment 3: Map of Flood Hazard and Aquifer Recharge Areas
- Geotechnical Report for the Tacoma LNG Project, Geotechnical Services, Inc., January 16, 2015 (submitted under separate cover)
- Attachment 4: Ground Improvement Installation Areas (Revised April 2015)
- Attachment 5: Additional JARPA Information and Exhibits
- Attachment 6: Water Quality Protection and Monitoring Plan

#### **4.0 PROJECT LOCATION AND DESCRIPTION**

The project is located at 901 and 1001 Alexander Avenue East and 3533 East 11th Street in Tacoma on Port-owned property on the Blair-Hylebos peninsula. Photos of the sites are provided in Appendix A of the JARPA for reference. The parcels affected by the subject development are identified as tax parcel numbers 5000350021, 5000350040, 5000350011, 2275200502, and 2275200532 by the Pierce County Assessor (see JARPA Figure 2). However, only parcel numbers 5000350021, 2275200502, and 2275200532 would have construction in shoreline jurisdiction and be subject to the TSMP.

#### **4.1 Existing Uses**

##### **4.1.1 Tacoma LNG Facility Site**

Existing uses of the Tacoma LNG facility site include a warehouse, two office buildings, and dispersed storage facilities. Tenants that currently occupy space within the site are PCC Logistics, EHW Constructors, and Safe Boats International, LLC. PCC Logistics is a logistics, warehousing, trucking, distribution, and freight services company. EHW Constructors uses the site for construction, fabrication, and storage. Safe Boats leases the existing pier on the Hylebos Waterway at the Tacoma LNG facility site for testing new vessels. The Port of Tacoma Maintenance Department uses some areas for equipment storage. Nearly the entire approximately 30-acre site is developed, paved, or graveled. Site grades are relatively flat with a slope of 5 percent or less, dropping approximately 3 feet from the crest of the peninsula to the top of the bank on the Blair and Hylebos waterways. In total, undeveloped areas cover less than 1 percent of the total upland portion of the site. Parts of three buildings– the large existing warehouse and the small boiler plant building [Facility 51] (to be removed) and the storage structure (to remain) on the northwest side of the site – are within shoreline jurisdiction.

The aquatic portion of the site on the Hylebos Waterway is currently developed with two piers, a timber pile bulkhead, and 10 stormwater outfalls. One pier is approximately 40 feet by 15 feet, with an approximately 90-foot walkway, located on the northeast corner of Parcel 2275200532. This creosote-treated timber pier is abandoned and in

disrepair. The second pier is a creosote-treated timber structure measuring roughly 600 feet by 25 feet, located on Parcel 2275200502. Both piers are proposed to be removed.

The 10 stormwater outfalls along the Hylebos Waterway span approximately 650 feet from the northern corner of the site to the eastern end of the existing 600-foot pier and are located below the OHWM. The existing locations of the outfall pipes are shown in Exhibits 1-3 of Attachment 5. Photographs of outfall pipes 1-6, and 10 are Exhibit 4 to Attachment 5. Dimensions, materials of construction, and condition of the 10 outfall pipes are summarized in the following Table 1.

**Table 1. Dimensions, Materials of Construction and Condition of Stormwater Outfall Pipes**

<b>Outfall Pipe Number</b>	<b>Parcel Number</b>	<b>Dimension and Material of Construction</b>	<b>Outfall Condition</b>	<b>Invert Elevation (MLLW = 0 ft)</b>
Outfall 01	2275200532	15-inch concrete	Good condition. Headwall facility blocked by vegetation and debris	+4.50 ft.
Outfall 02	2275200532	12-inch ductile iron	Poor condition. Outfall pipe is rusted.	+ 4.71 ft.
Outfall 03	2275200532	4-inch ductile iron	Poor condition. Outfall pipe is rusted and brittle.	+7.14 ft
Outfall 04	2275200532	6-inch ductile iron	Poor condition. Outfall pipe is rusted.	+3.54 ft
Outfall 05	2275200532	12-inch ductile iron or steel	Poor condition. Outfall pipe is rusted and brittle.	+4.82 ft
Outfall 06	2275200532	18-inch concrete	Poor condition. Outfall is broken	3.10 ft.
Outfall 07	2275200532	4-inch	Not available.	0.57 ft.
Outfall 08	2275200532	8-inch concrete (outfall not found)	Not available	Not available
Outfall 09	2275200532	Not available (outfall not found)	Not available	Not available
Outfall 10	2275200502	8-inch concrete	Poor	+3.76

#### **4.1.2 TOTE Site**

The TOTE site shoreline along the Blair Waterway is developed with wharves, piers, and riprap armored slopes. It is generally sloped at approximately 40 to 60 percent and is covered with slope protection materials, including riprap, concrete and asphalt pieces. Several existing in-water structures in the Blair Waterway are associated with existing TOTE operations: one timber T-pier, three concrete piers, and one concrete breasting dolphin. TOTE's existing operations, including use of these in-water structures would continue and are not subject to any modifications under this application.

The sites proposed for the Tacoma LNG facility and the underground cryogenic pipe serving the future TOTE marine vessel LNG fueling system were created decades ago from dredge and fill material and are situated on what was historically mudflat and salt marsh habitat. The resulting upland, marine tidal, and sub tidal habitats have been actively developed, managed, and maintained for industrial and commercial shipping since that time. Consequently, plant and animal habitats are limited or highly disturbed.

#### **4.2 Surrounding Uses**

Industrial uses date back a century at the sites of the proposed Tacoma LNG facility and TOTE marine vessel LNG fueling system. Adjacent areas are also industrial and include predominantly maritime cargo traffic in the Hylebos and Blair waterways. The TOTE terminal currently provides containerized shipping services from the Pacific Northwest region to Alaska. Much of the shoreline along the vicinity of each site is developed with bulkheads, wharves, piers, and riprap, which is typical of water-dependent, maritime industrial uses.

The Tacoma LNG facility site is bordered by the Hylebos Waterway to the northeast, a vacant industrial property to the northwest, Alexander Avenue East and the proposed TOTE marine vessel LNG fueling system site to the south and southwest, and East 11th Street to the southeast. Adjacent properties contain a mix of industrial, vacant, commercial, and storage uses.

The TOTE marine vessel LNG fueling system site is bordered by the Blair Waterway to the southwest, Alexander Avenue East and the proposed Tacoma LNG facility to the northeast, and East 11th Street to the east. The TOTE site consists of loading/unloading ramps; administration, maintenance, and warehouse buildings; and a paved trailer yard. The shoreline along the Blair Waterway is developed with wharves, piers, and riprap armored slopes. Adjacent properties contain a mix of industrial, commercial, and storage uses, interspersed with some vacant parcels.

#### **4.3 Improvements within Shoreline Jurisdiction**

The proposed improvements are consistent with the applicable provisions of the master program as demonstrated in this narrative.

The following provides an expanded description of project elements located in the S-10 Port Industrial High-intensity designation and the overwater improvements located in the S-13 Marine Waters of the State Aquatic shoreline environment under the TSMP. In addition to being located within the 200-foot shoreline jurisdiction buffer, the following elements are also located within the 50-foot marine habitat buffer designated in accordance with TMC 13.10.6.4.3.B.3. Along the Hylebos Waterway, the above ground cryogenic transfer and loading pipeline, a portion of the access trestle, shoreline improvements (stabilization and riprap), repaired/replaced stormwater outfalls, ground improvements (described further below) security fence, lighting and a portion of the on-site vehicular access would be within the 50-foot marine buffer.



Along the Blair Waterway, facilities within the 50-foot marine habitat buffer include, the transition area to an aboveground cryogenic transfer and loading pipeline, spillway, lighting, security fence, trestle providing access to the loading platform, ground improvements, and loading arm serving the TOTE marine vessel LNG fueling system. See Site Plan in Attachment 2 to this narrative which shows all project elements within shoreline jurisdiction and the 50-foot marine buffer, as well as Exhibits 1-3 of Attachment 5 which show shoreline improvements. See also Attachment 4, which shows the proposed location of ground improvements.

**4.3.1 Hylebos Waterway Stormwater Pipe Maintenance, Repair, and Replacement (Phase 1)**

- Stormwater Pipe Maintenance, Repair, and Replacement:** The proposed project includes maintenance, repair, and replacement activities for 10 existing stormwater outfalls on the project site which discharge into the Hylebos Waterway in Phase 1 of the project. These repairs would be completed prior to, or concurrently with, the installation of the steel sheet pile bulkhead and riprap along the shoreline. Eight of the existing outfalls are broken or in poor condition and need to be replaced to function properly (outfalls 02-06, and 08-10). Outfall 01 will be undergo maintenance, and outfall 07 will be abandoned. Work on stormwater outfall pipes would occur both above and below the OHWM. The existing and proposed stormwater outfall locations are shown in Exhibits 1-3 to of Attachment 5. In addition, small portions of the existing timber pile bulkhead may be removed to allow repairs to be conducted. Following stormwater outfall work, the shoreline would be stabilized with riprap and, if necessary, minor repair or replacement activities for the existing timber pile bulkhead would be undertaken. In areas where sections of bulkhead are removed to allow replacement of stormwater outfall pipes and repair/maintenance of outfalls, the shoreline will be stabilized to approximate previous conditions using appropriate methods such as, but not limited to, replacement bulkhead or application of riprap, as appropriate. See Exhibit 5 of Attachment 5, for further detail.

Table 2 describes the maintenance, repair, and replacement activities for each stormwater outfall and the proposed in-water work, as applicable. All in-water work would be conducted in dry conditions or at low tide. Subject to HPA and in-water work windows?

**Table 2. Description Stormwater Outfall Maintenance, Repair, and Replacement Activities**

<b>Outfall Pipe No.</b>	<b>Project Description</b>	<b>In-Water Work Description</b>
01	Debris clearing around headwall facility. Install interior pipeline check valve.	Debris clearing around headwall facility. Install interior pipeline check valve.
02 – 06, 08-10	Excavate existing rock riprap upslope of timber pile bulkhead, beneath the	Remove existing bulkhead, if necessary

Outfall Pipe No.	Project Description	In-Water Work Description
	<p>stormwater pipe, and surrounding the outfall</p> <p>Remove specific portions of existing bulkhead, if necessary. Sections would be approximately 10-20 feet in length.</p> <p>Remove approximately 20 feet of existing stormwater pipe by excavating surrounding soils and disposing of pipe.</p> <p>Replace approximately 20 linear feet of outfall pipe with HDPE pipe material.</p> <p>Install duckbill check valve or interior check valve.</p> <p>Backfill excavated pipe trenches with clean soil.</p> <p>Place 2' depth riprap rock apron beneath pipe outfall extending downslope to elevation +5.3.</p> <p>Repair/replace existing timber pile bulkhead sections approximately 10-20 feet in length in outfall locations, if necessary with new bulkhead sections or riprap.</p> <p>Place 2' depth riprap pad upslope of timber pile bulkhead</p> <p>Riprap shoreline replacement in lieu of wood timber bulkhead reinstallation (15-20 cubic yards per outfall location).</p>	<p>Excavate approximately 56 cubic yards of soils surrounding the outfalls (7 cubic yards per outfall).</p> <p>Remove existing outfall pipes.</p> <p>Replace in-water portion of outfall pipes with new HDPE outfall pipe material. In-water portion averages 20 feet in length depending on outfall number.</p> <p>Install duckbill check valve or interior check valve.</p> <p>Backfill excavated pipe trenches with approximately 56 cubic yards of clean soil (7 cubic yards per outfall).</p> <p>Place 2' depth riprap rock apron (10-20 cubic yards per outfall) beneath pipe outfall extending downslope to elevation +5.3</p> <p>Repair/replace existing timber pile bulkhead in outfall locations, if necessary. Sections replaced would be approximately 10-20 feet in length.</p>
07	None. Outfall will be abandoned.	None. Outfall will be abandoned.

Note: HDPE = High Density Polyethylene. Excavation and fill quantities are approximate and assume a trench 20 feet in length by 4 feet wide by average 2.3 feet in depth for the in-water portion of each outfall and 12 feet long by 4 feet wide by 4.4 feet deep for the dry portion.

The stormwater outfall repair can occur concurrently with the shoreline improvements (new steel sheet pile bulkhead described in Section 4.3.2 below) or in phases. If phased, the stormwater repairs would be sequenced with the outfall pipe maintenance, repair, and replacement and timber bulkhead repairs/replacement occurring in Phase 1 and the new steel pile bulkhead being installed in Phase 2. Please see Exhibit 5 of Attachment 5 for further detail.

#### 4.3.2 Hylebos Waterway LNG Loading Facilities

- Ground Improvements.** The proposed project includes the construction of ground improvements within shoreline jurisdiction along the Hylebos waterway to mitigate the effects of soil liquefaction and associated soil strength loss and settlement during design seismic events. Ground improvements would consist of hardening compaction grout columns (HCGCs) or displacement-drilling grout columns (DGCs) (e.g., omega piles, screw piles, driven grout piles, etc.). (See the geotechnical report

submitted under separate cover.) Ground improvements would be constructed within a 250-foot-long and 25-foot-wide area parallel to the shoreline abutting the location of the replacement pier and trestle, as indicated in Attachment 4 (described in additional detail below). The proposed locations for ground improvements illustrated in Attachment 4 supersede the locations identified in Figure 7 of the Geotechnical Report (submitted under separate cover). In addition, ground improvements would also be constructed beneath the trestle and pipe rack extending from the LNG storage tank to the Hylebos Pier.

HCGCs are continuous concrete columns constructed in the ground to densify and strengthen the surrounding soft and loose soils to provide higher foundation load bearing capacity and to reduce foundation settlement. HCGCs are usually constructed by driving or pushing a steel casing through the soft and loose soils to the intended tip depth. The steel casing is filled with a specified volume of concrete and then repeatedly extracted and re-driven over a specified depth interval. As the casing pipe is raised, concrete is discharged into the ground using compressed air to construct the HCGC. The process is repeated until a continuous HCGC is constructed, effectively compacting the surrounding soils to a denser/stiffer state. The process results in a continuous HCGC that has a much higher strength and stiffness than the surrounding soft soils and does not create preferential pathways that would allow migration of contaminated groundwater.

DGCs are continuous cement grout columns constructed in the ground to reinforce and strengthen the surrounding soft and loose soils to provide higher foundation load bearing capacity and to reduce foundation settlement. DGCs are usually constructed by driving or drilling a steel casing with a specified diameter through the soft and loose soils to the intended tip depth. The steel casings are then filled with cement grout injected through the tip of the casing while being retrieved under a positive grout pressure. The process results in a continuous DGC that has a much higher strength and stiffness than the surrounding soft soils and does not create preferential pathways that would allow migration of contaminated groundwater.

- **Aboveground Cryogenic Transfer and Loading Pipeline.** LNG from the storage tank (located outside of shoreline jurisdiction) would be loaded onto the bunkering barges within the Hylebos Waterway using in-tank LNG loading pumps by way of a loading pipeline. The aboveground pipeline would extend approximately 500 feet from the LNG storage tank to the Hylebos shoreline where it would transition to a pipeline extending down the trestle to the loading platform at the end of the pier. This pipeline would be approximately 8 inches in diameter and be supported on a pipe rack. The pipe rack would also support a vapor return line which would be approximately 8 inches in diameter. The function of the vapor return line is to carry vapors that are displaced from the vessel hold during loading operations back to the storage tank. The 200 feet of the loading pipeline would be located within shoreline jurisdiction.

The LNG pipeline would end at an articulated loading arm or hose on the loading platform, which would transfer LNG to the barge. The articulated loading arm or hose would have full-bore emergency release couplings at the outboard of the arm or hose. At maximum upward extension, the articulated loading arm, if used, would be approximately 34 feet high.

A spillway installed down the trestle below the transfer pipeline would provide for conveyance of any released liquid to a purpose-built containment basin located onshore, in the unlikely event of a liquid release.

- **Replacement of Existing Pier and Access Trestle.** To accommodate LNG bunkering operations at the project site, a new concrete pier would replace an existing creosote-treated timber pier in the Hylebos Waterway. A description of the pier is provided in Part 6a of the JARPA. The proposed location for the replacement pier is shown in JARPA Figure 3. Preliminary design details of the pier are shown in JARPA Figures 7 through 10. The replacement pier is proposed to replace the existing creosote-treated timber pier, as shown in JARPA Figure 7. The replacement pier would be constructed within the footprint of the existing timber structure. The existing timber pier would be removed as described in the JARPA, Part 6e Construction Procedures.
- **Shoreline Improvement.** In Phase 2 of the project when the Hylebos pier is constructed, the existing shoreline along the Hylebos waterway adjacent to the new pier will be repaired. A new steel sheet pile bulkhead at the location of the access trestle approximately 33 feet in length and approximately the width of the trestle would be installed approximately 9 feet shoreward of the existing bulkhead. In addition, approximately 600 feet of the existing timber pile bulkhead and supported fill material would be removed adjacent to the proposed pier and the shoreline would be stabilized with light, loose riprap varying in size from 3 inches to ½ cubic yard, constructed at 2:1 slope similar to the existing shoreline slope below elevation 11.8 feet MLLW. The steel sheet pile bulkhead would be located between stormwater outfalls 03 and 07 and would not conflict with the location of stormwater outfall pipes (see Exhibit 5 of Attachment 5).
- **Security Fence and Lighting.** A security fence would be located along the perimeter of the top of the bank of the shoreline. The proposal is subject to the following federal requirements which will require specific security measures to be implemented, including but not limited to perimeter fencing at the site: 49 CFR 193, and specifically 49 CFR 193.2905 and .2907; 33 CFR 127 and specifically 33 CFR 127.709; and 33 CFR 105. The anticipated location of perimeter fencing is identified on the site plan. The nature and height of site fencing, including fencing within the 200-foot shoreline buffer, will be selected to meet the above standards, and will be reviewed and approved by the Washington Utilities and Transportation Commission and the U.S. Coast Guard.

- **Vehicular Access.** An approximately 20-foot wide access road would be located adjacent to the platform supporting the cryogenic transfer and loading pipeline and return vapor pipeline, to allow vehicular access to the loading facilities and the pier.

#### 4.3.3 Tote Marine Vessel LNG Fueling System

- **Ground Improvements.** The proposed project includes the construction of ground improvements within shoreline jurisdiction along the Blair waterway to mitigate the effects of soil liquefaction and associated soil strength loss and settlement during design seismic events. Ground improvements would consist of hardening compaction grout columns (HCGCs) or displacement-drilling grout columns (DGCs) (e.g., omega piles, screw piles, driven grout piles, etc.). (See the geotechnical report submitted under separate cover.) Ground improvements would be constructed within an approximately 150-foot-long and 25-foot-wide area parallel to the shoreline under the aboveground pipeline and trestle supporting the loading arm or hose, as indicated in Attachment 4 (LNG pipeline, trestle and loading equipment are described in additional detail below). The proposed locations for ground improvements illustrated in Attachment 4 supersede the locations identified in Figure 7 of the Geotechnical Report (submitted under separate cover).
- **LNG Pipeline:** LNG would be conveyed from the LNG storage tank via an underground cryogenic pipeline as part of the proposed TOTE marine vessel LNG fueling system. The new pipeline would extend approximately 800 feet underground from the Tacoma LNG facility until reaching the underground/ aboveground transition point approximately 50 feet from the ordinary high water mark. At this point it would turn 90 degrees and continue northwest on a pipe rack to the base of the ship loading platform then turn again and head southwest on the platform to the loading arm at the aft end of the TOTE vessel mooring area. Approximately 75 feet of the cryogenic pipeline will be located within shoreline jurisdiction. A separate aboveground pipeline would extend along the trestle to the loading arm or hose on a platform in Blair Waterway.
- **Ship Loading Platform:** The ship loading platform contains a loading arm which moves to connect to the ship's receiving flanges at any tidal level (the connection point can vary between 44 and 60 feet above MLLW). The top of the loading arm will be approximately 65 feet above MLLW.
- **Ancillary Facilities:** The loading area would also include facilities such as lighting, emergency detection and warning equipment (combustible gas detectors, flame detectors, etc.), security fencing, etc. All areas under the LNG pipe rack are sloped such that in the event of a spill the LNG will run back to the spill sump located near the point where the pipeline transitions from below ground to above ground.

## **5.0 TMC 13.10 SHORELINE MANAGEMENT COMPLIANCE**

The following discussion demonstrates compliance with key sections of TMC 13.10, including for general provisions, environment designations, critical areas, shoreline specific use and modification regulations, the S-10 Port Industrial specific use regulations, and the S-13 Marine Waters of the State specific use regulations.

### **5.1 Chapter 2: Administration**

TMC 13.10.2.3.1.1 requires an SSDP for all proposed use and development of shorelines unless specifically identified as exempt. Because the subject LNG facility proposal is for the use and development of the shorelines and does not meet an exemption category under Washington Administrative Code (WAC) 173-27-040, an SSDP is required. As noted in Section 9 below, the proposed development of the site for port industrial, water-dependent uses (aboveground cryogenic pipeline, trestle to Hylebos pier, underground pipeline to TOTE facility) and overwater structures (Hylebos pier/dolphins and Blair pier/dolphins) are permitted uses in the S-10 High-intensity Port Industrial and S-13 Marine Waters of the State District as shown in Table 9-2 of the TSMP.

The stormwater maintenance, repair, and replacement work is considered to be “normal maintenance and repair” of existing facilities under TMC 13.10.2.3.3.2 and, by itself, is exempt from the requirement to obtain an SSDP. However, per TMC 13.10.2.3.2.3, if any part of a development is non-exempt (i.e., the LNG loading facilities on the Blair and Hylebos waterways), all elements of the proposal, including those normally exempt such as the stormwater work, are required to obtain a shoreline substantial development permit.

TMC 13.10.2.4.1 lists submittal requirements for shoreline permits and, where applicable, allows the Director to accept a JARPA in lieu of these submittal requirements (TMC 13.10.2.4.1.10). The JARPA application and all of its attachments are enclosed with this request for SSDP approval. In addition, this letter includes Attachment 2, which is a site plan for the proposal showing the OHWM, the 50-foot marine shoreline buffer, and the 200-foot shoreline jurisdiction. Exhibits 1-3 of Attachment 5 show the locations of the proposed stormwater pipeline repairs, Attachment 4 shows the proposed location of ground improvements, and Attachment 5, Exhibit 5 shows the proposed shoreline improvements.

TMC 13.10.2.4.2 lists the requirements for a shoreline critical areas submittal. As required by TMC 13.10.2.4.2, a JARPA permit vicinity map, site plan, Wetland Delineation (JARPA Appendix B), Biological Evaluation (JARPA Appendix E), and Mitigation Plan (JARPA Appendix C) are attached to this request for SSDP approval. Please refer to the JARPA for information regarding applicant name and contact information.

The project site is located adjacent to the Hylebos and Blair waterways, which are fish and wildlife habitat conservation areas (FWHCAs) for marine and terrestrial species listed as threatened or endangered under the Endangered Species Act (ESA) and state-listed priority habitat species (PHS). In addition to the above-listed JARPA documentation, for further information on critical area impacts and mitigations, also see JARPA application form Sections 9l and 9m and the response to TMC 13.10.6.4 in this SSDP approval request. The site is also located in a geological hazard area for seismic hazards and liquefaction/lateral spreading as further described by the Geotechnical Report in Appendix 4 to this narrative. The site is also located in a tsunami hazard zone (Tsunami Hazard Map of Tacoma, Washington) and volcanic hazard zone as defined by the City of Tacoma and Pierce County.

TMC 13.10.2.4.4 lists requirements for moorage facilities. For further discussion of the proposed piers and mooring dolphins, please see responses to Section 13.10.8.6 “Mooring Facilities” of this narrative. The environmental impacts of the piers are further discussed in the response to Section 13.10.6.4.

TMC 13.10.2.4.6 outlines requirements regarding Archaeological, Cultural and Historic Resources. Please see responses to TMC 13.10.6.3 for further response on this topic.

## **5.2 Chapter 4: Shorelines of the State**

TMC 13.10.4 designates shorelines of the state and shorelines of statewide significance. The Hylebos and Blair waterways are shorelines of the state and all areas 200 feet landward of the OHWM are within shoreline jurisdiction. In addition, Commencement Bay is a shoreline of statewide significance below the line of extreme low tide. A portion of the project improvements (i.e., the placement of new steel piles supporting the piers) would occur below the line of extreme low tide. As such, the project is subject to the policies for shorelines of statewide significance focused on preservation of shoreline resources, public access, and preferring long-term to short-term benefit.

The proposed use of the site as a port industrial facility for LNG production, storage, and loading to vessels and fuelling of maritime vessels or bunker vessels is shoreline dependent. This use is a preferred use of the shoreline under RCW 90.58.020 as it is dependent on use of the state's shoreline. In addition and as explained further in this narrative, the project will not further degrade the existing natural and aesthetic resources of the shoreline and the project will improve the shoreline environment through mitigations, such as the removal of creosote piles. Therefore, the project complies with the policies for shorelines of statewide significance contained in TMC 13.10.4.4.

## **5.3 Chapter 5: Shoreline Environment Designations**

Upland improvements landward and within 200 feet of the OHWM are located in the S-10 Port Industrial High-Intensity shoreline environment and overwater improvements are located in the S-13 Marine Waters of the State (Aquatic) environment designation.

Per TMC 13.10.5.5.2(A), the purpose of the Aquatic environment is to protect, restore, and manage the unique characteristics and resources of the marine areas waterward of the OWHM. Management policies for the aquatic environment limit new overwater uses to those that are water-dependent or public access/recreational improvements. As a water-dependent use, the proposed piers and stormwater outfall repairs fulfill this policy. TMC 13.10.5.5.2.D.1.e requires that aquatic uses and modifications be designed and managed to prevent degradation of water quality and alteration of natural hydrologic conditions, including sediment transport and benthic drift patterns. The pier, mooring dolphins, stormwater repairs, and replacement stabilization have been designed to minimize impacts to water quality and the alteration of hydrographic conditions during construction, operation. Please see response to TMC 13.10.6.4.2.D of this narrative pertaining to mitigation sequencing.

Replacement of existing corroded stormwater pipes and installation of check valves in Phase 1 of the project will ensure that the stormwater system functions properly. The new stormwater outfall pipes and riprap outfall dissipation pads will be located along an existing, highly degraded shoreline. Stormwater outfall improvements will occur within this previously altered nearshore area landward from any areas where sediment transport or benthic drift functions may be present, if such functions exist. In addition, existing creosote-treated timbers would be replaced or removed for isolated sections of the bulkhead during the stormwater repair. Repaired sections of the bulkhead would be replaced with new non-creosote treated timbers or replaced with riprap, thereby helping to prevent further water quality degradation. Addition of “fish mix” to disturbed areas where pipelines have been replaced would further improve the shoreline habitat. Temporary erosion control BMPs will be employed to prevent water quality impacts during construction.

The purpose of the High-Intensity” environment is to provide for high-intensity water-dependent and water-oriented mixed-use commercial, transportation, and industrial uses while protecting existing ecological functions and restoring ecological functions in areas that have been previously degraded per TMC 13.10.5.5.5(A). Management policies in the High-Intensity environment are met with the construction and operation of the project as follows.

- TMC 13.10.5.5.5.D.1 prioritizes water-dependent uses over other use categories. As a water-dependent industrial use, the proposed project fulfills this policy.
- TMC 13.10.5.5.5.D.2 promotes full utilization of existing high-intensity areas before expansion into non-high-intensity areas. The subject proposal would redevelop an existing site in the High-Intensity environment without any expansion into non-high-intensity areas, meeting this policy.
- TMC 13.10.5.5.5.D.3 requires new development to meet no net loss of shoreline ecological functions. The project site is a highly altered area of low ecological



function due to previous and current industrial use (See JARPA Application Section 5l). As shown in the Mitigation Plan (appendix C to the JARPA), the proposed project will improve the overall shoreline ecological quality through the removal of creosote pilings, and replacement with fewer steel piles, resulting in an overall net reduction of overwater coverage. In addition, removal of corroded stormwater pipes and creosote-treated timber piles will help prevent further water quality degradation.

- TMC 13.10.5.5.5.D.4, 6 requires visual and physical access by the public to the shoreline where such access would not interfere with industrial operations or endanger public health and safety. Please refer to the response to TMC 13.10.6.5 for further information on public access.
- TMC 13.10.5.5.5.D.5 promotes aesthetic objectives. In this case, aesthetic objectives will be achieved through the appropriate siting of the project in the S-10 Port Industrial environment designation next to other intensive maritime industrial uses.

## **5.4 Chapter 6: General Policies and Regulations**

### **5.4.1 6.1: Shoreline Use**

TMC 13.10.6.1 establishes use priorities for Tacoma's shorelines. Water-dependent uses, such as the subject proposal, are a preferred use on Tacoma's shorelines. Specific regulations in this section allow for restoration activities on all shorelines, discourage projects which require stabilization, and requires parking to be located upland of shoreline uses.

TMC 13.10.6.1.2 addresses impacts of proposed shoreline uses on adjacent uses and shoreline areas, requires projects to be designed to avoid stabilization, and prioritizes water-dependent uses over other types of uses. The project will utilize BMPs, further described in response to TMC 13.10.6.4.2.D of this narrative, to limit off-site and on-site impacts. The project will not interfere with the use of adjacent properties nor deprive other properties of the use of shoreline or navigable waters. The Hylebos pier would extend 83 feet from the OHWM and would not project into the navigation channel as shown on JARPA Figure 7. The Blair pier would extend approximately 108 feet from the OHWM and would also be located outside the navigation channel as shown on JARPA Figure 12. Per TMC 13.10.6.1.2.5, the uses proposed within the shoreline are water-dependent uses and take priority over non-water-dependent uses. A portion of the proposed on-site circulation areas will be located within the shoreline jurisdiction along the Hylebos Waterway. This on-site circulation is a water-related use, as it provides ramp access to the pier for emergency vehicles, and is not displacing a water-dependent use. The project provides for restoration of ecological functions and processes on all shorelines. In response to TMC 13.10.6.1.2.3, the project will require shoreline stabilization to prevent erosion from tidal action from the Hylebos Waterway. Please see response to 13.10.8.2 for further information on stabilization.

#### 5.4.2 6.2: Site Planning

The following addresses key elements of TMC 13.10.6.2.

- **Adherence to Setbacks.** TMC 13.10.9, Table 9-2 does not require side yard view corridors, front/rear yard setbacks in the S-10 Port Industrial or S-13 Marine Waters of the State districts. Thus, the proposed development complies with setback standards.
- **Design of structures to conform with natural contours and vegetation.** The site is essentially flat, being a historically filled tideland and mudflat for decades. Plant and animal habitats, including shoreline vegetation, are highly disturbed. Most of the area within the 200-foot shoreline jurisdiction and the 50-foot marine buffers is already paved, graveled, or highly disturbed. Grading and contouring within the shoreline will be limited to areas that are beneath and to the northwest of the existing large warehouse and is expected to match existing site elevations. The site was previously cleared of nearly all vegetation, with the exception of two cottonwood trees and one Douglas fir tree near the northeast part of the site on parcel 5000350040 and isolated weedy and noxious grasses and forb plant species. These trees are assumed to remain for the purposes of this SSDP request. Thus, no native vegetation clearing is proposed as part of this application. For this reason, the project will not disturb native soils or vegetation.
- **Stormwater infiltration encouraged.** The stormwater management system would be designed to meet the water quality requirements of the Port's 2014 Stormwater Management Plan and any additional applicable requirements from the Ecology 2012 Stormwater Management Manual for Western Washington. As with soils and vegetation, natural drainage patterns have been highly disturbed for decades from the placement of fill in the historic tidelands in this area. Infiltration is not appropriate in this area due to the industrial nature of this use, and especially in the context if site design in conformance with federal regulations (49 CFR 193) to appropriately manage unintended releases of LNG from storage or project equipment.
- **Fencing.** Due to compliance with federal security requirements and to exclude the public for safety reasons the site will be gated and fenced. The fence will be chain-link and will not obstruct shoreline views. Access to the Hylebos pier within the 200-foot shoreline area will be restricted as a result of overall project security requirements. Fences are allowed for water-dependent uses per TMC13.10.6.2.2.10.
- **Stabilization.** The proposal will redevelop a site previously and currently used for industry and which is located on a historically-filled tideland area with existing shoreline stabilization along the Blair and Hylebos waterways. Replacement stabilization is necessary to prevent shoreline erosion from the Hylebos Waterway. For further information on stabilization, please see response to TMC 13.10.8.2.

- **Accessory uses placed upland.** The primary proposed uses of the site are upland facilities for the conversion and storage of LNG for marine vessel and truck fueling and peak shaving reinjection, as well as shoreline use for loading of LNG to bunkering and marine vessels at the proposed piers. With the exception of the proposed stormwater outfall pipe replacements and shoreline stabilization, uses such as parking and vehicle circulation areas will be located landward of the primary LNG loading facility and outside of shoreline jurisdiction (See Site Plan in Attachment 2). The replacement stormwater pipes will be located in the same location as existing stormwater pipes and must be located in the shoreline area because they are water-dependent and convey stormwater to the Hylebos Waterway. A small portion of the vehicle circulation areas will cross into shoreline jurisdiction on the north part of the site. Per TMC 13.10.9, Table 9-2, no shoreline setbacks apply to accessory uses on the site in the S-10 or S-13 districts.
- **Minimization of impacts on public uses.** Land on the Blair-Hylebos peninsula has been and remains designated for use by high-intensity port industry. Historically there have been no public uses of the shoreline on the subject site. Public uses in the vicinity of the project are limited in this industrially developed area. The public uses provided by the Port of Tacoma include access points elsewhere, with the nearest location being the Rhone Poulenc Habitat Site (see <http://portoftacoma.com/community/>). The Chinook Landing Marina, a private facility, is located on the north side of the Hylebos Waterway adjacent to the site. The project is not required to provide public access. See further discussion in regards to public access in response to TMC 13.10.6.5. The project will not impact public uses of the shoreline.
- **Minimizes spillover effects of lighting.** The project facilities will be lighted at night for safety and security. However, existing artificial lighting already occurs on the Tacoma LNG facility site, the TOTE site and on the adjacent and surrounding shoreline. Thus, the addition of artificial lighting for the project is not expected to appreciably alter the shoreline conditions of the Port. The proposal is subject to the following federal requirements which will require specific lighting measures to be implemented, including but not limited to: 49 CFR 193, and specifically 49 CFR 193.2911; 33 CFR 127 and specifically 33 CFR 127.109; and 33 CFR 105, specifically 33 CFR 105.275. The proposal will also comply with WAC 296-56-60221, Illumination. The specific nature, location, and intensity of site lighting will be selected to meet the above standards. Lighting requirements will be reviewed and approved by the Washington Utilities and Transportation Commission and the U.S. Coast Guard. To the degree allowable under these regulations lighting will be downcast and shielded to mitigate impacts to wildlife and reduce glare impacts relative to the shoreline buffer. Under 33 CFR 105.275 lighting may be required to vary in intensity based on the Maritime Security (MARSEC) level enforced at any one time by the U.S. Coast Guard. Lighting of facilities associated with vessel loading activities will also comply with the following provisions of 33 CFR 127.109: (a) the marine transfer area for LNG must have a lighting system and separate

emergency lighting; (b) all outdoor lighting must be located or shielded so that it is not confused with any aids to navigation and does not interfere with navigation on the adjacent waterways; and (c) the lighting system must provide an average illumination on a horizontal plane one meter (3.3 feet) above the deck that is 54 lux (5 foot-candles) at any loading flange and 11 lux (1 foot-candle) at each work area.

#### **5.4.3 6.3 Archaeological, Cultural and Historic Resources**

TMC 13.10.6.3 outlines requirements for Archaeological, Cultural and Historic Resources. The applicant completed a Cultural Resources Survey, documented in Appendix D to the JARPA. The survey did not locate any historic structures and concluded that no archaeological resources are known or likely to be present within the Area of Potential Effect (APE). The Cultural Resources Survey recommends implementing an Unanticipated Discovery Plan (see Appendix 3 to the Cultural Resources Survey in the JARPA, and Attachment 5 to the JARPA). Appropriate mitigation actions would be implemented if currently undetected sites were discovered during construction activities. Because the Cultural Resources Survey did not identify the presence of known historic or archaeological resources, the Applicant is not required to prepare a Cultural Resources Management Plan.

#### **5.4.4 6.4: Marine Shoreline and Critical Areas Protection**

*General Regulations:* As further discussed in this request for SSDP approval, the project is within a geologic hazard area (seismic hazards, liquefaction/lateral spreading, tsunamis, and volcanic hazards and lahars), and adjacent to FWHCAs and flood hazard areas for the Hylebos and Blair waterways.

The general regulations for critical areas contained in TMC 13.10.6.4.2 require that development be carried out in a manner that prevents or mitigates adverse impacts so that no net loss of existing ecological functions occurs. As more specifically discussed in this narrative for each type of critical area, impacts to critical areas and their buffers will be avoided or otherwise mitigated.

Per TMC 13.10.6.4.2, modifications to critical area buffers are only permitted for water-dependent uses if the development is operated, located, designed, and constructed to minimize and avoid disturbance to shoreline functions and native vegetation to the maximum extent feasible. Although the site is situated in a highly degraded shoreline environment where there are few intact shoreline functions, where required in accordance with mitigation sequencing, the proposed development will preserve these functions or mitigate for impacts. Mitigation sequencing (see TMC 13.10.6.4.2.C) requires that impacts be treated in the following priority order: avoidance, minimization, rectification, reduction, compensation, and monitoring.

TMC 13.10.6.4.2.D requires that mitigation plans be prepared in accordance with best available science. Appendix E of the JARPA is the Biological Evaluation and contains mitigation measures in Section 2.6 for the upland and in-water elements of the project.

The JARPA Mitigation Plan (Appendix C) notes that because the project is water-dependent and must locate on the water, impacts cannot be entirely avoided. The mitigation measures prescribed in the Biological Evaluation and the Mitigation Plan meet the specific requirements of TMC 13.10.6.4.2.D, including construction, maintenance, monitoring and contingencies, which address unavoidable impacts of the project, as required by the TSMP.

Regarding the stormwater outfall pipe maintenance, repair, and replacement activities, these improvements will be located in a highly degraded area along the Hylebos shoreline. The Hylebos shoreline improvements include an existing timber bulkhead parallel to the existing pier structure with riprap rock above and below the bulkhead, and previously compacted and asphalted areas above the bulkhead. The stormwater outfall improvements would temporarily excavate areas below the bulkhead for pipe installation, replace or repair the bulkhead as necessary, and place riprap rock to serve as dissipation below the bulkhead. In areas where it may be necessary to remove the bulkhead to allow replacement of stormwater outfall pipes, the shoreline will be stabilized to approximate previous conditions by supplementing the bulkhead with new timbers or application of riprap. Although the stormwater repairs and replacements were not anticipated in the Biological Evaluation, the repairs associated with the placement of the steel pile bulkhead and associated placement of riprap along the shoreline to replace the existing timber bulkhead in Phase 2 (the action analyzed in the Biological Evaluation) would generally result in impacts greater than those for the stormwater outfall improvements. Thus, the mitigation measures proposed in the Biological Evaluation would be similar to and sufficient to address impacts from the stormwater outfall repair. See Table 3 for further detail.

**Table 3. Comparison of Impacts for Project With and Without Stormwater Improvements**

Shoreline Improvement	Project Including Stormwater Improvements (Phase 1)	Project Excluding Stormwater Improvements (Phase 2)	Additional Impacts
Replacement of stormwater outfall pipes 02-06, 08-10	Pipe replacement would occur in areas already proposed for disturbance in BE, with the exception of most landward approximately 13' of pipe where excavation would occur for trenching.	N/A	Trenching impacts would be mitigated by temporary erosion control BMPs already proposed in Biological Evaluation. Thus, mitigations proposed are sufficient.
Bulkhead removal	Remove 10-20 lineal foot segments of bulkhead	Remove entire 600-foot existing timber bulkhead	Shorter sections of bulkhead removed in Phase 1, therefore temporary construction impacts are less than for Phase 2
Bulkhead repair/replacement	Repair of timber bulkhead in selected outfall locations or replacement of timber bulkhead with new riprap in select locations	Replacement of timber bulkhead with new steel pile bulkhead for 33' of shoreline adjacent to trestle. New bulkhead would be located 9 feet landward.	Similar level of impacts dependent upon length of bulkhead repair/replacement in Phase 1.
Placement of riprap along shoreline in location of timber bulkhead	Approximately 2' riprap would be placed from elevation +8.8 to +5.8 in the location of outfalls only. In addition, 2' depth riprap would be replaced on top of the timber pile bulkhead from elevation 14.2' to 11.8' in area where riprap already exists.	Approximately 2' depth riprap would be placed for entire 600 linear foot length of shoreline adjacent to new pier, excluding 33' section where new bulkhead is located from +17.1 to +5.8 elevation.	Impacts for Phase 1 are less than or equal to those for Phase 2 due to the fact that repairs occur at isolated locations of stormwater pipes.

The following describes how the project complies with mitigation sequencing.

- **Avoidance:** The LNG from the project is intended to be made available for the marine transportation industry as a cleaner burning fuel than traditional diesel fuel. Thus, direct access to the water is a necessity. However, specific components of the project were selected to avoid impacts which could occur from alternative options. One example is selection of the specific site for the Tacoma LNG facility. PSE chose the existing industrial site and surrounding waterways for brownfield

redevelopment; negating the need for development on a greenfield or non-industrial site. Therefore, impacts to higher value in-water habitat, vegetation, and shoreline have been avoided. Another aspect of impact avoidance integrated into PSE's design is the avoidance of dredging. In-water structures in both the Hylebos and Blair waterways, including the Tacoma LNG facility pier and TOTE marine vessel LNG fueling system loading platform, have been configured to avoid the need for dredging.

- **Minimization:** In order to minimize impacts to the Hylebos Waterway from temporary and permanent impacts associated with the construction and operation of the marine loading facility and repair/replacement of existing stormwater outfall pipes, various measures would be utilized. These measures are described in Section 2.6 of the Biological Evaluation (JARPA Appendix E) and Section 7 of the Mitigation Plan (JARPA Appendix C) and are summarized as follows (please refer to the cited sections for a complete listing of mitigation measures).
  - Use of steel grating to allow light penetration on the Hylebos pier and the catwalk proposed on the Blair Waterway where concrete is not required per federal regulations.
  - General best management practices would be implemented during construction, including: adherence to the Port of Tacoma's 2014 Stormwater Management Plan; prevention of construction and waste materials entering the waters of the state; no waterward storage of machinery, equipment, materials, or stockpiled soils; cleaning of equipment of pollutants prior to overwater construction. See JARPA Mitigation Plan Section 7.2.1.
  - Spill prevention BMPs would be implemented. See JARPA Mitigation Plan Section 7.2.2.
  - Adherence to in-water work windows (July 16 to February 14). See JARPA Mitigation Plan Section 7.2.3.
  - Temporary erosion and sediment control BMPs would be implemented during construction. See JARPA Mitigation Plan Section 7.2.4.
  - Water quality standards and procedures that limit the impact of turbidity would be observed (WAC 173-201A-210(1)(e)(i)). See JARPA Mitigation Plan Section 7.2.5.
  - Implementation of in-water demolition and piling removal BMPs, including use of containment booms, oil absorbent materials, daily disposal of accumulated debris, use of silt curtains, slow motion removal of piles, fill of piling holes with clean sand, containment of creosote-treated wood piles and liquid sediment during removal. See JARPA Mitigation Plan Section 7.2.6.
  - Use of pile-driving BMPs. See JARPA Mitigation Plan Section 7.2.7.
  - Humpback and killer whale monitoring per JARPA Biological Evaluation Section 2.6.8.
  - Marbled Murrelet monitoring per JARPA Biological Evaluation Section 2.6.9.
  - Shoreline improvement per JARPA Biological Evaluation Section 2.6.10.

- Repair and replacement of stormwater pipes and addition of riprap along shoreline associated with the removal of the timber pile bulkhead would temporarily disturb the shoreline area. Minimization measures specific to the stormwater repair and replacement construction activities include the general best management practices mentioned above, adherence to in-water work windows, and temporary erosion control and sediment BMPs.
- **Compensatory Mitigation:** The project would result in the unavoidable impacts of the installation of 142 new steel pipe pilings and the creation of 11,497 square feet of new effective (excluding grated portions) over-water coverage through construction of the proposed pier and loading platform, trestles, catwalks, and dolphins (see Section 8 of the JARPA Mitigation Plan). Proposed compensatory mitigation includes the removal of existing creosote-treated in-water structures, including 532 wood piles and 15,245 square feet of over-water cover structures. The net result of the proposed compensatory mitigation would be an overall reduction of 390 pilings and overall reduction of 3,788 square feet of over-water cover.

Following is a discussion of specific critical areas affecting the site.

- **Marine Shorelines:** The marine shoreline buffer for the S-10 district according to TMC 13.10.6.4.3.B is 50 feet from the OHWM (see Site Plan in Attachment 2 to this narrative). There is a total of 237,350-square feet (5.45 acres) of area on the site within the required 50-foot marine buffer. Water-dependent uses, such as the LNG transfer and loading facilities on the Hylebos and Blair waterways and the repaired stormwater outfall pipes, are allowed in the buffer. The only water-related use on the subject site is proposed vehicle circulation areas which will provide access to the Hylebos pier. Construction of roadways, parking, and stormwater conveyance facilities within buffer areas is allowed per TMC 13.10.6.4.2.B.2.c and e, subject to critical areas requirements. ~~As previously discussed in this narrative, the site, including the area within the 50-foot marine buffer, is highly disturbed and is composed of previously cleared areas overlain by asphalt and gravel. The proposed project will maintain similar conditions within the 50-foot marine buffer and will not impact native plants, soils, or habitat in the buffer as none currently exist. There is a total of 12,390 square feet of improvements proposed within the 50-foot regulatory buffers on the Blair and Hylebos Peninsulas.~~
- **Fish and Wildlife Habitat Conservation Areas:** The project is located adjacent to the Blair and Hylebos waterways, which are marine shorelines. These waterways are FWHCAs for marine and terrestrial species and as such are subject to the critical areas regulations in TMC 13.10.6.4 and 13.10.2.4.2, including the submission of a critical areas report. The proposed LNG loading facilities (piles, pier, dolphins, and catwalks) and repaired/replaced stormwater outfalls would be within the FWHCAs on the Blair and Hylebos waterways and would result in 12,773 square feet of total



impact within the FWHCA areas, a net reduction of 4,054 square feet of impact over existing conditions.

The Applicant prepared a Biological Evaluation (JARPA Appendix E) which serves as the habitat critical areas report. The following federal and state-listed species in Table 4 have been identified that might be affected by the project work per Section 9m of the JARPA and Section 4 of the Biological Evaluation:

**Table 4. Listed Species and Status within the Project Action Area**

Species	Federal Status	State Status	Designated Critical Habitat in Action Area?
<b>Birds</b>			
Bald Eagle	none	sensitive	No, but have potential to occur
Peregrine Falcon	none	sensitive	No, but have potential to occur
Marbled Murrelet	threatened	none	No
Streaked Horned Lark	threatened	none	No
Purple Martin	none	Candidate for listing	No
<b>Fish</b>			
Chinook Salmon	threatened	Species of concern	Yes
Steelhead Trout	threatened	none	Yes
Bull Trout	threatened	Species of concern	Yes
Canary Rockfish	threatened	Species of concern	No
Yelloweye Rockfish	threatened	none	No
Bocaccio	endangered	Species of concern	No
<b>Marine Mammals</b>			
North Pacific Southern Resident Killer Whale	endangered	none	Yes

Critical habitat was federally designated for three species occurring within the Hylebos and Blair waterways, located directly adjacent to the Tacoma LNG facility and TOTE marine vessel LNG fueling system (U.S. Fish and Wildlife Service, 2014; U.S. Fish and Wildlife Service, 1999; NOAA Fisheries, 2006; National Marine Fisheries Service, 2014b): The three species are Chinook salmon, bull trout, and Southern Resident killer whale. Specific impacts for the species with critical habitats in the vicinity of the project are shown in Table 5.

**Table 5. Impacts for Species with Critical Habitats in the Project Vicinity**

Species	Impacts
Chinook Salmon	<ul style="list-style-type: none"> <li>• Work area: construction requires work in migratory habitat for Chinook Salmon.</li> <li>• Noise: temporary elevated noise from pile removal/installation</li> <li>Water quality: temporarily impaired by turbidity due to pile removal/installation</li> <li>• Habitat: some modification to nearshore habitat.</li> </ul>

Species	Impacts
Bull Trout	<ul style="list-style-type: none"> <li>• Work area: construction requires work in migratory habitat for bull trout</li> <li>• Noise: temporarily elevated noise from pile removal/installation</li> </ul> Water quality: temporarily impaired by turbidity due to pile removal/installation <ul style="list-style-type: none"> <li>• Habitat: some modification to nearshore habitat.</li> </ul>
Killer Whales	<ul style="list-style-type: none"> <li>• No impacts expected because occurrence is rare.</li> </ul>

To address these impacts, Project-specific mitigation measures will be employed during construction and operation of the use. These mitigation measures are included in Section 2.6 of the Biological Evaluation (JARPA Appendix E) and the Mitigation Plan (JARPA Appendix C) and are summarized in response to TMC 13.10.6.4.2.D above. The Biological Evaluation concludes that the project will not adversely affect the listed species when mitigation measures are implemented. The Biological Evaluation does not specifically address impacts and mitigations for the stormwater outfall repair. However, as explained previously, stormwater outfall impacts would be generally less than or equal to the impacts associated with the installation of the proposed steel sheet pile bulkhead and riprap. Thus, no additional mitigation measures are necessary for the outfall improvements. Therefore, the project will result in no net loss of critical areas related to FWHCAs.

- Geologically Hazardous Areas:** According to the Geotechnical Report, the project site is located within geologic hazard areas for seismology. The site is also located in a tsunami hazard zone (Tsunami Hazard Map of Tacoma, Washington) and volcanic hazard zone as defined by the City of Tacoma and Pierce County. Because the entire upland area improvements of the Tacoma LNG facility and TOTE marine vessel LNG fueling system are within geologically hazardous areas, there would be 25,674-square feet of improvements within geologically hazardous areas within the shoreline areas on the Hylebos and Blair peninsulas.
- Seismic Hazards:** Physical evidence suggests several large-magnitude earthquakes (magnitude 8 to 9) have occurred in the vicinity in the past. The facility will be designed for two design level earthquakes - an Operational Basis Earthquake (OBE) and a Safe Shutdown Earthquake (SSE). The project design will include a seismic base isolation system in the form of columns placed under the LNG storage tank and in other process related-areas adjacent to the Hylebos pier and the Blair pier within shoreline jurisdiction. Please see Geotechnical Report in Attachment 4 for further description on seismic hazards and mitigations which comply with the International Building Code. Ground improvements mitigations in the form of HCGCs and DGC columns are proposed in areas immediately landward of the Hylebos and Blair piers, as well as beneath the LNG storage and process areas to mitigate for seismic hazards.
- Tsunami Hazards:** The Tsunami Hazard Map of Tacoma, Washington (Walsh et al., 2009) indicates tsunami wave inundation is likely at the Tacoma LNG facility and

TOTE marine vessel LNG fueling system site. The City of Tacoma Fire Department's Emergency Management Division coordinates with the Port of Tacoma to operate the Port Emergency Warning System (PEWS) from the City of Tacoma Fire and Emergency Communication Center.<sup>1</sup> The PEWS sirens warn of natural hazards in the immediate Port area, such as tsunamis, and broadcast specific instructions and evacuation routes according to specific inundation zones (City of Tacoma, 2014). Sirens are located throughout the Port area and include one location at the north point of the Blair-Hylebos peninsula where the Tacoma LNG facility and TOTE marine vessel LNG fueling system would be located.<sup>2</sup> There are no specific tsunami hazard standards in the TSMP other than compliance with the zoning and building codes. The project will comply with zoning and building code requirements through the review and issuance of development and building permits.

- **Volcanic Hazards:** The Tacoma LNG facility and TOTE marine vessel LNG fueling system are mapped as within volcanic and lahar hazard areas. The project will comply with the building code requirements through the review and issuance of building permits by the City of Tacoma and will submit an evacuation and emergency management plan.
- **Flood Hazard Areas:** Approximately 12 feet of the replacement stormwater outfall pipes 02-06 and 08-10, the proposed riprap dissipation areas below the bulkheads (below timber bulkhead in Phase 1 and adjacent to the pier in in Phase 2) and piles supporting the in-water facilities of the proposed project are within a 100-year flood zone and are, therefore, subject to the critical areas regulations for flood hazards in TMC 13.10.6.4.8. Please see Attachment 3 to this letter, which is a map of the flood hazard areas. There would be 430 square feet of pile improvements within the 100-year flood zone shoreline critical area of the Blair and Hylebos waterways, a decrease of 307 square feet due to the removal of existing piles. The new piles will not impede the flow of flood waters to any measureable extent. The repair or replacement of stormwater pipes in Phase 1 (if not constructed concurrently with the steel sheet pile bulkhead) proposes to place riprap from elevation +9.0 to +5.3 at the location of the outfalls. However this riprap will be sloped to match the contour of the existing shoreline and does not constitute "fill" per TMC 13.10.10.55 because it is not raising the elevation or creating dry land and will not impact flood capacity. In Phase 2, the applicant proposes to remove 1,900 cubic yards of material below the OHWM and backfill with 690 cubic yards - a net reduction of 1,210 cubic yards of fill in the flood hazard area.

The Hylebos Waterway is part of the marine environment of Commencement Bay, which is tidally influenced. The Proposed Action would result in a net reduction in

Do we need to look at elevations of catch basins?

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<sup>1</sup> [http://www.cityoftacoma.org/government/city\\_departments/fire/divisions/emergency\\_management/port\\_emergency\\_notification\\_system/](http://www.cityoftacoma.org/government/city_departments/fire/divisions/emergency_management/port_emergency_notification_system/)

<sup>2</sup> [http://portoftacoma.granicus.com/MetaViewer.php?view\\_id=4&clip\\_id=376&meta\\_id=15022](http://portoftacoma.granicus.com/MetaViewer.php?view_id=4&clip_id=376&meta_id=15022)

the number of pilings present in the waterways. With the exception of the replacement of the dock, which would reduce the amount of fill on the site, there is no other fill proposed as part of the Project. Thus, the Proposed Action on these flood hazard areas would have no adverse impact on flood water storage.

- **Aquifer Recharge Areas:** The Tacoma LNG facility and the cryogenic pipe to the TOTE marine vessel LNG fueling system are not located within an aquifer recharge area as identified by the City of Tacoma<sup>3</sup>. No wellhead protection areas (WHPAs) or EPA sole-source aquifers occur within either site.

#### 5.4.5 6.5: Public Access

The intent of TMC 13.10.6.5 is to preserve the right of the public to enjoy the physical and aesthetic qualities of the state's shorelines under the Public Trust Doctrine incorporated into RCW 90.58.020. For water-dependent developments which either create additional demand for public access, impacts to existing public access, or interfere with public use of the water, mitigation must be provided. Because the project is water-dependent but does none of these three things, public access is not required.

#### 5.4.6 6.6: Vegetation Conservation

TMC 13.10.6.6 requires the preservation or replacement of existing shoreline vegetation which is removed from a site. The site was previously cleared of all vegetation with the exception of two cottonwood trees and one Douglas-fir tree near the northeast part of the site on parcel 5000350040 and isolated weedy and noxious grasses and forb plant species. Nearly the entire approximately 30-acre site is developed, paved, or graveled. In total, undeveloped areas cover less than 1 percent of the total upland portion of the site (see photos of the site in JARPA Appendix A). These trees are assumed to remain for the purposes of this SSDP request. Thus, all existing vegetation on the site within shoreline jurisdiction, with the exception of weedy and noxious grasses and forb plant species, will be preserved and the application is not required to submit a vegetation management plan.

#### 5.4.7 6.7: Views and Aesthetics

TMC 13.10.6.7 specifies design requirements to preserve public views of the water for new shoreline development. Table 9-2 specifies view corridors or side setbacks from other shoreline uses required by environment designation. However, no view corridors are required in the S-10 High-Intensity Port Industrial or S-13 Marine Waters of the State Districts. Table 9-2 also restricts height in the S-10 district to 100 feet and 35 feet in the S-13 District unless associated with port industrial uses. The following table shows the heights of all project elements within shoreline jurisdiction on both waterways (see also JARPA Figures (5, 6, 7, 12, 13, 14, and 15) :

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<sup>3</sup> Map 10, Aquifer Recharge & Wellhead Protection Areas, Tacoma Shoreline Inventory and Characterization, Tacoma, Washington, January 2008. Available at: <http://www.ecy.wa.gov/programs/sea/shorelines/smp/mycomments/tacoma/10Aquifer.pdf>

**Table 6. Height of Project Elements within Shoreline Jurisdiction**

Project Element	Hylebos Facility (feet)	Blair Facility (feet)	S-10 District Height Limits	S-13 District Height Limits
Loading Platform	9	8	100 feet	None
Trestle	7	7.5		
Dolphins	8.5	28.5		
Catwalks		9.5		

Note: All heights are measured above OHWM

As shown in Table 6, all project elements would meet the 100-foot height limit in the S-10 District. There are no height limits in the S-13 District for structures associated with Port/Industrial facilities.

There are no new buildings proposed within the 200-foot shoreline jurisdiction on either the Blair or Hylebos waterways, thus no architectural features are required to be incorporated. Fences are anticipated to be chain-link and will not restrict the public’s views of the water from upland or adjacent off-site locations.

The project is not subject to landscaping requirements because the portion of the project immediately landward of the OHWM (approach slabs and steel piles) serve the overwater use and is thus exempt per TMC 13.10.6.7.4.C.1. Clarify that SHR portion of project is not subject to landscaping but it may/will be required upland.

**5.4.8 6.8 Water Quality and Quantity**

TMC 13.10.6.8 lists water quality requirements for shoreline developments. The project will employ BMPs during construction and operation to preserve surface and groundwater quality. The Biological Evaluation (JARPA Appendix E) contains specific water quality BMPs which are further discussed in response to 13.10.6.4.2.D of this narrative. Specific mitigations for water quality include the removal of creosote treated piles beneath existing piers and replacement with steel piles.

The stormwater improvements proposed will be constructed to meet the Port of Tacoma’s 2014 Stormwater Management Plan and any additional applicable requirements from the Western Washington Stormwater Manual. Existing corroded, ductile iron stormwater pipes will be replaced with non-corrosive types and creosote-treated timbers will be removed from the bulkhead adjacent to outfall locations thereby preventing further water quality degradation. In Phase 2, the existing timber bulkhead would be removed adjacent to the proposed Hylebos Pier (linear distance of approximately 600 feet), a new 33-foot-long steel pile bulkhead would be installed, and riprap would be placed along the shoreline adjacent to the pier location for stabilization purposes (see Attachment 5, Exhibit 5). Removal of the creosote-treated timber bulkhead and replacement with a steel sheet pile bulkhead and riprap along the shoreline will remove a potential source of contamination, helping to prevent further water quality degradation.

The project would only use pesticide and fertilizers consistent with local, state and federal application requirements in locations required to be landscaped by the City of Tacoma.

## 5.5 Chapter 7: General Shoreline Use Policies and Regulations

The proposed project is a port/maritime industrial use, with accessory circulation areas, and underground utilities and will adhere to all relevant parts of TMC 13.10.7.

### 5.5.1 7.6: Port/Industrial Use

The Port Industrial use regulations are intended to prioritize water-dependent industries over all other use types in specific areas, while ensuring that these uses achieve no net loss of ecological functions. The proposed use is a water-dependent port industrial use which, per TMC 13.10.7.6.2, has priority over all other uses in the S-10 shoreline district. As discussed above in the response to TMC 13.10.6.4, the project will ensure no net loss of shoreline resources, including for FHWCA, geologic hazards, and flood hazards.

The proposal will require the replacement of existing creosote-treated wood pile stabilization structures along the project shoreline and in-water piers and mooring dolphins for loading LNG onto bunkering barges and marine vessels. Per TMC 13.10.7.6.A.5, the project is required to demonstrate:

- **That the proposed action shall give special consideration to the viability of migratory salmonids and other aquatic species.** The project will employ conservation measures listed in Section 2.6 of the Biological Evaluation to preserve salmon habitat. These measures include removing of creosote-treated piles, filling of pile holes with clean sand or habitat mix, using a silt curtain during pile removal, vibratory hammer to drive piles, and a sound-attenuating bubble curtain.
- **That contaminated sediments are managed and/or remediated in accordance with state and federal laws.** The Commencement Bay-Nearshore Tidelands adjacent to the site and the Hylebos Waterway are a designated Superfund site. The Hylebos Waterway is a Clean Water Act §303(d) listed body for Dieldrin and PCBs in tissue. Sediment cleanup actions have been completed in portions of the Hylebos Waterway under U.S. Environmental Protection Agency (EPA) oversight. During the previous cleanup actions, sediment in the immediate vicinity of the existing pier adjacent to the Tacoma LNG facility site was designated for monitored natural recovery. The Blair Waterway was delisted from the EPA National Priorities List on October 29, 1996 (EPA, 2010). The project does not involve any dredging and there is no need for additional sediment management or remediation.
- **That public access to the water body is provided where safety and operation of use are not compromised.** Due to the nature of the industrial activity proposed and the specific materials to be handled at the site, in conformance with applicable federal regulations as described above the public must be excluded from the site for

safety and security reasons. The project is not required to provide public access per TMC 13.10.6.5.

- **That shading and water surface coverage is the minimum necessary for the use.** The project will result in some shading impacts. All the shading and water surface coverage proposed for the project will be the minimum necessary for the safe operations of the project. The mode of impact is through the loss of or reduction of primary productivity within the footprint of new overhead structures. The components of the proposed in-water structures on both the Hylebos and Blair waterways, which will be directly supporting equipment used for conveyance of LNG, are required to be constructed of precast or cast-in-place concrete panels. Concrete panels are required to meet the requirements of 49 CFR 193, *Liquefied Natural Gas Facilities* and National Fire Protection Association Standard 59A, *Standard for the Production, Storage, and Handling of Liquefied Natural Gas*. However, the new Hylebos Waterway pier will have an identical footprint as the existing structure. That structure is relatively narrow and currently allows some light under the decking. The new structure will do the same.

The new trestle and platform in the Blair Waterway will shade approximately 5,400 square feet of sea floor, including the dolphin. It is assumed for this analysis that all shaded areas currently supporting macroalgae will result in the loss of those resources within that footprint. The primary habitat for ESA-protected rockfish species in the action area is macroalgae-covered riprap. A 33-foot-wide strip of this riprap will be eliminated as a result of the new trestle in Blair Waterway.

Steel grating is proposed for in-water structures where concrete is not required. This grating is proposed for the various catwalks on the Hylebos Waterway proposed between the pier and dolphins. Steel grating will also be used for the catwalk proposed on the Blair Waterway. This will allow some light to penetrate the structures in these areas and thus minimize primary productivity loss, or in the case of the Hylebos facility, improve existing conditions. It is assumed that the steel grating to be used will allow at least 40 percent light transmission through the various catwalks.

The proposed development would comply with all federal, state, regional, and local requirements regarding air and water quality, including the federal Clean Air and Clean Water acts.

Spill prevention BMPs would be implemented per Section 7.2.2 of the Mitigation Plan (JARPA Appendix C).

### **5.5.2 7.11 Transportation**

The project design proposes an access roadway serving the Hylebos pier and storage area within shoreline jurisdiction and is subject to the requirements in TMC 13.10.7.11.

The proposed access roadway will serve the pier – a water-dependent use – and will result in no net loss due to the fact that the existing site is disturbed and is already paved in the area where the access roadway is proposed. Grading for the proposed access roadway will be limited to its footprint, which would be 24 feet wide to accommodate on-site truck circulation and is consistent with retaining existing site topography.

### **5.5.3 7.13 Utilities**

The project involves the extension of PSE’s natural gas line distribution line in the City of Tacoma to the project site. However, the pipeline extension would not cross shoreline jurisdiction and is not further discussed here.

The existing stormwater outfalls are considered to be “accessory utilities” in accordance with TMC 13.10.10.178. The stormwater repairs are normally exempt under TMC 13.10.2.3.3.2, but are subject to compliance with the Master Program due to the fact that there are other non-exempt elements which are part of the project. The pipeline repairs will result in no net loss of shoreline ecological function as discussed in response to TMC 13.10.6.4.

The project would also extend accessory utilities (gas distribution, sewer collection, electric service, water etc.), which are directly adjacent to the site. These utilities are considered appurtenances to the primary use according to TMC 13.10.7.13 and are not subject to this section.

## **5.6 Chapter 8: Shoreline Modification Policies and Regulations**

The project involves several modifications, including: the replacement of existing shoreline stabilization features along the Hylebos Waterway and excavation/fill above the OHWM for the replaced shoreline stabilization; excavation for on-site utilities and underground LNG pipeline with excavated materials being reused on site pending clarification of contamination status; and construction of two LNG loading piers (Blair and Hylebos). Therefore, the project is subject to sections TMC 13.10.8.2, 8.3, 8.4, and 8.6.

### **5.6.1 8.2: Shoreline Stabilization**

TMC 13.10.8.2.2 discourages new and replacement hard structural stabilization measures in favor of soft stabilization which has less impact on shoreline resources. An engineering analysis is required to demonstrate the need for hard stabilization, including for replacement, based on erosion risks. All stabilization, hard or soft, is required to demonstrate no net loss of shoreline ecological functions.

The existing shoreline along the Hylebos Waterway at the project site is constructed of gravel and soil fill material supported by a creosote treated timber bulkhead, which is located at approximately elevation 11.8 feet MLLW (see JARPA Figure 6). In Phase 1 of the project, stormwater outfall improvements would result in isolated repairs or replacement of the existing timber bulkhead, as well as placement of riprap below the bulkhead along the shoreline for stormwater dissipation. Existing creosote piles would be replaced by non-creosote treated piles. The riprap would be sloped at 2:1 to match the



existing shoreline contour. The improvements to the existing bulkhead are “normal maintenance and repair” activities and will improve shoreline ecological functions as compared with existing conditions. Minor improvements to ecological functions would occur resulting from the replacement of corroded pipes and removal of creosote-treated timber piles preventing further water quality degradation.

In Phase 2, a new steel sheet pile bulkhead approximately 33 feet in length would be installed approximately 9 feet shoreward of the existing bulkhead adjacent to the access trestle. The 600 feet of the existing timber bulkhead and supported fill material adjacent to the proposed pier would be removed and replaced with light, loose riprap varying in size from 3 inches to 1/2 cubic yard. The riprap would be constructed at a 2:1 slope similar to the existing shoreline slope below Elevation 11.8 feet MLLW (see Attachment 5, Exhibit 5). The existing creosote-treated timber bulkhead structure (fabricated with used timber piles) would be demolished by land-based equipment, which would remain above Elevation 11.8 feet MLLW and the ordinary high water mark (OHWM) when conducting the work. Waste would be disposed of at an appropriate upland facility. Shoreline work quantities in Phase 2 below Elevation 11.8 feet MLLW would be as follows.

- Excavation: 1,900 cubic yards
- Backfill: 690 cubic yards (light, loose riprap varying in size from 3 inches to 1/2 cubic yard)
- Disturbance area: 5,440 square feet

The placement of riprap along the Hylebos Waterway will not change the contour of the shoreline in a manner that raises the elevation or creates dry land and does not meet the definition of “fill” in TMC 13.10.10.55. Relocation of the bulkhead landward of the OHWM would result in the restoration of approximately 5,440 square feet of intertidal habitat. The riprap-sloped shoreline is an improvement over the existing vertical bulkhead and will remove a source of contaminants from the treated timbers (see JARPA Figure 10). This will result in an increase in habitat suitability achieving the no-net loss of ecological functions. There is no undisturbed shoreline or beach to preserve along the Hylebos Waterway.

The new sheet pile bulkhead and riprap is necessary to reduce the amount of lateral spreading expected should a seismic event occur and is also necessary to maintain the water-dependent activity and prevent erosion of the upland fill material on site from tidal forces. The placement of the new bulkhead is not due to existing upland erosion. The proposed sheet pile bulkhead design results in a significant setback from the existing stabilization measures, and when combined with removal of the existing timber bulkhead allows for restoration of the intertidal area with new riprap resulting in an additional beach area to dissipate erosive forces. Relocating the upland improvements to

a different part of the project site would not eliminate the need for riprap and hard stabilization since the entire site is underlain by fill and would be subject to erosion if exposed to tidal influence or seismic events.

#### **5.6.2 8.3: Fill and Excavation, Dredging and Dredge Material Disposal**

The stormwater improvements proposed for Phase 1 of the project, would result in the excavation of the area immediately waterward of the existing timber pile bulkhead from elevation +9.0 to +5.3 MLLW. A two-foot depth area in line with each stormwater outfall pipe would be excavated with riprap placed in the excavated area. The riprap would be sloped at 2:1 to match the existing shoreline contour and does not meet the definition of fill in 13.10.10.55 because it will not raise the elevation or create dry land. The stormwater outfall work will result in water quality improvements related to the removal of creosote-treated timbers for the bulkhead, helping to restore this part of the shoreline. Excavation is permitted in the S-13 district for shoreline restoration projects.

In Phase 2 of the project, the subject proposal would excavate material along the Hylebos Waterway landward of the OHWM for the stabilization improvements. The excavated materials will be replaced with new materials. As previously noted, the replacement materials do not constitute fill since they will not raise the elevation of the shoreline. In addition, the large existing warehouse building situated on Parcel 5000350021 in the center of the Tacoma LNG facility site sits on a raised foundation of approximately 3 to 5 feet of fill soil. The preliminary plan for site preparation, after demolition of the warehouse, involves spreading this soil to two areas of the site: the southwestern area over the project footprint area that would be under the LNG storage tank and liquefaction processing structure (which would all be covered with concrete and yard rock at completion) and the undisturbed open area in the southeast portion of the site. Thus, the proposal is subject to the fill and excavation standards in TMC 13.10.8.3.

Excavation would occur waterward of the OHWM associated with pier construction for Phase 2 of the project. 1,900 cubic yards of material would be excavated from the shoreline area and would be replaced with 690 cubic yards of light, loose riprap. The replacement material and excavation activities are proposed for the placement of the pier, which is a water-dependent use, and for the ecological restoration of the shoreline area. Shoreline stabilization is a permitted use in this designation per TMC 13.10.9, Table 9-2. The removal of the existing wood pile stabilization, excavation, and replacement material along the shoreline would improve the value of this part of the shoreline for nearshore habitat per Section 6.1.10 of the Biological Evaluation (see TMC 13.10.8.3.2A.3). The replacement material would be sloped at a 2:1 grade to match the existing shoreline below the OHWM (see TMC 13.10.8.3.2.A.5).

Per TMC 13.10.8.3.2.A.7, replacement material and removal of the existing wood pile bulkhead in Phase 2 would increase or maintain (as opposed to reduce) habitat feeding and reproduction areas for shellfish, fishlife, and wildlife, and fish migration areas.

Because the fill material that would be placed landward of the OHWM will match the existing shoreline grade below that point, removing/replacing the bulkhead would provide the same or greater level of function for local currents, waves, water surface, and water flow/circulation. Since creosote timbers would be removed from the existing stabilization structure and would be replaced with steel sheet piles and riprap, a potential source of contamination would be removed, thereby enhancing water quality. As discussed above, public access is not present on the existing site and is not required to be provided per TMC 13.10.6.5. There will be no net loss of accretional beaches as none now exist. Finally, the stabilization and riprap material will reduce erosion potential along the shoreline as the new bulkhead structure will be placed upland of the existing location and the riprap will help prevent scouring underneath or along the shoreline.

All excavated materials from beneath the existing large warehouse would be spread to areas of the site outside shoreline jurisdiction and would not, therefore, impact shoreline functions.

### **5.6.3 8.4: Clearing and Grading**

The proposed development of the LNG facility includes grading on the upland portions of the project to accommodate proposed parking, building, circulation, and LNG processing and storage facilities. The preliminary plan involves no earth work northeast of the large existing warehouse, with the exception of excavation for stormwater pipe repair and installation of ground improvement columns. Grading within the shoreline area is expected to be minimal to accommodate access and circulation areas northwest and west of the existing large warehouse as shown on the JARPA Overall Site Plan, Figure 3. The site was previously cleared of all vegetation with the exception of two cottonwood trees and one Douglas fir tree near the northeast part of the site on parcel 5000350040 and isolated weedy and noxious grasses and forb plant species. These trees are assumed to remain for the purposes of this SSDP request. Thus, no vegetation clearing is proposed as part of this application. For this reason the project will not disturb native soils or vegetation.

Grading activities are required to meet no net loss, pertain to a specific proposed development, and be limited to the minimum area necessary in accordance with TMC 13.10.8.4.2. As previously stated, grading on the subject site within shoreline jurisdiction would be limited to areas northwest of the existing large warehouse to accommodate site circulation. Areas northeast of the existing warehouse within shoreline jurisdiction would be left undisturbed, with the exception of limited excavation areas for stormwater pipe repair and installation of ground improvements. In addition, temporary erosion control BMPs such as barrier and silt fencing will be utilized during site grading activities to contain sediments and prevent water quality impacts in the Hylebos Waterway. The barrier and silt fencing would be located along the physical shoreline to prevent water quality impacts to the Hylebos Waterway. The BMPs would be consistent with the conditions of the project's coverage under the NPDES General Construction

Stormwater Permit, which guides construction stormwater planning for land-disturbing construction work. Coverage under the General Construction Stormwater Permit will be obtained before initiation of construction. The BMP controls will be inspected and maintained until the end of construction. Soils would be immediately developed for project improvements after grading.

#### **5.6.4 8.6: Moorage Facilities**

The Hylebos piers and moorage dolphins on the Hylebos and Blair waterways are moorage facilities subject to TMC 13.10.8.6. The proposed piers are being constructed to support a specific water-dependent use (loading of LNG as fuel to TOTE vessels or loading to bunker vessels) per TMC 13.10.8.6.2.C.1.

In response to TMC 13.10.8.6.2.A.1 and 13.10.8.6.2.C.2 and 3, the removal of the existing pier along the Hylebos Waterway and the construction of the new piers and dolphins on both waterways would result in a total decrease of 4,095 square feet of overwater coverage (see JARPA Mitigation Plan, Section 8). In addition, 532 creosote-treated wood piles will be removed that support the existing piers and replaced with 142 steel piles. Therefore, there would be a net increase in the ecological functions as compared with existing conditions. The proposed Hylebos pier would extend approximately 83 feet from the OHWM – less than the 87 feet for the existing pier, would be perpendicular and connected to the shoreline, and would not project into the navigation channel as shown on JARPA Figure 7. The pier in the Blair Waterway will extend approximately 108 feet from OHWM (similar dimension to adjacent piers) and also will not project into the navigation channel as shown on JARPA Figure 12. The piers and dolphins would be constructed specifically for LNG loading operations onto bunkering barges and marine vessels and would not be appropriate for shared mooring with recreational boats or other large vessels as this would restrict access to the pier for the LNG loading operations.

The existing piers are constructed of timber and will be removed to make way for the new concrete piers. Concrete is required to meet the requirements of 49 CFR Part 193, *Liquefied Natural Gas Facilities* and National Fire Protection Association (NFPA) Standard 59A, *Standard for the Production, Storage, and Handling of Liquefied Natural Gas*. Thus, the existing timber piers could not be used or repurposed to serve the LNG facility (see TMC 13.10.2.4.4.1.d). Similarly, an open pile or floating structure would neither meet the requirements for the proposed use of the moorage (LNG loading operations) nor the requirements of 49 CFR Part 193 and NFPA Standard 59A (see TMC 13.10.2.3.3.1.e). In the unlikely event of a liquid release, a spillway installed down the trestle below the transfer pipeline would convey any released liquid to a purpose-built containment basin located onshore.

Life-saving devices on the Hylebos and Blair piers will be provided in accordance with OSHA and WISHA requirements, including but not limited to WISHA WAC 296-56-60115 – Other Protective Measures. The Hylebos dock will be equipped with life rings in

accordance with WAC 296-56-60115 (2)(c) and other applicable federal regulations. Employees conducting bunkering operations will be equipped with personal floatation devices in accordance with WAC 296-56-60115 (2)(a) and –(b).

The pier and mooring dolphins would be no more than 10 feet above the OHWM and well below the 100-foot height limit and in the S-10 District and therefore would not obstruct views from surrounding areas. Per TMC 13.10.6.5, public access is not required to be provided for the project.

## 5.7 Chapter 9: District Specific Regulations

The project is located in the S-10 High-Intensity Port Industrial District and the S-13 Marine Waters of the State shoreline environment designations and is subject to the regulations in TMC 13.10.9.12 and 15. They include provisions for permitted/prohibited/conditional uses and modifications, buffers, height limits, view corridors, and setbacks. Table 7 summarizes how the project meets the development standards in Table 9-2.

**Table 7. S-10 and S-13 District Compliance Summary**

Use Category/Standard	Compliance
<b>Shoreline Uses</b>	
Water-dependent, port industrial uses (access trestle to pier and on-site access/circulation drives)	Permitted in the S-10 and S-13 districts
Stormwater outfall (accessory utility)	Permitted in S-10, Conditional in S-13 as applied to new facilities. Normal maintenance and repair of existing facilities are exempt.
<b>Shoreline Modifications</b>	
Shoreline stabilization for water-dependent uses	Permitted in the S-10 and S-13 districts
Fill and excavation above the OHWM	Permitted in the S-10 district
Excavation below the OHWM	Permitted in S-10 and S-13 for shoreline restoration projects
Mooring facilities associated with water-dependent uses	Permitted in the S-10 and S-13 districts
<b>Shoreline Development Standards</b>	
Marine shoreline buffer	50 feet from OHWM in S-10. Water-dependent uses, such as the trestle, pier structure, and stormwater conveyance, may be located within the buffer per TMC 13.10.6.4.3.B.2
Height limit	S-10 district: 100 feet. Hylebos: Loading platform is 9 feet high, access trestle is 7 feet high and dolphins are 8.5' high as measured from OHWM. Blair: Loading platform 8 feet, trestle is 7.5 high, dolphins are 28.5 feet, and catwalk is 9.5 feet (all heights are approximate). S-13 district, no limit for port/industrial uses.
Setbacks	0 ft in S-10 district. S-13 – N/A.

In the S-13 District, regulations are focused on preservation of these waters for public purposes and managing in-water uses. Overwater structures are prohibited, unless permitted in the upland district. Since, overwater structures are allowed in the S-10 district, they are also allowed in the S-13 district adjacent to the site. Conclusion

As demonstrated by this report, the proposed development of a water-dependent industrial use for the transfer of LNG loading facilities on the proposed Hylebos and Blair piers and the conveyance of LNG in the below-ground cryogenic pipeline for use at the TOTE marine vessel LNG facility meets all requirements of the City of Tacoma's Shoreline Master Program for the issuance of a shoreline substantial development permit.