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ENVIRONMENTAL CHECKLIST

Harbor Island Marina Dock E Floats and North Pier Improvements
Port of Seattle SEPA File #2021-09

PURPOSE

The State Environmental Policy Act (SEPA), Chapter 43.21 RCW, requires all governmental agencies to consider the environmental impacts of a proposal before making decisions. The purpose of this checklist is to provide information to help identify impacts from the proposal (and to reduce or avoid impacts, if possible) and to help the Port of Seattle to make a SEPA threshold determination.

A. Background

1. Name of proposed project, if applicable:
Harbor Island Marina Dock E Floats and North Pier Improvements

2. Name of applicant:
Laura Wolfe, Port of Seattle, Environmental Program Manager

3. Address and phone number of applicant and contact person:
2711 Alaskan Way
Seattle, WA 98121
206-787-4292

4. Date checklist prepared:
10/25/2021

5. Agency requesting checklist:
Port of Seattle

6. Proposed timing or schedule (including phasing, if applicable):
The float replacement, float repairs, and pier replacement work is expected to take approximately 2.5 months to complete. The duration and total period of in-water work will be affected by several factors including the type of construction equipment and procedures selected by the contractor, and the sequencing of work elements. All in-water work will occur during the approved work window, during daylight hours. The timing of this project is dependent upon permit approvals but is projected to be constructed during the 2023/2024 approved Washington Department of Fish and Wildlife work window. Work occurring above the ordinary high water mark may occur outside the work windows if conservation measures are followed.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
There are no future additions or activities connected to this proposal.

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8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

1. Joint Aquatic Resources Permit Application (JARPA)
2. Biological Assessment (BA) to support Formal Endangered Species Act, Section 7 Consultation
3. Hydraulic Project Approval application
4. Underwater Noise Monitoring Plan

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

There are no known applications pending for approval of other proposals that would directly affect the Harbor Island Marina.

10. List any government approvals or permits that will be needed for your proposal, if known.

1. Hydraulic Project Approval from Department of Fish and Wildlife
2. Clean Water Act, Section 10 approval, potentially under Nationwide 3 (Maintenance) or Nationwide 28 (Modifications to Existing Marinas) from US Army Corps of Engineers, including review by agencies/tribes as follows:
   - United States Fish & Wildlife Service (Endangered Species Act, Section 7 review of potential impacts on bull trout and marbled murrelet);
   - National Marine Fisheries Service/NOAA (Endangered Species Act, Section 7 review of potential impacts on Chinook salmon, Southern Resident killer whales, and humpback whales);
   - Environmental Protection Agency (review of compatibility with CERCLA-designated cleanup actions);
   - Washington State Department of Ecology (review of compatibility with MTCA-designated cleanup actions);
   - Washington State Department of Archaeology and Historic Preservation (Section 106 review of potential impacts on historic properties, archaeological resources, and cultural resources);
   - Muckleshoot Indian Tribe and Suquamish Tribe (review of potential impacts on treaty-reserved fish and shellfish resources).
3. Clean Water Act, Section 401 Water Quality Certification from Department of Ecology
4. Shoreline Substantial Development Permit, City of Seattle
5. Environmentally Critical Area review, City of Seattle
6. Building Permit, City of Seattle

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The Port of Seattle owns and operates Harbor Island Marina (HIM) in Seattle, Washington. The HIM Dock E Floats and North Pier Improvements project will replace a section of the concrete floating dock, rehabilitate the remaining concrete floating dock sections, replace timber guide piling with steel, and replace the North Pier, which is nearing the end of its service life. The project will preserve services and moorage for large tug and commercial vessels that utilize the Dock E and North Pier facilities. Specific elements of the project include:

- Complete replacement of the southernmost 23 (out of the 78 total) of Dock E's existing float sections with new heavy-duty floats with appurtenances designed for large vessel berthing and mooring.
- The existing float is anchored with a combination of newer steel piling and older timber piling. This project will be retaining the existing steel float guide piling and replacing the existing timber float guide

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piling with new steel piling. Three new steel piling will be installed as required by updated load design requirements for the facility.

- Refurbishment of 55 (out of 78 total) of Dock E's existing float sections including replacing damaged walers and cleats, nominal float leveling, and concrete surface crack repairs and sealing.
- Demolition and replacement of Dock E's existing deteriorated North Pier to restore vehicle access to the pier. The existing electrical transformer on the pier will be relocated to an adjacent upland location.
- Removal and reinstallation of electrical system components (wiring and pedestals) as required for new floats.
- Removal and reinstallation or replacement of potable and fire water piping, hose bib, and standpipe systems as required due to the replacement of the North Pier and float sections.

The project does not include any upland parking and site improvements, site stormwater systems, or sanitary sewer systems.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

Terminal 102 is located on the south end of Harbor Island, at the north end of the Duwamish Waterway navigation channel (47.56989N, 122.3461W; parcel 7666701220; Figure 1). The facility is at the confluence of the East and West Waterways, where these navigation corridors join at Turning Basin #1 in the Duwamish Waterway. The site includes shoreline between approximately river mile 0.5 and 0.6. Terminal 102 includes approx. 8.1 acres of existing upland area, 13.9 acres of aquatic area, and approx. 1,800 linear feet of shoreline. The project itself is located in the East Waterway, on the eastern side of Terminal 102.

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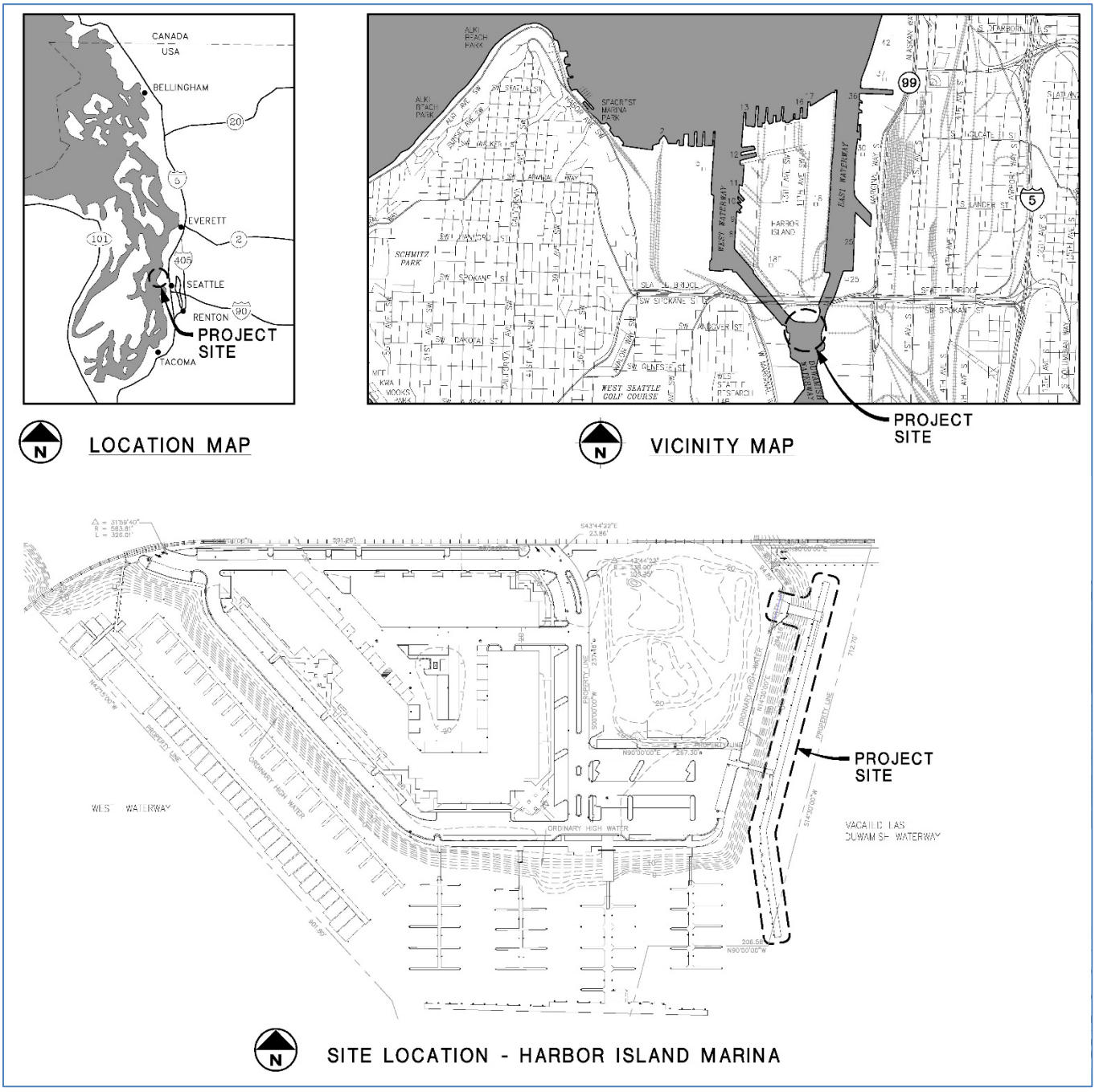

Figure 1. Harbor Island Marine Dock E Float and North Pier Improvements Site Plan

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B. Environmental Elements

1. *Earth*

a. General description of the site:

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

Terminal 102 is a relatively flat uplands with structurally stabilized slopes that extend into the adjacent waterways.

b. What is the steepest slope on the site (approximate percent slope)?

The shoreline at Terminal 102 is structurally stabilized, with exposed riprap shoreline and riprap surfaces along the entire margin of the site. Existing upland grade elevations at the site, independent of buildings at the location, are between 17 and 20 feet above mean lower low water. The bankline slopes rapidly to the adjacent East Waterway Navigation Channel, decreasing from plus 17 to 18 feet MLLW at the existing top-of-bank to minus 30 feet MLLW at the east margin of the navigation channel approximately 120 feet to the east. The upper section of the slope above the edge of vegetation ranges from 1.1H:1V to 1.8H:1V. The lower section of the slope which is armored and generally within the tidal zone is 2H:1V.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

Soils on site are generally industrial fill and alluvial layers. There is no agricultural land of long-term commercial significance along the Port shoreline.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

Seattle is situated in a moderately active earthquake region where the Juan de Fuca plate is thrust beneath the North American plate along the toe of the continental slope (Galster and Laprade, August 1991). The Uniform Building Code (1997 Edition) places the Puget Sound area within Seismic Zone 3, which indicates significant seismic risk. The design level earthquake for this zone is magnitude 7.0 to 7.5 with peak ground acceleration of about 0.3g. Harbor Island Marina also is in a liquefaction zone. Liquefaction Prone Areas are environmentally critical areas designated by the City of Seattle associated with a shallow groundwater table that lose substantial strength during earthquakes.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

The project is proposing the removal and placement of piles into an existing shoreline. Some excavation may be necessary for the installation of the North Pier abutment, but it will be minor in nature. No fill is currently proposed as part of this project.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

A minor amount of erosion is possible during construction activities. Erosion and Sediment Control Plans and Construction Stormwater Pollution Prevention Plans will be adhered to. Work will be conducted in the dry to the extent possible and within the in-water work windows. Debris booms will be utilized for inwater containment.

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g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The project will result in an in-kind replacement of impervious surface for the North Pier improvements and a decrease in overwater coverage for the South Float Replacement due the use of grated decking.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Additional best management practices will be utilized to reduce and control erosion, as listed below:

- Piling will be installed from a barge using a vibratory hammer. Piles for the pile bents near shore may be installed from an upland-based crane using a vibratory hammer.
- Impact hammer will only be used for proofing pier piles and when required by hard driving conditions.
- New floats to be fabricated off-site.
- Use of pre-cast concrete members for construction of the new pier to the maximum extent feasible.
- Use of silt curtain with floating debris boom.
- Spill Prevention Control and Countermeasures Plans, as required by the General Contract Provisions, will be implemented to minimize impacts during construction.
- Maintain Temporary Erosion and Sediment Control Plan onsite
- Confine construction impacts to the minimum area necessary, delineate impacts on project plans and onsite.
- Establish staging and site access areas along existing roadways or other disturbed areas
- Limit clearing and grubbing areas to minimum required, retain vegetation to maximum extent
- Locate equipment wash areas where washwater, sediment, and pollutants cannot enter waterbodies
- Do not track sediment onto paved streets or roadways
- Remove equipment and excess supplies, clean work storage areas, and remove temporary erosion control materials and temporary fill after construction and when soils have stabilized
- Install erosion and water quality control devices prior to beginning of work

2. Air

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

The project replaces existing structures. No new impervious surface will be created. Construction activities may create short-term, intermittent increases in dust and emissions. These effects will be temporary in duration, minimal in nature, and limited to the immediate construction equipment and activities. No significant air quality impacts are anticipated as a result of the project.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no off-site sources of emissions or odor that affect the proposal.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

All construction equipment will be maintained in proper working order and within compliance with State regulations for vehicle emissions. During construction, the site will be watered as necessary to reduce fugitive dust emissions.

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3. Water

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

The project is within a heavily industrialized area of the Lower Duwamish River, within the East Waterway.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

The proposed project includes removing the existing South Float sections and North Pier and replacing them with new structures (Figure 2). The new South Float will be consisting of a heavy-duty HDPE float system with steel structural framing and fully grated decking. The new North Pier will consist of steel piles with a concrete pier superstructure and steel guardrail. Both structures will be replaced within their existing footprint with no increase in overwater coverage. The project will also include repairs to the existing North Floats to remain. More specifically, the project will include the following elements of demolition and construction for a new float, new pier, and float repairs. Plans are included as Attachment A:

Proposed Demolition

- Dock-E Floats
  - Removal and disposal of the existing South Float
  - Removal and disposal of 12” diameter timber float anchoring piles (11)
- North Pier
  - Removal and disposal of 14” diameter timber piles on the pier (14)
  - Removal and disposal of timber cross-bracing on the pier
  - Removal and disposal of timber superstructure and steel railing on the pier
  - Removal of existing concrete abutment
  - Temporarily remove and store existing steel gangway

Proposed Design and Construction Details

- Dock-E Floats
  - Installation of new 12” diameter galvanized steel pipe piling to replace timber piles and anchor new South Float and replace timber piles on the North Float (14 total new galvanized steel piles)
  - Installation of new heavy-duty floats to replace the South Floats (approximately 12 feet wide x 180 feet long)
  - Installation of a new aluminum transition ramp between South and North Float sections (approximately 5 feet wide x 16 feet long)
  - Repairs to existing floats including concrete repairs, deteriorated timber waler replacement, and replacement of treated timber rub board with High Density Polyethylene (HDPE) rub boards
  - Installation of the salvaged existing gangway
- North Pier
  - Installation of new 18” diameter galvanized steel piling (12)
  - Installation of new concrete pier superstructure (62’-3” feet long and 16 feet wide) and new steel railing
  - Installation of a new concrete abutment
  - Installation of the salvaged existing gangway

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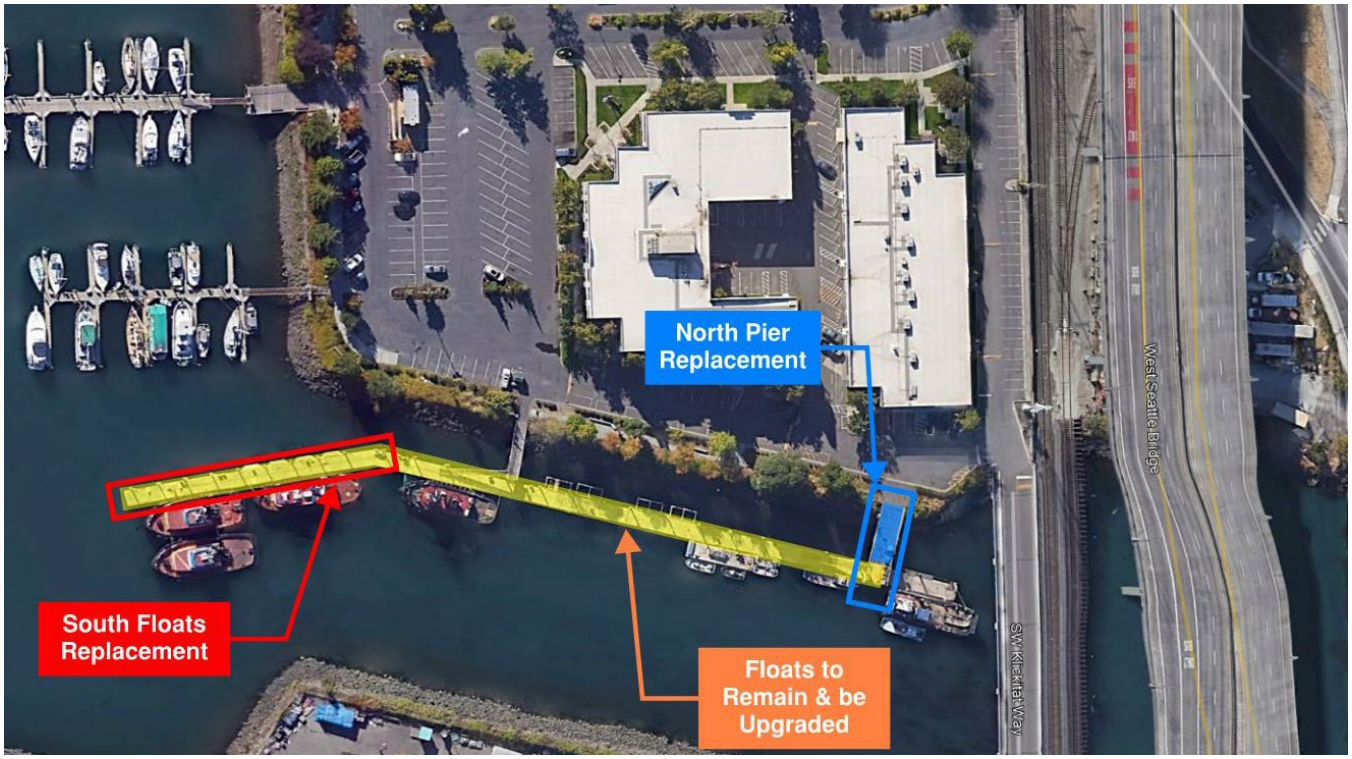

Figure 2. Harbor Island Marina Dock E Float and North Pier Improvements Project Elements

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

No fill material is proposed. The project will result in a net decrease in ocerwater coverage (128 square feet), create additional open areas due to grating incorporated into the design (874 square feet), and minimally increase seabed coverage (9 square feet). The detailed breakdown is included in Attachment A. Project elements to be placed in/on the water include:

- Piles: 14 new 12" diameter galvanized steel pipe pilings for Dock E floats, and 12 new 18" diameter galvanized steel pilings for the north pier
- Dock E Floats: new, heavy-duty 12 feet wide x 180 feet long
- Ramp: new aluminum transition ramp approximately 5 feet wide x 16 feet long
- North pier superstructure: new concrete pier superstructure, 62'-3" feet long and 16 feet wide, and new steel railing
- The existing steel gangway will also be temporarily removed, stored, and reinstalled.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

The Port does not anticipate any surface water withdrawals or diversions as a result of this project.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

Most of the project is located within the 100-year floodplain. It is within an AE Zone with a base flood elevation of 12 feet NAVD 88. The South Floats will rise with the tide and floodwater. The North Pier will be constructed at approximately 16 feet NAVD 88, well above base flood elevation.

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6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.
The project does not propose any discharges of waste materials to surface waters.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.
Groundwater will not be withdrawn from a well for drinking water or other purposes.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.
No waste material will be discharged into the ground or other sources as part of the proposed project.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.
There will be no measurable change in rain runoff due to the proposed project. A minor amount of erosion is possible due to construction.

Erosion and Sediment Control Plans and Construction Stormwater Pollution Prevention Plans will be created when applicable. Work will be conducted in the dry if possible and within the in-water work windows.

2) Could waste materials enter ground or surface waters? If so, generally describe.
An equipment failure has the potential to spill fluids or diesel onto the ground or into the adjacent waterbody. The contractor will be required to prepare and implement a Spill Prevention, Control, and Countermeasures Plan.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.
The proposed project is not expected to alter drainage patterns. Drainage for the north pier will be captured by the existing stormwater system.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:
See Section 1h for erosion and sediment control measures and conservation measures.

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4. Plants

a. Check the types of vegetation found on the site:

__X__ deciduous tree: alder, maple, aspen, other
_____ evergreen tree: fir, cedar, pine, other
__X__ shrubs
__X__ grass
_____ pasture
_____ crop or grain
_____ Orchards, vineyards or other permanent crops.
_____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
_____ water plants: water lily, eelgrass, milfoil, other
__X__ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

The project is within a heavily industrialized area of the Lower Duwamish River. The North Pier is constructed of wooden decking on creosote-treated wooden piles and provides vehicle access and supports an electrical transformer. The South Float is constructed of solid concrete decking and a mix of creosote-treated timber piles and steel piles. The Duwamish River adjacent the project area is armored with riprap on both banks. Vegetation in the project area is limited to a few white ash (*Fraxinus americana*), two Pacific madrone (*Arbutus menziesii*), one Sitka willow (*Salix sitchensis*), and an understory of non-native and invasive species, including Himalayan blackberry (*Rubus armeniacus*), sweet pea (*Lathyrus latifolius*), woodbine (*Clematis virginiana*), and English ivy (*Hedera helix*). A few isolated patches of pickleweed (*Salicornia depressa*) are present just below the ordinary high water mark of the river.

The project entails the removal and installation of piles. No earthwork or grading and fill is anticipated. Some excavation may be necessary for installation of the North Pier abutment. Vegetation will not be intentionally removed or altered as part of this project.

c. List threatened and endangered species known to be on or near the site.

There are no known threatened or endangered plant species known to be on or near the site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

No vegetation is proposed as part of this project.

e. List all noxious weeds and invasive species known to be on or near the site.

Himalayan blackberry, English ivy, and woodbine are known to occur in the project area.

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5. Animals

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other: *waterfowl*
mammals: deer, bear, elk, beaver, other: *sea lions, harbor seals*
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.

Federally-listed species whose geographic range extends into at least a portion of the Action Area are identified in below. See Attachment B for the draft Biological Assessment.

Federally listed species whose range extends into the Action Area

Species	Evolutionary Significant Unit (ESU)/Distinct Population Segment (DPS)/Region	Status	Critical Habitat Designated/ Designated in Action Area
Chinook salmon (*Oncorhynchus tshawytscha*)	Puget Sound	Threatened	Yes/Yes
Steelhead (*Oncorhynchus mykiss*)	Puget Sound	Threatened	Yes/Yes
Bull trout (*Salvelinus confluentus*)	Coastal Puget Sound	Threatened	Yes/Yes
Bocaccio (*Sebastes paucispinis*)	Puget Sound/Georgia Basin	Endangered	Yes/No
Yelloweye Rockfish (*Sebastes ruberrimus*)	Puget Sound/Georgia Basin	Threatened	Yes/No
Canary Rockfish (*Sebastes pinniger*)	Puget Sound/Georgia Basin	Threatened	Yes/No
Eulachon (*Thaleichthys pacificus*)	Southern DPS	Threatened	Yes/No
Killer Whale (*Orcinus orca*)	Southern Resident DPS	Endangered	Yes/No
Humpback Whale (*Megaptera novaeangliae*)	Mexico DPS	Threatened	Yes/No
	Central America DPS	Endangered	Yes/No
Marbled murrelet (*Brachyramphus marmoratus*)	Pacific Region	Threatened	Yes/No

Species	Evolutionary Significant Unit (ESU)/Distinct Population Segment (DPS)/Region	Status	Critical Habitat Designated/ Designated in Action Area
Yellow-billed cuckoo (*Coccyzus americanus*)	Western DPS	Threatened	Yes/No
Streaked horned lark (*Eremophila alpestris strigata*)	Pacific Region	Threatened	Yes/No

c. Is the site part of a migration route? If so, explain.

The Puget Sound area is part of the Pacific Flyway. Birds that inhabit the area vary seasonally due to migrations. Port facilities also are located on significant migratory routes for anadromous fish.

d. Proposed measures to preserve or enhance wildlife, if any:

The project layout and construction techniques have been chosen to reduce the potential environmental impacts. The proposed project will result in a slight net decrease in the overwater coverage area (128 square feet). The use of grated decking on the new South Floats will also provide an additional open area of approximately 874 square feet. The project will undergo Section 7 consultation as part of Section 10 permitting with the US Army Corps of Engineers. See Attachment B for the draft Biological Assessment. Proposed conservation and mitigation measures include:

- Work will be conducted from upland (in the dry) or from a barge
- Use of pre-cast concrete members for construction of the new pier to the maximum extent feasible
- Removal of treated timber piling from the aquatic environment
- Use of fully grated decking for the new South Floats
- Use of dampening device (block of wood, at least 6-inches thick, placement placed between the piling and impact hammer) and bubble curtain to attenuate sounds from hard driving conditions or pile proofing requiring the use of an impact hammer
- Use of silt curtain with floating debris boom
- Use of appropriate best management practices (BMPs)
- Spill Prevention Control and Countermeasures Plans, as required by the General Contract Provisions, will be implemented to minimize impacts during construction
- Piling driving within the in-water work window
- Barges and materials used in the construction process will be completely removed upon project completion
- Piling will be installed from a barge using a vibratory hammer. Piles for the pile bents near shore may be installed from an upland-based crane using a vibratory hammer
- Impact hammer will only be used for proofing pier piles and when required by hard driving conditions
- New floats to be fabricated off-site

e. List any invasive animal species known to be on or near the site.

No significant amounts of invasive animal species have been noted along the bankline repair areas.

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6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The current South Floats are shore power equipped. The proposed project does not change current energy loads or needs on the piers and will reinstalled at the end of the project.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The project replaces current infrastructure. Therefore, it will not affect the potential use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

There are no energy impacts, so no energy conservation features are included as part of the proposed project.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

There are no environmental health hazards that could occur due to the proposed projects. Potential hazards during construction are listed below.

1) Describe any known or possible contamination at the site from present or past uses.

Terminal 102 is located on the south end of Harbor Island, at the north end of the Duwamish Waterway navigation channel. Terminal 102 has been in place as filled former aquatic area in south Elliott Bay for more than 50 years. The site was formerly used as a marine cargo marshalling facility by the Port of Seattle, prior to redevelopment as an office/warehouse/marina use.

Harbor Island is a National Priorities List (NPL) listed site. Cleanup has been completed on Harbor Island and it is currently subjected to a 5-year review process. The East Waterway is an Operable Unit under the Harbor Island Cleanup Program. According to EPA, the mud of the East Waterway is contaminated with high levels of pollutants including polychlorinated biphenyls (PCBs), arsenic, carcinogenic polycyclic aromatic hydrocarbon (cPAHs), tributyltin (TBT), and mercury.

The project elements will be coordinated with the EPA and/or Ecology and will be designed to not preclude or foreclose future cleanup options. Since the project only requires pile removal and installation, sediment disturbance will be minimal.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

There are no known underground hazardous liquid or gas transmission lines near the proposed project.

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3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

There is a small risk of accidental spillage of fuels, oils, and /or hydraulic fluids associated with operation of equipment during construction. Use of standard construction practices and the requirement for the contractor to comply with the Port's spill prevention and response procedures are expected to acceptably minimize this risk.

4) Describe special emergency services that might be required.

No special emergency services are required due to proposed repair and enhancement projects.

5) Proposed measures to reduce or control environmental health hazards, if any:

Ecology and EPA concurrence are required for projects located on contaminated properties. The contractor will be required to comply with the Port's spill prevention and response procedures are expected to acceptably minimize this risk.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

There are no noise sources which will affect the proposed project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

There will be short-term, temporary noise impacts due to construction equipment on the project areas. The project will not result in a large amount of truck trips. Work will occur during normal work hours and will comply with local noise ordinance. If nighttime construction occurs and is anticipated that it will exceed the limits of the local noise ordinance, then the Port would be required to obtain a variance for the evening work period.

Upon project completion, noise levels will return to pre-project levels.

3) Proposed measures to reduce or control noise impacts, if any:

The Port of Seattle will adhere to all applicable federal, state, and local noise regulations governing construction activities.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

Terminal 102 is located on the south end of Harbor Island, at the north end of the Duwamish Waterway navigation channel. The Terminal 102 facility is adjacent to the confluence the East and West Waterways, where these navigation corridors join at Turning Basin Number One in the Duwamish Waterway, including shoreline between approximately river mile 0.5 and 0.6. Terminal 102 includes approximately 8.1 acres of existing upland area, 13.9 acres of aquatic area, and approximately 1,800 linear feet of shoreline. The entire site is built and committed to water-dependent marine industrial and marina uses and warehousing/light manufacturing facilities. Shoreline and aquatic area at the west and south portions of the site are occupied by two existing marinas: (1)

Anchor Marina (west shoreline) consisting of approximately 59 open and covered moorages, with associated floats and (2) Harbor Island Marina (south shoreline) consisting of approximately 75 moorages served by a system of five floating docks. The marinas are operated separately but share a common boundary.

Harbor Island consists entirely of marine industrial and commercial uses and activities. The area is bordered on all sides by existing industrial land, shoreline, and aquatic area use designations. The west, south, and east margins of Terminal 102 comprise the north portion of the Duwamish Waterway, allowing marine vessel access to south Elliott Bay. The north margin of Terminal 102 includes the Spokane Street corridor containing essential surface road and rail connections to the inter-state highway and rail transportation network.

The proposed project will preserve current uses at Terminal 102.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

The project site has not been used as working farmlands or forest lands.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

The proposed project occurs within highly modified maritime industrial sites and urban waterways. The project will not affect or be affected by a working farm or forestland.

c. Describe any structures on the site.

The entire site is built and committed to water-dependent marine industrial and marina uses and warehousing/l light manufacturing facilities. Shoreline and aquatic area at the west and south portions of the site are occupied by two existing marinas: (1) Anchor Marina (west shoreline) consisting of approximately 59 open and covered moorages, with associated floats and (2) Harbor Island Marina (south shoreline) consisting of approximately 75 moorages served by a system of five floating docks. The marinas are operated separately but share a common boundary. Below is a specific list of structures at Harbor Island Marina that the project encompasses:

Dock-E Floats

The Harbor Island Marina Dock-E floats support tug and commercial vessels. The floats contain the following features:

- Concrete floats with timber walers and rub boards. Floats are approximately 624 feet long x 11.5 feet wide.
- The South Floats (approximately 184 feet long) are at the end of their service life and need to be replaced.
- The North Floats (approximately 440 feet long) have some remaining service life and need to be repaired for cracks/spalls, select deteriorated timber walers & rub boards, and areas of listing.
- Floats are supported by a mix of timber and steel piles (25 total). There are 11 timber piles and 14 steel piles anchoring the float system.

North Pier Structure

The Harbor Island Marina Dock-E North Pier supports the tug and commercial vessel operations on the float and is intended to provide vehicle access to the pier. The pier contains the following features:

- Pier structure consists of timber piles, cross-bracing, pile caps, stringers, decking, and a steel railing.
- The pier is approximately 62’-3” feet long and 16 feet wide.

- The pier structure is supported by 14 treated timber piling with diameters of 14 inches.
- The pier is nearing the end of its service life and needs to be replaced to restore vehicle access to the facility.

d. Will any structures be demolished? If so, what?

The South Floats and North Pier will be demolished and replaced as part of this project.

e. What is the current zoning classification of the site?

Terminal 102 is zoned General Industrial (IG1 U/85) and has a shoreline designation of Urban Industrial (UI). The terminal also is within the Greater Duwamish Manufacturing Industrial Center.

f. What is the current comprehensive plan designation of the site?

The City of Seattle 2015-2035 Comprehensive Plan has Terminal 102 designated as an industrial area.

g. If applicable, what is the current shoreline master program designation of the site?

Shoreline designations from Seattle Department of Construction and Inspection GIS list Terminal 102's shoreline designation as Urban Industrial (UI).

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

City of Seattle has designated Terminal 102 and its shoreline as having Liquefaction Prone Areas, Flood Prone Areas, and Wildlife Habitat. There is one steep slope area in the northwest corner of the property, away from the project site.

i. Approximately how many people would reside or work in the completed project?

People would not reside or permanently work in the completed project area.

j. Approximately how many people would the completed project displace?

The completed project would not displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any:

There will be no displacements.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposed projects will not impact existing or projected land uses. The project will support and maintain existing uses at Terminal 102.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

The proposed project will not impact agricultural or forest lands.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing will be provided as part of this project.

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b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing will be eliminated as part of this project.

c. Proposed measures to reduce or control housing impacts, if any:

The proposed project will not impact housing.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The tallest height of the proposed project (North Pier) is approximately 19 feet Mean Lower Low Water (approximately 16 feet NAVD 88), which is level with the existing Terminal 102 uplands. A guardrail will extend approximately 4 feet above the pier. A small crane may be situated at the end of the pier.

b. What views in the immediate vicinity would be altered or obstructed?

The project will not alter existing permitted views. The existing North Pier was in a similar location and had the ability to accommodate a boat lift and trucks.

c. Proposed measures to reduce or control aesthetic impacts, if any:

There are no expected aesthetic impacts due to this project.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

No light or glare will be produced by the proposed project.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

No light or glare will be produced by the proposed project and, therefore, will not create a safety hazard or interfere with views.

c. What existing off-site sources of light or glare may affect your proposal?

Existing sources of light and glare will not affect the proposed project.

d. Proposed measures to reduce or control light and glare impacts, if any:

No light or glare will be produced by the proposed project.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

Terminal 102 is a recreational and commercial marina. It also has 600 feet of shoreline pathway, viewing areas, and seating.

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b. Would the proposed project displace any existing recreational uses? If so, describe.

The proposed project may result in temporary access constraints and noise impacts during construction. The Port provides temporary access and public safety plans for projects that plan to close trails or accessways due to construction activities.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

Impacts to public access and recreation will be short-term and temporary in nature. There will be no permanent impact recreation opportunities.

13. Historic and cultural preservation

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.

There are numerous buildings over 45 years of age on Port properties. The proposed project will not impact any building or structures of historical significance.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

Port facilities are built in industrial areas, mostly over and within historic fill. Waters in the vicinity of most Port facilities are Treaty-protected “Usual and Accustomed” fishing areas. Fishing activities are managed by the Suquamish Tribe and Muckleshoot Indian Tribe. Fishing by Tribe members in these areas is consistent with past federal government treaties and subsequent federal court decisions.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

The Port has consulted environmental conditions reports prepared for the Port, as well as the Washington Information System for Architectural & Archaeological Records Data. Tribes will be further consulted as part of the environmental review and permitting process.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

The proposed project will remove and replace existing piles. Some upland earth disturbance may be necessary to install the North Pier abutment. Any potential resources found during will result in a construction stop-work order.

14. Transportation

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

Terminal 102 is accessible by Klickitat Ave SW. The north side of Terminal 102 is bound by SW Spokane Street and the West Seattle Bridge. The proposed projects will not alter existing access to the street system.

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b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The proposed projects will not alter or impact demand on existing public transit systems.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

The proposed project will not create additional parking and is not expected to eliminate any parking that is currently in use.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

The proposed project will not require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities. The project could require the temporary closure of public access sites or parking areas. These impacts will be short-term and temporary in nature.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The proposed project serves commercial vessels, which is the existing use at the facility.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

No vehicle trips will be generated by the project.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The proposed project will not interfere with or be affected by the movement of agricultural and forest products.

h. Proposed measures to reduce or control transportation impacts, if any:

There are no transportation impacts expected as a result of the proposed project.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

The proposed project will not increase the need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

The proposed project will not impact public services.

16. Utilities

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other _____

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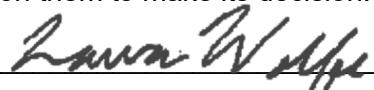
b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

The proposed project does not require utilities. The current South Floats are shore power equipped. The proposed project does not change current energy loads or needs on the piers and will reinstalled at the end of the project.

C. Signature

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Name of signee Laura D. Wolfe, AICP

Position and Agency/Organization Environmental Program Manager, Port of Seattle

Date Submitted: 10/25/2021

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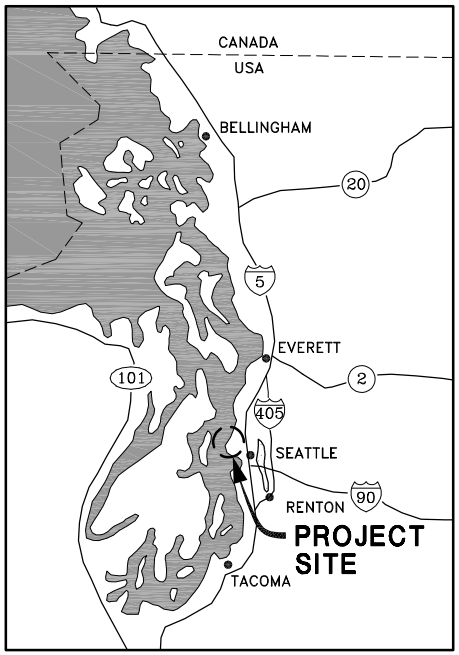
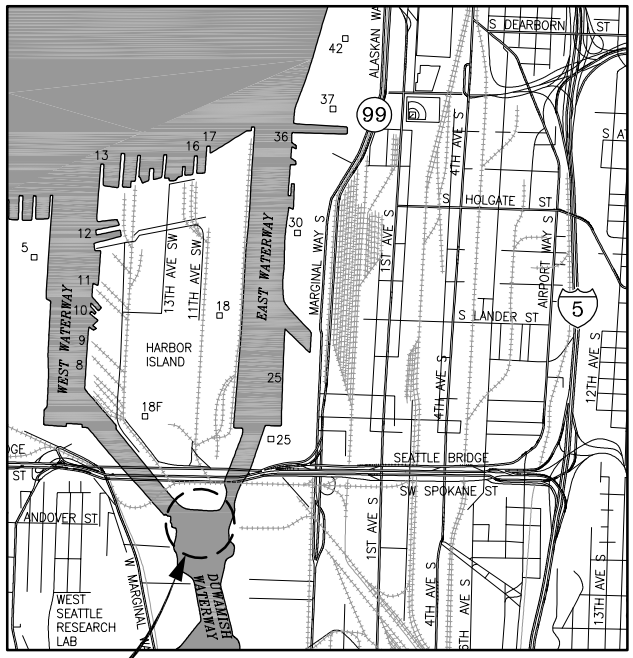
ATTACHMENT A: PLAN SHEETS



N

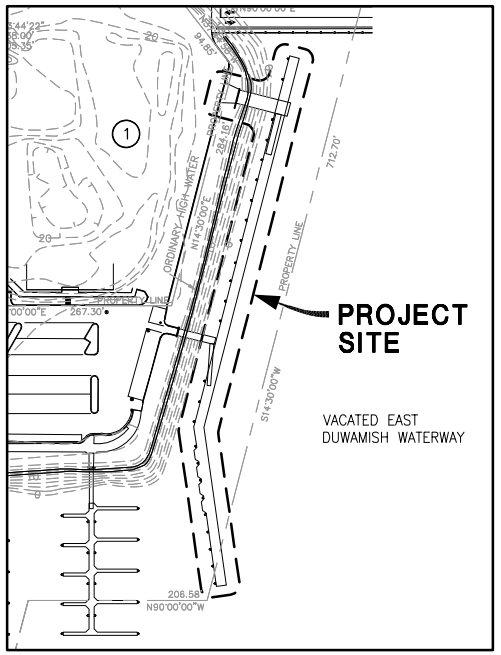
LOCATION MAP



PROJECT SITE

N

VICINITY MAP



N

SITE PLAN

PROPERTY DESCRIPTION

PARCEL NUMBER: 766670-1220

LEGAL: SEATTLE TIDE LDS EXT #1 POR OF W 1/2 OF STR 18-24-04 BEING THOSE PORTIONS OF VAC KLICKITAT AVE SW - VAC 10TH AVE SW - VAC SW MANNING ST & VAC EAST WATERWAY & POR OF BLKS 390-391 & 409 OF PLAT OF SEATTLE TIDE LANDS LY WITHIN FOLG DESC TR - BEG AT NXN WLY MGN SD VAC EAST WW & S LN OF N 30 FT LOT 4 BLK 390 & TPOB TH N 90 E ALG SD S LN 206.58 FT TO C/L SD VAC E WW TH S 14-30 W 712.7 FT TH S 90 W 206.58 FT TO SE COR LOT 15 BLK 390 TH S 14-30 W ALG ELY LN SD BLK 390 837.04 FT TO S COR LOT 28 SD BLK TH N 17-56-45 W 752.56 FT TH N42-15W 901.8 FT TAP ON CRV BEING SELY LN BNRRCO R/W TH NELY ALG SD R/W CRV 326.11 FT TO LN 30 FT N & PLW S LN SD LOT 4 BLK 391TH E ALG SD PLL LN 591.12 FT TH S 43-4-22 E 23.85 TAP CRV TO R RAD 138 FT ARC DIST 105.35 FT TH S 237.46 FT TH E 267.3 FT TH N 14-30 E 284.16 FT TH N 37-44-58 W 94.85 FT TO TPOB LESS PORTION THOF LYING SLY OF N LN & WLY EXTENSION SD N LN OF LOT 23 SD BLK 390 --AKA PORTION OF PARCEL A CITY OF SEATTLE LOT LINE ADJUSTMENT NO 9403933R REC NO 9501240803
PLAT BLOCK: 391 &
PLAT LOT: 6 THRU 14 &

SITE ADDRESS

NAME: HARBOR ISLAND MARINA
ADDRESS: 1001 SW KLICKITAT WAY
SEATTLE, WA 98134
PHONE: (206) 787-3006

LATITUDE: 47° 24' 12.26" N
LONGITUDE: 122° 20' 52.24" W

OWNER

NAME: PORT OF SEATTLE
ADDRESS: P.O. BOX 1209
SEATTLE, WA 98111
PHONE: (206) 728-3000

CONTACT: LAURA WOLFE, ENVIRONMENTAL PROGRAM MANAGER
PHONE: (206) 247-2193

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:
(1) SSA MARINE INC

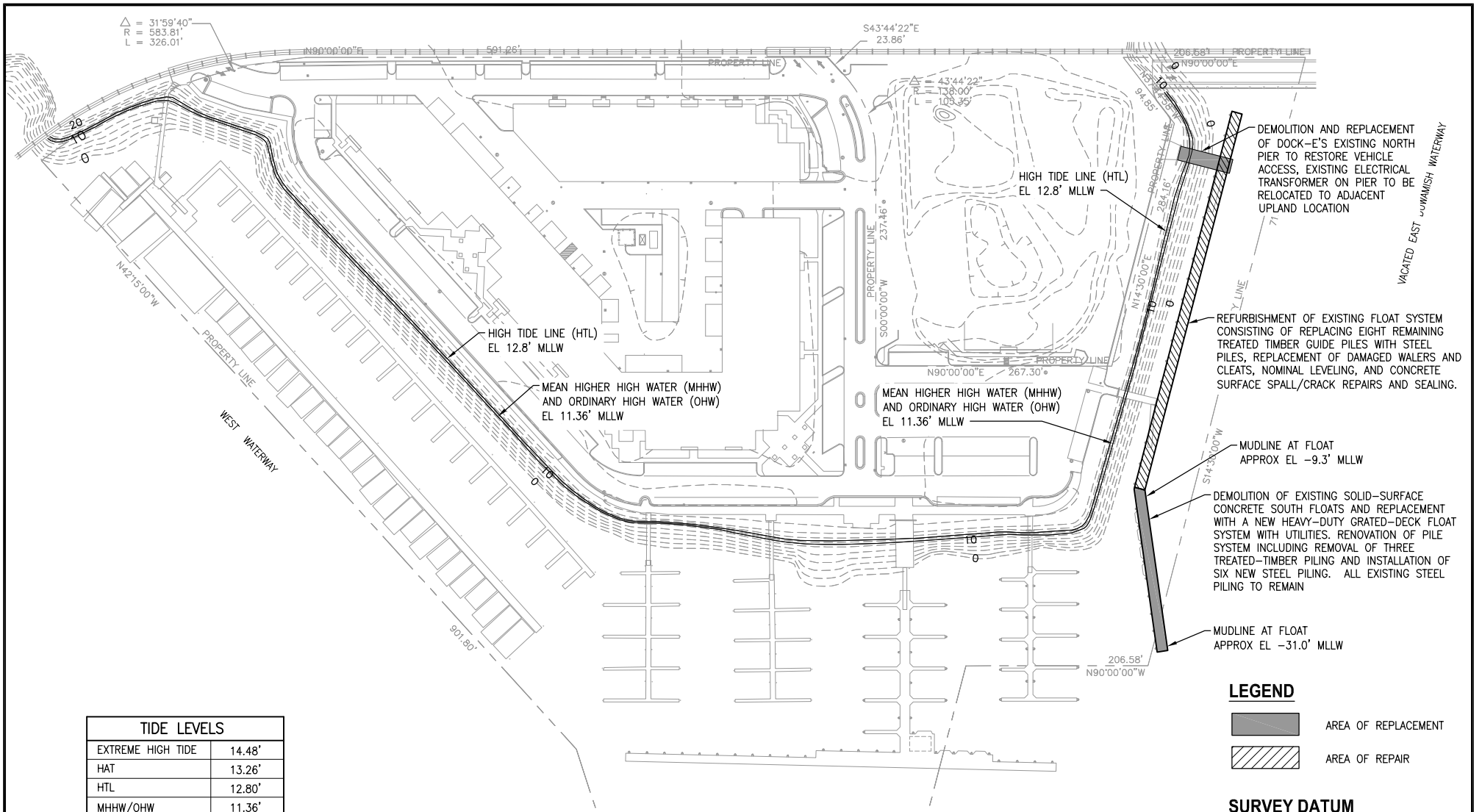
LOCATION MAP, VICINITY MAP

HARBOR ISLAND MARINA
DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

NAME: HARBOR ISLAND MARINA
ADDRESS: 1001 SW KLICKITAT WAY
SEATTLE, WA 98134

ReidMiddleton
728 134th Street SW · Suite 200
Everett, Washington 98204
Ph: 425 741-3800

IN: SEATTLE, WA
AT: HARBOR ISLAND MARINA
COUNTY OF: KING
APPLICATION BY: PORT OF SEATTLE
SHEET 1 OF 11 DATE: MAY 2021



TIDE LEVELS	
EXTREME HIGH TIDE	14.48'
HAT	13.26'
HTL	12.80'
MHHW/OHW	11.36'
MHW	10.49'
MEAN	6.64'
MLLW	0.00'
EXTREME LOW TIDE	-5.04'

PLAN - SITE PLAN

SCALE: 1" = 160'

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:

(1) SSA MARINE INC

SITE PLAN

HARBOR ISLAND MARINA
DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

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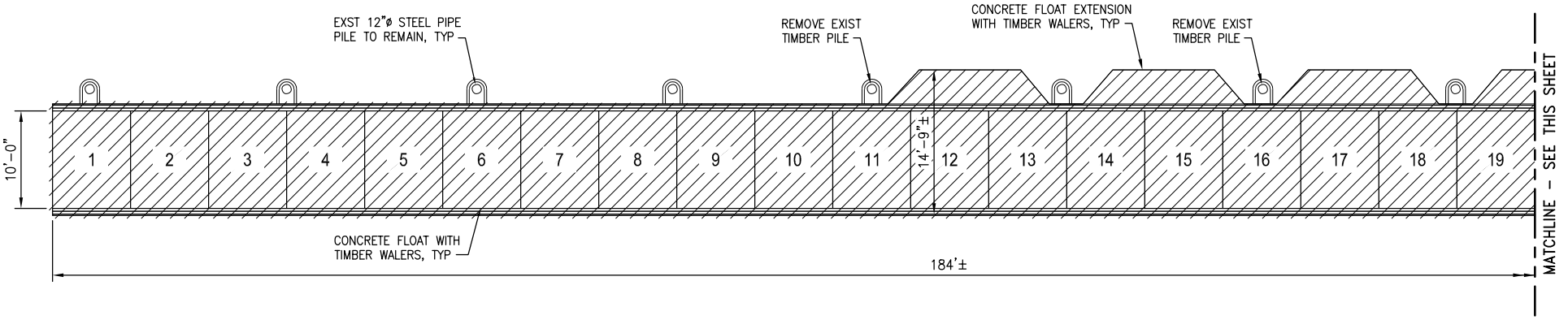
Ph: 425 741-3800

IN: SEATTLE, WA
AT: HARBOR ISLAND MARINA
COUNTY OF: KING
APPLICATION BY: PORT OF SEATTLE

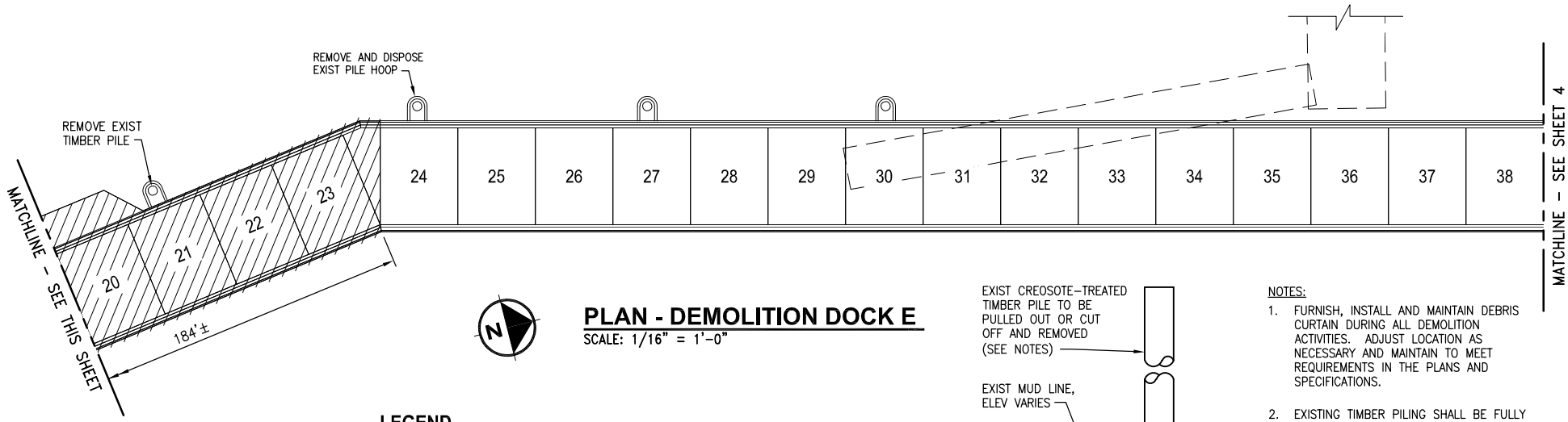
SHEET 2 OF 11 DATE: MAY 2021

May 26, 2021 - 5:10pm dolsen H:\24WF\2021\003 POS Harbor Island Marina Dock E\Drafting\Permit - JARPA\PRMT 2.dwg Layout Name: PRMT 2



PLAN - DEMOLITION DOCK E

SCALE: 1/16" = 1'-0"



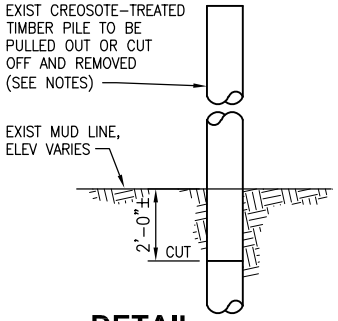
PLAN - DEMOLITION DOCK E

SCALE: 1/16" = 1'-0"

LEGEND

TO BE DEMOLISHED

TO BE REPAIRED



DETAIL

PILE REMOVAL
NOT TO SCALE

1/4

NOTES:

1. FURNISH, INSTALL AND MAINTAIN DEBRIS CURTAIN DURING ALL DEMOLITION ACTIVITIES. ADJUST LOCATION AS NECESSARY AND MAINTAIN TO MEET REQUIREMENTS IN THE PLANS AND SPECIFICATIONS.
2. EXISTING TIMBER PILING SHALL BE FULLY EXTRACTED BY DIRECT PULLING WITH A CRANE BARGE OR VIBRATORY HAMMER. HYDRAULIC WATER JETTING WILL NOT BE ALLOWED. IF AN EXISTING PILE CANNOT BE EXTRACTED, THE PILE WILL BE CUT OFF UP TO 2 FEET BELOW MUD LINE.

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:

(1) SSA MARINE INC

DEMOLITION PLAN DOCK E

HARBOR ISLAND MARINA
DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

NAME: HARBOR ISLAND MARINA
ADDRESS: 1001 SW KLICKITAT WAY
SEATTLE, WA 98134

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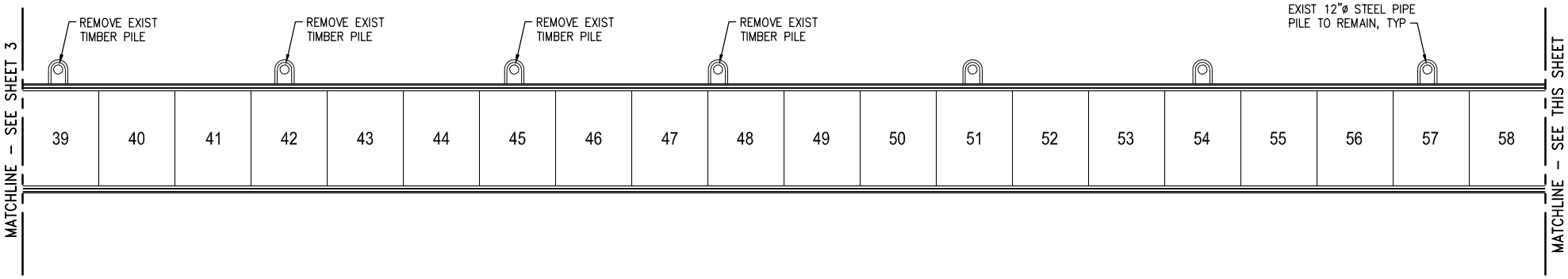
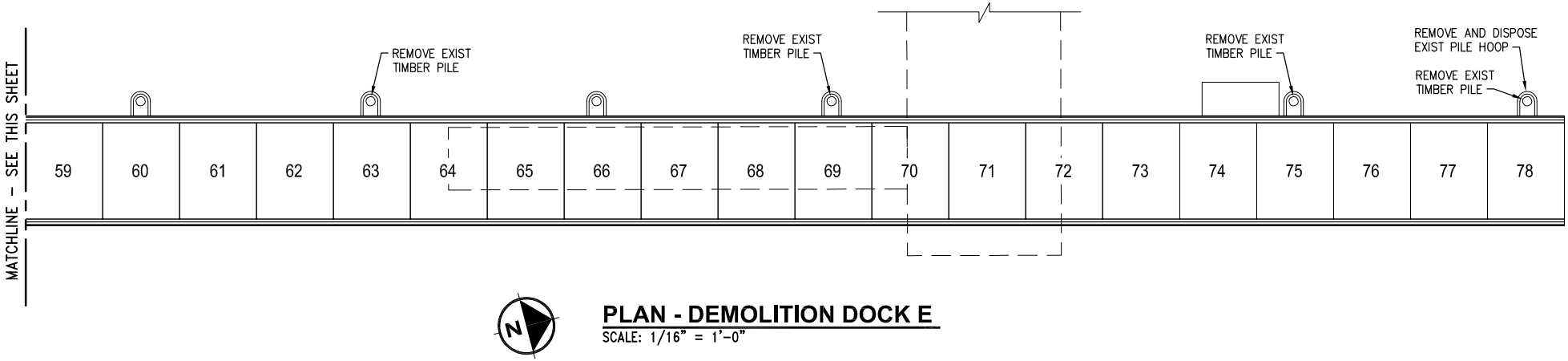
SHEET 3 OF 11 DATE: MAY 2021



PLAN - DEMOLITION DOCK E

SCALE: 1/16" = 1'-0"



PLAN - DEMOLITION DOCK E

SCALE: 1/16" = 1'-0"

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:

(1) SSA MARINE INC

DEMOLITION PLAN DOCK E

HARBOR ISLAND MARINA
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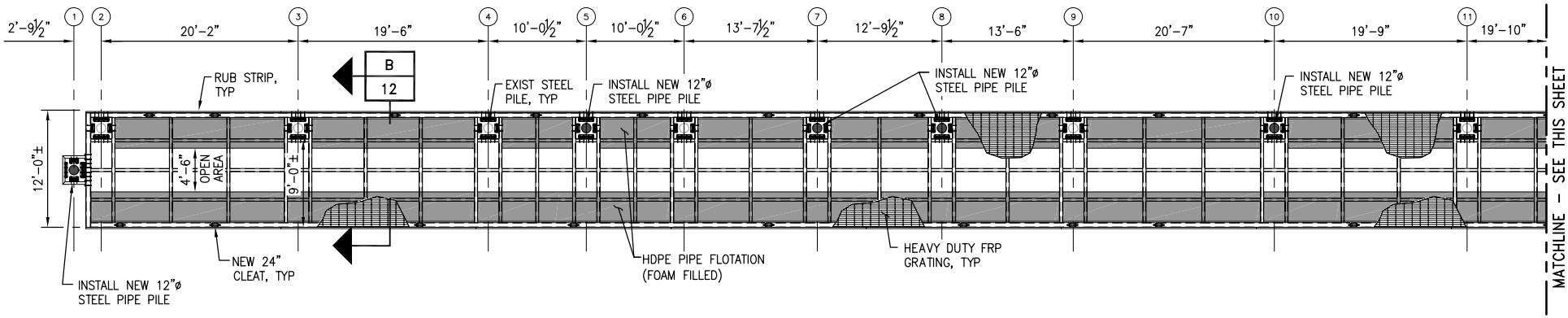
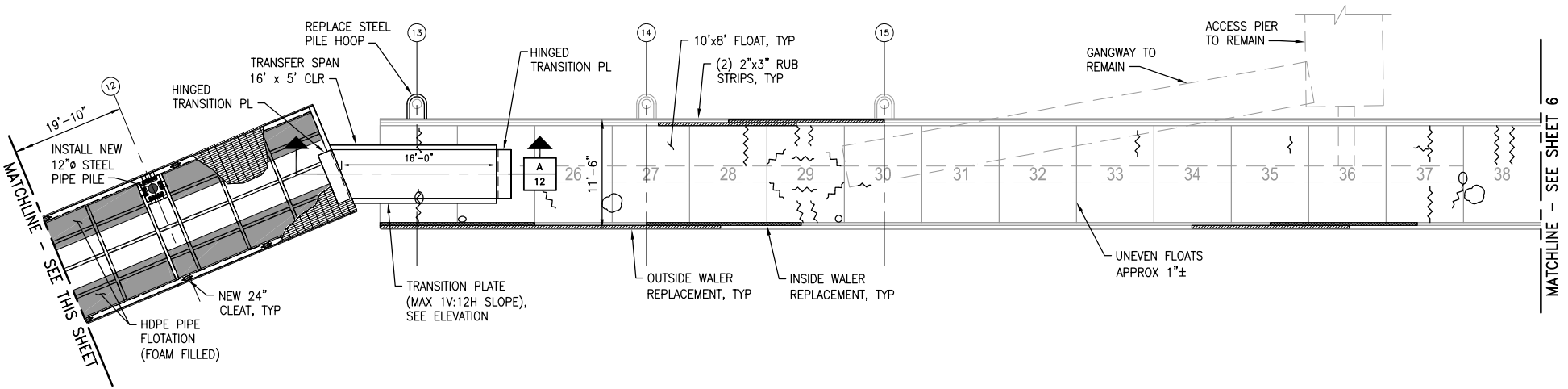
SHEET 4 OF 11 DATE: MAY 2021



PLAN - FLOAT REPLACEMENT AND REPAIR DOCK E

SCALE: 1/16" = 1'-0"



NOTES

1. REPLACE ALL RUB BOARDS WITH PLASTIC LUMBER.
2. ADD SUPPLEMENTAL FLOTATION TO CORRECT UNEVEN FREEBOARD ON EXISTING FLOATS TO REMAIN.

PLAN - FLOAT REPLACEMENT AND REPAIR DOCK E

SCALE: 1/16" = 1'-0"

LEGEND

CRACK TO BE REPAIRED

SPALL TO BE REPAIRED

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:

(1) SSA MARINE INC

FLOAT REPLACEMENT AND REPAIR PLAN DOCK E

HARBOR ISLAND MARINA
DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

NAME: HARBOR ISLAND MARINA
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SEATTLE, WA 98134

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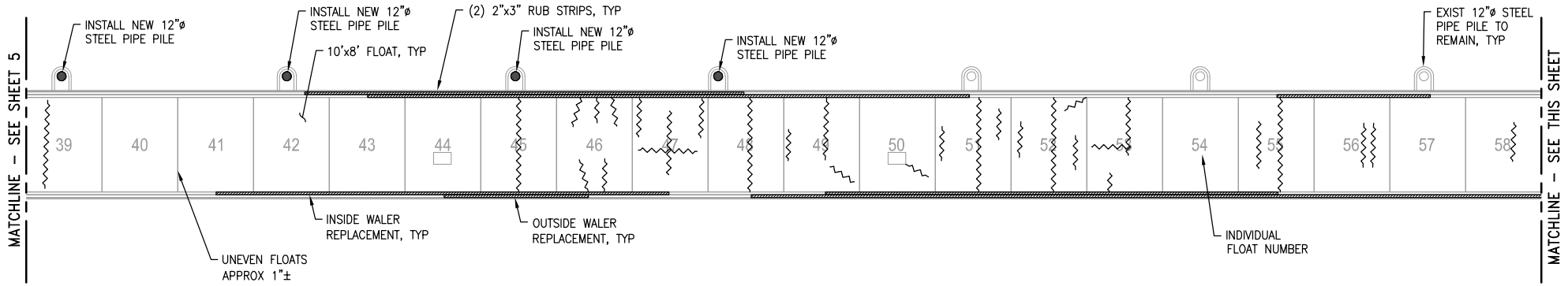
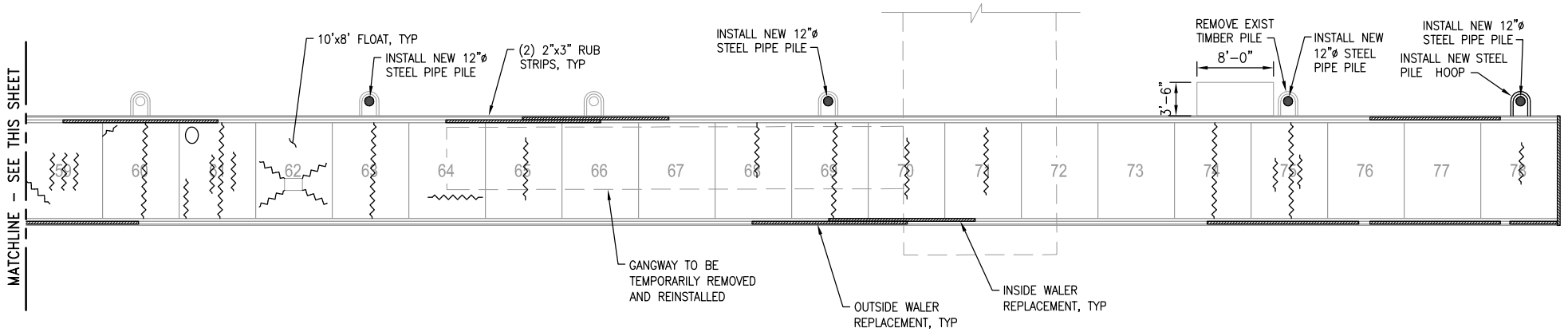
SHEET 5 OF 11 DATE: MAY 2021



PLAN - FLOAT REPLACEMENT AND REPAIR DOCK E

SCALE: 1/16" = 1'–0"



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2. ADD SUPPLEMENTAL FLOTATION TO CORRECT UNEVEN FREEBOARD ON EXISTING FLOATS TO REMAIN.

PLAN - FLOAT REPLACEMENT AND REPAIR DOCK E

SCALE: 1/16" = 1'–0"

LEGEND

CRACK TO BE REPAIRED

SPALL TO BE REPAIRED

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:

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FLOAT REPLACEMENT AND REPAIR PLAN DOCK E

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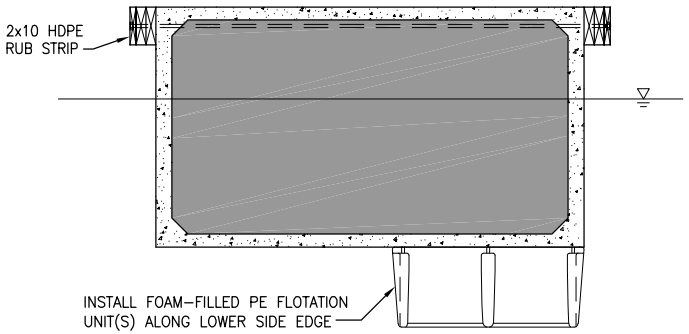
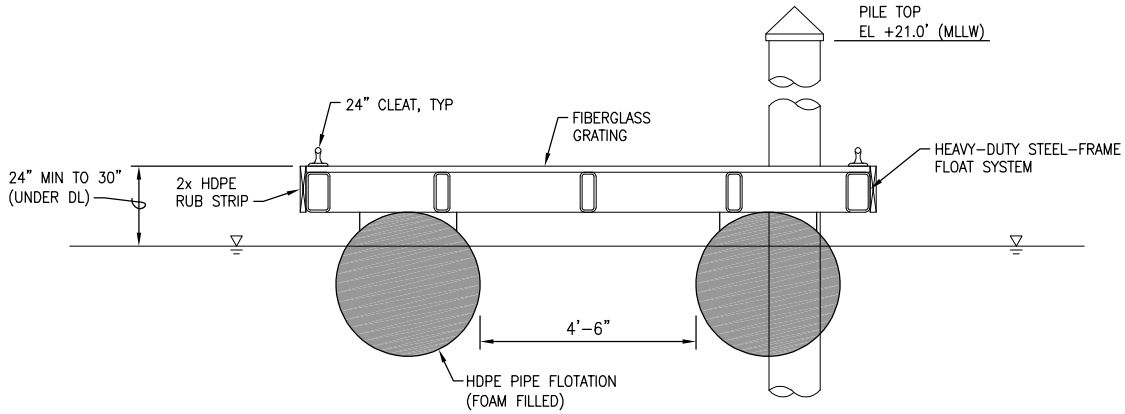
APPLICATION BY: PORT OF SEATTLE
SHEET 6 OF 11 DATE: MAY 2021

May 26, 2021 – 5:10pm dolsen H:\24WF\2021\003 POS Harbor Island Marina Dock E\Drafting\Permit – JARPA\PRMT 6.dwg Layout Name: PRMT 6



DETAIL 1/12
INSTALLATION OF SUPPLEMENTAL FLOTATION UNITS
SCALE: 1/4"=1'-0"



SECTION B/11
TYPICAL REPLACEMENT FLOAT
SCALE: 1/4"=1'-0"

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:
(1) SSA MARINE INC

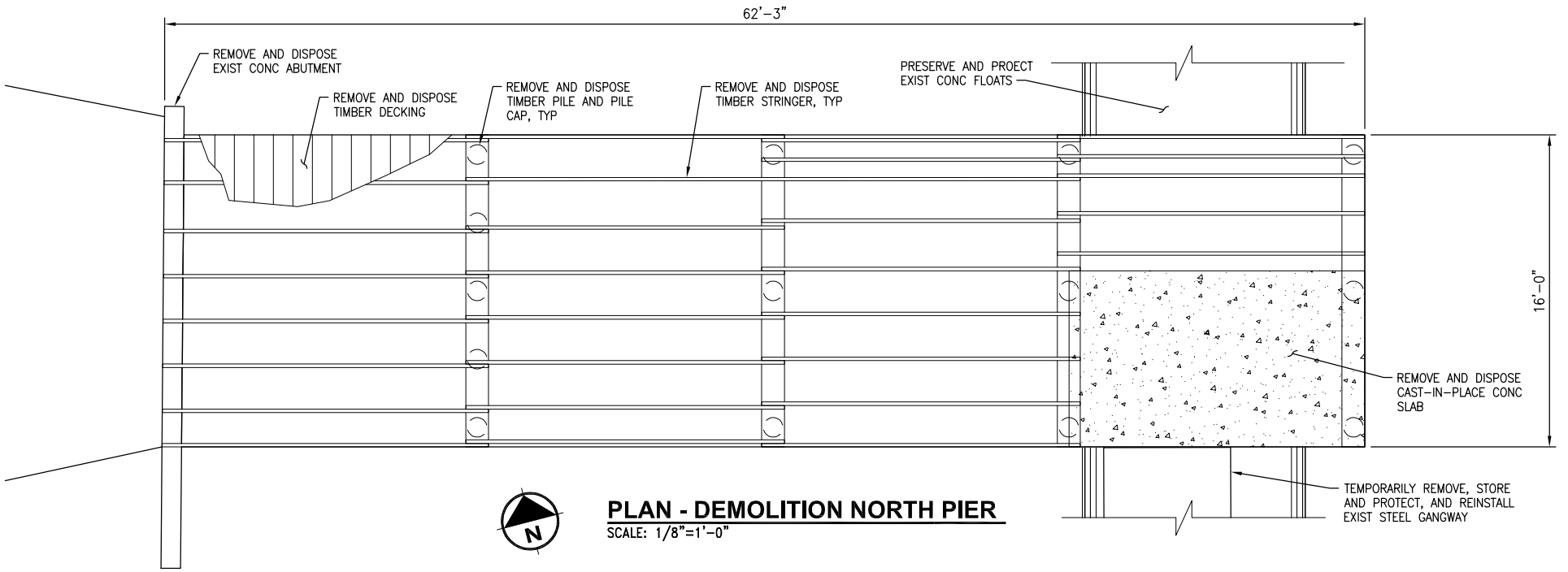
FLOAT REPLACEMENT SECTIONS AND SUPPLEMENTAL FLOTATION

HARBOR ISLAND MARINA
DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

NAME: HARBOR ISLAND MARINA
ADDRESS: 1001 SW KLICKITAT WAY
SEATTLE, WA 98134

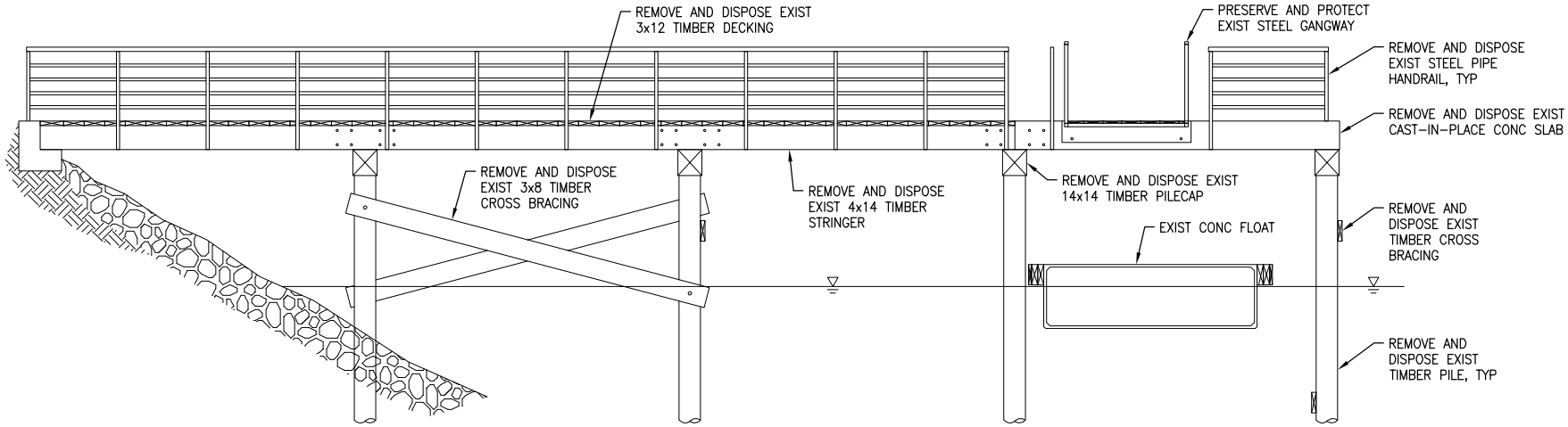
ReidMiddleton
728 134th Street SW · Suite 200
Everett, Washington 98204
Ph: 425 741-3800

IN: SEATTLE, WA
AT: HARBOR ISLAND MARINA
COUNTY OF: KING
APPLICATION BY: PORT OF SEATTLE
SHEET 7 OF 11 DATE: MAY 2021



PLAN - DEMOLITION NORTH PIER

SCALE: 1/8"=1'-0"



ELEVATION - DEMOLITION NORTH PIER

SCALE: 1/8"=1'-0"

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:

(1) SSA MARINE INC

DEMOLITION PLAN NORTH PIER

HARBOR ISLAND MARINA
DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

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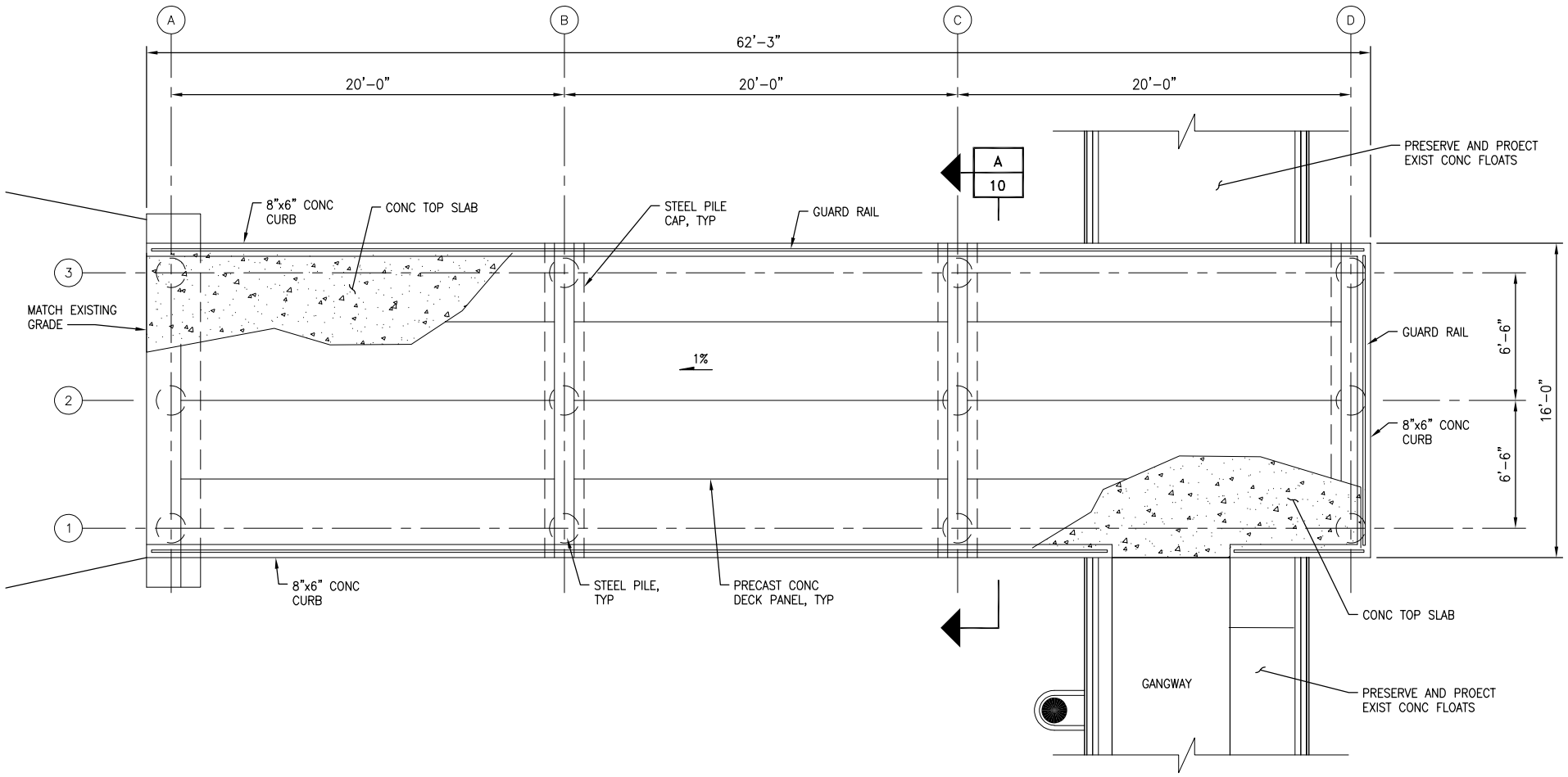
SHEET 8 OF 11 DATE: MAY 2021



N

PLAN - REPLACEMENT NORTH PIER

SCALE: 1/8"=1'-0"

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:

(1) SSA MARINE INC

REPLACEMENT PLAN NORTH PIER

HARBOR ISLAND MARINA
DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

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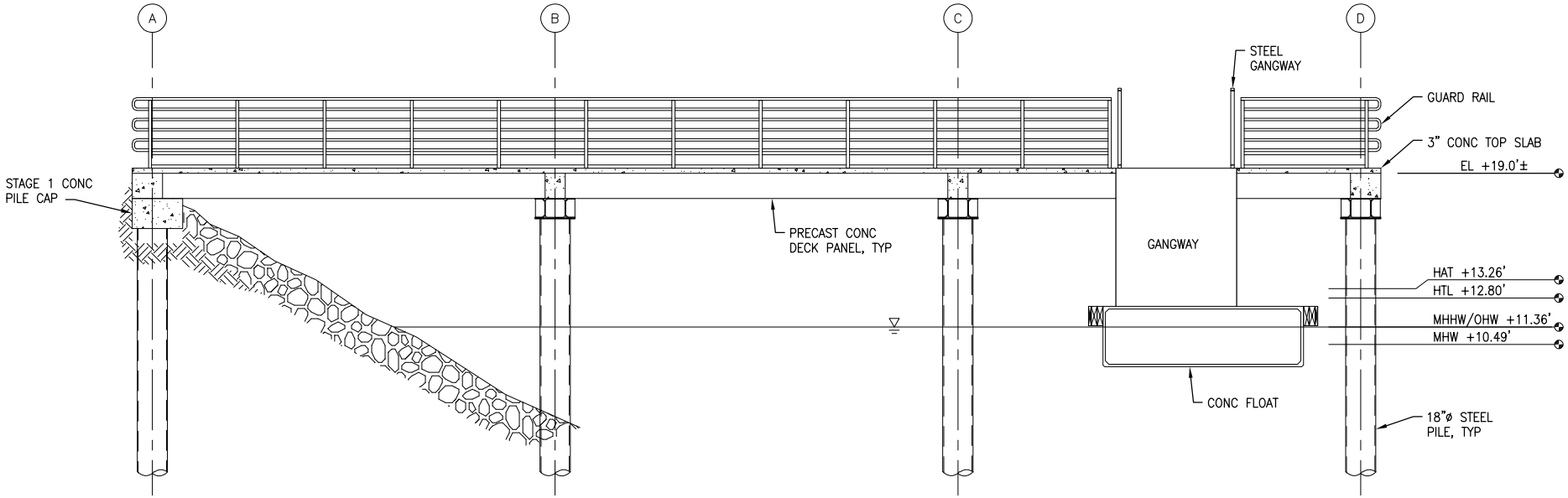
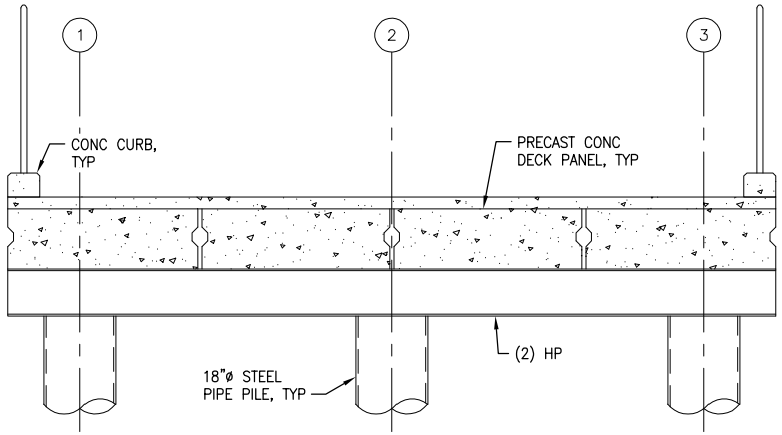
SHEET 9 OF 11 DATE: MAY 2021



ELEVATION - REPLACEMENT NORTH PIER

SCALE: 1/8"=1'-0"



SECTION

NORTH PIER
SCALE: 1/4"=1'-0"

A
9

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:
(1) SSA MARINE INC

REPLACEMENT PLAN NORTH PIER

HARBOR ISLAND MARINA
DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

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SHEET 10 OF 11 DATE: MAY 2021

OVER WATER COVERAGE

PROJECT ELEMENT	EXISTING OVER WATER COVERAGE (SF)	PROPOSED OVER WATER COVERAGE (SF)	NET OVER WATER CHANGE (SF)	ADDITIONAL OPEN AREA (SF) DUE TO USE OF GRATED DECKING (MIN 40% OPEN AREA)
DOCK–E FLOAT REPLACEMENT	2,312	2,160	–152	2,160 x 0.4 = 864
TRANSITION RAMP	N/A	24	24	24 x 0.4 = 9.6
NORTH PIER	996	996	0	N/A
TOTAL	**3,308**	**3,180**	**–128**	**874**

SEABED IMPACT COVERAGE

PROJECT ELEMENT	EXISTING SEABED IMPACT (SF)	PROPOSED SEABED IMPACT (SF)	NET SEABED IMPACT (SF)
REMOVAL AND REPLACEMENT OF SELECT DOCK–E FLOAT PILING	(11) TIMBER 12"ø = 8.64 SF	(14) STEEL 12"ø = 11 SF	+11 STEEL –8.64 TIMBER = 2.36 SF
NORTH PIER PILING	(14) TIMBER 14"ø = 15.00 SF	(12) STEEL 18"ø = 21.21 SF	+21.21 STEEL –15.00 TIMBER = 6.21 SF
TOTAL	**24**	**33**	**9**

PURPOSE: REPAIR/REPLACEMENT OF DETERIORATED DOCK E FLOATS AND REPLACEMENT OF NORTH PIER

DATUM: MLLW 0.0'

ADJACENT PROPERTY OWNERS:
(1) SSA MARINE INC

HARBOR ISLAND MARINA
DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

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AT: HARBOR ISLAND MARINA
COUNTY OF: KING
APPLICATION BY: PORT OF SEATTLE
SHEET 11 OF 11 DATE: MAY 2021

P.O. Box 1209
Seattle, WA 98111-1209
Tel: 787-3000

www.portseattle.org

ATTACHMENT B: DRAFT BIOLOGICAL ASSESSMENT

Biological Assessment

HARBOR ISLAND MARINA DOCK E FLOATS AND NORTH PIER IMPROVEMENTS

SEATTLE, WASHINGTON

July 2021

Prepared for:

Laura Wolfe
Environmental Program Manager
Maritime Environment and Sustainability
Port of Seattle
2711 Alaskan Way
Seattle, WA 98121

Prepared on behalf of (applicant):

Port of Seattle
2711 Alaskan Way
Seattle, WA 98121

THE WATERSHED COMPANY

Title-page image: Dock E, facing south.

THE WATERSHED COMPANY

750 Sixth Street South
Kirkland, WA 98033

p 425.822.5242
f 425.827.8136

watershedco.com

Reference Number: 160246.11

Contact: Ryan Kahlo, PWS
Senior Ecologist

Table of Contents

List of Figures

List of Tables

1 Consultation History and Federal Nexus

The National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) have not been consulted regarding this project prior to this effort, which is related to a permit application to the U.S. Army Corps of Engineers (Corps) in accordance with Section 10 of the Rivers and Harbors Act. The Corps is the lead federal agency for the project.

2 Project Description

The Port of Seattle owns and operates Harbor Island Marina (HIM) in Seattle, Washington. The facility is part of Terminal 102, which is located at the south end of Harbor Island in the Duwamish Waterway. The HIM Dock E Floats and North Pier Improvements project will replace a portion of an older concrete dock system, repair a portion of the concrete dock system to remain, and replace an older timber pier. The project will preserve services and moorage for large tug and commercial vessels that utilize the Dock E and North Pier facilities.

The proposed Dock E Float and North Pier Improvements project includes replacing a section of the concrete floating dock, rehabilitating the remaining concrete floating dock sections, replacing timber guide piling, and replacing the North Pier, which is nearing the end of its service life. Specific elements of the project include:

- Complete replacement of the southernmost 23 (out of the 78 total) of Dock E's existing float sections with new heavy-duty floats featuring appurtenances designed for large vessel berthing and mooring.
- The existing float is anchored with a combination of newer steel piling and older timber piling. This project will retain the existing steel float guide piling and replace the existing timber float guide piling with new steel piling. Three new steel piles will be installed as required by updated load design requirements for the facility.
- Refurbishment of 55 (out of 78 total) of Dock E's existing float sections including replacing damaged walers and cleats, nominal float leveling, and concrete surface crack repairs and sealing.
- Demolition and replacement of Dock E's existing deteriorated North Pier to restore vehicle access to the pier. The existing electrical transformer on the pier will be relocated to an adjacent upland location.
- Removal and reinstallation of electrical system components (wiring and pedestals) as required for new floats.

- Removal and reinstallation or replacement of potable and fire water piping, hose bib, and standpipe systems as required due to the replacement of the North Pier and float sections.

The project does not include any new vehicle parking or other upland site improvements.

2.1 Project Location

See Figures 1 - 3 for vicinity and project overview maps. The HIM Dock E Floats and North Pier are part of the Port's Terminal 102 (T102), which encompasses and is located on the south end of Harbor Island, at the north end of the Duwamish Waterway navigation channel. The T102 facility is at the confluence of the East and West Waterways, where these navigation corridors join at Turning Basin #1 in the Duwamish Waterway. The site includes shoreline between approximately river mile 0.5 and 0.6. T102 includes approx. 8.1 acres of existing upland area, 13.9 acres of aquatic area, and approx. 1,800 linear feet of shoreline.

Figure 1. Project Vicinity Map (image source: King County iMap)

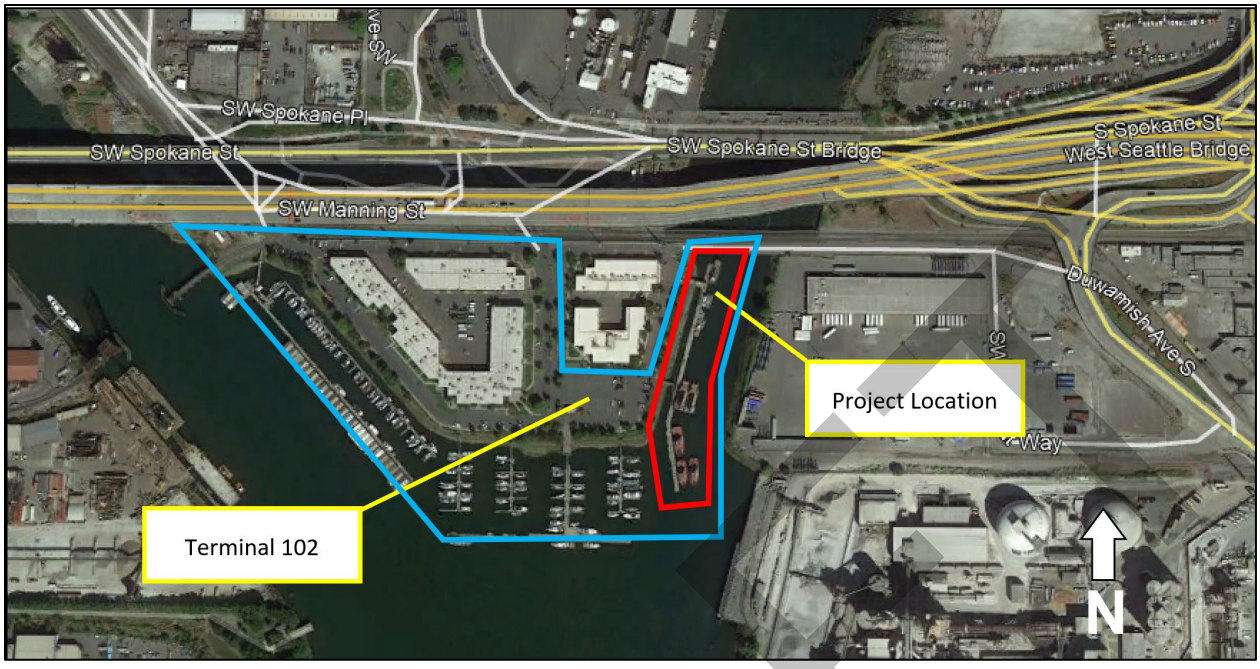

Figure 2. Terminal 102 and Project Locations (image source: Google Earth)

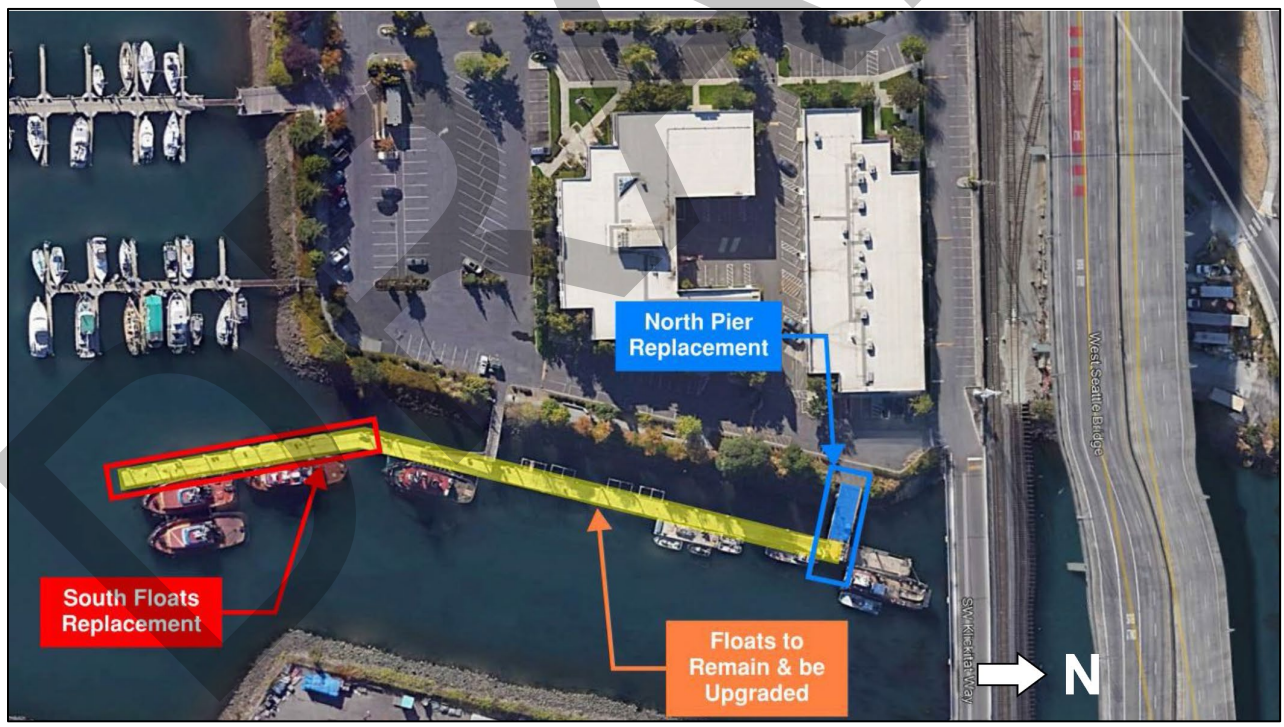

Figure 3. Primary project activities and locations (source: Port of Seattle)

2.2 Construction Methods

The proposed project includes removing the existing South Float sections and North Pier and replacing them with new structures. The new South Float will consist of a heavy-duty HDPE float system with steel structural framing and fully grated decking. The new North Pier will consist of steel piles with a concrete pier superstructure and steel guardrail. Both structures will be replaced within their existing footprint with no increase in overwater coverage. The project will also include repairs to the existing North Floats to remain.

More specifically, the project will include the following elements of demolition and construction for a new float, new pier, and float repairs:

2.2.1 Proposed Demolition

Dock-E Floats

- Removal and disposal of the existing South Float.
- Removal and disposal of 12" diameter timber float anchoring piles (11 total).

North Pier

- Removal and disposal of 14" diameter timber piles on the pier (14 total).
- Removal and disposal of timber cross-bracing on the pier.
- Removal and disposal of timber superstructure and steel railing on the pier.
- Removal of existing concrete abutment.

2.2.2 Proposed Design and Construction Details

Dock-E Floats

- Installation of new 12" diameter galvanized steel pipe piling to replace timber piles and anchor new South Float and replace timber piles on the North Float (14 total new galvanized steel piles).
- Installation of new heavy-duty floats to replace the South Floats (approximately 12 feet wide x 180 feet long).
- Installation of a new aluminum transition ramp between South and North Float sections (approximately 5 feet wide x 16 feet long).
- Repairs to existing floats including concrete repairs, deteriorated timber waler replacement, and replacement of treated timber rub board with High Density Polyethylene (HDPE) rub boards.
- Installation of the salvaged existing gangway.

North Pier

- Installation of new 18″ diameter galvanized steel piling (12).
- Installation of new concrete pier superstructure (62′-3″ feet long and 16 feet wide) and new steel railing.
- Installation of a new concrete abutment.
- Installation of the salvaged existing gangway.

2.3 Construction Techniques

- Timber piles to be removed will be fully extracted by direct pulling from a crane barge or vibratory hammer. If an existing pile cannot be extracted, the pile will be cut off at least two feet below the mudline.
- Piling will be installed from a barge using a vibratory hammer. Piles for the pile bents near shore may be installed from an upland-based crane using a vibratory hammer.
- Impact hammer will only be used for proofing pier piles and when required by hard driving conditions.
- New floats to be fabricated off-site.

2.4 Construction Timing

The float replacement, float repairs, and pier replacement work is expected to take approximately 2.5 months to complete. The approximate duration for various construction activities is listed below. The duration and total period of in-water work will be affected by several factors including the type of construction equipment and procedures selected by the contractor, and the sequencing of work elements. All in-water work will occur during the approved work window, during daylight hours. Washington Department of Fish and Wildlife (WDFW) has listed August 1st through February 15th as the approved in-water work window for the Lower Duwamish River.

Table 1. Approximate Duration of In-water Activities

Project Element	Approximate Duration
Existing South Float, North Pier, and select pile removal	2 weeks
New pile installation	2 weeks
New structures installation	6 weeks

2.5 Conservation Measures

The project layout and construction techniques have been chosen to reduce the potential environmental impacts. The proposed project will result in a slight net decrease in the overwater coverage area (128 square feet). The use of grated decking on the new South Floats will also provide an additional open area of approximately 874 square feet. Proposed conservation and mitigation measures include:

- Work will be conducted from upland (in the dry) or from a barge.
- Use of pre-cast concrete members for construction of the new pier to the maximum extent feasible.
- Removal of treated timber piling from the aquatic environment.
- Use of fully grated decking for the new South Floats.
- Use of dampening device (block of wood, at least 6-inches thick, placed between the piling and impact hammer) and bubble curtain to attenuate sounds from hard driving conditions or pile proofing requiring the use of an impact hammer.
- Use of silt curtain with floating debris boom.
- Spill Prevention Control and Countermeasures Plans, as required by the General Contract Provisions, will be implemented to minimize impacts during construction.
- Piling driving only within the in-water work time window.
- Barges and materials used in the construction process will be completely removed upon project completion.
- A net reduction of 128 square feet of overwater coverage.
- A net increase of 874 square feet of open area through the use of grated decking (minimum 40% open area).

2.6 Action Area

"Action area" is defined as "all areas to be affected directly or indirectly by the proposed action and not merely the immediate area involved in the action." Based on the analysis below, the outer extent of in-water disturbance effects of this project would be determined by the extent of noise-generating activities associated with the driving of the steel pilings. The RMS noise pressure for sound produced by vibratory driving of a 12" and 18" steel pipe pile is 155 dB and 158 dB (RMS), respectively, measured 33 feet from the project site (CalTrans 2015). Impact pile driving will be used for proofing and, otherwise, only when substrate dictates. The loudest underwater noise would be generated by impact driving of 12" steel piles, measured at 177 dB (RMS) (CalTrans 2015); data is sparse for the noise generated by impact driving of 18" piles, but using a conservative estimate, as determined for impact driving of 20" piles, yields a measurement of 161 dB (CalTrans 2015). A bubble curtain will be employed during pile driving

to attenuate in-water noise. The effectiveness of bubble curtains varies widely but they have proven more effective in softer sediments. Average noise reduction for unconfined bubble curtains employed in similar environments is 12 dB (WSDOT 2020). For this assessment, bubble curtains have been estimated to reduce noise levels by at least 10 dB to produce peak noise levels of 148 dB for vibratory driving and 167 dB (RMS) for impact driving.

Noise would attenuate to a level below the disturbance threshold for small fish and behavioral response threshold for underwater marbled murrelets (150 dB) at a distance approximately 170 feet from pile driving locations. Noise would attenuate to a level below the pulsed sound (impact driving) disturbance threshold for cetaceans (160 dB) (NMFS 2018) at approximately 63 feet from the pile driving locations. Noise would attenuate to a level below the continuous sound (vibratory driving) disturbance threshold for cetaceans (120 dB) (NMFS 2018) at a distance of approximately 770 feet from the project site. Underwater background noise in Elliot Bay is significantly elevated. In 2018, NMFS estimated ambient background noise in Elliot Bay of 124 dB RMA for the restoration of Pier 62 at the Seattle Waterfront, which exceeds the disturbance threshold for cetaceans (Federal Register Vol. 83, No. 155, August 10, 2018). Therefore, any noise generated by the project below 124 dB would be subsumed by the existing background noise and have little likelihood of causing additional behavioral disturbance.

Maximum terrestrial noise generated from impact and vibratory pile driving is expected to be approximately 105 dB measured 50 feet from the project site (WSDOT 2020). The existing background noise level for the terrestrial area is anticipated to be approximately 65 dB, given the setting in an industrial waterway with heavy ship traffic. Given these assumptions, airborne noise would attenuate to background levels approximately 5,000 feet (just under one mile) from the project site. Airborne noise levels above 92 dB are considered high enough to injure marbled murrelets, and 70 dB are considered high enough to disturb foraging marbled murrelets. Airborne noises above the injury and disturbance thresholds could occur within an approximately 223-foot and 2,800-foot radius of the project site, respectively.

Based on the above analysis of the extent of project-related disturbance levels on listed species potentially found in the project vicinity, the action area and disturbance zones are confined to the East and West Waterways, Lower Duwamish River, and surrounding industrial areas (Figures 4 and 5).

Table 2. Potential Noise Disturbance Zones from Proposed Impact and Vibratory Pile Driving

Species	Disturbance Threshold	Type of Disturbance	Noise Generated	Attenuation Distance to Disturbance Threshold
All fish	150 dB	Underwater noise	167 dB	169 feet

Species	Disturbance Threshold	Type of Disturbance	Noise Generated	Attenuation Distance to Disturbance Threshold
Cetaceans	120 dB	Underwater noise (Vibratory pile driving)	148 dB	768 feet
	160 dB	Underwater noise (Impact pile driving)	167 dB	63 feet
Marbled Murrelet	150 dB	Underwater noise	167 dB	169 feet
	70 dB	Airborne noise	105 dB	2,800 feet

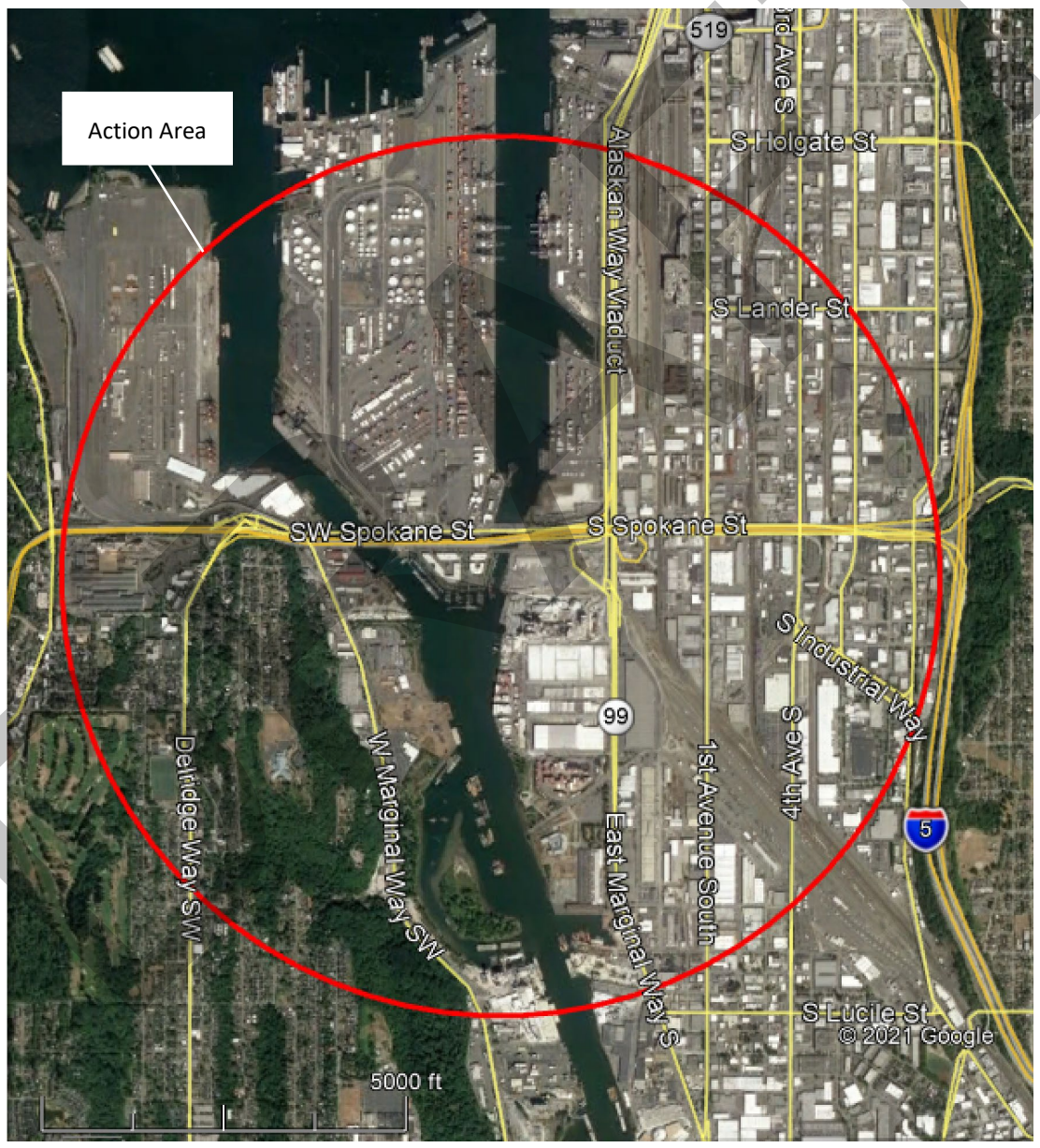

Figure 4. Project Action Area (image source: Google Earth)

Figure 5. Project Disturbance Zones (image source: Google Earth)

3 Listed Species and Site Use

Threatened and endangered species that may occur or could potentially be affected by activities within the action area according to USFWS Information for Planning and Conservation (IPaC) resource are listed in Table 3, below. Additionally, species under the jurisdiction of NMFS that are documented in the basin and/or Elliot Bay are also included in Table 3. An official species

list was obtained on July 2, 2021 (USFWS 2021A). The species list includes the gray wolf (*Canis lupis*). However, the gray wolf was delisted, effective January 4, 2021 (USFWS 2021B, USFWS 2021C, Federal Register Vol. 85, No. 213, Nov. 3, 2020); so, this reported listing does not appear to apply. According to USFWS Gray Wolf Final Delisting Determination Questions and Answers, "the effect of this final rulemaking action is to remove all gray wolves in the lower 48 states from the list of species protected under ESA." As such, the gray wolf will not be evaluated further in this report.

Table 3. Listed Species Potentially Present in the Action Area

Species	Evolutionary Significant Unit (ESU)/Distinct Population Segment (DPS)/Region	Status	Critical Habitat Designated/Designated in Action Area
Chinook salmon (*Oncorhynchus tshawytscha*)	Puget Sound	Threatened	Yes/Yes
Steelhead (*Oncorhynchus mykiss*)	Puget Sound	Threatened	Yes/Yes
Bull trout (*Salvelinus confluentus*)	Coastal Puget Sound	Threatened	Yes/Yes
Bocaccio (*Sebastes paucispinis*)	Puget Sound/Georgia Basin	Endangered	Yes/No
Yelloweye Rockfish (*Sebastes ruberrimus*)	Puget Sound/Georgia Basin	Threatened	Yes/No
Canary Rockfish (*Sebastes pinniger*)	Puget Sound/Georgia Basin	Threatened	Yes/No
Eulachon (*Thaleichthys pacificus*)	Southern DPS	Threatened	Yes/No
Killer Whale (*Orcinus orca*)	Southern Resident DPS	Endangered	Yes/No
Humpback Whale (*Megaptera novaeangliae*)	Mexico DPS	Threatened	Yes/No
	Central America DPS	Endangered	Yes/No
Marbled murrelet (*Brachyramphus marmoratus*)	Pacific Region	Threatened	Yes/No
Yellow-billed cuckoo (*Coccyzus americanus*)	Western DPS	Threatened	Yes/No
Streaked horned lark (*Eremophila alpestris strigata*)	Pacific Region	Threatened	Yes/No

3.1 Chinook Salmon

Adult Chinook salmon enter the Duwamish River from approximately mid-June through October. After entering the river, many early migrating Chinook salmon hold in the lower river areas (Duwamish to Kent area) until approximately mid-September, depending on temperature and flow (SPU 2015).

Juvenile Chinook salmon migrating through the Duwamish River into Elliot Bay exhibit two basic strategies: 1) direct migration into the bay/estuary as fry without extended stream rearing; 2) migration into the bay as smolts, following extended stream rearing closer to their spawning grounds (SPU 2015). In the Duwamish system, most fry migrate between January and April, with nearly all juveniles having migrated by July (SPU 2015); peak migration typically occurs in March.

Regarding the action area, juvenile Chinook may be present near the mouth of the Duwamish year-round. In addition to out-migrating fry during the winter and spring, some juveniles will re-enter the river from summer through winter (SPU 2015). Generally, adults are most likely to be in the action area during their spawning runs summer through fall, whereas juveniles are most likely to be in the action area winter through spring. The Lower Duwamish, including the East Waterway, is designated Chinook salmon critical habitat.

3.2 Steelhead

Two life forms of *O. mykiss* are commonly distinguished based on life history characteristics: anadromous (steelhead), and resident (rainbow trout). Juvenile steelhead generally migrate seaward as smolts from March to July after two years of stream residence, although duration of freshwater rearing can range from one to seven years before juveniles grow large enough (>170 mm) to undergo smoltification. Steelhead exhibit a highly variable anadromous life history. "Summer" steelhead, also known as stream-maturing, typically enter freshwater from May to October in a sexually immature condition and remain in rivers all winter, spawning the following spring. Summer steelhead are slightly smaller and generally return to cooler streams further inland than "winter" steelhead, which enter freshwater from November to April with well-developed gonads and spawn shortly thereafter (Busby et al 1996). Both summer-run and winter-run steelhead are documented in the action area, although the summer-run is a non-native stock.

Due to the overlapping nature of the summer and winter runs, migrating adults could be present in the action area year-round. Similarly, juvenile steelhead typically remain in freshwater for one to three years and could, therefore, also be present in the action area year-round. Outmigration of juveniles extends from March to July for winter and summer runs.

3.3 Bull Trout

Historically, bull trout numbers were higher in the Lower Duwamish River than they are today. A combination of natural factors (i.e., redirection of the White River into the Puyallup River) and anthropogenic factors (i.e., loss of the Black River and redirection of the Cedar River) have negatively impacted their numbers. Bull trout are occasionally observed in the Lower Duwamish River and are presumed to extend as far upstream as City of Tacoma's Headworks Diversion Dam at river mile (RM) 61 (SPU 2015). The Lower Duwamish is likely used for foraging or overwintering for Puyallup and Snohomish River populations (Seattle 2015). The number of bull trout entering the Duwamish is small; no bull trout were captured during weekly beach seining of up to 13 sites per week (RM 1 to RM 8.5) during December 2004 to July 2005 (SPU 2015). The specific extent of bull trout in the nearshore areas of Puget Sound is poorly understood, but they tend to concentrate near breeding areas of their primary prey species, including surf smelt (*Hypomesus pretiosus*), Pacific herring (*Clupea harengus*), and Pacific sand lance (Seattle 2015).

Bull trout typically spawn in headwater streams in late summer to early fall. Most migratory bull trout leave freshwater and enter Puget Sound during late winter and spring, then return to freshwater during late spring and early summer (Goetz et al. 2004). However, there are no documented spawning populations of bull trout in the Duwamish River.

Regarding the action area, bull trout presence in the action area cannot be summarily dismissed. However, their use of the action area is expected to be low. The action area includes designated bull trout critical habitat.

3.4 Bocaccio, Yelloweye Rockfish, Canary Rockfish

Adult bocaccio, yelloweye rockfish, and canary rockfish are associated with rocky habitats at depths over 100 feet; therefore, adults would not be present in the action area. Larval rockfish are transported by marine currents and tides. During this larval stage and immediately following, rockfish could occur in the shallow waters associated with the nearshore marine areas, but not within the brackish waters of the Lower Duwamish River. Following their larval stage, juvenile rockfish may settle in eelgrass beds before moving to deeper waters (Blackmon et al. 2006; Drake et al. 2010). However, no eelgrass beds are present within the action area. The action area does not provide suitable habitat for bocaccio, yelloweye rockfish, or canary rockfish, and none of these species have been documented in the Duwamish River. These species are not expected to be present in the action area during any portion of their life cycle. Bocaccio, yelloweye rockfish, and canary rockfish critical habitat is not designated in the action area.

3.5 Eulachon

Eulachon are anadromous fish that spawn in the lower reaches of river systems. Spawning generally occurs in rivers that are glacier-fed or have peak spring hydrographs (SPU 2015); the Duwamish River does not meet these requirements. There are no known spawning populations in Puget Sound, and any individuals observed would be adult migratory fish from distant river systems, likely the Elwha or Frazier Rivers (SPU 2015). The species has not been documented in Elliot Bay or the Duwamish River. The species is not expected to be present in the action area during any portion of its life cycle. Eulachon critical habitat has is not designated in the action area.

3.6 Killer Whale

The ESA listing for the species is specified to the Southern Resident DPS, which includes J, K, and L pods that are found within the Strait of Georgia, the Strait of Juan de Fuca, and Puget Sound during portions of the year; the species is less frequent in Puget Sound during the warmer months of the year (SPU 2015). Their range includes Elliot Bay, for which they have been observed during all months of the year except May, June, and July (SPU 2015). However, the species has the potential to be present throughout their range at any time of year. Southern Resident Killer Whales are not expected to be within the action area in the East Waterway and Lower Duwamish River during any time of year.

Southern Resident Killer Whale critical habitat has been designated in marine areas of Puget Sound deeper than 20 feet Federal Register Volume 72, No. 91, 11 May 2007). Critical habitat does not, therefore, extend into the action area in the East Waterway and Lower Duwamish River.

3.7 Humpback Whale

Humpback whales listed as threatened or endangered under the ESA include six distinct population segments. The three DPS known to occur in American water include, Western North Pacific, Mexico, Central America DPS (Federal Register Vol. 81, No. 174). Of these, the Mexico and Central America DPS are most likely to be found in Washington State, including rarely within Puget Sound. Humpback whale sightings in Puget Sound are considered intermittent (Federal Register Vol. 86, No. 75, 21 April 2021), typically including only one to two whales per year (SPU 2015). Humpback whales are not expected to ever be present within the action area in the East Waterway or Lower Duwamish River.

Humpback whale critical habitat has not been designated within Puget Sound or the project action area.

Marbled Murrelet

Marbled murrelets spend most of their lives in marine waters but nest in old-growth and mature coniferous forests up to 55 miles inland in Washington State (WDFW 2013). Nesting sites require platforms (typically large branches) at least four inches wide and 33 feet high, with vertical and horizontal cover (USFWS 2012). There are no mature conifer-dominated forests (more than 80 years old) in the action area. Marbled murrelets may forage throughout the year in nearshore waters ranging from 3 to 300 feet in depth (Strachan et al. 1995). The nearest critical habitat nesting area for marbled murrelet is approximately 35 miles from the action area. Since marbled murrelets generally select nests within 55 miles of marine waters, it is possible for the species to be present within Elliot Bay near the action area during the project activities. However, due to the high level of human activity and industrialization within the East and West Waterways and Lower Duwamish River, marbled murrelets are not expected to be present within the action area at any time of the year.

Marbled murrelet critical habitat has not been designated in the action area.

3.8 Yellow-billed Cuckoo

In the Pacific Northwest, the species was fairly common in willow bottoms along the Willamette and Columbia rivers in Oregon and in the Puget Sound lowlands. However, today, yellow-billed cuckoos are extremely rare in Washington, with fewer than 10 recordings since 1950, and the species no longer breeds in Washington, with cessation believed to have occurred by 1934 (WDFW 2013). Yellow-billed cuckoos typically inhabit large, continuous riparian zones with associations of mature cottonwoods and willows (*Salix* sp.) (Ehrlich, et al. 1988). This habitat is not present within the action area. Though scattered willow and cottonwood trees do occur in the action area, their presence is patchy or spotty. Therefore, yellow-billed cuckoos are not expected to be found in the action area.

Yellow-billed cuckoo critical habitat has not been designated in the action area.

3.9 Streaked Horned Lark

Streaked horned larks typically inhabit sparsely vegetated herbaceous and grassy areas, such as native prairies, coastal dunes, fallow agricultural fields, and grazing lands. This species is known to utilize human-altered landscapes with sparse vegetation, such as the aforementioned agricultural or grazing lands, but also including other cleared or developed lands that may inadvertently create suitable habitat. According to Anderson and Pearson (2015), some of the ecological processes such as flooding and Native American burning that historically created

some of these open landscapes no longer function, so streaked horned larks today can occur in landscapes where other more recent human activities have created such open-landscape characteristics. However, the species is highly susceptible to disturbance and are not associated with the built-out urban and industrial landscapes in the action area. King County is not included on the list of seven Washington counties in which the streaked horned lark is known or believed to occur (WDFW 2013), and there is no suitable habitat present in the action area.

Streaked horned lark critical habitat has not been designated in the action area.

4 Existing Conditions

4.1 General Conditions

The project and action areas are located within heavily industrialized areas of the Lower Duwamish River, including portions of the East and West Waterways. The action area includes Port of Seattle facilities and the Ash Grove Cement factory immediately across the Duwamish River from the project site. The West Seattle, Spokane Street, and SW Klickitat Way Bridges border the project site to the north; the Duwamish River and Ash Grove Cement border the project site to the east; and the Harbor Marina Corporate Center borders the project area to the west (Figure 6).

The project area includes the Harbor Island Marina Dock E North Pier and South Float sections. The North Pier is constructed of wooden decking on creosote-treated wooden piles and provides vehicle access and supports an electrical transformer. The South Float is constructed of solid concrete decking and a mix of creosote-treated timber piles and steel piles. The Duwamish River adjacent the project area is armored with riprap on both banks. Vegetation in the project area is limited to a few white ash (*Fraxinus americana*), two Pacific madrone (*Arbutus menziesii*), one Sitka willow (*Salix sitchensis*), and an understory of non-native and invasive species, including Himalayan blackberry (*Rubus armeniacus*), sweet pea (*Lathyrus latifolius*), woodbine (*Clematis virginiana*), and English ivy (*Hedera helix*). A few isolated patches of pickleweed (*Salicornia depressa*) are present just below the ordinary high water mark of the river.

Figure 6. Project Location and Vicinity (image source: Google Earth)

Figure 7. View of Dock E, facing southeast (7/2/21)

Figure 8. View of North Pier, facing southwest (7/2/21)

Figure 9. Creosote-treated piles South Float; south pier in background – no work proposed (7/2/21)

Figure 10. View of East Waterway, Ash Grove Cement in background, facing southeast (7/2/21)

Figure 11. Riverbank west of Dock E, facing southwest (7/2/21)

4.2 Wildlife Usage

The opportunity for the project area to provide habitat is dependent, in part, upon the potential for the greater vicinity to act as a source for wildlife. The surrounding landscape is developed with high-intensity land uses, predominately industrial. In general, the landscape offers very limited nearby habitat area to support wildlife species. The eastern slope of West Seattle is an undeveloped green belt that provides a forested refuge for urban wildlife species, likely urban-tolerant species including raccoons, possum, squirrels, coyotes, rabbits, rodents, and variety of songbirds and raptors. However, due to the extreme habitat fragmentation between that area and the project location, the greenbelt is not expected to act as significant sources of wildlife to habitat in the project area. Wildlife associated with the green belt refuge are unlikely to access the project area at any time. Wildlife present in the project vicinity likely include fish, rodents, and common waterfowl, such as gulls, Canada geese, and cormorants.

5 Species Effects

5.1 Chinook Salmon, Steelhead, and Bull Trout

The action area may be used as a rearing, foraging, or migration area for Chinook salmon, steelhead, and bull trout. Chinook salmon, steelhead, and bull trout could be present throughout the year. Adult Chinook are most likely to be present June through September, and juveniles are most likely to be present January through April. Due to the staggered timing of summer-run and winter-run steelhead, combined with their multi-year freshwater rearing, juvenile steelhead could be present any time of year, but are most likely to be present during their seaward migration from March through July. Bull trout presence is likely sporadic and could occur any time of year.

It is generally assumed in the following analysis that juvenile salmon are more sensitive to potential project effects, including turbidity and noise. The proposed project could potentially affect Chinook salmon, steelhead, and bull trout in generally similar manners. Unless otherwise noted, there is no distinction between those species within the following discussion.

5.1.1 Direct Effects on Salmonids

Water Quality: Project pile driving activities have the potential to generate localized, temporary turbidity, and to affect water quality through accidental release of chemicals, such as petroleum products. The proposed project will utilize best management practices (BMPs) to minimize the potential for any such discharges of debris or equipment fluids into the water. When possible, creosote-treated piles will be entirely removed from the substrate using a vibratory pile driver. When it is not possible to remove the entire pile, the pile will be cut at

least two feet below the mudline and capped to prevent leaching of toxic compounds found in creosote into the nearshore substrate.

Turbidity is generally an undesirable condition for all stages of salmonids, as exposure to potentially contaminated or abrasive sediments suspended in the water column is thought to result in lethal and sub-lethal effects (Newcombe and MacDonald 1991). However, localized episodic turbidity events from an individual pile driving activity would not represent a permanent sediment source and would not produce conditions of chronic exposure necessary to produce a direct detrimental effect on juvenile or adult fishes (Newcombe and MacDonald 1991).

The most probable impact on salmonids would be a behavioral modification (avoidance response) rather than injury or reduction in growth potential. An avoidance response could expose juvenile salmonids to increased predation or force them away from preferred rearing areas. Such a behavioral modification would be expected to have little effect on adult salmon.

The most effective strategy for minimizing or eliminating potential pile driving-related impacts would be to restrict such activities to periods when the presence of listed species is improbable. The proposed in-water work window for this project (August 1st – February 15th) for the Lower Duwamish River is outside of the peak juvenile salmonid migration and rearing within estuarine waters. This work window will minimize the probability that juvenile Chinook salmon, steelhead, or bull trout would be in the action area during pile driving activities. Adult Chinook salmon, steelhead, and bull trout could be present during the work window; however, the anticipated localized and temporary effects on turbidity to adult salmon would not be expected to rise to the level of injury. The work-window and utilization of BMPs will minimize direct impacts to salmonids associated with increased turbidity during pile driving activities. Use of the proposed sediment curtain will limit the potential exposure of elevated turbidity to within the contained area and prevent any meaningful amount of siltation from occurring outside of the immediate project area. Thus, temporary water quality impacts associated with the proposed project are expected to be minimal, although not absent.

Noise and Vibration: In-water pile driving will be conducted with a vibratory hammer to the maximum extent feasible. Impact hammer driving will only be used for proofing and where the substrate is not suitable to reach required depths with a vibratory hammer. Depending on the equipment used, pile-driving activities can generate considerable noise and vibration impacts. Recent investigations of the effects of pile driving on fish have indicated that pile driving, especially impact pile driving, can be harmful, or fatal for small fish (NOAA Fisheries 2003). The use of vibratory pile driving minimizes the noise produced by pile driving (ICF and Illingworth and Rodkin 2009). The loudest anticipated underwater noise generated by project pile driving activities will be 158 dB RMS for vibratory driving of an 18" steel pile and 177 dB

RMS for impact driving a 12" steel pile (CalTrans 2015). The use of a bubble curtain will further reduce the generated noise by an estimated 10 dB, resulting in a net noise generation of 148 dB RMS and 167 dB RMS for vibratory and impact driving, respectively. These levels fall below the threshold that is likely to injure small fish (peak > 206 dB, cumulative SEL > 187 dB). Noise would be attenuated to a level below the disturbance threshold for small fish (150 dB) at a distance approximately 169 feet from the project area. Although generally below the threshold for injury, noise produced by the pile driving is above the threshold for disturbance to small fish (RMS pressure >150 dB). While the pile driving activity is not likely to cause direct injury to fish, the disturbance caused by the sound in the aquatic environment is expected to extend approximately 169 feet from the project area. Any disturbance is likely to be exhibited through an avoidance response. An avoidance response could expose juvenile salmonids to increased predation or force them away from preferred rearing areas. Minimizing fish exposure to pile driving activities by following construction timing restrictions is an accepted method for avoiding or minimizing adverse effects on listed species (NOAA Fisheries 2003).

In order to minimize the impacts of pile driving on salmonids, the above timing restriction (no in-water construction from August 1st – February 15th) would be followed. This restriction will minimize the probability that juvenile salmonids would be in the action area during construction. Thus, noise and vibration impacts would not rise to the level of injury or mortality to ESA-listed fish species, but could result in disturbance/avoidance.

5.1.2 Indirect Effects on Salmonids

Effects resulting from the activity that are later in time could include changes in habitat quality and quantity, prey availability, and water quality experienced salmonids.

1. Water Quality: Docking and fueling of potential vessels at the repaired and refurbished structure may result in an insignificant and discountable amount of oil or gas entering the water. However, since moorage of vessels would occur at the existing structures, spillage of petroleum products would not be a new or additional potential impact in the action area. Thus, potential indirect water-quality impacts at the project site are considered discountable and insignificant.
2. Habitat (the refurbished dock as predator habitat and a disruption of migration):: The overall footprint shape and area of the repaired pier will be nearly the same as the existing dock. The structural simplicity of the dock relative to natural shorelines would favor predators such as birds and piscivorous fish, which forage on juvenile salmonids and other small fish. However, the existing dock and pier will be repaired to essentially match its previous configuration and dimensions, with a slight reduction in overwater cover of approximately 128 square feet. Additionally, grated decking with a minimum 40 percent

open space will be used on the Dock E float section and transition ramp, resulting in a total increase of 874 square feet of open space. This will increase light transmission to the substrate compared to the existing condition.

3. Habitat (changes in refuge, foraging, and migration conditions for juvenile salmonids in the action area resulting from the proposed dock and pier re-construction): The proposed action would include temporary disruption of the benthic community (marine worms, snails and bivalves, crustaceans, aquatic insects) in limited areas where pile driving occurs. The pile driving activities would disturb approximately 1.8 square feet for each 18-inch pile and 0.8 square feet for each 12-inch pile of benthic habitat at each location, for a total disturbance area of approximately 34 square feet. The total disturbance area is relatively small and benthic organisms are very resilient to habitat disturbance and would quickly recover to pre-disturbance levels. Therefore, the localized and temporary nature of the proposed action would have a negligible impact to benthic invertebrates. No work besides pile driving would be conducted on the substrate, and measures would be taken to prevent construction debris and spills from impacting the substrate, which are components of habitat quality for salmonids. The project will also result in a net increase in seabed coverage of 9 square feet, due to a change in the number and size of total piles, which represents a minor decrease in benthic habitat.

5.1.3 Cumulative Effects on Salmonids

Incorporation of impact minimization measures (such as light mitigation, reduction in overwater cover, and removal of treated timber piles) reduces the collective impact of the proposed project. The proposed project includes some standard conservation measures such as the use of light transmitting deck grating, use of a floating sediment curtain, and use of a bubble curtain. Thus, with these measures and the proposed timing restrictions and conditions that would minimize the potential for construction-related impacts, the proposed project:

- may affect, but is not likely to adversely affect, Puget Sound Chinook salmon;
- may affect, but is not likely to adversely affect, Coastal-Puget Sound bull trout;
- may affect, but is not likely to adversely affect, Puget Sound steelhead.

5.2 Canary Rockfish, Yelloweye Rockfish, and Bocaccio

The action area does not provide suitable habitat for rockfish. None of the ESA-listed rockfish are expected to be present in the action area during any portion of project construction activities. The action area does not contain designated critical habitat for canary rockfish, yelloweye rockfish, and bocaccio. Therefore, the project will have no effect on canary rockfish, yelloweye rockfish, and bocaccio or their designated critical habitat.

5.3 Eulachon

Eulachons are not documented in the action area, Elliot Bay, or the Duwamish River, and there are no spawning populations in Puget Sound. The species is not expected to be present in the action area during any portion of project construction. The action area does not contain designated critical habitat for eulachon. Therefore, the project will have no effect on eulachon or their critical habitat.

5.4 Southern Resident Killer Whale

The action area does not provide suitable habitat for killer whales, and the species is not expected to be present in the action area during any portion of project construction activities. As described in Section 5.1 above, project construction is not likely to adversely affect salmonids, the Southern Resident killer whales' primary prey. The action area does not contain designated critical habitat for Southern Resident killer whales. Therefore, the project will have no effect on Southern Resident killer whales or their critical habitat.

5.5 Humpback Whale

The action area does not provide suitable habitat for humpback whales, and the species is not expected to be present in the action area during any portion of project construction activities. The action area does not contain designated critical habitat for humpback whales. Therefore, the project will have no effect on humpback whales or their critical habitat.

5.6 Marbled Murrelet

Marbled murrelets may forage throughout the year in nearshore waters ranging from 3 to 300 feet in depth (Strachan et al. 1995). Therefore, it is possible that marbled murrelet could forage in habitats within Elliot Bay and/or fly over the action area. These birds could be near the action area during project activities; however, their presence is considered extremely unlikely due to the high disturbance levels of the industrial land use in the action area. The potential direct, indirect, and collective effects of the proposed projects on marbled murrelet are described below.

5.6.1 Direct Effects on Marbled Murrelet

Noise: It is possible that the project could interrupt foraging activities if marbled murrelets are in the action area during construction activities. Underwater construction noise is expected to reach a maximum of 167 dB RMS during impact pile driving activities. These levels fall well below the threshold that is likely to cause auditory injury (202 dB) or barotrauma (208 dB) to marbled murrelets. The RMS levels are above the behavioral effects (150 dB RMS) for marbled murrelets within 169 feet of the noise-generating activity. If marbled murrelets are foraging

underwater within 169 feet of impact pile driving, they may exhibit responses such as flushing or avoidance.

Terrestrial noise generated by pile driving activities could exceed the threshold for injury (92 dB). Impact pile driving could generate 105 dB and would attenuate to below the injury threshold approximately 223 feet from the pile driving locations. Non-injurious temporary threshold shifts in hearing may cause masking, delayed or interrupted foraging, and interference with mate identification, bonding, and courtship. This is also referred to as the masking zone and can occur from airborne noise created from impact pile driving. NMFS has established a 126-foot distance (masking zone) around impact driving of piles less than 24 inches that can potentially disturb life history behaviors of marbled murrelet. Given the significantly smaller size and resulting noise produced by the proposed project (12- and 18-inch diameter steel piles), we expect the effective masking zone to be much smaller than 126 feet. It is possible that airborne noise produced from pile driving activities could disturb marbled murrelets within the effective masking zone; however, the masking zone would be much smaller than 126 feet, the timing of impact strikes would be short in duration and intermittent. If marbled murrelets were exposed to non-injurious masking, they would be expected to employ behavioral strategies to overcome any short-term masking effects. However, the likelihood of marbled murrelets being present in the industrial action area is extremely low. Therefore, the potential effects of noise to marbled murrelets is expected to be insignificant and discountable.

5.6.2 Indirect Effects on Marbled Murrelet

Habitat: Marbled murrelets feed on forage fish and invertebrates, including Pacific herring and sand lance. However, there are no documented forage fish spawning areas or suitable forage fish (i.e., herring and sand lance) spawning areas within the action area. Similarly, there are no eelgrass beds or other suitable habitat for forage fish in the action area. Thus, impacts to prey species and their vegetated habitat will not occur, and no long-term indirect impacts to marbled murrelet habitat or their prey is anticipated as a result of the proposed project.

5.6.3 Collective Effects

It is extremely unlikely that marbled murrelets will be present in the action area at any point. Any marbled murrelets that could feasibly be in the action area would likely be flying overhead, although even that potential is unlikely given the level of industrial disturbance in the action area. No impacts from underwater and airborne noise are anticipated. The action area does not contain designated marbled murrelet critical habitat. With consideration to all of the potential direct and indirect impacts of the project, the proposed will have no effect on marbled murrelets or their critical habitat.

5.7 Yellow-billed Cuckoo

There is no suitable habitat for yellow-billed cuckoos in the action area. The species is not expected to be present in the action area during any portion of project construction. The action area does not contain designated yellow-billed cuckoo critical habitat. Therefore, the project will have no effect on yellow-billed cuckoos or their critical habitat.

5.8 Streaked Horned Lark

There is no suitable habitat for streaked horned lark in the action area. The species is not expected to be present in the action area during any portion of project construction. The action area does not contain designated streaked horned lark critical habitat. Therefore, the project will have no effect on streaked horned larks or their critical habitat.

6 Critical Habitat

The following discussion will address impacts to critical habitat where critical habitat has been designated within the action area. Critical habitat has been designated for Puget Sound Chinook salmon, Puget Sound steelhead, and Coastal Puget Sound bull trout in the action area. The action area does not contain designated critical habitat for any other species addressed in this report. Therefore, critical habitat for canary rockfish yelloweye rockfish, bocaccio, eulachon, Southern Resident killer whale, grey whale, marbled murrelet, yellow-billed cuckoo, and streaked horned lark would not be affected by the proposed project.

6.1 Chinook Salmon

The action area includes critical habitat for Puget Sound Chinook salmon. The action area is in the Nearshore Marine Area (Unit 16) for Puget Sound Basins and "includes all river reaches accessible to listed salmon within the range of the ESUs listed, except for reaches on Indian lands." The Duwamish River (HUC 17110013) is specified as critical habitat. Critical habitat includes areas with physical or biological features essential to the conservation of the species and which may require special management considerations or protection. Constituent elements of critical habitat for Chinook salmon are listed as:

1. Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development;
2. Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade,

submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks;

3. Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival;
4. Estuarine areas free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.
5. Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.
6. Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.

Project activities that introduce or remove physical elements to and/or from the Duwamish River, or that contribute to short-term changes in water quality, may alter certain primary constituent elements. For the proposed project, these include piling replacement, pier decking replacement, reduction in overwater cover, and the installation of light transmitting grating. Areas of unnatural shade (pier cover) will be improved due to light transmittance through the deck surface.

Although in-water work is proposed, the proposed project would not effectively diminish any of the primary constituent elements (Table 4).

Table 4. Assessment of Chinook Salmon Primary Constituent Elements

Primary Constituent Elements	Direct, Indirect, Interrelated and Interdependent Effects
1. Freshwater spawning	Chinook salmon do not spawn in the Lower Duwamish (SPU 2015, SalmonScape 2021). The project will not affect freshwater spawning.
2. Freshwater rearing	The proposed project would affect freshwater rearing areas through potential temporary construction impacts as described

	previously including short-term increases in turbidity in the immediate vicinity of the pier and noise and vibration disturbance due to pile replacement activities. Shading and cover impacts would be reduced because the area and configuration of the pier will not substantially change, but will include a reduction in overwater cover and, due to the use of grated decking, will increase light transmittal. The project will not affect natural shade and cover or floodplain connectivity.
3. Freshwater migration	The proposed project would affect freshwater migration areas through potential temporary construction impacts as described previously including short-term increases in turbidity in the immediate vicinity of the pier and noise and vibration disturbance due to pile replacement activities. Shading and cover impacts would be reduced because the area and configuration of the pier will not substantially change, but will include a reduction in overwater cover and, due to the use of grated decking, will increase light transmittal. The project will not affect natural shade and cover or create physical migration obstructions.
4. Estuarine areas	The proposed project would affect estuarine areas through potential temporary construction impacts as described previously including short-term increases in turbidity in the immediate vicinity of the pier and noise and vibration disturbance due to pile replacement activities. Shading and cover impacts would be reduced because the area and configuration of the pier will not substantially change, but will include a reduction in overwater cover and, due to the use of grated decking, will increase light transmittal. The project may temporarily affect benthic invertebrate communities during pile driving activities, but the effects will be extremely localized over a small area and short-term. The project will not affect natural cover, salinity conditions, or create new physical obstructions.
5. Nearshore marine areas	The project will have no effect on nearshore marine areas.
6. Offshore marine areas	The project will have no effect on offshore marine areas.

Given the direct, indirect, interrelated, and interdependent effects from the proposed action, the proposed project **may affect, but is not likely to adversely affect, the designated critical habitat of Puget Sound Chinook salmon**.

6.2 Steelhead

The action area includes critical habitat for Puget Sound steelhead, which includes the Lower Duwamish River (HUC 1711001303). Steelhead critical habitat includes the following primary constituent elements (Note: the Federal Register uses the terms "primary constituent elements" and "features essential to conservation of these species" interchangeably).

1. Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development.
2. Freshwater rearing sites with water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; water quality and forage supporting juvenile development; and natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.
3. Freshwater migration corridors free of obstruction with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.
4. Estuarine areas free of obstruction with water quality, water quantity, and salinity conditions supporting juvenile and adult physiological transitions between fresh- and saltwater; natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels; and juvenile and adult forage, including aquatic invertebrates and fishes, supporting growth and maturation.
5. Nearshore marine areas free of obstruction with water quality and quantity conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation; and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, and side channels.
6. Offshore marine areas with water quality conditions and forage, including aquatic invertebrates and fishes, supporting growth and maturation.

Project activities that introduce or remove physical elements to and/or from the Duwamish River, or that contribute to short-term changes in water quality, may alter certain primary constituent elements. For the proposed project, these include piling replacement, pier decking

replacement, reduction in overwater cover, and the installation of light transmitting grating. Areas of unnatural shade (pier cover) will be improved due to light transmittance through the deck surface.

Although in-water work is proposed, the proposed project would not effectively diminish any of the primary constituent elements (Table 5).

Table 5. Assessment of Steelhead Primary Constituent Elements

Primary Constituent Elements	Direct, Indirect, Interrelated and Interdependent Effects
1. Freshwater spawning	Steelhead do not spawn in the Lower Duwamish (SPU 2015, SalmonScape 2021). The project will not affect freshwater spawning.
2. Freshwater rearing	The proposed project would affect freshwater rearing areas through potential temporary construction impacts as described previously including short-term increases in turbidity in the immediate vicinity of the pier and noise and vibration disturbance due to pile replacement activities. Shading and cover impacts would be reduced because the area and configuration of the pier will not substantially change, but will include a reduction in overwater cover and, due to the use of grated decking, will increase light transmittal. The project will not affect natural shade and cover or floodplain connectivity.
3. Freshwater migration	The proposed project would affect freshwater migration areas through potential temporary construction impacts as described previously including short-term increases in turbidity in the immediate vicinity of the pier and noise and vibration disturbance due to pile replacement activities. Shading and cover impacts would be reduced because the area and configuration of the pier will not substantially change, but will include a reduction in overwater cover and, due to the use of grated decking, will increase light transmittal. The project will not affect natural shade and cover or create physical migration obstructions.
4. Estuarine areas	The proposed project would affect estuarine areas through potential temporary construction impacts as described previously

	including short-term increases in turbidity in the immediate vicinity of the pier and noise and vibration disturbance due to pile replacement activities. Shading and cover impacts would be reduced because the area and configuration of the pier will not substantially change, but will include a reduction in overwater cover and, due to the use of grated decking, will increase light transmittal. The project may temporarily affect benthic invertebrate communities during pile driving activities, but the effects will be extremely localized over a small area and short-term. The project will not affect natural cover, salinity conditions, or create new physical obstructions.
5. Nearshore marine areas	The project will have no effect on nearshore marine areas.
6. Offshore marine areas	The project will have no effect on offshore marine areas.

Given the direct, indirect, interrelated, and interdependent effects from the proposed action, the proposed project **may affect, but is not likely to adversely affect, the designated critical habitat of Puget Sound steelhead**.

6.3 Bull Trout

The action area includes critical habitat for Coastal Puget Sound bull trout, which has been designated in the Duwamish River from the mouth to latitude 47.514, longitude -122.304 . The action area is in the Coastal Recovery Unit – Puget Sound [Unit A(2)]. Bull trout critical habitat includes these primary constituent elements (excerpted from the final rule, U.S. Federal Register, 18 October 2010):

1. Water temperatures ranging from 36 to 59°F (2 to 15°C), with adequate thermal refugia available for temperatures at the upper end of this range. Specific temperatures within this range will vary depending on bull trout life history stage and form, geography, elevation, diurnal and seasonal variation, shade, such as that provided by riparian habitat, and local groundwater influence;
2. Complex stream channels with features such as woody debris, side channels, pools, and undercut banks to provide a variety of depths, velocities, and instream structures;
3. Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-the-year and juvenile

survival. A minimal amount of fine substrate less than 0.25 in (0.63 cm) in diameter and minimal substrate embeddedness are characteristic of these conditions;

4. A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, a hydrograph that demonstrates the ability to support bull trout populations by minimizing daily and day-to-day fluctuations and minimizing departures from the natural cycle of flow levels corresponding with seasonal variation;
5. Springs, seeps, groundwater sources, and subsurface water connectivity to contribute to water quality and quantity;
6. Migratory corridors with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows;
7. An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish;
8. Few or no nonnative predatory, interbreeding, or competitive species present; and
9. Permanent water of sufficient quantity and quality such that normal reproduction, growth and survival are not inhibited.

Project activities that introduce or remove physical elements to and/or from the Duwamish River, or that contribute to short-term changes in water quality, may alter certain primary constituent elements. For the proposed project, these include piling replacement, pier decking replacement, reduction in overwater cover, and the installation of light transmitting grating. Areas of unnatural shade (pier cover) will be improved due to light transmittance through the deck surface.

Although in-water work is proposed, the proposed project would not effectively diminish any of the primary constituent elements (Table 6).

Table 6. Assessment of Bull Trout Primary Constituent Elements

Primary Constituent Elements	**Direct, Indirect, Interrelated and Interdependent Effects**
1. Water Temperature	The project will not affect water temperature or natural shade.
2. Complex Stream Channels	The project will not affect stream channel complexity.
3. Substrate	The project will not affect spawning substrate.
4. Natural hydrograph	The project will not affect the natural hydrograph.

5. Spring, seeps, groundwater sources and subsurface water connectivity	The project will not affect springs, seeps, groundwater sources, and subsurface water connectivity.
6. Migratory corridors	The proposed project would affect freshwater migration corridors through potential temporary construction impacts as described previously including short-term increases in turbidity in the immediate vicinity of the pier and noise and vibration disturbance due to pile replacement activities. Shading and cover impacts would be reduced because the area and configuration of the pier will not substantially change, but will include a reduction in overwater cover and, due to the use of grated decking, will increase light transmittal. The project will not affect natural shade and cover or create physical migration obstructions.
7. Abundant food base	The project may temporarily affect benthic invertebrate communities during pile driving activities, but the effects will be extremely localized and short-term.
8. Few or no nonnative predatory, interbreeding, or competitive species	The project will not introduce or otherwise affect non-native predatory, interbreeding, or competitive species.

Given the direct, indirect, interrelated, and interdependent effects from the proposed action, the proposed project **may affect, but is not likely to adversely affect, the designated critical habitat of Coastal Puget Sound bull trout**.

7 Essential Fish Habitat

Essential fish habitat is defined in the Magnuson-Stevens Act as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. The law provides the following additional definitions for clarification:

- "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include areas historically used by fish where appropriate.

- "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities.
- "Necessary" means the habitat required to support a sustainable fishery and the managed species contribution to a healthy ecosystem.
- "Spawning, breeding, feeding, or growth to maturity" covers the full life cycle of a species.

The Pacific groundfish fishery and the coastal pelagic fishery are not associated with the action area. Those species included in the Pacific salmon fishery that are associated with the action area include Chinook, coho, and pink salmon. Pacific salmon habitat present in the project action area within the Lower Duwamish River is indirectly included in this Biological Assessment (BA) through discussions of effects to salmonid habitat for Chinook salmon, steelhead, and bull trout. Effects on coho and pink salmon would be similar to effects discussed for other salmonid fish species. The information below identifies where these discussions are located within the BE and concludes with a determination of effect.

Description of the Project / Proposed Activity: The project description and location are described within Section 1 of the BA. Appendix A shows the location of all pile locations and decking replacements.

EFH Conservation Measures: The following impact minimization measures are being incorporated into the dock and pier repair and replacement project in order to reduce the collective impact.

1. Limitation of the allowable construction window from August 1st through February 15th would sufficiently minimize the potential to directly affect the rearing and migration of juvenile Pacific salmon.
2. Adherence to a "best management practices" temporary erosion and sedimentation control plan during construction.
3. Use of a floating sediment curtain to limit the extent of siltation and turbidity in the water column.
4. Use of a vibratory hammer, where feasible, and a bubble curtain to minimize noise impacts during construction.
5. Removal of treated timber piles and replacement with steel piles to improve water quality.
6. Reduction in overwater cover by approximately 128 square feet.

7. Use of grated decking to improve light transmission.

Potential Effects: As described in Section 5 of the BE, all effects to Pacific salmon EFH are temporary, and may include increased turbidity increases during pile driving activities, short-term degradation in water quality from potential debris and/or accidental spills; and temporary impacts from sound and vibration during pile driving (disruption in foraging and predator-avoidance behavior). These short-term temporary effects are expected to be insignificant to Pacific salmon EFH.

Removal and replacement of treated timber piles, reduction in overwater structure area, and improved light transmission will contribute to a net benefit to water quality.

Conclusion: All of the proposed project's potential impacts on salmon and groundfish EFH are considered collectively. Although the project could potentially adversely affect EFH during construction, temporarily and to a limited degree as described above in Sections 5 and 6, the implementation of the proposed conservation measures would diminish the collective impact to less than significant levels. The long-term effects would be a net benefit on water quality and overall habitat by replacing treated timber piles with steel piles, reducing overwater cover, and increasing light transmission. Thus, the collective impact of the proposed project **will not adversely affect Pacific salmon EFH**.

8 Cumulative Impacts

Cumulative impacts were assessed through the review of aerial photos and a site visit. At present, the action area includes Port of Seattle, industrial, and maritime facilities, with single-family residences comprising a small portion of the action area. Several high-traffic throughfares are also present in the action area, including the West Seattle Bridge, S. Spokane Street, and Highway 99. Waterward of the shoreline in the action area, future activities include continued industrial and maritime uses. The proposed project does not represent an expansion of port facilities and will not contribute to increased ship traffic and related port activities. Any future activities subject to local, but not federal, regulation would comply with all applicable ordinances governing construction and soil disturbance near water. These regulations have become increasingly restrictive to the benefit of sensitive fish and wildlife resulting from consideration of the listing of Chinook salmon, bull trout, steelhead trout, and Southern Resident killer whales.

Projection of activities not under federal regulation on properties adjacent to the action area is speculative at best.

9 Effects Determination

The effects determination is the conclusion of the analysis of potential direct or indirect effects of the proposed activity on listed species and critical habitat. Potential effect determinations include the following:

- No effect means no effect whatsoever, including any beneficial, highly improbable, or insignificant effects that may result from the project.
- Not likely to adversely affect is the appropriate determination if direct effects and delayed consequences of a federal project are expected to be discountable, insignificant, or completely beneficial.
- Likely to adversely affect is the appropriate determination if any adverse effect on listed species may occur as a direct or indirect result of a project, and these effects are not discountable, insignificant, or entirely beneficial.
- "Insignificant" indicates that the impact of an action never reaches the level where take occurs or where adverse modification of critical habitat occurs. "Discountable" indicates that it is extremely unlikely that impacts will occur.

In making an effect determination, it is important to distinguish if potential project effects could rise to the level of a "take" as defined under ESA Section 3: "*harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct*." The term "harm" is further defined as: "*an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering*." The term "harass" is further defined as: "*an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering*."

9.1 Salmonids

The project **may affect, but is not likely to adversely affect Puget Sound Chinook salmon, Puget Sound steelhead, and Coastal Puget Sound bull trout and their critical habitat.** Potential effects on salmonid fish species would be similar in nature. Therefore species-level distinctions are not made in the following summary.

The project may affect listed salmonids and their critical habitat because in-water work activities will occur in waters documented to support listed salmonids and contain their designated critical habitat. In-water noise will be elevated during pile driving activities, and increased turbidity is likely.

The project is not likely to adversely affect listed salmonids and their critical habitat because:

- In-water work activities will be conducted during the approved construction window for in-water work in the Lower Duwamish River (August 1st – February 15th), when salmonids, particularly juvenile salmonids, are least likely to be present.
- Underwater noise generated by the project, including the use of noise attenuation methods, will not rise to the level of injury for fish (peak > 206 dB, cumulative SEL > 187 dB). Underwater noise will exceed the disturbance threshold/behavioral modification (150 dB) for approximately 169 feet from pile driving activities at a time when juvenile salmonids are least likely to be present. The disturbance zone will likely cause avoidance of the work area, but migration can continue unaffected through the West Waterway. Therefore, these effects are considered insignificant.
- Pile driving activities may result in a temporary disruption of the benthic community in limited areas where pile driving occurs. The total disturbance area is relatively small and benthic organisms are very resilient to habitat disturbance and would quickly recover to pre-disturbance levels. The localized and temporary nature of the proposed action would have a negligible impact to benthic invertebrates and does not represent a significant modification of salmonid prey species or their habitat. Therefore, these effects are considered insignificant.
- Short-term reductions in water quality are possible as a result of increased turbidity levels. A floating turbidity curtain will be installed to limit the extent of potential elevated turbidity. Localized episodic turbidity events from an individual pile driving activity would not represent a permanent sediment source and would not produce conditions of chronic exposure necessary to produce a direct detrimental effect on juvenile or adult salmonids. Therefore, these effects are considered insignificant.
- Creosote treated piles will be removed and replaced with steel piles. Overwater cover will be reduced by 128 square feet, and much of the solid concrete decking will be replaced with grated decking, improving light transmission to the aquatic environment. These effects are considered beneficial.

9.2 Rockfish

The project will have **no effect on canary rockfish, yelloweye rockfish, and bocaccio** because there is no suitable habitat for rockfish in the action area. These species and their habitat are not expected to be present at any time during construction, and no disturbance to either is anticipated.

The project will have **no effect on canary rockfish, yelloweye rockfish, and bocaccio critical habitat** because the action area does not contain critical habitat for any of these species.

9.3 Eulachon

The project will have **no effect on eulachon** because the species has not been documented in the action area, Elliot Bay, or the Duwamish River. The species is not expected to be present at any time during construction, and no disturbance is anticipated.

The project will have **no effect on eulachon critical habitat** because the action area does not contain eulachon critical habitat.

9.4 Southern Resident Killer Whale

The project **may affect, but is not likely to adversely affect Southern Resident killer whales**. The project may affect Southern Resident killer whales because effects to salmonid fish, their primary prey species, are possible. The project is not likely to adversely affect Southern Resident killer whales because potential adverse effects to salmonid fish are considered insignificant. The species is not expected to be present within the action area at any time during construction

The project will have **no effect on Southern Resident killer whale critical habitat** because the action area does not contain Southern resident killer whale critical habitat.

9.5 Humpback Whale

The project will have **no effect on humpback whales** because there is no suitable habitat for humpback whales in the action area. The species and its habitat are not expected to be present at any time during construction, and no disturbance to either is anticipated.

The project will have **no effect on humpback whale critical habitat** because the action area does not contain humpback whale critical habitat.

9.6 Marbled Murrelet

The project **may affect, but is not likely to adversely affect marbled murrelets**. The project may affect marbled murrelets because:

- Underwater noise generated during pile driving activities will exceed the threshold for disturbance (150 dB) for approximately 169 feet from pile driving locations.

- Terrestrial noise generated during pile driving activities will exceed the threshold for injury for approximately 223 feet and disturbance for approximately 2,800 feet from pile driving locations.

The project is unlikely to adversely affect marbled murrelets because:

- Underwater noise generated will not exceed the injury threshold (202 dB), and the disturbance threshold will only be exceeded for approximately 169 feet from pile driving locations.
- The likelihood of the species being present in the industrial action area within the East Waterway and Lower Duwamish River is exceedingly low and considered discountable.

The project will have **no effect on marbled murrelet critical habitat** because the action area does not contain marbled murrelet critical habitat.

9.7 Yellow-billed Cuckoo

The project will have **no effect on yellow-billed cuckoos** because there is no suitable habitat for yellow-billed cuckoos in the action area. The species and its habitat are not expected to be present at any time during construction, and no disturbance to either is anticipated.

The project will have **no effect on yellow-billed cuckoo critical habitat** because the action area does not contain yellow-billed cuckoo critical habitat.

9.8 Streaked Horned Lark

The project will have **no effect on streaked horned larks** because there is no suitable habitat for streaked horned larks in the action area. The species and its habitat are not expected to be present at any time during construction, and no disturbance to either is anticipated.

The project will have **no effect on streaked horned lark critical habitat** because the action area does not contain streaked horned lark critical habitat.

Table 7. Species Effect Determinations

Species	Effect to Species	Effect to Critical Habitat	Effect to EFH
Puget Sound Chinook salmon	May affect, not likely to adversely affect	May affect, not likely to adversely affect	No adverse effect
Puget Sound steelhead	May affect, not likely to adversely affect	May affect, not likely to adversely affect	N/A

Species	Effect to Species	Effect to Critical Habitat	Effect to EFH
Coastal Puget Sound bull trout	May affect, not likely to adversely affect	May affect, not likely to adversely affect	N/A
Puget Sound/Georgia Basin bocaccio	No effect	No effect	No adverse effect
Puget Sound/Georgia Basin yelloweye rockfish	No effect	No effect	No adverse effect
Puget Sound/Georgia Basin canary rockfish	No effect	No effect	No adverse effect
Eulachon	No effect	No effect	N/A
Southern Resident killer whale	May affect, not likely to adversely affect	No effect	N/A
Humpback whale	No effect	No effect	N/A
Marbled murrelet	May affect, not likely to adversely affect	No effect	N/A
Yellow-billed cuckoo	No effect	No effect	N/A
Streaked horned lark	No effect	No effect	N/A
Pacific salmon fishery	N/A	N/A	No adverse effect
Pacific groundfish fishery	N/A	N/A	No adverse effect
Coastal pelagic fishery	N/A	N/A	No adverse effect

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