Section 3.1 Earth

3.1.1 Seismicity

3.1.1.6 Mitigation

The following clarifications to mitigation measures are shown in underlined text for new/added items and strikethrough for deletions.

- **Spread footings** are shallow foundation elements that are constructed by excavating the footing footprint, layering base materials, concrete forming and pouring, and backfilling.

A preliminary ground improvement design was submitted to EFSEC for review (Appendix L.3), and is described in section 2.18.1.2.

~~It is anticipated that EFSEC will contract with the City for the review of final project design for compliance with the required code provisions as well as for providing the required inspections and issuance of occupancy permits.~~ The Applicant will submit the required plans, which will be designed in compliance with the codes and requirements referred to above.

The Applicant will also implement the following plans.

- Construction Emergency Plan to address actions and responses related to seismic activities
- Operations Emergency Plan to address actions and responses to site emergencies, including those related to seismic events

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Section 3.3 Water

3.3.3 Floodplains

3.3.3.2 Potential for Flooding and Mitigation Measures

Operation/100-500-Year Flood

Vancouver Energy will design the Facility in accordance with the mitigation measure proposed by EFSEC in Table ES-2, page ES-28 of the DEIS, as indicated by the clarifications below as shown in underlined text for new/added items and strikethrough for deletions.

All upland structures or portions of structures located in Area 400 will be located outside the 100-year floodplain. ~~These include a dock transformer pad, combined control room/E-house, fire pump and foam building. These structures will be elevated so that the floor is at least 1 foot above the base flood elevation~~The dock transformer pad, combined control room/E-house, fire pump, and foam building will be elevated so that the top of foundation is at least 2 feet above the 100-year base flood elevation and finish floor elevations are above the 500-year flood elevation. The~~y~~ structures will also be anchored to resist movement and designed with utilities and other connections that are designed to withstand flood events consistent with the requirements of VMC 20.740.120 Frequently Flooded Areas.

FEMA's floodplain mapping indicates that floodwaters are anticipated to inundate the facilities with approximately 1-foot of water during the 500-year event and a maximum of 3 feet in the lowest areas. The Facility will be designed with finished floor elevations above the 500-year floodplain elevation. Facility elements within the 500-year floodplain will be designed to maintain integrity in these worst-case flood conditions. The containment berm around the product storage tanks (Area 300) provides protection against inundation. The unloading facility is located within the mapped inundation area of the 500-year floodplain but the finished floor is above the 500-year floodplain elevation. ~~Flood waters inundating the unloading area would fill the below-grade trenches and containment pans~~In order to prevent the contamination of flood water, operating procedures will require that any crude oil spill, including minor leaks and drips be contained and affected surfaces cleaned promptly limiting the amount of any residue that could comingle with flood waters inundating the containment pans, containment piping, and below-grade trenches.

In the event of flood events exceeding the 100-year or 500-year flood stages, the Applicant will monitor the rate of flood water rise and suspend threatened Facility operations prior to the flooding occurring.

In the event of an expected site inundation, movable equipment, such as railcars and motor vehicles, will be demobilized and relocated above the 500-year floodplain to the extent possible. Static equipment that cannot be moved will be secured.

3.3.4.2 Mitigation

The following mitigation clarification is shown in underlined and strikethrough text.

Construction

Construction of foundations and utility and pipeline excavations for the project may require dewatering of the excavations. Groundwater that is pumped out of the excavations will be stored on site in mobile water tanks and analyzed and managed in accordance with local, state and federal regulations prior to reuse, infiltration or disposal. Disposal will be conducted in accordance with the stormwater permit issued for the project. If dewatering wells are necessary, well points used for construction dewatering will be completed in accordance with WAC 173-160 Minimum Standards for Construction and Maintenance of Wells. If groundwater extracted for construction dewatering is directed to the City's sanitary sewer it will be disposed in accordance with VMC 14.12 Discharge of Industrial Wastes to the Industrial Wastewater Pretreatment Facility.

During construction, the Applicant will conduct on-site investigations where production wells were known to be located. If a borehole is located, confirmation will be made that the borehole has been properly sealed to a depth at least 10 feet below the finished ground surface with a cementitious grout. ~~Abandoned production wells on the site could potentially be impacted and will be monitored during construction.~~ If during construction activities other wells are discovered on site, the wells will be properly logged and decommissioned.

As part of the Contaminated Materials Management, construction activities will be identified that could potentially impede monitoring and access of groundwater through existing water supply wells if access is necessary for ongoing remediation activities.

The Applicant has submitted a preliminary cSWPPP to EFSEC for review (Appendix C.1). The cSWPPP identifies the stormwater pollution prevention measures to be implemented at the construction site and as described in section 2.11 of this Application.

The following mitigation measure is added in response to the mitigation proposed in Section 3.3.5 of the DEIS as shown in underlined text.

Decommissioning

The final decommissioning plan will verify permanent measures to seal any areas with ground improvements, either by leaving existing impervious surfaces in place (such as the containment area liner) or installing minor additional impervious surface in areas where aboveground improvements are removed without a corresponding impervious surface improvement.

Section 3.4 Habitat, Vegetation, Fish, and Wildlife

3.4.2 Habitat and Vegetation

3.4.2.2 Impacts

Operation
Shipping –

Bank Erosion –

An updated version of the report titled "Wake Stranding in the Lower Columbia River" was submitted as part of the Testimony of Glenn Grette[6] and replaces Appendix H.5 from the May 2016 ASC. The date clarification is added as shown in underlined text.

The vessel corridor and habitats along the shoreline are already exposed to vessel wakes from the ships that use the river and a baseline level of propeller scour already occurs (see Appendices H.5 (revised May 2016) and H.6.

3.4.2.3 Mitigation Measures

Construction

Temporary Construction Water Quality

The following revisions are made to the text regarding the in-water work window.

~~All in-water temporary pile installation and removal below the OHWM will be conducted within the published in-water work period for the project, which is November 1 to February 28. This work window has been established to minimize potential impacts to aquatic habitat and native fish species and avoids the peak migration timing for marine mammals in the Lower Columbia River.~~ Work below the OHWM shall only occur during the EFSEC modified in-water work period between September 1 and January 15[11].

[6] Exhibit EX-0116-000038-TSS

[11] In the Applicant-prepared PDEIS for the project, and in the JARPA and Biological Evaluation (BE) for the project, the Applicant has proposed to conduct work below the Ordinary High Water Mark (OHWM) within the US Army Corps of Engineers' (USACE) published in-water work window for the Columbia River mainstem between the mouth of the river to the Snake River confluence (November 1–February 28).[1] This work window has been established by the USACE, in coordination with resource agencies, for the protection of fish life, including ESA-listed species.

In the Advisory HPA, as well as in Sections 3.6.3.1 and 3.6.5 of the DEIS, EFSEC proposes a modified in-water work window of September 1 - January 15 to avoid peak migration and larval stages of salmonid and nonsalmonid species.

The USACE is currently reviewing the JARPA and BE for the project and consulting with National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) as obligated under Section 7 of the Endangered Species Act (ESA). ~~Each of these regulatory agencies may have additional feedback on the preferred window for in-water work.~~

~~In the absence of a consensus among the resource agencies regarding a modified work window, EFSEC should defer to the USACE published in-water work window of November 1 – February 28, as this is the window under consideration with the federal permitting agencies.~~

~~If USACE, NMFS, USFWS, and EFSEC can agree upon a modified window in which the project can be accomplished, and which is no shorter in duration than the window proposed in the federal permit application, then the Applicant would support discussions regarding a modified in-water work window.~~

As of the submittal of the October 2016 Final Commitments and Revisions to the ASC, the Applicant is working with the USACE and Services to align the USACE work window with the preferred EFSEC/WDFW window.

Operation

The following revision is made to the text to incorporate DEIS mitigation related to building design features to deter perching as shown in underlined text.

The Draft EIS proposes mitigation requiring design features to deter perching, such as enclosing structures, so that no horizontal top surfaces are accessible, screen openings to prevent access to enclosed spaces for roosting or nesting, and installing spikes or wires to prevent perching to avoid attracting birds, such as pigeons, gulls, and starlings to the proposed Facility. In Area 200, there are two primary types of structures: the buildings to be erected as part of the administration area and the Area 200 rail unloading structure. The administrative buildings will be fully enclosed with horizontal rooftops. The buildings in Area 600 (boiler building), Area 300 (storage building), and Area 400 (marine terminal control room) are fully enclosed spaces.

The Applicant agrees to incorporate these design features to restrict access to enclosed spaces for roosting or nesting or to prevent perching where installation will not adversely interfere with required access, operation, maintenance of the unloading facility, and deployment of fire and emergency response equipment.

3.4.3 Fish

3.4.3.2 Impacts

Operation

Shipping –

An updated version of the report titled "Wake Stranding in the Lower Columbia River" was submitted as part of the Testimony of Glenn Grette[12] and replaces Appendix H.5 from the May 2016 ASC. The revised date of the report is shown in underlined text.

- *Wake Stranding* – Wake stranding occurs when fish are caught in the wave created by a passing ship and deposited on shore by the wave the wake generates. An analysis pertinent to vessel wakes and fish stranding within the Vessel Corridor area was completed for the project (see Appendix H.5 [revised May 2016]) and provides a review of wake stranding as the mechanism which could cause mortality for juvenile salmonids and eulachon as a result of wakes caused by deep-draft vessels. The focus of this review is the lower 104 miles of the Columbia River, between the Pacific Ocean and Vancouver, Washington. The study concluded wake stranding occurs on a small subset of the shoreline beaches of the vessel corridor. Pearson et al. (2008) predicted that 16 percent or about 33 miles of non-contiguous beaches had some potential to strand fish. When additional beach morphology criteria (i.e., beaches with slopes flatter than about 5 or 6 percent) were included, Person et al. (2008) predicted that about 4 percent or about 8 miles of beaches had a high susceptibility to stranding. All the beaches in this 8-mile total are located upstream of RM 33. These results indicate that stranding risk is relatively high only in a very small portion of the 208 miles of shoreline in the Vessel Corridor and all these beaches are upstream of the lower 33 miles of

[12] Exhibit EX-0116-000038-TSS

the Columbia River. Overall, subyearling (age-0+) Chinook salmon are the species that are most often stranded by vessel wakes. That species and life stage was also the most common fish captured in beach seine nets at the study sites, indicating they were highly available to be stranded. Based on these results, no generalized conclusions about moderate to major long-term effects to nearshore fish can be supported by the data.

3.4.3.3 Mitigation Measures

Construction

The following revision is made to the text regarding the in-water work window as shown in underlined text for new/added items and strikethrough for deletions.

~~All in-water construction activities, temporary pile installation, and removal activities below the OHWM will be conducted within the published in-water work period for the project (November 1 to February 28). This work window has been established to minimize potential impacts to native fish species, particularly to ESA-listed salmonids and Pacific eulachon. While there is no time when ESA-listed fish are absent from the project vicinity, the window between November 1 and February 28 avoids the peak migratory periods for adult fish and out-migrating juveniles of most populations.~~ Work below the OHWM shall only occur during the EFSEC modified in-water work period between September 1 and January 15.

Temporary Water Quality Impacts –

The following text has been clarified as shown in underlined text for new/added items and strikethrough for deletions.

- Work below the OHWM shall only occur during the EFSEC modified in-water work period between ~~November 1 to February 28~~ September 1 and January 15.
- The WDFW Region 5 Habitat Program Manager will be notified in writing (e-mail, FAX, or mail) from the agent/contractor no less than three working days prior to the start of construction activities. The notification will include the contractor's name, project location, and starting date for work.
- If at any time, as a result of project activities, fish are observed in distress, a fish kill occurs, or water quality problems develop (including equipment leaks or spills), immediate notification will be made to the Washington Military Department's Emergency Management Division at 1-800-258-5990, and to the WDFW Region 5 Habitat Program Manager.

Operation

Operational Water Quality –

The discussion regarding the 3-bbl catchment and/or sump to be provided at Berth 13 is clarified as shown in underlined text. (Makarow 2016).

The Applicant will increase the volume of containment available to capture potential releases at the dock during vessel loading activities.

Federal regulations require a catch basin at the dock that can contain 3 bbl in the event of a spill. The current design has a catch basin with a capacity to contain 84 bbl.

In addition to the catch basin design, the Applicant is committing to change the design to further increase the physical storage capacity of the catch basin by pumping oil out of the catch basin in the event of a spill. This change involves two components. First, the Applicant would use the existing pump and return pipeline already depicted in plans that are used to strip the loading hoses of any residual crude oil and return that crude oil to the Area 300 storage tanks. The Applicant proposes to connect the containment area into this system and implement an automatic trigger that would turn the pump on in the event of a system shutdown, as would occur during a rupture of the loading hoses (further described below). When engaged, that pump operates at a rate of approximately 286 bbl/hr. Second, to further increase the pumping capacity in the event of a larger spill at the dock, the Applicant proposes to install an additional larger landside pump that will connect to the same return piping and catch basin. The additional pump would be of the same size as the ones proposed in the rail unloading area and would pump approximately 2,800 bbl/hr (46 bbl/min). Collectively, this improved system far exceeds the 3-bbl regulatory requirement.

In addition to the improvements described above, several of the design features proposed in the submitted plans are engaged in the event of a spill during vessel loading to limit the volume released. First, the pump electrical drives that power the positive displacement pumps (the pumps responsible for moving oil from the storage tanks to the vessel) include a "safe torque off" feature. This feature removes rotational power from the motor of the positive displacement pumps instantly when pressure in the line drops or if the gas detection system is activated (as would occur in the event of a release), thus, stopping additional flow of material to the pipelines. Additionally, the pipelines at the dock have 30-second shutoff valves. In the event of a release, the valves are actuated and complete closure will occur within 30 seconds. During those 30 seconds, the valves are incrementally restricting the flow such that it is decreasing over that span of time.

If one assumes it takes 5 seconds for the positive displacement pumps to stop when the "safe torque off" is engaged, and one does not take into consideration any incremental decrease of flow that would be expected when the valve closes during the 30-second shutoff time (both of which are conservative assumptions and tend to underestimate the expected performance), the resulting volume that would flow past the valve during the 30 seconds is approximately 44 bbl.

By comparison, the improvements to the containment design at the dock would provide for the 84 bbl of physical storage capacity and would also remove an additional 48 bbl via pumping in that span of time. More generally, the containment system as described above would take roughly 1 minute to empty the 84-bbl containment area back to the aboveground storage tanks.

3.4.4 Wildlife

3.4.4.3 Mitigation Measures

The following revision is made to the text regarding the in-water work window as shown in underlined text for new/added items and strikethrough for deletions.

Construction

~~In addition, all work below the OHWM will be conducted within the published in-water work period for the project (November 1 to February 28). This work window has been established to minimize potential impacts to native fish species, but also avoids the peak migration timing for marine mammals in the Lower Columbia River.~~ Work below the OHWM shall only occur during the EFSEC modified in-water work period between September 1 - January 15.

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