Environmental Assessment

Port Orchard Marina Breakwater Replacement

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Prepared for:

US Department of Transportation: Maritime Administration

On Behalf of:

Port of Bremerton Washington

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ACRONYMS AND ABBREVIATIONS

ACAM – Air Conformity Applicability Model
ADA – Americans with Disabilities Act
APE – Area of Potential Effects
APPS – Aquatic Protection Permitting System
AQCR – Air Quality Control Region
BMP – Best Management Practice
CAA – Clean Air Act
CEQ – Council of Environmental Quality
CNG – Cascade Natural Gas Corporation
CRA – Cultural Resources Assessment
CWA – Clean Water Act
DAHP – Department of Archaeology and Historic Preservation
dB – Decibel
dBA – A-weighted decibel
DNR – Department of Natural Resources
DOD – Department of Defense
DOE – Washington State Department of Ecology
DPF – Diesel Particulate Filters
DPS – Distinct Population Segment
EA – Environmental Assessment
EB – East breakwater
EFH – Essential Fish Habitat
EIAP – Environmental Impact Analysis Process
EO – Executive Order
EPA – Environmental Protection Agency
ESA – Endangered Species Act
ESU – Evolutionary Significant Unit
FEMA - Federal Emergency Management Agency
FWHCA – Fish and Wildlife Habitat Conservation Area
HEA – Habitat Equivalency Analysis
lf – linear feet
MAO – Maritime Administration Order
MARAD – Maritime Administration
MLLW – Mean Lower Low Water
NAAQs – National Air Quality Standards
NB – North breakwater
NEPA – National Environmental Policy Act

NHVM – Nearshore Habitat Values Model
NMFS – National Marine Fisheries Services
NOAA – National Oceanic and Atmospheric Administration
NTU – Nephelometric turbidity units
OSPI - Office of the Superintendent of Public Instruction
PAH – Polycyclic Aromatic Hydrocarbons
PCB – Polychlorinated Biphenyls
POB - Port of Bremerton
POM - Port Orchard Marina
POPD – Port Orchard Police Department
PSCAA – Puget Sound Clean Air Agency
PSE – Puget Sound Energy
PTS – permanent threshold shift
RAISE- Rebuilding American Infrastructure with Sustainability and Equity
SEPA - State Environmental Policy Act
sf – square feet
SKFD – South Kitsap Fire Department
SMP – Shoreline Master Program
SPCC – Spill Prevention, Control, and Countermeasures
TESC – Temporary Erosion and Sedimentation Control
THPO – Tribal Historic Preservation Office
USDOT – United States Department of Transportation
USFWS – United States Fish and Wildlife Services
WAC – Washington Administrative Code
WDNR – Washington Department of Natural Resources
WRIA – Water Resource Inventory Area
WSDOT – Washington State Department of Transportation
ZOI – Zone of Impact

EXECUTIVE SUMMARY

The Port Orchard Marina is owned and operated by the Port of Bremerton (POB). The POB has obtained funding through the United States Department of Transportation (USDOT) Maritime Administration (MARAD) under the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant and the U.S. Fish and Wildlife Service (USFWS) Boating Infrastructure Grant (BIG) program to fund the replacement of the failing, floating Port Orchard Marina breakwater system. Providing funds for this project is a major federal action under the National Environmental Policy Act (NEPA) 42 U.S.C. §4321 *et seq*. In compliance with 42 U.S.C. §4336a, USDOT is the designated lead federal agency and USFWS is a cooperating agency for this jointly-funded project. David Evans and Associates, Inc. has prepared this Environmental Assessment (EA) on behalf of the Port of Bremerton (POB), MARAD, and the USFWS in compliance with NEPA.

The Port Orchard Marina Breakwater is 20 years past the end of its design lifespan and must be replaced. Impacts of wave attenuation from the Puget Sound Naval Shipyard and Washington State ferry traffic, have degraded the facility. The proposed preferred action is the replacement of the North Breakwater and East Breakwater, approach floats, and gangway at the Port Orchard Marina. The marina's solid gangway will be replaced with an Americans with Disabilities Act (ADA)-compliant, grated gangway; solid approach floats with grated approach floats; and north and east solid breakwater floats with new solid, North and East breakwater floats. New steel piles and steel plate anchors will be embedded below the mudline via vibratory and impact pile-driving. Upon completion of the new breakwaters, the existing approach floats and gangway will be removed. The project would result in a net increase of 1,232.7 square feet in overwater cover and an overall increase of 240 linear feet of anchor lines. The proposed approach float reduces the square footage of overwater cover by 196.2 square feet and changes the solid surface to a grated surface.

The proposed action is to replace the breakwater and associated facilities in kind with minor updates for safety (e.g., minor changes to flotation, upgraded fire suppression system, modern materials, contemporary layout of piles and anchors). Given this, there is no anticipated increase of operations as the new breakwater is not designed to increase capacity (i.e., no increase in moorage or capacity to increase the size of the marina). Thus, there are no anticipated impacts for future operations and most of all of the potential impacts are due to temporary effects of demolition/construction activities which would last approximately five months.

Potential temporary impacts include releases from construction equipment using petroleum-based fuels and lubricants into waters. Construction impacts will be avoided/minimized by the use of standard and agency-approved best management practices. If a spill does occur, the contractor will follow and implement an approved spill prevention, control, and countermeasures plan. Extraction of creosote-treated timber may also release contaminants into marine substrate and waters. Backfilling the void left after extraction and minimizing the increase in turbidity will minimize that potential release.

Short-term increases in background sound levels during vibratory and impact use have the potential to result in behavioral disturbance and/or injury to aquatic species. Noise effects will be minimized by the use of a vibratory pile driver to install all piles. Piles may require proofing with an impact pile driver which produces a higher degree of noise within the water column; this will be minimized by the use of a bubble curtain during impact pile driving significantly attenuates underwater noise at each pile. To further reduce potential impacts during all pile driving, an approved marbled murrelet and marine mammal monitoring plan will be implemented to help avoid exposure of elevated underwater noise to sensitive species.

Eleven fish, marine mammal, and marine bird species protected under the Endangered Species Act (ESA) are present within the study area. The following Effects Determinations were found, based on construction activities, as presented in the Biological Assessment:

- Likely to Adversely Affect – Chinook salmon and steelhead trout
- Not Likely to Adversely Affect – Bull trout, bocaccio, yelloweye rockfish, marbled murrelet, and southern resident killer whale,
- No Effect – Monarch butterfly, Suckley's cuckoo bumble bee, yellow-billed cuckoo, and Humpback whale.

If implemented, the Proposed Action would be "likely to adversely affect" designated critical habitat for Chinook salmon, yelloweye rockfish, bocaccio, and southern resident killer whale. The project "may adversely affect" Essential Fish Habitat for Pacific salmon (coho, Chinook and pink salmon) and federally managed groundfish species. All effects on ESA-listed species, their designated critical habitat, Essential Fish Habitat, and other impacts would be temporary, only occurring during the construction period of in-water work.

However, as this project occurs within the nearshore of Puget Sound, the project impacts were evaluated using the National Oceanic and Atmospheric Administration (NOAA) Fisheries Puget Sound Nearshore Conservation Calculator (NOAA calculator) to quantify the habitat impacts. The NOAA calculator quantifies habitat impacts from a proposed re-development/development project and the habitat benefits from restoration projects in terms of a common habitat currency. To offset the unavoidable impacts associated with the project, two derelict structures which consist of creosote-treated material have been identified by the Port for removal to offset project impacts. The majority of credits are derived from removal of creosote from the aquatic environment within the vicinity of the marina and a smaller percentage attributed to removal of overwater coverage. Any residual mitigation debits generated by the project were offset by a purchase of credits from the Puget Sound Partnership.

As previously mentioned, the proposed action will likely only result in short-term impacts due construction related actions. However, this analysis identified that the No Action alternative may result in a few short-term impacts, a potential long-term impact, and maintaining current levels of impact based on inaction. The analysis concluded that the breakwater would eventually fail (either slowly over time or in an unexpected catastrophic event) which would lead to the eventual closing of the marina facility. Based on that scenario, the potential impacts of the No Action alternative are:

- The potential uncontrolled release of petroleum products from the fueling facility and vessels should the breakwater acutely fail under adverse conditions (e.g. severe windstorm). Though this is unlikely, this could result in a short-duration, high-impact event affecting regional water and sediment quality that would require a potential spill response.
- The potential to adversely affect Kitsap Transit Ferry service. The condemning or failure of the existing breakwater would likely cause a prolonged disruption of ferry service. Depending on impacts to infrastructure needed by the ferry service, the service may need to relocate either to an existing facility or (more likely) need to construct a new facility which may lead to a disruption of the service for months to years.
- By choosing the No Action alternative, mitigation associated with the replacement of the breakwater would not be implemented. Specifically, substantial amounts of creosote timbers would not be removed to offset impacts of the proposed action and would continue to leach a hazardous, persistent chemical into the nearshore.

1.0 INTRODUCTION

The Port Orchard Marina breakwater is 20 years past the end of its design lifespan. The marina is owned and operated by the Port of Bremerton (POB). POB has requested funding to replace the failing, Port Orchard Marina floating breakwater system through a MARAD grant under the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) discretionary grant program and the U.S. Fish and Wildlife Service (USFWS) Boating Infrastructure Grant program.

This Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321 *et seq*. and is consistent with implementing guidance issued by the Council on Environmental Quality (CEQ), the U.S. Department of Transportation (DOT) "Procedures for Considering Environmental Impacts," and the Department of Interior (DOI) NEPA Implementing Regulations, 43 CFR 46.[1,2] Providing funds for this project is a major federal action under NEPA, 42 U.S.C. § 4321. In compliance with 42 U.S.C. § 4336a, MARAD is the designated lead federal agency and USFWS is a cooperating agency for this jointly-funded project. David Evans and Associates, Inc. has prepared this EA on behalf of the Port of Bremerton (POB), the DOT, and the USFWS.

1.1 Project Description

The Port Orchard Marina Breakwater is 20 years past the end of its design lifespan and must be replaced. Impacts of wave attenuation from the Puget Sound Naval Shipyard and Washington State ferry traffic have degraded the facility. The Port Orchard Marina, originally built in 1974, is publicly owned and operated by the POB. The marina is located in the downtown area of the City of Port Orchard, along the shoreline of Sinclair Inlet, Kitsap County. See **Figure 1** for the site location. Sinclair Inlet is a moderately developed pocket estuary with a U.S. Naval port on the north side of the inlet. Both the Port Orchard Marina and the Kitsap Transit Ferry Dock are located on the south side of the inlet. References to marina in this report will refer to the Port Orchard Marina (the marina).

The proposed project will replace the marina's solid gangway with an ADA-compliant, grated gangway; solid approach floats with grated approach floats; and north and east solid breakwater floats with new solid breakwater floats. **Figure 1** illustrates these components in more detail. Work will begin with the construction of the proposed breakwaters on the seaward side of the existing structures. New steel piles and steel plate anchors will be embedded below the mudline via

[1] MARAD is aware of CEQ's rescission of its NEPA-implementing regulations at 40 CFR §§ 1500–1508. This environmental assessment was prepared while those CEQ regulations were still in effect. To efficiently process NEPA documents, this document may still reflect previous CEQ regulatory language. MARAD also utilized the Department of Transportation Order 5610.1C, titled "Procedures for Considering Environmental Impacts," and MARAD's Maritime Administrative Orders (MAO) 600- 1, titled "Procedures for Considering Environmental Impacts," to meet the agency's obligations under NEPA, 42 U.S.C. § 4321 *et seq*. MARAD notes that new DOT "Procedures for Considering Environmental Impacts" (DOT Order 5610.1D) went into effect July 1, 2025, and will be applied to future environmental reviews.

[2] USFWS is aware of CEQ's rescission of its NEPA-implementing regulations at 40 CFR §§ 1500–1508. This environmental assessment was prepared while those CEQ regulations were still in effect. To efficiently process NEPA documents, this document may still reflect previous CEQ regulatory language. USFWS also used Department of Interior (DOI) NEPA Implementing Regulations, 43 CFR 46, and the DOI "Handbook of National Environmental Policy Act Implementing Procedures" to meet agency obligations under NEPA. The new DOI "Handbook of National Environmental Policy Act Implementing Procedures" went into effect on July 3, 2025.

vibratory and impact pile-driving. Upon completion of the new breakwaters, the existing approach floats and gangway will be removed and replaced. The floats, anchor lines, and creosote-treated piles would be placed on a salvage barge for transfer to an appropriate Subtitle D disposal location. **Table 1** summarizes the existing and proposed overwater and in-water structures. The project would result in a net increase of 1,232.7 square feet in overwater cover and an overall increase of 240 linear feet of anchor lines. The project would incorporate grated surfaces where feasible.

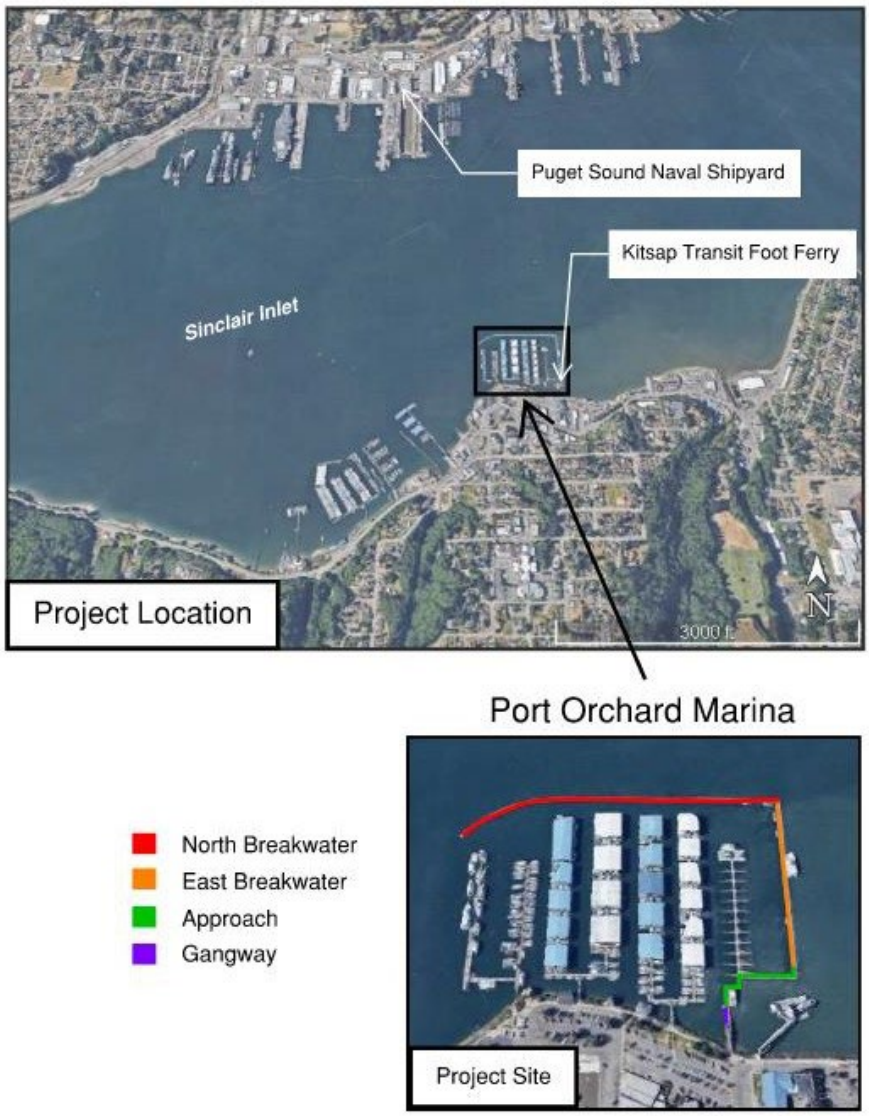

Figure 1. *Map of Project Location and Scope of Project Site with Relevant Adjacent Landmarks*

After construction phases are completed, any demolished materials staged on the uplands and all spill prevention materials (such as depth turbidity curtains, booms, vacuum pumps, tarpaulins, straw bales, and absorbent materials) will be removed from the site in compliance with applicable regulations.

Table 1. *Summary of Existing and Proposed Project Components*

North Breakwater (NB)			
Component	Existing sf, lf	Proposed sf, lf	Net Difference sf, lf
Solid floats	12,882 sf	13,126 sf	+244 sf
Plate anchors (below mudline)	0	21.6 sf	+21.6 sf
Creosote-treated timber stake piles	34.6 sf	0	-34.6 sf
Anchor lines	6,740 lf	9,740 lf	+3,000 lf
	NB Total		**+234 sf / +3,000 lf**
East Breakwater (EB)			
Solid floats	7,248 sf	8,038 sf	+790 sf
Steel piles	0	128 sf	+128 sf
Creosote-treated timber anchor piles	18 sf	0	-18 sf
Creosote-treated timber piles	3.1 sf	0	-3.1 sf
Anchor lines	2,760 lf	0	-2,760 lf
	EB Total		**+897 sf / -2760 lf**
Approach			
Floats	2,569 sf solid	2,408 sf grated	-221 sf
Creosote-treated timber piles	9.4 sf	0	-9.4 sf
Steel piles	0	6.2 sf	+6.2 sf
Transformer float		60 sf	+60 sf
Tri-brace float	32 sf	0	-32 sf
	Approach Total		**-196.2 sf**
Gangway			
Gangway	235 sf	536 sf Grated, ADA-compliant	+301 sf
	Gangway Total		+301 sf
	Total square footage change		**+1,237.7 sf**

Note: Table based on engineer's estimates. *sf = square feet, lf = linear feet*

1.2 Purpose and Need

The purpose of this project is to ensure the continued, reliable operation of the multi-use marina by replacing the aging breakwater that would mitigate wakes from the Kitsap Transit foot ferry and U.S. Naval Shipyard, and strengthen the structure against future environmental disturbances such as storms. Replacing the breakwater would extend the lifespan of the marina to meet community demand and avoid escalating, repetitive repair costs that offset the operation of its facilities. A key element of the proposed design is installing an accessible, ADA-compliant gangway and widening

the breakwater 6 inches on both sides to accommodate upgraded, fire suppression systems required by the Washington State Code (Chapter 36, Section 3604 and Chapter 23, Section 2310). These improvements will enhance safety, accessibility, and code compliance while maintaining the essential protective function of the breakwater.

The need for this project arises because the existing marina breakwater and surrounding structures are well beyond their design life and are failing. The POB has made a series of short-term repairs to preserve functionality, but those measures are cost-prohibitive, temporary, and unable to withstand severe wakes and storm events. Regular operations and maintenance can no longer sustain the breakwater's service life and without timely replacement, the likelihood of total system failure will increase, putting vessel safety, marina operations, and nearshore ecosystem health at risk.

Maintaining a robust breakwater is critical because the marina supports numerous public uses such as essential government emergency response services, tribal and non-tribal commercial fishing, the Kitsap Transit foot ferry fleet, general moorage slips, recreational slips, and moorage exclusively for Suquamish Tribal use. The breakwater also plays a vital role in protecting the only saltwater fueling station in a 16-nautical-mile radius, serving vessels that transport goods and people. The shelter provided by the marina's breakwater structure is also essential for protecting the boats and vessels anchored there. The replacement project would maintain and improve access to moorage slips for Suquamish Tribe members and sustain use by recreational boaters, fishermen, and other community members for many years to come. The marina has been an important asset to the city of Port Orchard for 50 years and should be protected for future use and stewardship.

In addition to these operational and community benefits, the proposed action will remove tons of creosote treated wood from the failing breakwater structure, eliminating a significant source of hazardous chemical leachate in the marine nearshore environment. This cleanup, consistent with the Environmental Protection Agency (EPA, 2016) and Department of Natural Resources (DNR) creosote removal programs, will improve shoreline health and support long-term environmental stewardship.

2.0 Alternatives Considered

This section describes the reasonable alternatives considered for the proposed project. The selection of reasonable alternatives should be based on: 1) consideration of alternatives that avoid impacts where feasible; 2) consideration of the alternatives that minimize impacts where feasible; and 3) consideration of the potential mitigation of impacts of each alternative, all while meeting the project purpose and need.

2.1 Proposed Action (Preferred Alternative)

The proposed action is the replacement of the North Breakwater (NB) and East Breakwater (EB), approach floats, and gangway at the Port Orchard Marina.

The proposed NB and EB would be constructed on the seaward side of the existing breakwaters to protect the marina throughout project implementation. The marina's solid gangway will be replaced with an Americans with Disabilities Act (ADA)-compliant, grated gangway; solid approach floats with grated approach floats; and north and east solid breakwater floats with new solid, North and East breakwater floats. New steel piles and steel plate anchors will be installed via vibratory and impact pile-driving. Upon completion of the new breakwaters, the existing approach floats and gangway will be removed. The project would result in a net increase of 1,232.7 square feet in overwater cover due to and upgrade of the fire suppression system design to meet current city requirements and an overall increase of 240 linear feet of anchor lines. The proposed approach float reduces the square footage of overwater cover by 196.2 square feet and changes the solid surface to a grated surface. See Table 1 for specific details on surface area differences from the currently installed breakwater components.

After both new breakwaters components are installed, the existing breakwaters would be demolished. The approach floats and existing gangway, would be replaced with grated surfaces upon completion of the new breakwaters. The new gangway will be ADA-compliant. The new fire suppression system incorporated into the breakwaters would meet current fire safety standards. The Proposed Action is the Preferred Alternative.

2.2 No Action

The No Action alternative, leaving the existing breakwaters in place, was considered (see Section 3) but it does not meet the project purpose and need (see Section 1.2). The No Action Alternative would result in further deterioration of the existing structure and would not extend the lifespan of the marina for the community. Because the existing marina breakwater and surrounding structures are well beyond their design life and are failing, the No Action alternative would continue to require expensive repair costs and leave the aging breakwater vulnerable to failure due to storms and large vessel wakes. Meanwhile, the creosote would continue to leach from the failing breakwater structure. Eventually, the existing breakwaters would fail to function as intended and not provide the marina with protection from storms, debris, and vessel wakes.

Failing to replace the existing breakwaters would impact tenants and frequent users of the marina. These impacts would affect the Suquamish Tribe, Kitsap Foot Ferry, recreational boaters, fishing vessels, and other community members.

3.0 Existing Conditions, Environmental Consequences, and Mitigation Measures

3.1 Earth

3.1.1 Existing Conditions

The project is located on the south shoreline of Sinclair Inlet which is associated with the Bremerton-Seattle fault. This fault, also known as the Seattle Fault, is a zone of multiple shallow east-west thrust faults. The fault is inferred to have been active in the past, with evidence of an earthquake around AD 900-930 and subsequent submergence at Gorst at the terminus of Sinclair Inlet (Arcos 2012).

Sediments within the action area are generally characterized by surface layer of gray silty sand with shell pieces approximately 5-10 feet in thickness followed by either stiff clay or glacially deposited gray silt with compact gravels (GeoEngineers 2021) at deeper depths below the silty sand layer. Generally, the upper layer is subject to liquefaction and spreading in moderate to maximum magnitude earthquakes (500-2500 year return period), but generally stable during operational magnitude earthquake activity (GeoEngineers 2021).

The breakwater, both current and proposed, is generally isolated from ground movements due to its design which relies on an anchoring system. This decouples the floating structure from the anchors by the use of line and chains which buffer ground movements that are predicted to be experienced. Because of this decoupling, the threat of impact from seismicity on the floating breakwater is very low.

3.1.2 Proposed Action

The proposed project area is located completely offshore with minimal sediment-disturbing activities. Project elements that have the potential to affect sediments within the project area are embedded into marine sediments and meant to be replaced in kind. Additionally, these replacement elements represent an overall decrease in the sediment footprint (Table 1) minimizing potential impacts. Proposed anchors for the north breakwater will be similarly sized and placed within the same location to the extent practicable. All existing creosote-treated piles will be removed, and new steel piles will be installed in the east breakwater. And while these steel piles will be larger compared to the existing piles, there will be fewer in number. Removal of the existing piles and derelict structures will cause short-term disturbance to sediments but will be minimized through the implementation of conservation measures and BMPs such as the Pile Removal and Installation Measures and the Spill Prevention, Control and Countermeasures (SPCC) (Attachment D). Long-term, the removal of the derelict structures and its 88 creosote-treated piles will decrease the area of shaded sediments by 2,551 square feet (Attachment D, p.9).

Given the minimal disturbance of marine sediments and that these sediments are far removed from slopes and other existing structures, the potential adverse effects on surrounding sediments, geology, and seismicity are negligible.

3.1.3 No Action Alternative

The no-action alternative would have no additional effect on existing sediments, geology, and seismicity due to operations.

3.2 Air Quality

3.2.1 Existing Conditions

Regulatory Context

Clean Air Act (CAA) regulations require the EPA to set national air quality standards (NAAQs) for established criteria pollutants including carbon monoxide, lead, particulate matter, ozone, nitrogen dioxide, and sulfur dioxide. Criteria pollutants are considered harmful to public health and standards have been set to ensure the established standards are not exceeded. For the proposed project area, air quality is regulated by three agencies: the EPA, the Washington State Department of Ecology (DOE), and the Puget Sound Clean Air Agency (PSCAA). PSCAA and DOE work together to monitor air quality within the Puget Sound region. The Clean Air Act (CAA) (42 U.S. Code 7401-7671q), as amended, gives EPA the authority to establish the primary and secondary safe concentration levels for the six criteria pollutants (mentioned above). In Washington, EPA has delegated the authority for ensuring compliance with the NAAQS to the DOE and PSCAA.

EPA classifies the air quality defined in an area as an Air Quality Control Region (AQCR). Areas which do not exceed the national standards are designated as "attainment areas" and areas which exceed the national standards are considered "non-attainment areas." State and local governments in non-attainment areas must develop regional plans outlining how areas will attain and maintain national air quality standards through reduction of emissions over time. Kitsap County is currently designated as an attainment area (EPA NAAQs 2023) and is subject to national standards and criteria.

3.2.2 Proposed Action

Proposed activities associated with the replacement of the existing breakwater would seek to maintain current operations of the marina without any expansion of services or actions that would contribute to increased emissions or other airborne pollutants. Therefore, any impacts to air quality and increased emissions would be limited to construction and demolition activities.

To help estimate the emissions associated with the construction of the proposed action, a Department of Defense (DOD) modeling approach was used to estimate these emissions based on similar equipment and sequencing. Designed as a spreadsheet-based model for practitioners, the US Air Force's Air Conformity Applicability Model (ACAM version 5.0.23a) was used to model estimates of air emissions for the proposed construction activities associated with the proposed action as required by the Environmental Impact Analysis Process (EIAP, 32 CFR 989).

Construction Impacts

Construction activities during maintenance may cause negligible impacts to air quality including use of heavy marine construction vessels, pile driving, and other use of heavy machinery. Demolition and removal of existing structures would be localized and temporary. Replacement of the existing breakwater would reset the lifespan of the structure and subsequently the lifetime emissions.

Construction vehicles and equipment will include two barges (a crane barge and a salvage/materials barge), a tugboat, a crane, and a support work vessel (e.g., a work skiff). On-road

traffic will include waste haul trucks and crew commute vehicles using existing roadways. Fueling of land vehicles and equipment is restricted to upland locations only, and no fueling occurs over water. These vehicle emissions were included in the ACAM analysis and were found to have negligible impacts on local air quality.

If selected, the proposed construction activities would begin in July 2026 to coincide with the approved Sinclair Inlet in-water work window (Attachment B, Table 1-8), established to protect migrating salmon and bull trout. Based on sequencing and project elements, construction/installation of the new breakwater pieces would take approximately 4.1 months and immediately be followed by demolition of the existing breakwater and final positioning of the new breakwater. This would take approximately 1.2 months to complete for a combined construction duration of 5.3 months. This is a "best estimate" of duration of when construction equipment would be employed on a weekly basis assuming 5-day work weeks. These assumptions were used as inputs to the air quality analysis.

Based on this, ACAM provided the following results:

Table 2. *ACAM Emission Estimates for Construction Activities Associated with the Proposed Action*

Pollutant	Action Emissions (ton/yr)	Emission Criteria (national standards)	
		Indicator[3] (ton/yr)	Exceedance (Yes or No)
NOT IN A NON-ATTAINMENT AREA			
VOC	0.069	250	No
NOx	0.547	250	No
CO	0.711	250	No
SOx	0.001	250	No
PM 10	0.033	250	No
PM 2.5	0.019	250	No
Pb	0.000	25	No
NH3	0.001	250	No

None of the estimated annual net emissions associated with this action are above the established criteria (**Table 2**); therefore, the action will not cause or contribute to an exceedance of one or more NAAQSs and will not have a significant impact on air quality. Based on this, no further air assessment is needed. The complete Record of Air Analysis is included in Attachment A.

Operational Impacts

No additional operational impacts are anticipated since there is no anticipated increase in operations relative to existing conditions.

Mitigation Measures

Typical mitigation measures for controlling air quality are generally related to generation of particulates during construction. Since this work will be performed in and overwater, dust generation is naturally eliminated. However, the following Best Management Practices (BMPs) will be employed to the extent practicable to reduce noxious and generation of emissions.

[2] The indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold and 25 ton/yr for lead for actions occurring in areas that are "Attainment". These indicators do not define a significant impact.

- Machinery and vehicles used will be equipped with emission control technologies, such as diesel particulate filters (DPFs) and catalytic converters, to reduce exhaust emissions.
- Construction sequencing and equipment layout will be optimized to minimize the distance traveled by construction vehicles and reduce vehicle idling, which can contribute to air pollution.
- Equipment will be properly maintained according to manufacturer specifications to ensure optimal efficiency and lowest potential emissions.
- For small vessels, four-stroke engines will be favored over 2-stroke variants to minimize emissions.
- When feasible, use of electric or battery-powered tools instead of 2-stroke engine variants to eliminate emissions.

The project has been designed to avoid and minimize potential air quality impacts where feasible but will temporarily increase emissions during construction though this increase can be considered a negligible increase compared to operational baseline conditions. Also, criteria pollutants created during construction fall well below the national criteria (i.e., no exceedances).

3.2.3 No Action Alternative

The no-action alternative would have no additional effect on existing air quality.

The no-action alternative could eventually lead to decommissioning of the facilities supported by the current breakwater. Objectively, ceasing operation of the facilities would decrease associated emissions and consequently improve ambient air quality. Kitsap County is currently in attainment of the national ambient air quality, therefore, continued use of the marina following maintenance of the breakwater would not appreciably affect air quality in the region.

3.3 Hazardous Materials

The purpose of this section is to discuss hazardous materials in relation to the Project and determine whether any existing hazardous sites are close enough to the Project to cause potential negative impacts.

3.3.1 Existing Conditions

The proposed action is needed to ensure the breakwater continues to protect the multi-use marina within Sinclair Inlet and to remove a source of hazardous chemicals from the nearshore habitat, consistent with Environmental Protection Agency (2016) and DNR creosote removal programs.

When accessing the National Priorities List, June 17, 2024, of federally managed contaminated sites, No Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) sites were noted in the APE. However, when consulting the Washington State Department of Ecology's *What's in My Neighborhood: Toxics Cleanup* website, accessed on June 17, 2024, the following eight sites were identified within 0.5 miles of the Project site:

1. Chevron 91253. 620 Bay Street. Cleanup Started.
2. Marina Mart Blandunn Corp. 528 Bay Street. Cleanup Started.
3. Port of Bremerton Wilkins Distributing. 521-525 Bay Street. Awaiting Cleanup.
4. Port Orchard Public Schools. 514 Bay Street. Cleanup Started.
5. Hall & Sons Auto Repair. 512 Bay Street. Cleanup Started.
6. Port Orchard Yacht Club. 203 Bay Street. Cleanup Started.
7. Bay Ford. 1215 Bay Street. Cleanup Started.

8. Tire Center. 1216 Bay Street. Awaiting Cleanup.

For all of the above sites, the leading contaminant(s) of concern are petroleum and petroleum based byproducts.

Additionally, the U.S. Naval Shipyard on the Bremerton side of the inlet (north side) has been associated with contaminated sediment remedial investigations managed at the Federal level. Remedial dredging programs for elevated concentrations of organic compounds have taken place in recent years. In 2017, the Suquamish Tribe, along with environmental groups, issued an intent to sue the U.S. Navy for violations of the Clean Water Act (CWA) after the hull of an aircraft carrier was scraped depositing harmful pollutants (e.g. zinc and copper) into the inlet. In response to the event, the Navy pumped a 10-centimeter-thick layer of sand to cap the contaminated substrate in the area.

None of the sites identified are in the water or near the Project site. The nearest toxic cleanup site (Chevron) at 620 Bay Street, is more than 300 feet from the shoreline. It is unlikely that any Project actions would disturb or otherwise impact any existing cleanup sites. It is unlikely that any existing cleanup sites would impact the marina site.

The Port Orchard Marina currently includes a fueling dock, dockside pump-out station, maintenance shop, restrooms, and a laundry facility. Damage to any of these, particularly the fueling dock and pump-out station, could result in the spillage of hazardous materials or untreated waste into the waterway. Appropriate measures have been put in place first to prevent a spill (e.g., check valves, inspection of facilities, sunset schedule for components that wear or degrade over time) and to address a potential spill should one occur (staged spill response trailer and spill mitigating materials throughout the marina).

3.3.2 Proposed Action

Construction Impacts

The existing Toxic Cleanup Sites are not near the project and are not expected to be impacted during construction. Extraction of creosote-treated timber may release contaminants into marine substrate and waters. Construction equipment using petroleum-based fuels and lubricants may spill into waters. If a spill does occur, the contractor will follow and implement the spill prevention, control, and countermeasures (SPCC) plan, and the Washington State Department of Ecology's (Ecology) Northwest Regional Spill Response Office will be contacted.

The proposed NB and EB would be constructed on the seaward side of the existing breakwaters to protect the marina throughout the proposed action. After both new breakwaters are completed, the existing breakwaters would be demolished. The approach floats and existing gangway would be replaced upon completion of the new breakwaters. The new gangway will be ADA-compliant. This construction phasing ensures no damage will come to existing dockside facilities, such as the fueling station and waste pump-out station.

With the appropriate spill prevention plans in place, as required by the WA Water Quality Certification, and the proposed phasing of construction, there would be potentially negligible impact from the introduction of hazardous materials to project area.

Operational Impacts

No new hazardous material impacts are anticipated with continued operations. Hazardous materials would continue to be utilized at the fueling dock and maintenance shop and have best

management practices and spill prevention plans in place to prevent introduction of hazardous materials into the marine environment as well as spill response materials and planning documents in place should a spill occur. Waste materials would continue to be generated at the pump-out station, restrooms, and laundry.

Mitigation Measures

During construction, the following BMPs will be used to protect the waterway from mechanical drips/spills/contamination.

- The contractor will implement Washington Department of Natural Resources Derelict Piling Removal Best Management Practices for Pile Removal & Disposal (WDNR 2017) and EPA Region 10 Best Management Practices for Piling Removal and Placement in Washington State (2016).
- A turbidity curtain will be installed during creosote-treated timber pile extraction.
- The contractor will comply with Washington State Water Quality Standards (Washington Administrative Code [WAC]173-201A).
- The contractor will prepare and implement a SPCC plan during all demolition and construction operations.
- The contractor will check equipment before staging on-site and then daily for leaks and other problems that could result in the discharge of petroleum-based products or other material into the waters of Sinclair Inlet before using equipment in or near water.
- Oil-absorbent materials will be present on-site for use in the event of a spill or if any oil product is observed in the water.
- To reduce the potential for spills and leaks, work barge(s) will contain an adequate supply of materials (such as a vacuum pump, booms, diapers, and other absorbent material) to control and contain deleterious materials in the event of an accidental spill.
- Waste materials will be disposed of in an appropriate manner consistent with applicable local, state, and federal regulations.
    - Creosote-treated timber, miscellaneous garbage, and/or other debris, will be transported off-site for disposal following applicable regulations and prevented from entering the water.

3.3.3 No Action Alternative

The no-action alternative would have no additional effect on the presence of hazardous materials in the region.

The no-action alternative could eventually lead to decommissioning of the facilities supported by the current breakwater including dockside fueling facilities, which would reduce the potential for small accidental spills during refueling.

3.4 Wetlands, Streams, and T&E Species

A Biological Assessment and a Macro-vegetation Survey (Attachment B, C) were completed for the Proposed Action to review potential impacts on biological resources. Discussion will focus on special aquatic sites, other habitats (e.g., fish and wildlife habitat conservation areas [FWHCAs], vegetative communities, and migratory corridors), and protected species.

3.4.1 Regulatory Framework

The Endangered Species Act (ESA) protects federally listed endangered and threatened plant and animal species, as well as their critical habitats. The ESA is co-administered by the United States

Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS).

Under the Salish Sea Nearshore Programmatic (SSNP) Consultation, (Biological Opinions included in Attachment G), the USACE demonstrated compliance with Section 7 of the ESA for both NMFS and USFWS. To satisfy MARAD's Section 7 obligations for this project, MARAD adopted the NMFS and USFWS SSNP Biological Opinions issued to the USACE and apply those Biological Opinions as MARAD's Section 7 consultations. On March 18, 2025, to fulfill MARAD's Section 7 consultations with NMFS, MARAD sought NMFS approval to adopt USACE's consultation as a "late-arriving action agency" and apply it towards MARAD's review of the project (Attachment F, p. 249). MARAD agreed with USACE's Section 7 effects determinations and NMFS' biological opinion for the purposes of MARAD's project. On March 21, 2025 NMFS concurred that "the MARAD funding will have no additional impacts on listed species or critical habitat in relation to the actual permitting to the projects by the Corps" (Attachment F, p. 254). Likewise, MARAD sought USFWS approval to adopt USACE's consultation to fulfill MARAD's Section 7 obligations with USFWS (Attachment F, p. 258) in which USFWS concurred with the programmatic consultation on August 2, 2024. Because USFWS is serving as a co-lead on the EA, request for consultation as a "late arriving agency" was not required; nonetheless, MARAD sought formal confirmation with USFWS on January 29, 2026. On February 9, 2026, USFWS confirmed that the current impact statements for Section 7 species managed by USFWS found in this EA are consistent with USFWS's SSNP Biological Opinion and that MARAD may rely on previous programmatic consultation with USFWS for MARAD's Section 7 review (Attachment F, p. 262).

3.4.2 Existing Conditions

The following ESA-listed species and designated critical habitat, summarized below, were identified in the project's Biological Assessment (Attachment B) as those with the potential to occur in the project area:

- Monarch Butterfly (*Danaus Plexippus*)
- Suckley's cuckoo bumble bee (*Bombus suckleyi*)
- Yellow-billed cuckoo (*Coccyzus americanus*)
- Marbled Murrelet (*Brachyramphus marmoratus*)
- Bull Trout (*Salvelinus confluentus*)
- Puget Sound Evolutionary Significant Unit (ESU) Chinook salmon (*Oncorhynchus tshawytscha*)
- Puget Sound Distinct Population Segment (DPS) steelhead (*O. mykiss*)
- Puget Sound/Georgia Basin DPS bocaccio rockfish (*Sebastes paucispinis*)
- Puget Sound/Georgia Basin DPS yelloweye rockfish (*S. ruberrimus*)
- Southern resident killer whale (*Orcinus orca*)
- Central America DPS humpback whale (*Megaptera novaeangliae*)
- Mexico DPS humpback whale (*M. novaeangliae*)

Protected Species: **Table 3** provides the listing status, critical habitat designation, and ESA determinations for the species listed above. Listed species and designated critical habitat with the potential to occur in the project area were obtained from the USFWS (2025) and previous NMFS biological assessments and online tools were reviewed to gain information regarding ESA-listed species, designated critical habitat and essential fish habitat (EFH).

Monarch butterfly (*Danaus plexippus*) is a proposed threatened species and Suckley's cuckoo bumble bee (*Bombus suckleyi*) is proposed endangered but there is no suitable habitat for either

species in the project area and neither are present in the area of potential effect. Yellow-billed cuckoo (*Coccyzus americanus*) – Threatened, are also not present due to lack of suitable habitat within or adjacent to the area of potential effect and will not be addressed further. Therefore, there is "No Effect" on these species from either alternative since they do not occur within the area of potential effect.

Table 3. *ESA-Listed Species, Description, Critical Habitat Presence, and Determination*

ESA Listed Species	Agency	Status	Determination	Critical Habitat Presence and Determination
Marbled Murrelet (*Brachyramphus marmoratus*) CA/WA/OR DPS	USFWS	Threatened	May affect, not likely to adversely affect	Not present in the action area. No effect.
Bull Trout (*Salvelinus confluentus*)	USFWS	Threatened	May affect, not likely to adversely affect	Not present in the action area
Chinook salmon (*Oncorhynchus tshawytscha*) Puget Sound ESU	NMFS	Endangered	May affect, likely to adversely affect	Present. Likely to adversely affect.
Steelhead (*O. mykiss*) Puget Sound DPS	NMFS	Threatened	May affect, likely to adversely affect	Not present in the action area.
Bocaccio rockfish (*Sebastes paucispinis*) Puget Sound/Georgia Basin DPS	NMFS	Endangered	May affect, not likely to adversely affect	Nearshore and deepwater present. Likely to adversely affect.
Yelloweye rockfish (*S. ruberrimus*) Puget Sound/Georgia Basin DPS	NMFS	Threatened	May affect, not likely to adversely affect	Present. Likely to adversely affect.

ESA Listed Species	Agency	Status	Determination	Critical Habitat Presence and Determination
Southern resident killer whale (*Orcinus orca*)	NMFS	Endangered	May affect, not likely to adversely affect	Present. Likely to adversely affect.
Humpback whale (*Megaptera novaeangliae*) Central America/Mexico DPS	NMFS	Central America DPS – Endangered Mexico DPS - Threatened	No effect	Not present in the action area.

Wetlands and Other Protected Habitat: The scope of the project does not impact any wetland habitat; all work is nearshore and in-water. The project area is in Sinclair Inlet, a shallow embayment in the western part of Puget Sound. The shoreline is characterized by non-native and some native species such as English ivy (*Hedera helix*), rose species, various weedy species, rhododendron sp., Mahonia sp., red maples, dogwood trees, lupine sp., and lawn. Riprap hard armoring lines the shoreline along the marina. Several streams drain into Sinclair Inlet, the largest being Gorst, Blackjack, Anderson, and Wright Creeks. The area is tidally dominated, non-stratified, and saline due to a low inflow of freshwater. Blackjack Creek, which enters Sinclair Inlet approximately 0.4 mile east of the project area, is a known spawning ground for Chinook and other species of salmon.

Forage fish spawning occurs on most of the south shore of Sinclair Inlet as well as along the north shore from Bremerton north into Rich Pass. While there are no forage fish spawning beaches at the marina, there are spawning areas east and west of the marina. The nearest smelt spawning areas begin approximately 400 feet east and west of the marina (WDNR 2021). The nearest sand lance spawning area is about 700 feet east of the marina (WDNR 2021). A pre-spawner herring holding area is near Bremerton and north into Rich Pass (WDNR 2021).

The depths within the marina are variable. The nearshore section connecting the ramp with the East Breakwater ranges from -10 to -18 feet mean lower low water (MLLW). The East Breakwater depths range from -15 feet to -25 feet MLLW and the North Breakwater ranges from -25 to -35 feet MLLW. Based on the habitat requirements and bathymetry at the site, the nearshore portion could potentially host eelgrass with deeper depths suitable for kelp. However, the macro-vegetation survey conducted in September 2020 for this project documented no attached eelgrass, kelp, or Ulva species within the project footprint (GeoEngineers 2020).

The project site itself does not have known contaminated sediments. Please see Section 3.3.1 for a discussion of known sediment contamination in the vicinity of the project.

3.4.3 Proposed Action

Construction and Operational Impacts

The Proposed Action has the potential to result in direct and indirect effects on certain listed species. Potential injury and behavioral disturbances are primarily related to the use of impact and vibratory hammers. The short-term, localized increases in turbidity within a 150-foot radius during the removal and installation of piles and plate anchors have the potential to adversely affect designated critical habitat for Chinook salmon, rockfish species (nearshore and deepwater habitat), and southern resident killer whales. These effects would be temporary, occurring within the confined window of anchor and pile removal and installation. The removal of creosote-treated timbers would result in beneficial effects on habitat and ESA-listed species. This would improve water quality and habitat by removing an in-water source of hazardous chemicals (dioxin-furans) known to adversely affect fish, macroinvertebrates, and marine vegetation (Washington Department of Ecology 2010).

Short-term increases in background sound levels during vibratory and impact hammer use have the potential to result in behavioral disturbance and/or injury to certain ESA-listed species. Please see Section 3.5 for a complete noise analysis of the proposed action. No thresholds have been established for marbled murrelet and fish species in association with vibratory pile driving. It is also unlikely that murrelets would forage within the zones where the potential for impact driving to cause auditory and barotrauma injury is present (the marina and the ferry transit lanes). However, the elevated sound levels during impact pile driving may affect bull trout, Chinook salmon, steelhead, ESA-listed rockfish, and forage fish. Humpback whales occasionally transit Sinclair Inlet, with rare sightings most recently in 2017. Because the action area is an active port and does not provide suitable habitat for humpback whales and a Marine Mammal Monitoring Plan will be in place during construction, the proposed action is expected to have no effect on the species. While Southern resident killer whales occur locally and could be vulnerable to injury and behavioral effects from vibratory and impact pile driving, the implementation of the Marine Mammal Monitoring Plan would also prevent any risks of injurious noise or behavioral disturbance to this species. See Section 3.5 (Noise and Vibration) for an analysis of the potential impacts of pile driving noise on ESA-listed fish, marine mammals, and migratory birds, as well as the biological assessment and Marine Mammal Protection Plan in Attachments B and C.

Other Resources

Other habitat types of concern that may be present in the region (e.g., wetlands, streams, forage fish spawning habitat) will not be affected (directly or indirectly) by the proposed action. For the proposed alternative, the temporary construction effects do not extend to areas where these habitats exist and potential affects from operations are no different than current operations and would not increase potential impacts to the region.

With the exception of the migratory marbled murrelet, evaluated separately for potential impacts from construction noise and vibration (see Section 3.5), there are no anticipated effects on other migratory birds by the preferred alternative as provisioned by the Migratory Bird Treaty act since there is no viable nesting habitat within the APE. Bald eagles regularly occur in Sinclair Inlet but there are no existing bald eagle nests within the APE. Golden Eagles are only documented east of the Cascade Mountains and do not occur within the Puget Sound region. Therefore, there are no anticipated effects on Bald or Golden Eagles.

Essential Fish Habitat

The action area includes areas designated as essential fish habitat (EFH) for various life-history stages of Pacific coast groundfish and three species of Pacific salmon. The West Coast Groundfish Management unit includes 31 species that typically live on or near the bottom of the ocean. Species groups include skates and sharks, rockfishes, flatfishes, and ground fishes. **Table 4** provides a summary of species and life stages that may be present in Sinclair Inlet (PFMC 2005, 2014, 1998; NMFS 2018).

***Table 4**. EFH Species List and Life Stages That May Occur In Shallow Nearshore Water in Puget Sound*

Scientific Name	Common Name	Adult	Juvenile	Larvae	Egg
Anoplopoma fimbria	sablefish	x	x	x	x
Citharichthys sordidus	Pacific sanddab	x			
Eopsetta jordani	Petrale sole	x			
Glyptocephalus zachirus	Rex sole	x			
Hexagrammos decagrammus	Kelp greenling	x		x	
Hippoglossoides elassodon	flathead sole	x			
Hydrolagus colliei	Spotted ratfish	x	x		
Isopsetta isolepis	Butter sole	x			
Lepidopsetta bilineata	Rock sole	x			
Merluccius productus	Pacific hake	x	x		
S. maliger	Quillback rockfish	x	x		
S. melanops	Black rockfish	x	x		
S. mystinus	Blue rockfish	x	x	x	
S. nebulosus	China rockfish	x	x		
S. nigrocinctus	Tiger rockfish	x			
S. paucispinis	Bocaccio		x	x	
S. pinniger	Canary Rockfish		x	x	
S. ruberrimus	Yelloweye rockfish			x	
Squalus acanthias	Spiny dogfish	x			
Pacific Salmon					
Oncorhychus tshawytscha	Chinook salmon	x	x		
O. kisutch	Coho salmon	x	x		
O. gorbuscha	Pink salmon	x	x		

Under the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act, it has been determined that the project "may adversely affect" EFH for Pacific salmon and "may adversely affect" EFH for Pacific groundfish based on the effects of the construction activities. These potential adverse effects include:

- elevated underwater sound during pile-driving activities

- increased turbidity and suspended solids in the pile and anchor removal and installation zone, and
- the potential for leaks and spills of fuel, hydraulic fluids, lubricants, and other chemicals from equipment or storage containers associated with the project.
- increased overwater shading that may affect benthic communities, listed species, and prey species.

Under the Salish Sea Nearshore Programmatic (SSNP) Consultation, the project components and implementation were evaluated and demonstrated compliance with the Essential Fish Habitat (EFH) requirements of the Magnuson-Stevens Fishery Conservation. EFH determinations have no time limits, but the project was reviewed for consistency to ensure no re-consultation is required. 50 CFR 600.920(l) states, "A Federal agency must reinitiate consultation with NMFS if the agency substantially revises its plans for an action in a manner that may adversely affect EFH or if new information becomes available that affects the basis for NMFS EFH Conservation Recommendations." No changes have occurred to the proposed activities that would result in additional impacts or that would affect the EFH Conservation Recommendations.

Mitigation Measures

Based on the effects on endangered species and critical habitats mentioned above, several conservation and mitigation measures have been identified to satisfy requirements under the Endangered Species Act. To address proximity impacts of pile driving, a bubble curtain will be used during all impact driving activities to reduce sound levels and reduce the ensonified areas. Implementation of conservation measures, such as conducting the project during approved in-water work windows would reduce effects to threatened and endangered species in or near the project area. To avoid effects on humpback and southern resident killer whales, a protected species monitoring plan will be implemented that will require pile-driving activities to cease before a killer whale or humpback whale enters the action area.

As this project occurs in the nearshore region of Puget Sound, the project was evaluated using the NOAA calculator to quantify the habitat impacts. The NOAA calculator quantifies habitat impacts from a proposed re-development/development project and the habitat benefits from restoration projects in terms of a common habitat currency, applying both the Habitat Equivalency Analysis (HEA) and Nearshore Habitat Values Model (NHVM) to a user-friendly interface (Ehinger et al. 2022). Two mitigation actions are proposed that will remove significant amounts of creosote-treated timber from sensitive upper shore zone and lower shore zone nearshore habitat that will benefit water quality, habitat, ESA-listed species, and other protected species. The proposed creosote removal actions are anticipated, conservatively, to remove approximately 243 tons of creosote-treated timber piles and 876.5 cubic feet of treated timber solid decking (overwater cover). Using the NOAA calculator, the proposed mitigation generated a total of 599 debits. The Port Orchard Marina (POM) has identified two derelict structures (see **3.8 Cultural Resources**) of creosote construction for removal to partially mitigate permanent project impacts to the nearshore. Removal of these structures would result in removal of 88 creosote-treated piles and decrease the area of shaded sediments by 2,551 square feet. Any residual impacts not addressed by the proposed derelict structure removal would be offset by the purchase of habitat credits from the Puget Sound Partnership.

3.4.4 No Action Alternative

Without action to repair the marina, potential marine resources could be disturbed by the degradation of the marina structure. Encrusting and sessile species inhabit the below-ground structures of the marina and fish and mammals use the habitat for various purposes (refuge, feeding, etc.). In the short term, the no-action alternative would maintain conditions (i.e. have No Effect) for marine and terrestrial biological resources. In the long term, if the marina breakwater were to be decommissioned, the structures would be removed and there would be a small but measurable reduction in habitat function that could have a negligible negative impact on marine resources (ESA species, marine mammals, and Essential Fish Habitat).

In addition, the no-action alternative would preclude the removal of 243 tons of creosote treated timber proposed as mitigation for the installation of the Preferred Alternative. Without the removal of creosote-treated wood materials, harmful toxins would continue leaching into the aquatic environment and would settle and persist in the sediment, maintaining a persistent low level impact to marine resources in Sinclair inlet.

3.5 Noise and Vibration

3.5.1 Existing Conditions

The principal source of significant noise and vibrations within the Port Orchard Marina is from existing vessel traffic in and out of the marina. Since the proposed action will replace an existing, failing breakwater with no increase in operations or vessel traffic anticipated, existing and proposed conditions will be similar. When the new breakwater is constructed, the old one will be completely removed. A small increase in overwater coverage (1,238 square feet) will occur as presented in **Table 1**, but this will have no effect on marina operations and will not enhance vessel traffic. The new breakwater will not increase the amount of noise generated from vessel traffic in an out of the existing marina nor will it affect any noise or vibrations from marina operations.

3.5.2 Proposed Action

Construction Impacts

Underwater Noise

Short-term increases in underwater background sound levels during vibratory and impact hammer (vibratory driving and impact driving) use have the potential to result in behavioral disturbance and/or injury to aquatic species. In 2024, National Marine Fisheries Services (NMFS) updated their acoustic injury thresholds for marine mammals and there are thresholds for effects on fish and marbled murrelets in association with vibratory pile driving as part of species conservation efforts. Impact driving has the potential to cause auditory and barotrauma injury if species are present within specified zones as dictated by the NMFS thresholds.

Pile installation and extraction activities will result in temporarily elevated underwater noise levels that may affect certain listed species. NMFS Summary of Marine Mammal Protection Act (MMPA) Acoustic Thresholds (2024) was used to determine the underwater sound zone of impact (ZOI) during pile driving. Vibratory hammer driving will be the primary method for extracting and installing piles. This method is defined as a non-impulsive sound source that produces broadband, narrowband or tonal sounds, and continuous or intermittent sounds. An impact hammer, which produces high peak sound pressure with rapid rise/decay time (impulsive noise), will be used to drive piles to final embedment. Sound exposure levels for vibratory and impact driving a 30-inch

steel pile were evaluated, and disturbance zones were calculated to determine the largest ZOI. Behavioral disturbance zones are generally used to delineate the zones of impact because these zones are typically larger than injury zones. **Table 5** provides the threshold ZOIs for pile driving at the site. Based on data from sound studies, vibratory and impact driving a 30-inch diameter steel pile produced the highest sound levels.

Pile	Activity	Vibratory Driving 120 dB threshold[1] (m, miles)	Impact Driving 160 dB threshold (m, miles)
12-in Diameter Timber	Removal	1,000 m 0.62 miles	-
12-in Diameter Steel	Installation	2,154 m 1.34 miles	40 m 131.2 ft
30-in Diameter Steel	Installation	18,478 m 11.62 miles	2,000 m 1.24 miles
HP14 (Plate Anchors)	Installation	1,000 m 0.62 miles	-

m = meters

Table 5. *Zone of Impacts for Proposed Pile Driving at the Port Orchard Breakwaters*

No injury or disturbance thresholds have been established for marbled murrelet in association with vibratory pile driving. Impact pile driving may cause underwater auditory and barotrauma injury effects but are not anticipated because marbled murrelets are not known to forage within the respective injury zones of 131 feet (barotrauma) and 328 feet (auditory injury) (see Attachment B, Table 4-3 for additional information). In addition, the auditory and barotrauma injury zones fall within the marina and the foot ferry lane, both unsuitable foraging habitat due to the high degree of anthropogenic disturbances. During all pile driving activities, monitors will be deployed in accordance with the approved Marbled Murrelet Monitoring Plan and impact pile driving will cease whenever a marbled murrelet enters the designated zone of impact, further reducing the risk of injurious noise exposure.

Vibratory driving is not considered harmful to listed fish species (bull trout, salmon, and rockfish) because no injuries or deaths to fish or other aquatic organisms have been observed during vibratory hammer use. The project may affect bull trout, Chinook salmon, steelhead, and rockfish due to elevated underwater sound during impact pile driving. However, the project would reduce or avoid effects on these species with the implementation of impact and avoidance and conservation measures, such as conducting the project during in-water work windows (June 16 to February 15) when listed fish species are less likely to be present, and using sound attenuation methods, such as a bubble curtain, around each pile during impact driving to reduce sound levels.

Listed marine mammals (Southern resident killer whale and humpback whale) have been documented within the area of analysis and increased underwater noise from pile driving has the potential to cause injury and behavioral disturbance. Permanent threshold shifts (PTS) are considered injurious impacts where recovery is not anticipated due to high levels of energy imparted to the water column. The PTS injury zones analyzed for both species (Attachment B, Table 4-3) are restricted to a small radii (1.3 – 382 feet for most piles) and are generally much smaller than the areas where we anticipate behavioral impacts to occur. Because humpback whales rarely transit Sinclair Inlet and are also very unlikely to enter these relatively small areas within an active construction site, injurious impact on this species is not expected. Southern resident killer whales,

by contrast, frequent nearby waters and could have the greatest potential for exposure especially during pile driving of 30-inch piles where the TTS zone (behavioral distance) can extend to as much as 1.24 miles. Therefore, to avoid any risk of injury and behavioral effects to these whales, especially to the Southern resident killer whale, a protected species monitoring plan will be implemented (Attachment C) that will cease pile-driving activities before an ESA-listed species enters the temporary injury and behavior zone. For behavioral effects, part of the monitoring plan includes receiving real-time location data from the Orca Network to identify the location of whales each morning before pile driving begins. Prey species may experience temporary behavioral effects within the action area during impact pile driving, but these effects would be localized and not result in long-term adverse effects. Therefore, impacts from underwater noise and vibration on protected species and marine resources will be negligible during construction. Please refer to the Biological Assessment and Marine Mammal Protection Plan in Attachments B and C for further details on the results of the analysis and avoidance and minimization procedures.

In-Air Noise

As with the in-water analysis, the loudest in-air disturbances are likely to be associated with pile installation, especially of larger piles. As a result, sound levels used for determining the largest in-air zone of influence are based on the project's largest pile size 30-inch diameter steel pile. Both vibratory and impact driving will be used for the project. Vibratory driving will be used for the pile removal and installation. Washington State Department of Transportation (WSDOT) measured an A-weighted in-air noise level (Leq/RMS) standardized to a distance of 50 feet of 80.1 A-weighted decibel (dBA) (for vibratory driving a 30-inch pile). WSDOT also measured airborne sound levels for impact driving a 30-inch pile at Vashon Island. The standardized sound level at 50 feet, was 110 dBA Lmax (Soderberg & Laughlin 2016; Soderberg 2016 as cited in WSDOT 2020). We also used WSDOT guidelines and the higher sound level (impact driving) for determining the distance that point source construction noise will travel before it attenuates to the ambient sound level as published in the WSDOT Biological Assessment Manual 7.19 (WSDOT 2020). Please see Attachment B (Biological Assessment) for the equations used and the specific analysis.

Assuming the above source levels, the distance at which airborne noise attenuates to background level would be 1,581 feet over a hard site (over water) and 5,000 feet over a soft site (adjacent upland area). This is the airborne noise ZOI which will determine whether the proposed action will adversely affect terrestrial resources. Generally, airborne noise generated during construction will travel over water and be audible along the Port Orchard waterfront which is generally commercial and mixed-use areas. The Port Orchard Municipal Code prohibits public disturbance noises, including those from motor vehicles, animals, and other sources, particularly between 11:00 p.m. and 7:00 a.m. This includes the operation of construction equipment, mechanically powered tools, and similar devices. Because marine mammals cannot be reliably observed after dark, all in-water construction activities will be restricted to daylight hours to ensure visual monitoring can be effectively implemented during pile driving. Construction related noise (loudest being pile driving related) is likely to attenuate to background as sound travels south once it reaches WA State Route 166 which has an average daily traffic volume of 13,000 to 17,000 vehicles (WSDOT 2016). Given this, the project will have only negligible impact from construction related airborne noise on the Port Orchard waterfront.

The United States Fish and Wildlife Services (USFWS) evaluates masking effects based on an increase of 29 dB between the ambient sound level, and sound level during pile driving. In-air sound levels during pile driving activities would exceed the threshold of 29 dB greater than ambient sound

levels by 20 dB. Vibratory pile driving a 30-inch steel pile will not exceed the 29 dB threshold; therefore, no masking effects are anticipated during vibratory pile driving.

In air masking zones for impact strikes of 30-inch and 12-inch diameter steel piles are based on the USFWS Sound Exposure Level Calculator for marbled murrelet. The masking zone for piles less than 36 inches is 42 meters (approximately 138 feet). If murrelets are present, masking effects within 42 meters are possible. However, this area is either within the marina or within the foot ferry lane so it would be unlikely that murrelets would forage in these areas due to anthropogenic disturbance. Nevertheless, if marbled murrelets are within the masking zone, impact driving will be stopped until the murrelets have left the area. This will maintain negligible impact from masking on marbled murrelets during in water construction.

No breeding habitat for murrelet is present within the in-air overland ZOI; therefore there will be no effects to nesting birds. The entire 5,000-foot overland ZOI is within developed portions of Port Orchard and surrounding agricultural vicinity. Marbled murrelets nest exclusively in old-growth conifer forests or forests with considerable old-growth characteristics. These habitat requirements limit nesting habitats to the Cascade and Olympic Mountains and undeveloped foothill areas. During the Marbled murrelet breeding season (April 1 through September 23), murrelets could fly over the project area to reach suitable breeding habitat. Murrelets usually leave and return to their nests around dawn and dusk. To minimize risk of disturbance, impact pile driving activities will be limited to starting 2 hours after sunrise and ceasing 2 hours before sunset during the murrelet breeding season (see mitigation measures below).

Operational Impacts

This is a maintenance/replacement operation. No additional services will be added; therefore, no new noise or vibration impacts are anticipated with the completion of the proposed project.

Mitigation Measures

To avoid and offset the impacts of noise and vibration disturbances, the following measures are proposed.

- During marbled murrelet nesting season (April 1 through September 23) impact pile driving activities will be limited to starting 2 hours after sunrise and ceasing 2 hours before sunset.
- The contractor will implement a marbled murrelet monitoring plan during impact pile driving 30-inch diameter steel piles that will include at least two monitors able to observe a minimum 400-foot area around each pile being driven. One monitor will be located on the work barge and the other monitor locations will be determined by the lead monitor. Pile driving activities will not begin until the monitors have cleared the area. Pile driving will be stopped if a marbled murrelet is within the monitoring area and will not restart until the lead monitor provides clearance to the impact hammer operator.
- The contractor will also monitor for marine mammals from similar vantage points and stop impact pile driving should a marine mammal be within or certain to enter an area that could potentially harm or take a marine mammal.
- Before impact driving, an unconfined bubble curtain will be installed on each pile to attenuate underwater sounds (WSDOT 2008).
- Vibratory driving will be the primary method for pile removal and pile and anchor installation. An impact hammer will be used only to reach the final embedment as required by the design.
- In-water work will be conducted only during the approved in-water work window for marine waters of Sinclair Inlet.

- Only one pile will be driven/installed at any given time. There will be no simultaneous use of pile drivers.
- Soft-start procedures will be used before vibratory and impact driving to allow aquatic species to leave the work area before full energy is employed. These procedures include the following:
    - For vibratory pile driving: the contractor will initiate noise for 15 seconds at 40 to 60 percent reduced energy, followed by a 1-minute waiting period. This procedure will be repeated two additional times before full energy is applied.
        - If vibratory driving ceases for a period of 30 minutes or more, the soft-start procedure will be repeated before reinitiating vibratory pile driving.
    - For impact pile driving: the contractor will use a 6-inch wood block installed on the piles to attenuate impact strike noise.
        - The contractor will be required to use an initial set of three strikes at 40 percent energy, followed by a 1-minute waiting period, then two subsequent three-strike sets (NMFS 2012).

3.5.3 No Action Alternative

No additional noise or vibration impacts are associated with the no-action alternative.

3.6 Public Services and Utilities

Public services for the marina breakwater replacement site include police services (Port Orchard Police Department) fire and emergency services (South Kitsap Fire Department), and transit services (Kitsap Transit Ferry). Utility services supplied to, or available adjacent to the site include potable water supply, sanitary sewer, natural gas, electricity, and garbage and recycling collection. The City of Port Orchard provides water and sewer services, natural gas is supplied by Cascade Natural Gas, electricity is provided by Puget Sound Energy and garbage and recycling is collected by Waste Management. The potential for environmental impacts to public services and utilities during construction and operations of the Proposed Action Alternative are considered in comparison to continuing impacts under the no-action alternative.

3.6.1 Existing Conditions

Emergency Services

Police service for the site and surrounding area is provided by the City of Port Orchard Police Department (POPD). Fire and emergency services for the site and surrounding area are provided by the South Kitsap Fire Department (SKFD), specifically Station 31.

Utilities

Water - The City of Port Orchard provides water service to the site and surrounding area. The City of Port Orchard has two water systems that combine six wells, 8 tanks, and approximately 230 miles of piping. This system supplies more than 500,000 gallons of clean drinking water per day, but this number can be almost double during peak summer months. Well #6 is located on Maple Street, west of Bethel Avenue. This station is over 60 years old. (City of Port Orchard Water System Plan, 2020.) The existing City fire hydrants are located on Sidney Parkway along the marina sidewalk.

Sewer - The City of Port Orchard and West Sound Utility District independently operate their respective collection systems and jointly own a treatment facility in Annapolis which discharges to Sinclair Inlet. West Sound Utility District is responsible for the daily operation of the treatment plant which provides sanitary sewer services to the site and surrounding area. The collection system in Port Orchard includes 49 miles of gravity sewers, 8 miles of force mains, 14 miles of septic tank

effluent pumping mains, and 16 pumping stations. An expansion in 2006 increased the capacity of the system to provide service to a growing population and upgraded the treatment process to produce Class A reclaimed water and Class A biosolids. Sewer mains are located on Sidney Parkway and Bay Street (Kitsap County Comprehensive Plan 2016) and there is a pump station located on the west side of the marina. Sewer pipes in the vicinity of the site run along Bay Street and Orchard Avenue.

Natural Gas - Cascade Natural Gas Corporation (CNG) builds, operates, and maintains natural gas facilities serving Kitsap County and the project area.

Electricity - Puget Sound Energy (PSE) provides electricity to the site and surrounding area. It is part of a western regional system, which means electricity is produced elsewhere and transported to Kitsap County through high-voltage transmission lines.

Solid Waste Disposal - Garbage and recycling collection services are provided by Waste Management.

Transit and Ferry Services

Transit services are provided by the Kitsap Transit foot ferry. The ferry dock is located between the shoreline and the east breakwater. The ferry runs from Port Orchard to the Bremerton ferry dock, north across Sinclair Inlet. An additional Kitsap Transit foot ferry, located northeast of the project site, operates a route from Annapolis to Bremerton. This ferry mainly services employees of the Naval Shipyard and runs only on weekdays. Kitsap Transit bus lines operate within the vicinity of the project site and offer access to the marina and the ferries.

3.6.2 Proposed Action

Construction Impacts

Emergency Services

Construction activities could generate new calls for police service associated with construction site theft, vandalism, or injuries. The number of calls is not anticipated to be significant and the POPD is anticipated to have the capacity to respond to such calls.

Construction activities could generate new calls for fire and emergency services associated with construction workplace injuries or fire incidents. The number of calls is not anticipated to be significant, and the SKFD is anticipated to have the capacity to respond to such calls.

Utilities

Water – There is no anticipated increase in or disruption of water use associated with the proposed action.

Sewer – There is no anticipated increase in or disruption of sewer use associated with the proposed action. The pump-out station is anticipated to remain online until demolition of the existing breakwater begins. The pump-out station should reopen for use once the new breakwater is in place.

Natural Gas – There are no anticipated effects of the proposed action on natural gas service to the area.

Electricity - There is no anticipated increase in, or disruption of electrical service to the area associated with the proposed action. Electrical service to the breakwater will be disconnected during demolition and reconnected once the breakwater in place.

Solid Waste Disposal – There may be a small increase in solid waste disposal associated with the proposed action. Materials developed during demolition will be stockpiled and barged to an appropriate disposal facility which will not affect local solid waste disposal, but minor waste such as consumables and individual refuse from workers will likely enter local solid waste disposal streams via public receptacles. This increase should be small in magnitude and temporary.

Transit and Ferry Services

There is no anticipated interruption of Kitsap Transit foot ferry service to and from Bremerton, based on timing of construction and the fact that the ferry maintains facilities adjacent to but separate from the breakwater.

Operational Impacts

Emergency Services

Because the proposed project does not increase the size or capacity of the marina, no operational impacts to the emergency services are anticipated.

Utilities

Water - Because the proposed project does not increase the size or capacity of the marina, no operational impacts to water services (for domestic and fire protection usage) are anticipated.

Sewer - The project proposes to maintain existing pump-out services for guest moorage. Beyond this, the proposed project does not increase the size or capacity of the marina, and no operational impacts to sanitary sewer services are anticipated.

Natural Gas - Because the existing and proposed project does not use this service, no operational impacts on natural gas services are anticipated.

Electricity - Because the proposed project does not increase the size or capacity of the marina, no operational impacts on electrical services are anticipated. However, the electrical service of the east breakwater is being upgraded to accommodate fast charging for a proposed electric ferry to replace the existing Kitsap ferry service diesel-powered vessel. A separate operational impact analysis will accompany that action.

Solid Waste Disposal - Because the proposed project does not increase the size or capacity of the marina, no operational impacts to garbage and recycling services are anticipated.

Transit and Ferry Services

Because the proposed project does not increase the size or capacity of the marina, no operational impacts to transit services are anticipated. This is largely due to Kitsap Transit maintaining a dedicated dock and float for ferry operations adjacent to but not connected to the existing marina breakwater. No change in Ferry service is anticipated and is expected to remain the same as pre-project levels.

Mitigation Measures

Emergency Services

The number of calls or need for police service is anticipated to be minimal and capacity is anticipated to be available to serve the site. No additional mitigation measures are identified.

SKFD is anticipated to have the capacity to respond to calls for service from the site. In addition, the project would comply with applicable requirements for the provision of fire hydrants and fire/emergency vehicle access. No other mitigation measures have been identified.

Utilities

Water - Existing service lines are available for the proposed action and capacity is anticipated to be able to serve the site. No further mitigation measures have been identified.

Sewer - Existing service lines are available for the proposed action and capacity is anticipated to be able to serve the site. No further mitigation measures have been identified.

Natural Gas – There is no existing natural gas service to the marina with no plans to add that service. No further mitigation measures have been identified.

Electricity - Existing electrical service lines are available for the proposed action and capacity is anticipated to be able to serve the site. No further mitigation measures have been identified.

Solid Waste Disposal - Existing garbage and recycling service is available for the proposed action and capacity is anticipated to be able to serve the site. In addition, access to the site for collections will remain. No further mitigation measures have been identified.

Transit and Ferry Services

While there is no anticipated interruption of Kitsap Transit foot ferry service to and from Bremerton, the Port of Bremerton will coordinate with Kitsap Ferry service on construction/demolition process ensure any ferry operations are not impacted.

3.6.3 No Action Alternative

In the short-term, the no-action alternative will have no effect on existing water, sewer, and natural gas services. In the long-term, closure of the marina facilities could result in a reduction in electricity and solid waste disposal services as tenants leave the marina for another moorage.

3.7 Water

This section contains information and analysis on flood plains, nearby rivers, and surface water conditions as groundwater is not relevant to the proposed project. The potential for environmental impacts to nearshore/offshore water resources during construction and operations of the Proposed Action are considered, along with conditions under the no-action alternative.

3.7.1 Existing Conditions

The marina is associated within Water Resource Inventory Area (WRIA) 15 in Puget Sound Watershed and Hydrologic Unit Code 17100190104, the Blackjack Creek-Frontal Port Orchard sub-watershed. The existing elements of the marina are located in Sinclair Inlet which is a moderately developed water body with a U.S. naval port and the Washington Department of Transportation Bremerton Ferry Terminal in addition to the marina operated by POB on the north side of the inlet. The Kitsap Transit marina and Kitsap Transit's Annapolis Ferry dock operate on the south side of the inlet. There are no rivers designated as Wild and Scenic within the project area. At considerable distances from the marina, Pratt River is located approximately 50 miles east and Skagit River with its three tributaries (Sauk, Suiattle, and Cascade) is located 75 miles northeast.

The marina is designated as Zone AE under the Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (SFHA), which is an area with an assumed "high risk" or 1% annual chance of flooding. Despite the project occurring within the SFHA, the existing structures (and proposed replacement structures) have no effect on coastal flooding potential as the breakwater is floating and this area is tidally dominated open shoreline. Additionally, as discussed in Section 1.2, to achieve the purpose and need of the Proposed Action, major components of the Proposed

Action must be constructed within the floodplain/floodzone. Because the purpose and need cannot be achieved outside of the floodplains, the Proposed Action is the only practicable alternative.

A query of the Washington Department of Ecology Water Quality Atlas (2022) produced the following impaired water listings in the action area (including Sinclair Inlet, Port Washington Narrows, Agate Pass and Rich Passage):

- dissolved oxygen
- bacteria (fecal coliform and enterococci)
- mercury
- polychlorinated biphenyls (PCBs)
- methyl mercury
- zinc, and
- benzo(k) flouroanthene

3.7.2 Proposed Action

The proposed action will have no effect on flood plains or the functions of nearby rivers as the proposed breakwater is intended to replace the functions of the existing breakwater with only a minor increase of surface area due to an upgraded fire suppression system. Relative to water quality, only the removal and installation of piles and plate anchors may affect water quality within the construction site. Outside of the construction area, removal of two derelict structures made of creosote timbers may also result in short-term, localized increases in turbidity. Long-term, the removal of the creosote treated timbers associated with the derelict structures and breakwaters would prevent further leaching of harmful chemicals such as Polycyclic Aromatic Hydrocarbons (PAHs). This would lead to improved water quality overall for the region.

Construction Impacts

The demolition and installation of the proposed project elements may cause potential impacts to water quality within Sinclair Inlet through temporary and localized increases in turbidity. Due to the localized increase in turbidity, a Section 404/Section 10 Permit will be required. These potential impacts on water quality will occur during any pile removal and pile/plate anchor installation. The project proposes to remove and re-install 27 plate anchors. Each anchor will be removed by pulling the anchors using the existing chains and then installing new anchors using a vibratory hammer. Each anchor installation is anticipated to take 60 minutes of vibratory driving.

Existing timber float piles will be removed using a vibratory hammer to loosen the pile and then removed via crane pull. New steel piles will be installed using vibratory methods to initially drive the pile and an impact hammer to proof the pile. Each pile is expected to take up to 60 minutes of vibratory driving which may increase turbidity at the base of the pile.

As with all work with heavy machinery over and within waterbodies, there is a potential for spills, leaks, and minor releases of petroleum products. These potential effects will be limited through the implementation of BMPs.

Under Washington's Coastal Zone Management review process, federal actions that may affect any land use, water use, or natural resources in the coastal zone must be consistent with the enforceable policies of the State's Coastal Management Program. The Washington Department of Ecology has evaluated the Proposed Action as part of the USACE permitting process. and found consistent with current coastal use policies. The Proposed Action was also reviewed for an

individual Water Quality Certification as provisioned by Shoreline Management Act and the Coastal Zone Management Act which led to the need for construction monitoring to prevent potential impacts to water quality.

Operational Impacts

There are no operational impacts anticipated from installing the new breakwaters. However, there is a benefit to removing creosote-treated timber elements (exiting float piles and derelict structures) from nearshore waters. By removing a substantial amount of creosote-treated timber from Sinclair Inlet, ongoing water quality within Sinclair Inlet is expected to improve as a direct result of the Proposed Action.

Mitigation Measures

A Water Quality Monitoring Plan (Attachment B) will be implemented to maintain existing water quality during construction activities. Implementing this plan ensures little to no impact of construction on water quality as mandated by Coastal Zone Management and Shoreline Management Acts administered through the Washington Department of Ecology.

Turbidity is the main concern during construction of the proposed action and will be monitored as the primary indicator of water quality. The water quality standard for turbidity for all in-water work with the potential to disturb marine sediments is:

- 5 nephelometric turbidity units (NTU) over background when the background is 50 NTU or less; or
- A 10 percent increase in turbidity when the background turbidity is more than 50 NTU at a distance of 150 feet away from the sediment disturbing activity.

In-water work will be monitored as described in the monitoring plan and should personnel observe that turbidity is approaching or exceeding stated criteria, contingency sampling will be performed to confirm that the point of compliance has been exceeded at which point corrective actions will be taken. Corrective actions include stopping in-water work, adjusting or augmenting BMPs (e.g., turbidity curtains, lower hammer energy), notifying agencies and hourly sampling until two consecutive compliant readings allow work to resume.

In addition to monitoring turbidity and taking corrective action when appropriate, the following conservation measures, BMPs, and impact and avoidance measures will be implemented to reduce the risk of adverse effects on water quality during the proposed action.

In-water Work Measures:

- A Temporary Erosion and Sedimentation Control (TESC) Plan will be developed and implemented by the contractor.
- Construction techniques will utilize BMPs such as those described in Ecology's Stormwater Management Manual for Western Washington (Ecology 2019) accessed here: https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/Content/Resources/DocsForDownload/2019SWMMWW.pdf.
- Project construction will be completed in compliance with Washington State Water Quality Standards (Washington Administrative Code [WAC]173-201A) including but not limited to:
    - The contractor will prepare a construction SPCC Plan for this project. Any potential spills will be handled and disposed of in a manner that does not contaminate the surrounding area. The SPCC Plan will be consistent with 40 Code of Federal Regulations 112.3 as well as the State of Washington Oil Spill Contingency Plan (WAC 173-182).

    - Adequate materials and procedures to respond to unanticipated weather conditions or accidental releases of materials (sediment, petroleum hydrocarbons, etc.) will be available on site. This will include materials necessary to cover stockpiles (e.g., tarpaulins), isolate pollutants from the environment (e.g., protective containers and straw bales), and contain and absorb spills (e.g., disposable absorbent materials).
    - The SPCC Plan will ensure the proper management of oil, gasoline, and solvents used in the operation and maintenance of construction equipment and that equipment remains free of external petroleum-based products prior to entering the work area and during the work, and for making any necessary repairs prior to returning the equipment to operation in the work area.
    - An emergency spill containment kit must be located on-site along with a pollution prevention plan detailing planned fueling, materials storage, and equipment storage.
    - To reduce the potential for spills and leaks, work barge(s) will contain an adequate supply of materials (such as a vacuum pump, booms, diapers, and other absorbent material) to control and contain deleterious materials in the event of an accidental spill.
- The contractor will limit work at the site to daylight hours and comply with local, state, and federal permit restrictions.
- All construction-related debris will be cleaned up daily. Proper conservation measures will be taken to ensure that debris will not contaminate the shoreline or marine waters.
- All equipment used for construction activities will be cleaned and inspected prior to arriving at the project site, and daily thereafter prior to commencing work, to ensure no potentially hazardous materials are exposed, no leaks are present and the equipment is functioning properly.
- Fueling of land-based equipment will be limited to upland areas and will not be allowed immediately adjacent to or over the water.
- Waste materials, including creosote-treated timber, miscellaneous garbage and/or other debris, will be transported off-site for disposal in accordance with applicable regulations and prevented from entering the water.
- The barge and other vessels will not contact the substrate of Sinclair Inlet. Work at high tide, low draft barges and/or other engineering controls will be employed.
- The contractor will limit construction impacts to the minimum area necessary to complete the project.

Pile Removal and Installation Measures:

- The contractor will implement the WDNR's 2017 Derelict Piling Removal Best Management Practices for Pile Removal & Disposal. Guidelines are available online at https://www.dnr.wa.gov/publications/aqr_rest_creosote_bmps_pilings.pdf. Measures include but are not limited to:
    - The creosote-treated timber piles will be removed using a pulling method (anchor stake piles) or using a vibratory hammer and will not be intentionally broken by twisting or bending.
    - The piles will be removed in a single, slow, and continuous motion to minimize sediment disturbance and turbidity in the water column.
    - If a pile breaks above or below the mudline, it will be cut consistent with DNR-approved guidelines.
    - The contractor will install a full depth turbidity curtain around the pile extraction area to minimize the spread of creosote-contaminated sediments.

    - Creosote from extracted piles will be prevented from re-entering the water and removed piles, stubs, and attached sediments will be contained on the support barge and not be allowed to enter marine waters.
- All debris will be retrieved and disposed of properly by the contractor.
- If piles are placed directly on the barge and not in a container, the storage area will consist of a row of hay or straw bales, filter fabric, or similar material placed around the perimeter of the barge to prevent debris from entering marine waters.
- Removed creosote-treated timber piles or other treated timbers will not be hosed off or otherwise cleaned.
- All creosote-treated material, pile stubs, and associated sediments (including sawdust from cutting timber piles) will be contained and disposed of by the contractor in a landfill approved to accept these types of materials. The contractor will retain receipts for creosote-treated timber disposal with the total creosote timber disposal weight recorded.

With appropriate mitigation measures in place and followed, there will be No Impact on water resources from construction and operation of the preferred alternative.

3.7.3 No Action Alternative

There will be no increases in turbidity due to normal operations of the facility and the eventual shutdown of the facility due to decommissioning of the breakwater may bring marginal improvements to local water quality since boat use will be reduced. In general, the no-action alternative will have no effect on water resources.

3.8 Cultural Resources

3.8.1 Existing Conditions

The project is on Sinclair Inlet, in an area that was tribal land, ceded in 1855 with the Treaty of Point Eliot. The Kitsap Peninsula and the Sinclair Inlet are within the Usual and Accustomed hunting, gathering, and fishing area of the Suquamish and Port Gamble S'Klallam Tribes. Currently, the inlet hosts significant tribal salmon fisheries. As discussed earlier, the existing at-risk facility includes a moorage section dedicated to Suquamish Tribal use only.

A desktop cultural resource survey was conducted utilizing the Washington State Department of Archeology & Historic Preservation (DAHP) WISAARD's tool (Attachment H-1). Results showed no historic or culturally sensitive resources within the project's Area of Potential Effect (see **Figure 2**). This project has been assigned DAHP Project tracking code 2022-09-06181.

Figure 2. *Area of Potential Effect Analyzed for Historical and Cultural Resources Potentially Affected by the Proposed Project Action*

As part of the project's mitigation planning and following further consultation with USFWS, the APE was amended in 2025 to explicitly include two creosote-treated derelict waterfront structures (**Figure 3** and **Figure 4**) to account for the planned removal of contaminated piles (see Attachment H-2). Based on research of the property via local government records, the two derelict structures are described as follows:

- Derelict Structure 1/Mitigation Area 1(**Figure 3**): located approximately 130 meters southeast of the Port Orchard Marina; Parcel # 262401-1-004-200; a derelict fueling dock that was operational during the 1970s; best available estimate for year built is between the 1950s and 1960s.
- Derelict Structure 2/Mitigation Area 2 (**Figure 4**): located further south of the marina, east of Yachtfish Marine; Parcel # 4623-000-005-0004; a derelict pier constructed in 1962.

A second desktop cultural resource survey was completed for each of the two derelict structures using DAHP's WISAARD tool. Results showed no historic or culturally sensitive resources within the project's expanded APE.

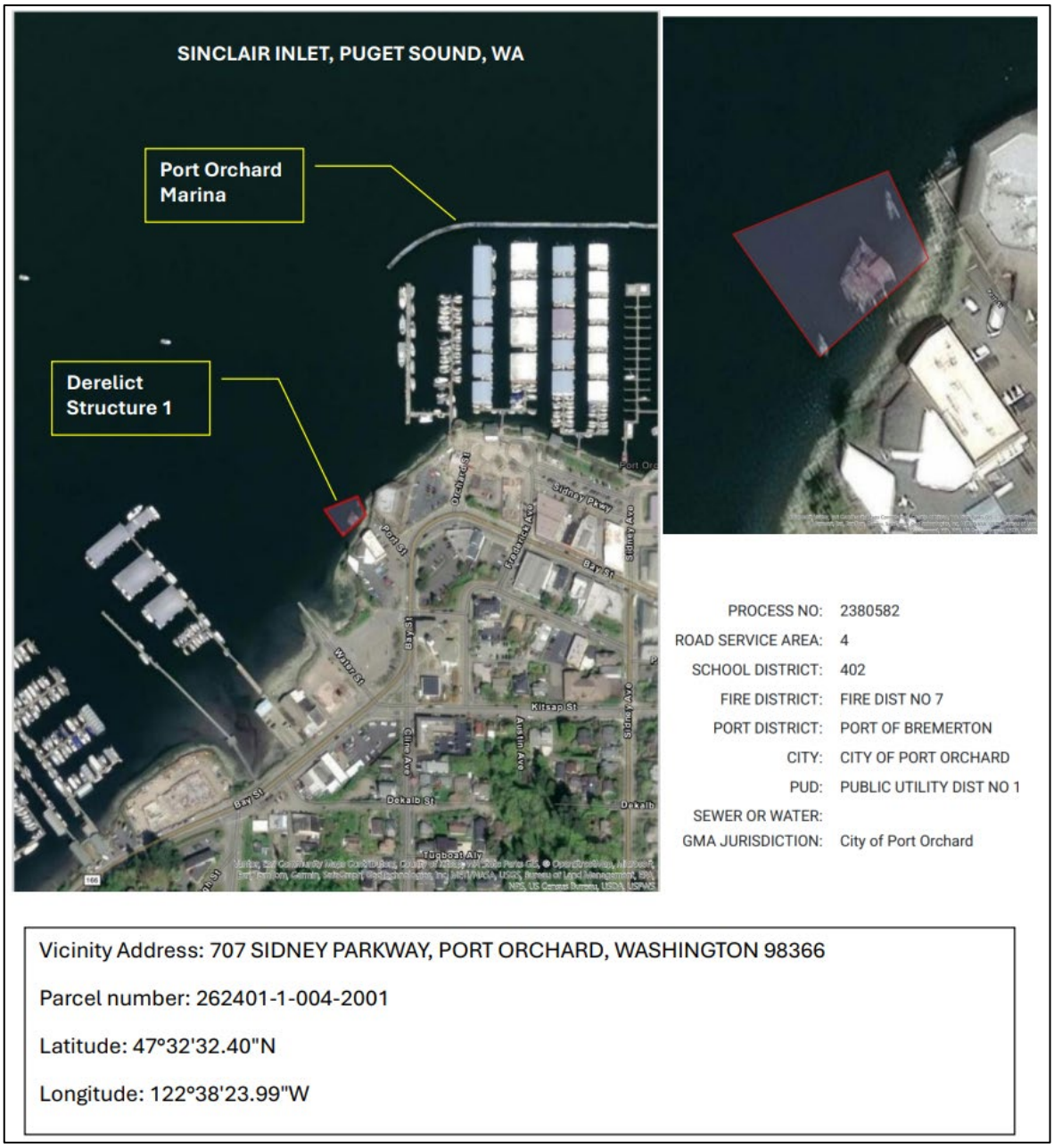

Figure 3. Area of Potential Effect for Derelict Structure 1 (Mitigation Area 1) Analyzed for Historical and Cultural Resources Potentially Affected by the Proposed Project Action

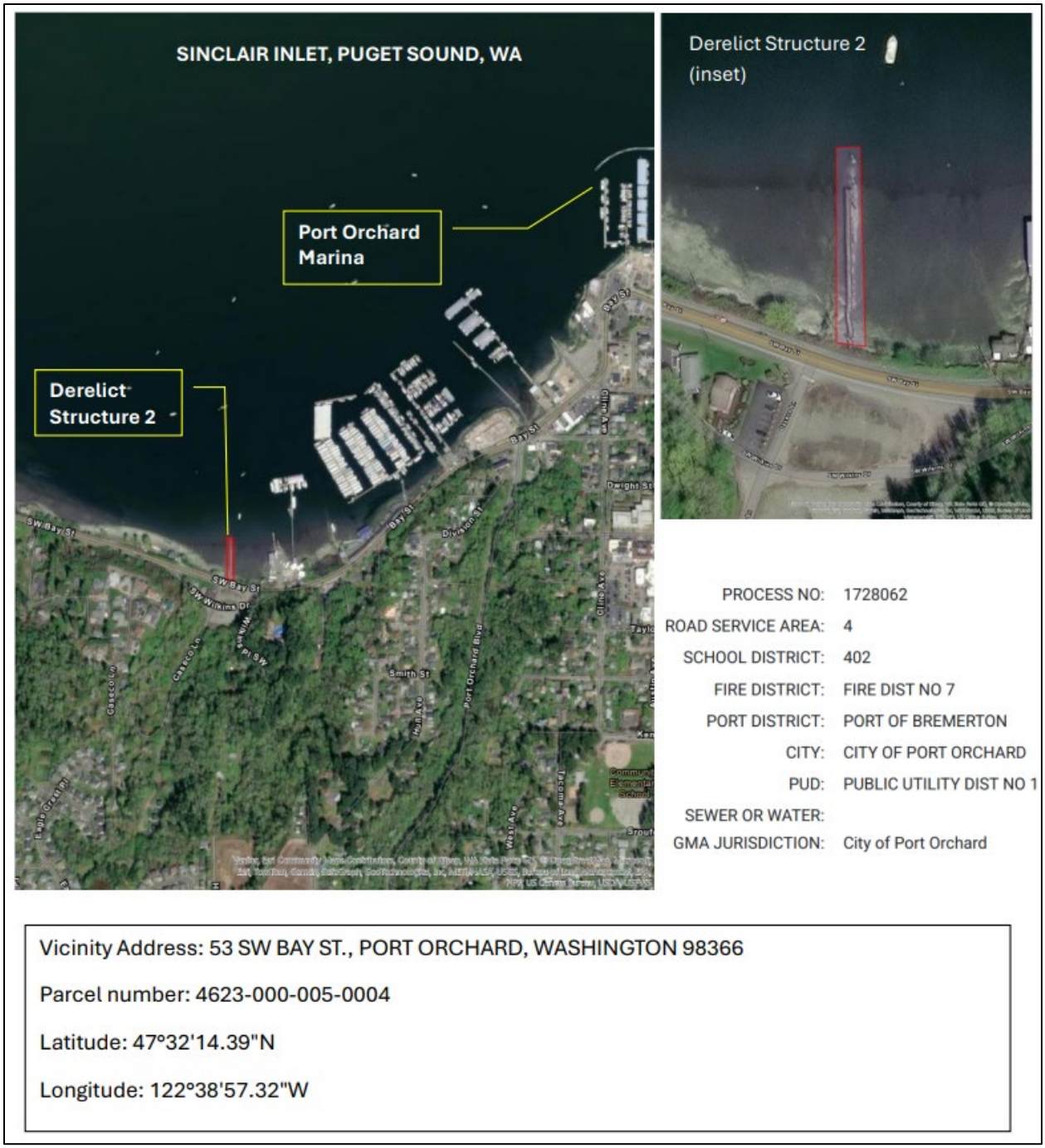

Figure 4. Area of Potential Effect for Derelict Structure 2 (Mitigation Area 2) Analyzed for Historical and Cultural Resources Potentially Affected by the Proposed Project Action

3.8.2 Proposed Action

Construction Impacts

The project Area of Potential Effects (APE) was originally characterized as entirely under and overwater, and waterward of the High Tide Line. The inclusion of the two waterward derelict structures expands the APE to include intertidal/waterward components associated with these

structures, so it is no longer limited to areas that are entirely submerged. Project elements that are embedded into marine sediments are meant to be replaced in kind with an overall decrease in the sediment footprint resulting in minimal disturbance. Proposed anchors for the north breakwater will be similarly sized and placed within the same location to the extent practicable, and all will occur within the APE. Piles associated with the east breakwater will be larger but fewer in number. As the project is following a similar footprint to the existing breakwater, and there are no known historic resources in the area, it is unlikely any unknown historic or culturally important resources will be inadvertently affected by this project. Both derelict structures, and the associated APEs, are located within areas identified as having Risk Level 5 (survey highly advised) according to the DAHP Archeological Risk Assessment tool. However, because the project only calls for the removal of the existing derelict structures and no additional ground disturbing activities, it is not anticipated that any unknown archaeological or cultural resources will be impacted by this project overall.

Because the new breakwater facilities will be constructed and installed before the removal of the failing facilities, disruption to marina operations will be limited to the time needed to install the new breakwater, demolish the existing breakwater, and a minor amount of time to reposition the new breakwater into its final operational setting. During that time, there will be limited disruption in moorage along the breakwater including those associated with Suquamish Tribal use. This time is expected to be very minimal.

As part of the Section 106 review process, MARAD determined that the construction or operation of the Proposed Action will not adversely affect traditional, religious, or culturally significant sites. MARAD has made the determination that there will be "No Historic Properties Affected," as a result of the Proposed Action. Copies of MARAD's SHPO and Tribal consultation letters are provided in Attachment H.

Concurrence with a "No Historic Properties Affected" determination under NHPA Section 106 was received from the SHPO on May 13, 2024 (Attachment H-1) and December 2, 2025 (Attachment H-2). The Squaxin Island Tribe Cultural Resources Department responded on July 10, 2024 and on December 1, 2025 indicating that the project is outside the Squaxin traditional area, and they do not need any further consultations.

Overall, the construction of the preferred alternative will present no impacts to cultural or historic resources given that there are no known historic resources in both the original and expanded APEs.

Operational Impacts

Operations are expected to continue with the replacement of the floating breakwater. This includes the continued use by the Suquamish Tribe of designated tribal moorage at the Port Orchard Marina. The preferred alternative will present no impacts during operations because there are no known historic resources in the area. The operations of the newly constructed breakwater will maintain current access to usual and accustomed access to fisheries resources and thus will have No Impact on cultural resources.

Mitigation Measures

Notification of breakwater closure will be posted and transmitted to the Suquamish Tribe ahead of the construction season. No other mitigation measures are proposed.

3.8.3 No Action Alternative

The no-action alternative would have no effect on historic resources. However, decommissioning of the breakwater without replacement would reduce or eliminate the Suquamish Tribe's moorage at the Port Orchard Marina which would reduce access to usual and accustomed fishing grounds which represents a moderate impact to cultural resources.

3.9 Transportation

3.9.1 Existing Conditions

State Route 166, also known as Bay Street, is the nearest highway to the site. Bay Street is the east/west connector for the downtown waterfront. In the vicinity of the marina, Bay Street is functionally classified as a Principal Arterial.

The site is served by Kitsap Transit bus routes 4, 5, 8, 9, 81, and 86. It is also served by Kitsap Transit's Port Orchard-Bremerton Foot Ferry. This ferry dock is located between the shoreline and the east breakwater. The 'North Kitsap Fast Ferry Express' takes about 30 minutes to transport passengers to the Bremerton ferry dock. This ferry route serves Naval Shipyard workers and other commuters, tourists, and Olympic College students. It also provides a connection to Seattle ferries from Bremerton. The foot ferry operates from 4:30 am to 8:30 pm on weekdays, and from 8:30 am to 7:30 pm on Saturdays. Additional services are available on holidays.

Pedestrian access is provided by a boardwalk that stretches from the Port of Bremerton Marina Park to the Kitsap Transit Ferry dock. From there, a sidewalk runs along the shoreline to approximately Port Street.

The marina itself provides a regional location from which to launch vessels, provides moorage for both private recreational craft and liveaboards, offers the only vessel fueling facility within 16 miles, and includes a designated tribal area. There is also dedicated parking for those that use and work at the marina.

3.9.2 Proposed Action

Construction Impacts

The majority of the construction and equipment transport would be completed via barge on Sinclair Inlet. The parking lot may be affected for a very short period (days) by staging materials and during demolition and installation of the gangway. Additional vehicle traffic and parking space use is anticipated during construction of the breakwater. Vessel activity in the marina will be limited when the new breakwater is being installed and the existing breakwater is being demolished. The parking lot area would be accessed from Sidney Parkway. Road closures are not anticipated. The vessel fueling facility's closure during construction is not anticipated.

Operational Impacts

No increase in operations is expected with the new breakwater. We do expect that the new breakwater will reduce the need for constant repair, reducing operational effort to maintain the structure. Benefits will include the long-term viability of the marina for private recreation and liveaboards, commercial fishing, tribal fishing, and Kitsap foot ferry.

Mitigation Measures

Public notices would be posted on-site and via the Port's website to announce transportation impacts, if any.

Given the above, it is anticipated there will be negligible, short-term impact of the preferred alternative on transportation resources.

3.9.3 No Action Alternative

Short-term, there would be no effect under this alternative. Long-term, the decommissioning of the existing breakwater would likely eventually occur, which would lead to the shutting down of the existing marina and its support functions. This would reduced access to moorage, fuel, and pumpout facilities in the greater Bremerton area.

Given the above, the no-action alternative would eventually lead to decommissioning of the marina with no viable replacement. This would result in a moderate impact to boating community who rely on the marina but only have a negligible impact to transportation due to maintaining Kitsap ferry and local bus services.

3.10 Land Use and Visual Resources

3.10.1 Existing Conditions

The City of Port Orchard *Comprehensive Plan* (July 2018) designation for the upland adjacent to the project area is Commercial. It includes the marina office and associated facilities, a waterfront park and trail, and shopping areas. The site is also included as part of the West Downtown Neighborhood, in the *Downtown Subarea Plan*, dated May 18, 2021. The plan states, "The West Downtown Neighborhood is the current and historical cultural and civic hub of the community. It is also the recreational hub with ferry connections to the neighboring cities." Existing Land Use and Zoning is identified as Neighborhood Mixed Use. The area along Bay Street is identified as storefront.

Port Orchard's *Shoreline Master Program* (SMP) (revised March of 2021) designates the marina project area as a High-Intensity shoreline environment designation. Work in this area must comply with *SMP Appendix C-Mitigation and Restoration for Redevelopment Activities in the High Intensity Shoreline Environment Designation* (September 3, 2021).

3.10.2 Proposed Action

Construction Impacts

The majority of the construction would be completed from a barge on Sinclair Inlet. The parking lot may be affected by staging materials and during demolition and installation of the gangway. Other than temporary impacts to the parking area during construction and temporary visual impacts from offshore cranes, no permanent land use or visual resource impacts are anticipated.

Operational Impacts

The project will not alter any land uses, nor will it impact the viewshed. No land use or visual resource impacts are anticipated.

Mitigation Measures

No mitigation measures are proposed other than those required during construction including signage and designated alternative parking areas.

Based on the above, the preferred alternative would have no effect on land resources.

3.10.3 No Action Alternative

In the short term, there would be no effects on land and visual resources. In the long term, the No Action Alternative could lead to decommissioning or failure of the breakwater, resulting in damage to and/or closing of the Port Orchard Marina, along with potential impacts to ferry service. Should the marina close, upland businesses would suffer from loss of tourism, which may result in impacts to land uses in the West Downtown Neighborhood.

This is not expected to result in substantive changes to the land use or visual resources since the upland structures and land use would not be directly affected if the marina was no longer operational.

3.11 Other Resources Considered But Not Carried Forward

3.11.1 Prime Farmland

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. Since no farmlands are part of or affected by the the alternatives, this analysis is not carried forward.

3.11.2 DOT Section 4(f)

Section 4(f) refers to the original section within the U.S. Department of Transportation Act of 1966 which provides for consideration of park and recreation lands, wildlife and waterfowl refuges, and historic sites during transportation project development administered by Federal programs. The current breakwater and proposed breakwater replacement falls within the Port Management Area that does not contain publicly owned public parks, recreation areas, wildlife and waterfowl refuges, and historic sites. Therefore, both the no action and current proposed action will not affect these types of publicly owned properties and this analysis is not carried forward.

3.12 Other Reasonably Foreseeable Impacts

Other reasonably foreseeable impacts are the impacts on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action.

Other reasonably foreseeable impacts include the direct and indirect impacts of a project together with the reasonably foreseeable future actions of others. The other reasonably foreseeable impacts that result from an action may be undetectable or below applicable significance thresholds for a specific project but can add to other disturbances and eventually lead to a measurable adverse effect.

The only foreseeable future actions to occur in the vicinity of the project area will maintain existing conditions along the Port Orchard Marina waterfront (e.g., minor maintenance of existing infrastructure, landscaping, etc.). No other capital projects are planned in the vicinity of the

Proposed Action therefore no other reasonably foreseeable construction or operational adverse effects are anticipated.

3.13 Conclusion Statement on Project Impacts

The preferred alternative considered meets the intended needs of the project proponent while seeking to avoid impacts where practical, minimize impacts where feasible, and mitigate for unavoidable impacts and loss of habitat function through implementation of habitat enhancements within the same watershed. Given the above, this Environmental Assessment concludes that the preferred alternative has no significant impact on the human environment given the avoidance and mitigation measures included in this document.

4.0 Agency, Tribal, and Public Consultation

4.1 EA Scoping Process

MARAD and the Port of Bremerton initiated the Environmental Assessment scoping process for the proposed **Port Orchard Marina Floating Breakwater Replacement Project** by initialing a pre-project filing meeting with agencies, Tribes, and stakeholders at various times in 2022 through 2024. Letters/emails informing Tribes and inviting comments on the project were also issued.

Scoping ran from March 2022 to May 2024

The Port of Bremerton carried out the following actions during EA scoping period to inform agencies, Tribes, organizations, and the public about the proposed action and to invite comments on the need, design, and consequences of the action:

- Public port commission meetings:
    - August 31, 2022, Port Commissioner Public Meeting/Retreat
    - Sept 13, 2022, Port Commissioner Public Meeting
    - February 28, 2023, Port Commissioner Public Meeting
    - August 8, 2023, Port Commissioner Public Meeting
    - May 14, 2024, Port Commissioner Public Meeting
- Tribal Communication
    - March 3, 2022, Email to Suquamish Tribes related to Port Orchard Marina Breakwater preapplication discussion.
    - May 7,2024 Letter to Suquamish, Squaxin, Port Gamble S'Klallam, Puyallup, and Snoqualmie Tribes re: Breakwater Project
    - May 10, 2024 Email Suquamish, Squaxin, Port Gamble S'Klallam, Puyallup, and Snoqualmie Tribes re: Breakwater Project
    - June 28, 2024, Email Follow up to Suquamish, Squaxin, Port Gamble S'Klallam, Puyallup, and Snoqualmie Tribes re: Breakwater Project
    - November 26, 2025, Letter to Suquamish, Squaxin, Port Gamble S'Klallam, Puyallup, and Snoqualmie Tribes re: Breakwater Project Updated APE

During scoping, agencies, Tribes, organizations, and members of the public were invited to submit written comments to the Port, as well as provide oral comments at the public meetings (Attachments F). Comments were received, from the WA Department of Archeology & Historic Properties (May 13, 2024 and December 2, 2025), the Squaxin Island Tribes and the Port Gamble S'Klallam Tribes (July 10, 2024 and December 1, 2025), Suquamish Indian Tribe (February 17, 2023 and December 12, 2025), and the Snoqualmie Indian Tribe (December 18, 2025). As of January 5, 2026, the Puyallup Tribe of Indians has not provided comments during the May 2024 and November 2025 official Section 106 comment periods, therefore, the agency and the Port assume concurrence with a finding of No Historic Properties Affected for the proposed project.

4.2 Permitting

The standard Federal, State, and City of Port Orchard permitting efforts for infrastructure replacement/repair were finalized October 16, 2024, with copies of each respective permit submitted to MARAD for their review. In addition, the Port of Bremerton is committed to ensuring full regulatory compliance by obtaining all applicable federal, state, and local permits and

approvals prior to commencing the Proposed Action. Public Outreach activities associated with each of the following permitting efforts have occurred:

- For compliance with **Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act** for projects occurring within Waters of the US and installing structures in navigable waters, the US Army Corps of Engineers publishes a Public Notice in the Seattle District Regulatory Website and distributes it to the EPA, USFWS, NOAA Fisheries, Suquamish Tribe of Indians, Department of the Interior, and Federal Emergency Management Agency (FEMA). Notices include the Washington State Department of Ecology, Washington Department of Fish and Wildlife, Washington Department of Archaeology and Historical Preservation, and Department of Natural Resources. Locally, the City of Port Orchard is copied as are any non-government entities that may have subscribed to public notice within the Project ZIP code.
- As part of **government to government coordination on co-managed resources**, the federal government conducts consultation with the Suquamish Tribe of Indians for projects that occur within their usual and accustomed fishing areas.
- SEPA compliance requires Public Notice to the State SEPA register, an on-site posting, notice published in a newspaper of general circulation, and to any parties that have requested notice.
- In addition, the issued **Hydraulic Permit** is subject to a 14-day appeal period to those parties of interest and published on the State Aquatic Protection Permitting System (APPS) dashboard of any party that has registered for notification.

4.2.1 Permits Attained

Table 6. *List of permits and permit status*

Agency Name and Type of Permit or Authorization	Permit Number or Tracking Number	Current Status	Issuance Date	Expiration Date
USACE Letter of Permission	NWS-2022-0513	**Active**	**10/16/2024**	**10/16/2027**
WA Ecology Water Quality Certification	Order 22609	**Active**	**05/07/2024**	**10/16/2027**
WA Ecology Coastal Zone Management Consistency Decision	**Ref NWS-2022-0513**	**Granted**	**08/18/2024**	**N/A**
WA Dept of Fish and Wildlife Hydraulic Project Approval	2022-6-393+01	**Active**	**08/26/2022**	**02/15/2027**
City of Port Orchard SEPA and Shoreline exemption	LU22-SH EXEMPT-08	**Granted**	**10/12/2022**	**N/A**
Section 106 DAHP Concurrence Letter	2022-09-06181	**Granted**	**05/13/2024**	**N/A**
Section 106 Amendment DAHP Concurrence Letter	2022-09-06181	**Granted**	**12/2/2025**	**N/A**

4.3 Section 106 of the National Historic Preservation Act

The Cultural Resources Assessment (CRA) was submitted to the Puyallup, Snoqualmie, Squaxin, and Suquamish Tribe of Indians as well as the Tribal Historic Preservation Office (THPO) on May 10, 2024 and again on November 26, 2025. This included a desktop survey completed through the WA

Department of Archaeology and Historic Preservation (DAHP; Project No.2022-09-06181). In 2025, a follow-up desktop survey was completed through DAHP to address an expanded APE that includes the proposed removal of two creosote-treated derelict waterfront structures. As part of the Section 106 process, MARAD made a determination that this project would result in *No historic properties affected,* on May 7, 2024 and on November 20, 2025. Concurrence was received from the SHPO on May 13, 2024 (Attachment H-1) and on December 2, 2025 (Attachment H-2).

4.4 Cooperating Agency

In April 2025, the USFWS learned that MARAD was also proposing to fund this project. USFWS contacted MARAD to discuss the project and how to best jointly meet environmental compliance requirements. In May 2025, in accordance with NEPA 42 USC §4336a, MARAD requested the USFWS to be a cooperating agency to ensure timely and unified federal review of the project. The USFWS accepted the invitation in May and was provided an opportunity to review a draft of the EA in September 2025.

5.0 REFERENCES

Arcos, M. 2012. The A.D. 900–930 Seattle-Fault-Zone Earthquake with a Wider Coseismic Rupture Patch and Postseismic Submergence: Inferences from New Sedimentary Evidence. Bulletin of the Seismological Society of America ; 102 (3): 1079–1098.

Caltrans. 2015. Revised 2020. Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish. November 2015.

City of Port Orchard Water System Plan. 2020. Available online: https://portorchardwa.gov/documents/2020-water-system-plan/

Creosote Removal Program. 2020. Available online: https://www.dnr.wa.gov/programs-and-services/aquatics/restoration/creosote-removal July 2024

Ehinger, S., Lisa Abernathy, Mary Bhuthimethee, Lee Corum, David Price, and Jennifer Quan.2022. Puget Sound Nearshore "Conservation Calculator" User Guide. Version 1.0. Available online: https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-11/Calculator%20User%20Guide%2011-17-20%20V1_jmc.pdf

GeoEngineers. 2021. Geotechnical Engineering Services Report. Port Orchard Marina Breakwater Replacement, Port Orchard, Washington. Prepared for the Port of Bremerton and PND Engineers, Inc.

Interim Sound Threshold Guidance. West Coast Region, NMFS, NOAA, U.S. Dept. of Commerce. Retrieved from: www.westcoast.fisheries.noaa.gov/protected_16species/marine_mammals/threshold_guidance.html

Kitsap County Comprehensive Plan. 2016. Available online: https://www.kitsap.gov/dcd/Pages/2016_Comprehensive_Plan.aspx

National Marine Fisheries Service (NMFS). 2024. 2024 Update to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 3.0). U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service. Available online: https://www.fisheries.noaa.gov/s3/2024-11/Tech_Memo-Guidance_-3.0-_OCT-2024-508_OPR1.pdf

NOAA Fisheries Essential Fish Habitat Mapper. 2021. Available online: https://www.habitat.noaa.gov/apps/efhmapper/?data_id=dataSource_10-1898a40fdf2-layer-2%3A4&page=page_4&org=noaa

Pacific Coast Groundfish Fishery Management Plan. 2022. Available online: https://www.pcouncil.org/documents/2016/08/pacific-coast-groundfish-fishery-management-plan.pdf/

Priority Habitat and Species. Accessed online at https://geodataservices.wdfw.wa.gov/hp/phs/ July 2024.

Teachout, Emily. 2012 Evaluating the Effects of Underwater Sound from Pile Driving on the Marbled Murrelet and the Bull Trout. WDFW. Lacey, WA.

U.S. Environmental Protection Agency (EPA). 2016. EPA Region 10 Best Management Practices for Piling Removal and Placement in Washington State. Available online:

https://ptpubliclibrary.org/sites/default/files/fileattachments/development_services/page/20311/final_epa_piling_bmps_2_18_1691.pdf

U.S. Fish and Wildlife Service. 2025. Information for Planning and Consultation (IPAC). Available online: https://ecos.fws.gov/ipac/. Accessed: April 2025

Washington Department of Natural Resources (WDNR). 2017. Derelict Creosote Piling Removal Best Management Practices For Pile Removal & Disposal. Available online: https://www.dnr.wa.gov/publications/aqr_rest_creosote_bmps_pilings.pdf

Washington Department of Natural Resources (WDNR). 2021. Forage Fish Spawning Map - Washington State. Available online: https://www.arcgis.com/home/webmap/viewer.html?webmap=19b8f74e2d41470cbd80b1af8dedd6b3

Washington State Administrative Code (WAC). Water Quality Standards For Surface Waters of the State of Washington. Available online: https://apps.leg.wa.gov/wac/default.aspx?cite=173-201A

Washington State Department of Ecology (Ecology). 2019. Stormwater Management Manual for Western Washington. Available online: https://fortress.wa.gov/ecy/ezshare/wq/Permits/Flare/2019SWMMWW/Content/Resources/DocsForDownload/2019SWMMWW.pdf

Washington State Department of Transportation (WSDOT). 2016. 2016 Annual Traffic Report. Washington State Department of Transportation. p. 153. Available online: https://digitalarchives.wa.gov/do/6F5FB22E627538839E4DBAC41BDDF87C.pdf. Accessed: July 19, 2024.

The Washington State Office of the Superintendent of Public Instruction (OSPI) Report Card. South Kitsap School District.

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7.0 ATTACHMENTS

Attachment A – Port Orchard Marina Record of Air Analysis

Attachment B – Port Orchard Marina Breakwater Replacement Biological Assessment

Attachment C – Port Orchard Marina Marine Mammal Monitoring Plan

Attachment D – Port Orchard Marina Water Quality Monitoring Plan

Attachment E – Port Orchard Marina Breakwater Replacement Macrovegetation Report

Attachment F – Correspondence for Public Comment Events, Tribal Outreach, and Correspondence with Regulatory Agencies

Attachment G – NMFS and USFWS Salish Sea Nearshore Programmatic (SSNP) Consultation Biological Opinion

Attachment H – Section 106 Consultation, May 2024 and November 2025