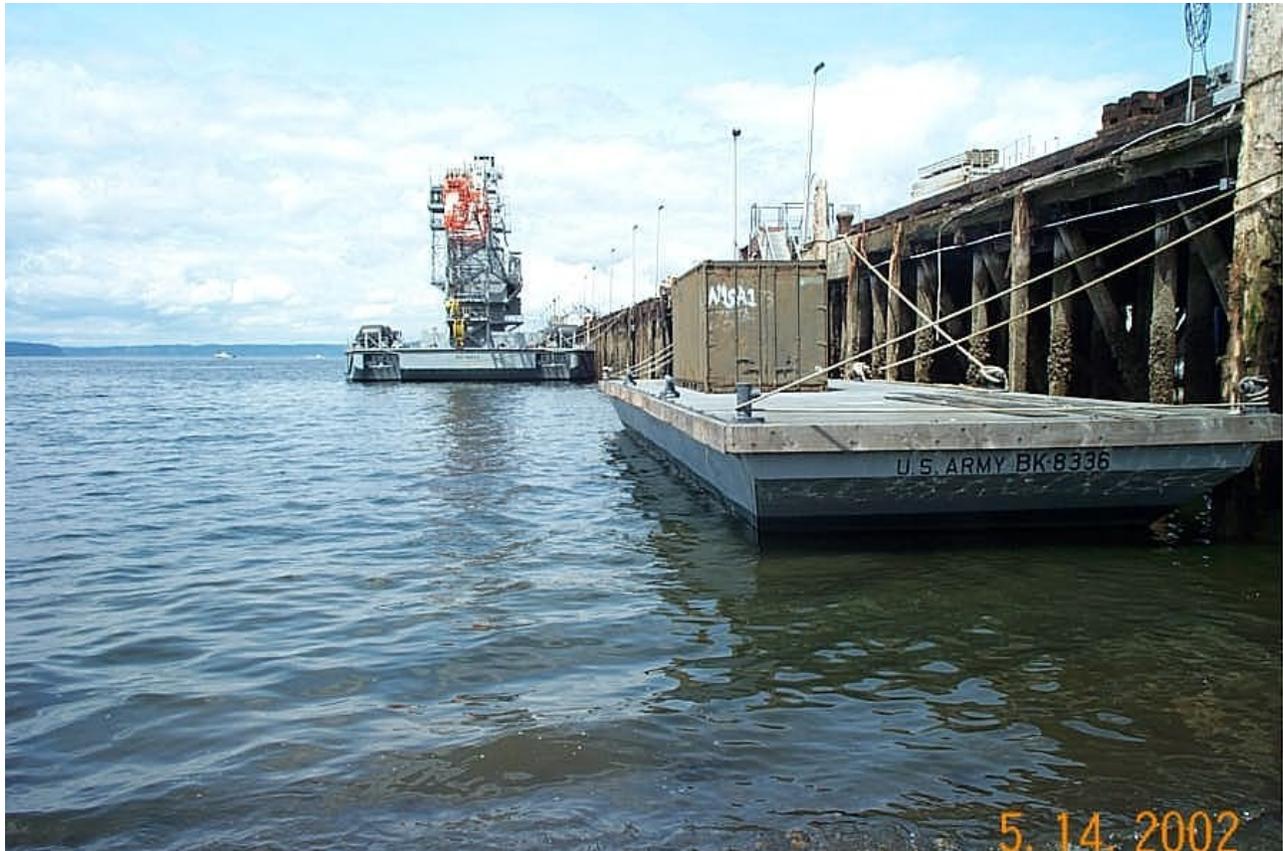


Final Environmental Assessment

Pier 23 Repair Tacoma, Washington

December 2004



**US Army Reserve
70th Regional Readiness
Command**



**US Army Corps
of Engineers®
Seattle District**

**Pier 23 Repair
Tacoma, Washington**

**Final Environmental Assessment
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Responsible Agencies: The agency responsible for this work is the U.S. Army Reserve Command, 70th Regional Readiness Command (70th RRC). The U.S. Army Corps of Engineers, Seattle District (Corps) is acting as the construction and environmental compliance agent for the 70th RRC.

Summary: In accordance with the National Environmental Policy Act (NEPA), this document examines the potential impacts of repairs to an existing 70th RRC pier structure located in Commencement Bay, Tacoma, Washington. Up to 530 creosote-treated timber pilings would be removed and replaced with ammoniacal copper zinc arsenate (ACZA) treated timber piles. Damaged pier decking, stringers, pile caps, and utilities running beneath the pier would also be replaced.

Unavoidable adverse impacts associated with this work include degradation of water quality (turbidity and contaminant resuspension) during construction; leaching of metals from the treated timber to adjacent sediments; and increase in ambient noise levels and air emissions during construction. These impacts will generally be localized in nature, short in duration, and minor in scope. None of these impacts would be significant either individually or cumulatively.

THE OFFICIAL COMMENT PERIOD ON THIS ENVIRONMENTAL ASSESSMENT
OCCURED BETWEEN SEPTEMBER 20 AND OCTOBER 19, 2004.

Please send questions and requests for additional information to:

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1. INTRODUCTION

In accordance with the National Environmental Policy Act (NEPA), this document examines the potential impacts of repairing U.S. Army Reserve, 70th Regional Readiness Command (70th RRC) pier facilities at the Pier 23 property in Commencement Bay, Tacoma, Washington.

The proposed action is one of several projects that the Army Reserve is conducting to upgrade its facilities at Pier 23. Construction of three new buildings on the upland portion of the site is scheduled to be completed in October 2004. This work was evaluated in a previous NEPA document, the *U.S. Army Reserve Pier 23 Upland Construction Final Environmental Assessment*, which was issued in April 2002. During the late summer and fall of 2004, the property's shoreline will be reconstructed to provide erosion control; remove debris and contaminants; and provide habitat enhancements. This work was evaluated in a second NEPA document, the *U.S. Army Reserve Pier 23 Shoreline Reconstruction Final Environmental Assessment*, which was issued in July 2004. These previous NEPA documents contain detailed information on Army Reserve facilities at Pier 23, as well as information on its surrounding environments. These documents are incorporated here by reference to avoid unnecessary duplication of previous evaluations.

The Army Reserve also has plans to remediate contaminated sediments on the property in 2005-2006, under the authority of the Defense Environmental Restoration Program. However, details of the sediment remediation action are currently being developed by the Army Environmental Center in cooperation with the 70th RRC and the Washington Department of Ecology (Ecology).

Separate NEPA documents have been prepared for these various activities because comprehensive schedules and plans for the all the work had not yet been developed when funding became available for individual projects. At the time individual documents were prepared, it was uncertain if or when the plans for future work would be completed and if the funding would become available for other activities. This uncertainty made it difficult to predict the full scope of future work..

1.1 Location

The Pier 23 property is located on the northwest end of the Port of Tacoma Industrial Yard, which is situated between the Hylebos and Blair Waterways along the shoreline of Commencement Bay (T21N, R03E, Section 27). Please see Sheet 1 in Appendix A.

1.2 Site Information

The Pier 23 property is operated and maintained by the 70th RRC, which leases the 7.4 acres of submerged lands and 3 acres of uplands from the Port of Tacoma. The 50-year lease expires in 2039. The upland area, submerged land under the pier, a 100-foot wide area beyond the edge of the pier structure, and all water rights are owned by the Port of Tacoma and leased to the Army Reserve. The Army Reserve owns, controls, and has command of the pier structure, all facilities on the pier, and all structures and improvements on the upland property.

Pier 23 and its associated facilities are required for the training of the 385th Transportation Battalion, 175th Floating Craft Company, 185th Medium Boat Company, 467th Transportation Terminal, 647th Cargo Documentation Detachment, 804th Movement Control Detachment, and 805th Logistics Support. These units use the pier facilities primarily for Army watercraft moorage and maintenance, as well as training of reserve soldiers. At full operational capacity, up to 400 reservists will utilize the upgraded Pier 23 facilities.

The existing pier is approximately 1,135 feet long with a mean width of 56 feet. About half of the existing pier is wood (540 ft) and construction of this portion of the pier occurred before World War II. The outer half of the existing pier is a concrete surface and piling extension that was added in 1946. Several Army Reserve office and maintenance/storage trailers are located on the paved surface of the pier. A large (150 ton) floating crane is moored on the south side at the end of the pier; it is used to transfer small vessels from the water onto the pier for maintenance and to transfer vehicles and equipment from the pier onto watercraft. An Army-owned x-foot floating dock is attached to the end of the pier along the north side and is used for mooring as many as 14 vessels.

1.3 Project Purpose And Need

The purpose of the proposed project is to allow the 70th RRC to continue mooring and maintaining Army Reserve vessels at Pier 23. The current facilities were constructed prior to World War II, and are deteriorated to the point where they do not meet current operational and safety requirements.

A 1994 underwater inspection of the pier showed that approximately 10% of the 960 load-bearing timber piles had moderate to heavy deterioration with material loss varying from 75 to 95%. A number of these piles had lengths of complete section loss. The timber fender pile system was also found to be in poor condition, with nearly 60% of the pilings moderately to heavily damaged by vessel impacts. A number of these piles were either completely missing or broken off at the waterline. A 2001 structural analysis conducted after the Nisqually earthquake indicated that the condition of the timber piles was found to be much worse than described in the 1994 inspection report.

The poor condition of the pier affects vessel moorage and maintenance operations, as well as the ability of various Reservist Units to conduct effective, realistic, and meaningful training to meet their readiness and mobility missions. Army Reserve personnel are subjected to unsafe and substandard working conditions.

The scope of the proposed project has been limited to the Pier 23 property because other comparable moorage facilities are not available in Puget Sound. The Puget Sound Naval Shipyard and Bangor Navy Submarine Base were contacted by the Army Reserve, and both responded that no properties or pier space were available. The Ports of Seattle and Tacoma were also consulted, and both responded that no other marine facilities were available for lease.

2. ALTERNATIVE EVALUATION

In order to comply with NEPA, Council for Environmental Quality (CEQ) regulations, and Army regulations, the Army Reserve performed an analysis of potential alternatives to determine which best meets the project purpose and need described in Section 1.3.

2.1 Alternative 1 - No Action

Under Alternative 1, the Army Reserve would not repair Pier 23. The deterioration of the pier structure would continue to affect the 70th RRC's usage of the facilities at this site. As a result of the 2001 structural analysis, loads on the pier have been limited by the damaged timber deck (requiring truck weight limits), and mooring loads have been limited by the deterioration of the piles supporting the bollard bases. Five of the ten bollards along the timber portion of the pier cannot be used for mooring anything but very small watercraft. These limitations affect the 70th RRC's ability to safely moor watercraft, and carry out vessel maintenance and training activities. The damaged structure and outdated utilities are becoming increasingly unsafe for 70th RRC personnel.

2.2 Alternative 2 - Pier Demolition and Reconstruction

Alternative 2 consists of demolishing the inner, wooden 600 feet of the pier and replacing it with a new concrete-surfaced pier on concrete piling. Under this alternative, approximately 1,100 creosote-treated timber piles (structural and fender) would be removed from the wooden section of the pier. These pilings would be replaced with 308 pre-cast concrete piles. Utilities running beneath the pier would also be replaced.

Under this alternative, repairs would also be made to the outer concrete portion of the pier. Approximately 200 creosote-treated timber fender piles would be removed from the outer section of the pier and be replaced by 122 square concrete fender piles. Delaminated areas with exposed reinforcing bars and spalls on existing concrete structural piles would be repaired.

The cost of Alternative 2 is estimated to be approximately \$8 million.

2.3 Alternative 3 - Pier Repair (Preferred Alternative)

Alternative 3 consists of repair of the existing wooden pier structure. Creosote-treated structural piles that are more than 50% damaged would be replaced with ammoniacal copper zinc arsenate (ACZA) treated timber piles.¹ Up to 175 piles would be removed and then replaced. Up to 125 damaged creosote-treated fender piles would also be removed and then replaced with ACZA-treated timber piles covered with rub-railings. Six clusters of 22 to 24 piles which support

¹ Other types of replacement pilings were considered, such as steel for structural pilings and steel coated with hard UHMW plastic for fender pilings. However, since not all of the pilings would be replaced and there are currently no plans to replace those pilings not addressed by this project, it was decided to replace the pilings in-kind. In addition, the cost of steel pilings was much higher than that of treated wood pilings and some regulatory agencies have concerns regarding increased noise impacts to fish associated with the driving of steel pilings.

mooring bollards would also be repaired. Up to 155 piles forming these 6 clusters would be removed and then replaced. On top of these pilings, and level with the deck surface, concrete will be poured to encapsulate the piling and absorb loads from vessel anchor lines.

An estimated 25% of the pier decking would be removed and replaced with untreated wood. An estimated 10% of pier stringers would be removed and replaced with ACZA-treated wood. An estimated 10% of pile caps would be removed and replaced with ACZA-treated wood. Utilities running beneath the pier would also be replaced.

Repairs to the outer portion of the pier would involve the removal and replacement of up to 75 damaged creosote-treated fender piles with ACZA-treated timber piles with rub-railings.

The cost of Alternative 3 is estimated to be approximately \$3 million.

2.4 Alternative Evaluation

None of the three alternatives would result in an increase in the number or size of vessels moored at this facility, as this is not an intent of the proposed work.

The no action alternative does not meet the project purpose and need. Therefore, it was eliminated from further consideration. Alternatives 2 and 3 both meet the project purpose and need.

Alternative 3 would result in a pier which would safely support vessel maintenance and training operations for the next 10 years without additional repairs. Alternative 2 would provide a structure which would last considerably longer without a need for additional repairs.

Alternative 2 would provide greater environmental benefits than Alternative 3. A larger number of creosote-treated timber pilings would be removed from the marine environment. They would be replaced with fewer concrete piles, which would decrease the effect of the pier on ambient light levels beneath it.

However, the cost of Alternative 2 would be more than double that of Alternative 3. The Army Reserve does not have funds available to implement Alternative 2. While mission and requirements may change in the future, the proposed pier repair project will provide an adequate pier facility to support current Army Reserve force structure, mission and requirements. Therefore, Alternative 2 was eliminated from further consideration and Alternative 3 was selected as the Preferred Alternative.

Engineering drawings depicting the proposed action can be found on Sheets 2 and 3 in Appendix A.

3. EXISTING ENVIRONMENT

3.1 Water and Shoreline Resources

3.1.1 Shoreline Condition

The remaining intertidal areas of Commencement Bay are dominated by industrial waterfront features. Structures such as piers, wharves, and buildings often extend over waters of the action area. In many places, shorelines consist of steeply sloped banks armored with riprap, concrete slabs, or other miscellaneous debris. Two other large industrial piers, Pier 24 and Pier 25, are located adjacent to Pier 23 (see photos 1 and 2 in Appendix B).

The shoreline southwest of the pier is composed of industrial slag material, concrete, fill dirt, and bricks. The “slag” is thought to be a mix of rusted molten wastes that originated from on-site shipbuilding activities, but may include some waste from the Asarco smelter. Below this artificial bank is a mix of silt and crumbled slag that transitions to mudflat in the lower intertidal zone. Portions of the bank are reinforced with debris ranging from cobbles, to refractory bricks, to old timbers. Just south of the pier, this fill juts out in a peninsula, in front of which are approximately 30 derelict creosote pilings. South of this fill bank and continuing onto the adjacent property, there is a wide intertidal zone composed of gently sloping mudflat. The shoreline of the project site lacks overhanging vegetation. The shoreline northeast of the pier is composed of the same “slag” material. In early 2003, a 50-meter long sheet pile wall was installed landward of the mean higher high water elevation (MHHW) along this portion of the shoreline.

During the fall of 2004, the Army Reserve will reconstruct the shoreline of the Pier 23 property. A 230’ long sheet pile wall will be installed landward of MHHW along the western shoreline of the Pier 23 property. This wall will provide support for a 12’ widening of a portion of the driving surface adjacent to the new Reserve Center. Debris, orphan pilings, and molten metal (or slag) material waterward of the sheet pile will then be removed. The shoreline will be reconstructed using riprap and cobble/gravel that incorporates fish-friendly habitat features. In some areas along the shoreline, a buffer will be planted with native plants. This work is described in detail in the April 2004 *U.S. Army Reserve Pier 23 Shoreline Reconstruction Final Environmental Assessment*.

3.1.2 Bathymetry and Substrate

Waterward of the Pier 23 property’s near-vertical slag banks, the surface grade slopes to a depth of about 35 feet and then levels off near the end of the pier. The slope is considerably steeper along the pier, as compared to the gentle mudflats along the southwest boundary of the property.

The intertidal and subtidal zones of the project area are composed of material with high percentages of silt, very fine sand, and fine sand (Hart Crowser 2004), as well as decomposed slag. At other sites, dock pilings have been found to alter adjacent substrates with increased shell hash deposition from piling invertebrate communities (Pentilla 1990 and Shreffler 1999). This may result in native dominant communities typically associated with sand, gravel, mud, and seagrass substrates being replaced by communities associated with shell hash substrates

(Nightingale and Simenstad 2001). Iron rails are embedded in the substrate just south of the Pier 23 property, where shipbuilding facilities were once located.

Currents generated by vessel propellers can affect the bottom contours in waters as deep as 30 to 40 feet (NOAA Fisheries 2003). Prop wash can produce scouring, remove fine sediments, and dislodge and/or bury benthic organisms. Prop wash may also increase turbidity, possibly resuspending contaminants, and directly displace fish due to strong currents (NOAA Fisheries 2003). In addition, large wakes from vessels may contribute to shoreline erosion. In the case of Pier 23, operational measures reduce the potential for these types of impacts. Generally, barges are docked along the portion of the pier nearest to shore and larger ships moor in deeper waters. The shallow draft of the barges minimizes the potential for vessel groundings at low tide, as well as prop scour in the zone most heavily used by juvenile salmon (landward of -10 feet MLLW).

3.1.3 Water Quality

Water quality in Commencement Bay has experienced a significant decline in the past 70 years due to hazardous and non-hazardous runoff from industry, homes, and municipalities. The bay and waterways are the receiving waters for treated and untreated industrial, commercial, and municipal discharges. Inner Commencement Bay, the Hylebos Waterway, and the Blair Waterway have been listed on the 2003/2004 303(d) list of Impaired and Threatened Water Bodies in Washington for a number of chemical parameters present in sediments and fish tissues.

Nutrient and contaminant loading from vessel discharges, engine operation, prop scouring, bottom paint sloughing, boat wash downs, boat scraping, painting, and other vessel maintenance activities pose water quality degradation and sediment contamination risks adjacent to any large industrial pier structure (Nightingale and Simenstad 2001). The Army Reserve is also currently in the process of updating Pier 23's stormwater pollution prevention plan and vessel response plan to minimize the risk of such impacts.

The Army Reserve has recently taken several steps to improve water quality conditions adjacent to Pier 23. As part of the ongoing upland redevelopment of the property, a new stormwater system with an oil-water separator was installed. Once upland construction activities are complete, many maintenance facilities and operations currently occurring on the pier will be moved to the new upland buildings. This will further reduce the likelihood for releases of fuel or solvents to waters adjacent to the pier.

3.1.4 Sediment Contamination

Elevated levels of total petroleum hydrocarbons (TPH), arsenic, and zinc have been detected in sediments adjacent to Pier 23. These contaminated sediments adjacent to the pier will likely be dredged and capped in 2005-2006. The Army Reserve is currently working with the Washington Department of Ecology to develop an Agreed Order outlining the scope of remedial actions necessary at this property. The Hylebos Superfund site is located adjacent to the Pier 23 property. Sediment remediation at this site began in 2003 and is continuing through 2004.

Accumulation of polycyclic aromatic hydrocarbons (PAH) in sediments on the Pier 23 property may be attributable to diffusion from creosote-treated wood supporting the pier. PAH in creosote-treated wood continues to migrate from structures for decades. Sediment accumulations of PAH are greatest at and immediately adjacent to the structure, though PAH contamination can be patch and relatively mobile (Poston 2001). PAH contamination has been linked to carcinogenesis, as well as developmental, nervous system, and hormone regulation impacts in marine organisms (Poston 2001).

3.2 Biological Resources

3.2.1 Marine Resources

Intertidal habitat (+11.8 ft to -4.0 ft MLLW) is located southwest of the existing Pier 23, extending to the mouth of the Blair Waterway. No eelgrass is found on or directly adjacent to the Pier 23 property, but some macroalgae (e.g., *Fucus* spp.) is present. USFWS and NOAA (1996) characterized the species which utilize intertidal habitat in Commencement Bay. During periods of inundation, this area may be used by Dungeness crab (*Cancer magister*), juvenile English sole (*Pleuronectes vetulus*), Pacific staghorn sculpin (*Leptocottus armatus*), starry flounder (*Platichthys stellatus*), and chum salmon (*Oncorhynchus keta*). Bird species which may utilize intertidal habitat include gulls (*Larus* spp.), Canada goose (*Branta canadensis*), common goldeneye (*Bucephala clangula*), great blue heron (*Ardea herodias*), and greater yellowlegs (*Tringa melanoleuca*), among others. Mammals which may use this habitat include harbor seal (*Phoca vitulina*), black rat (*Rattus rattus*), and raccoon (*Procyon lotor*). Macroalgae and invertebrates use cobble and manmade structures like pilings as substrates for anchorage and shelter.

Shallow subtidal habitat (-4.0 ft to -10.0 ft MLLW) is located waterward of the intertidal habitat described above, beneath Pier 23, and northeast of Pier 23. USFWS and NOAA (1996) characterized the species which utilize shallow subtidal habitat in Commencement Bay. Fish species include Pacific staghorn sculpin, starry flounder, shiner perch (*Cymatogaster aggregata*), and juvenile Chinook salmon (*Oncorhynchus tshawytscha*); bird species include western grebe (*Aechmophorus occidentalis*), double-crested cormorant (*Phalacrocorax auritus*), American coot (*Fulica americana*), and common goldeneye (*Bucephala clangula*); and mammals include Pacific harbor seal, California sea lion (*Zalophus californicus*), and harbor porpoise (*Phocaena phocaena*). Although some high quality habitat in Commencement Bay is utilized by some shorebird and waterfowl species, the project site does not provide important habitat for these species (USFWS and NOAA, 1996).

Deep subtidal habitat (-10.0 ft to -30.0 ft MLLW) is located further waterward of the shallow subtidal habitat described above. USFWS and NOAA (1996) indicate that deep subtidal habitat in Commencement Bay are utilized by fish species such as starry flounder, Pacific sculpin, shiner perch, and juvenile chinook salmon, and by the bird and mammal species which frequent shallow subtidal habitat.

3.2.2 Sensitive Species

Twelve stocks of salmonids utilize rivers and streams which discharge into Commencement Bay (WDFW and WWTIT 1994). These stocks of Chinook (3 stocks), chum (3 stocks), coho (2 stocks), pink (1 stock), and steelhead (3 stocks) are differentiated by their run and spawn timing, distribution, and genetic composition. The estuarine and nearshore marine areas of Commencement Bay provide juveniles with important habitat for physiological adaptation, foraging, and refuge. Juvenile salmonids are generally present in Commencement Bay and adjacent waterways from March until July (Duker et al. 1989). Salmonids protected under the Endangered Species Act are discussed in Section 3.2.3 below.

A variety of forage fish utilize Commencement Bay and adjacent Puget Sound waters. Sand lance spawning occurs on beaches near the lighthouse at Brown's Point, near the lighthouse at Dash Point, and on a small pocket beach in southern Commencement Bay along Ruston Way. Surf smelt spawning has been documented on the beach near the Brown's Point lighthouse. Pacific herring spawning occurs along the southeastern shoreline of Vashon Island and southern Maury Island. Herring holding occurs in Dalco Passage. No documented forage fish spawning areas are located in the immediate vicinity of Pier 23.

Marine mammals protected under the Marine Mammal Protection Act, including Pacific harbor seals (*Phoca vitulina richardsi*), California sea lions (*Zalophus californianus*), and harbor porpoises (*Phocoena phocoena*) occur in the project vicinity. Harbor seals and California sea lions commonly utilize buoys, floats, and log booms in northeast Commencement Bay as haul-out sites (Jeffries et al. 2000).

3.2.3 Endangered and Threatened Species

In accordance with Section 7(a)(2) of the Endangered Species Act of 1973, as amended, Federally funded, constructed, permitted, or licensed projects must take into consideration impacts to Federally listed and proposed threatened or endangered species. Several species protected under the Act are potentially found in Commencement Bay. These species are listed below in Table 1. Information on the life histories and occurrence of these species in the project area can be found in a Biological Evaluation (BE) prepared for the proposed project, which is briefly summarized in Section 4.2.3.

Table 1. Protected Species Potentially Occurring in the Project Vicinity

Species	Listing Status	Critical Habitat
Bald Eagle <i>Haliaeetus leucocephalus</i>	Threatened	—
Marbled murrelet <i>Brachyramphus marmoratus</i>	Threatened	Designated
Coastal/Puget Sound Bull Trout <i>Salvelinus confluentus</i>	Threatened	—
Puget Sound Chinook Salmon <i>Oncorhynchus tshawytscha</i>	Threatened	Withdrawn
Steller Sea Lion	Threatened	Designated

<i>Eumetopias jubatus</i>		
Humpback Whale <i>Megaptera novaeangliae</i>	Endangered	—
Leatherback Sea Turtle <i>Dermochelys coriacea</i>	Endangered	Designated

3.3 Cultural Resources

Cultural resources potentially affected by the Proposed Action are: (1) archeological resources, which may include districts, sites, or objects that have yielded or are likely to yield information important in prehistory or history; and (2) historic resources, which may include districts, sites, buildings, structures, or objects that relate or convey some aspect of American history, architecture, engineering, archeology, and/or culture. Activities that affect cultural resources are regulated by Federal, State, and local legislation. The primary law affecting cultural resources is the National Historic Preservation Act (NHPA) of 1966, as amended. The NHPA requires federal agency project proponents to identify any effects or impacts its actions may have on cultural resources listed in or eligible for listing in the National Register of Historic Places (NRHP).

The project vicinity was part of the aboriginal territory of the Puyallup Tribe of Indians. The Puyallup Tribe, who are closely related culturally and linguistically to the Nisqually, Duwamish, Muckleshoot, Skokomish, and possibly the Suquamish, occupied the Commencement Bay area and the Puyallup River drainage when contact occurred with European explorers. Ethnographic literature refers to these peoples as part of the Southern Puget Sound branch of the Coast Salish and they are known linguistically to be Lutshootseed speakers. The Puyallup, like the Nisqually, are differentiated from their other neighbors on Puget Sound by the “extreme development” of ceremonial and religious power complexes (Smith, 1940). The Puyallup engaged in diverse economic activities including fishing, gathering, and hunting (Haeberlin and Gunther, 1930).

The Pier 23 project is located at the former boundary between the Commencement Bay intertidal mud flats and deeper water of the subtidal zone. This location at the outer edge of the former delta reduces the probability that either submerged prehistoric archaeological sites or fish weirs are present within subtidal areas where subsurface disturbance will occur.

Cultural resources investigations for this project included a search of the NRHP, the Washington Office of Archaeology and Historic Preservation (OAHP) electronic historic site database, other background research, and an archaeological reconnaissance survey. There are no historic properties listed in the NRHP or the OAHP database within or close to the area of potential effects. A report describing the results of the cultural resource reconnaissance survey was sent to the Washington State Office of Archaeology and Historic Preservation (OAHP) for their review and concurrence. No other known historic resources are present at or near the site.

3.4 Air Quality

Air quality in the Puget Sound Basin is generally good. However, urban areas experience moderately degraded air quality during certain times of the year. Particulates, sulfur dioxide,

ozone, and carbon monoxide are the pollutants of concern. High concentrations of these pollutants generally occur during the dry late summer months when minimal wind conditions persist for long periods of time, or during mid-winter thermal inversions.

Commencement Bay is bordered by hills on its northeast and southwest sides. Air circulation in this “trough” is inhibited during periods of calm winds. The principal sources of air emissions in the project vicinity include chemical manufacturing plants, a pulp and paper mill, an aluminum smelter, and vehicular emissions.

The project area is within Clean Air Act attainment areas for all criteria pollutants. The Seattle-Tacoma area has been classified as an attainment area for carbon monoxide and ozone since 1996, and for particulate matter (PM10) pollution since 2001. The reductions in PM10 pollution that led to attainment status are a result largely of changes enacted by the Washington legislature in the 1991 Clean Air Washington Act.

3.5 Land Use

The project area has been characterized by industrial uses for several decades. In general, land use is related to port activities, including shipping, warehousing, fuel storage, and manufacturing. The Pier 23 property is part of the Port of Tacoma’s Earley Business Center, a 50 acre waterfront maritime-oriented industrial complex. The Earley Center is comprised of pier and moorage facilities designed for vessel lay-up, outfitting/repair, and crane-served manufacturing buildings/yard areas; these facilities are used primarily for boat manufacturing, metal fabrication and construction of floating structures. Facilities are available for lease by the Port on both long- and short-term arrangements.

In addition to 70th RRC, current and/or recent uses of the Earley Center include: fishing fleet maintenance and outfitting; boat manufacturing; metal fabrication, and rebar handling. Properties neighboring Pier 23 include a yacht manufacturing company, Occidental Chemical, and metal fabricating operations. Directly adjacent to Pier 23 are Tyson Foods' shipyard and warehouse facility, and parking lots to the northeast and south. The nearest non-industrial areas include a greenbelt on the Hylebos Waterway, and a private marina and residential neighborhood approximately 0.5 mile to the north, on the far side of Hylebos Waterway.

The zoning classification for the Pier 23 site and the surrounding area is S-10 Shoreline District-Port Industrial (Tacoma Municipal Code, 2003). This classification includes all areas within 200 feet of the waters of Commencement Bay, but does not include the northern side of the Hylebos Waterway. Water-oriented industrial, commercial, and transportation uses are permitted in this area (City of Tacoma 1997).

The City of Tacoma’s shoreline master plan designates the Pier 23 property as Shoreline District 10, Port Industrial. The stated intent for this area is: “To allow the continued development of the Port Industrial Area, with an increase in the intensity of development and a greater emphasis on terminal facilities within the city.”

3.6 Noise

The Pier 23 property is in a highly industrial area characterized by a wide range of noise. Traffic, both surface vehicles and marine vessels, as well as noise associated with warehousing, berthing of vessels, loading and unloading of material, and manufacturing, are all prevalent in the Pier 23 area.

No noise-sensitive land uses are located within the immediate vicinity of Pier 23. The nearest sensitive receptors include a residential community approximately 0.5 mile to the north, on the northern side of Hylebos Inlet, and an abandoned great blue heron nesting colony approximately 0.5 mile away. Several other noise-producing facilities lie between the Pier 23 site and these receptors.

The Washington Administrative Code (WAC) contains a set of maximum permissible sound levels based on the land use of the noise source and the land use of the noise receptor. Pier 23 lies in a Class C area designated for industrial uses. As a result, noise generated at Pier 23 may not exceed the following maximum levels: 70 dBA (WAC 173-60). The state regulations contains several exemptions for maximum permissible limits for certain activities. Construction noise between 7 a.m. and 10 p.m. weekdays is exempt from state noise regulations.

3.7 Aesthetics

The Army Reserve's Pier 23 property is located in a highly industrialized area in the Port of Tacoma industrial yard. The upland portion of the Pier 23 is relatively flat and slopes very gently to the west, toward Commencement Bay. Views into and out of the site from most vantage points are not extensive. This is due to the height of the industrial facilities immediately adjacent to the site. Views to the southeast and southwest include the surrounding industrial uses of a yacht manufacturing company, Occidental Chemical, and a metal fabricating operations. Views to the east and northeast include Tyson Foods' shipyard, warehouse facility, and parking lots. Distant views to the west include the urbanized portions of downtown Tacoma. Distant views to the northwest include the waters of Commencement Bay, Brown's Point, and Vashon Island beyond. Distant views to the south and east are blocked by the industrial facilities immediately adjacent to the site. No known sensitive viewsheds are present. The site is not part of the fore, middle, or background of any historic or significant public or private viewing areas.

4. ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

The effects of the proposed shoreline reconstruction are compared against the baseline conditions associated with the no-action alternative. Unless otherwise indicated in the following discussion of environmental effects, the no-action alternative would not affect resources at the project site.

4.1 Water and Shoreline Resources

4.1.1 Shoreline Condition

The proposed pier repair work would not change existing conditions in the project area. There will be no increases in the footprint of existing overwater structures, and the project will not

result in an increase in the number or size of vessels moored at this facility. Likewise, vessel stays will not increase in duration because of this project.

4.1.2 Bathymetry and Substrate

The proposed action would also maintain existing bathymetric and substrate conditions in the project area. The Army Reserve will continue to moor vessels in a manner which minimizes the potential for groundings at low tide and prop wash impacts to habitat used by juvenile salmon.

4.1.3 Water Quality

Water and sediment quality may be temporarily degraded during and immediately after pier repair construction activities, but in the long-term existing conditions will be maintained. Pile removal and driving activities will disturb and suspend sediment, creating discoloration of the water, reducing light penetration and visibility, and changing the chemical characteristics of the water. The size of the sediment particles and tidal currents will likely determine the duration of sediment suspension in the water column. Smaller silt and fine sand particles may remain suspended for several hours (NOAA Fisheries 2003). Anaerobic sediments create an oxygen demand when suspended in the water column, which would decrease dissolved oxygen levels. Sediment-bound contaminants associated with any suspended sediments may dissolve in the water column and result in impacts to water quality.

The amount of sediment that is suspended during pile removal depends, to a large degree, on the method used (NOAA Fisheries 2003). Vibratory pile removal tends to cause the sediments to slough off at the mudline, resulting in relatively low levels of suspended sediments and contaminants. Breaking or cutting the pile below the mudline may suspend only small amounts of sediment, providing the stub is left in place and little digging is required to access the pile. Previous monitoring efforts during construction of a large pier in Puget Sound indicated that turbidity associated with pile driving was generally less than 1 Nephelometric Turbidity Unit (NTU) higher than control stations (Roni and Weitkamp 1996).

Hart Crowser (2004) estimated the potential for exceedences of ambient water quality criteria (AWQC) at this site through application of a dredging elutriate test (DRET). The DRET predicts the release of sediment-bound and dissolved contaminants at the point of dredging (or suspension during pile removal and driving). DRET analyses were performed on a composite sediment sample from locations adjacent to the pier having the highest constituent concentrations to provide a conservative estimate of potential dredging impacts on water quality. Elutriate samples were submitted for chemical analysis of total suspended solids and dissolved total metals (arsenic, copper, lead, mercury, silver, and zinc). A sample of the ambient site surface water was also submitted for analysis. Laboratory results were compared against applicable Washington State AWQC (WAC Chapter 173-201A). Separate chronic and acute AWQC are established for long-term and short-term protection, respectively. For dredging projects, Water Quality Certifications issued under Section 401 of the Clean Water Act generally require compliance with marine acute criteria at the point of dredging, and marine chronic criteria at the boundary of a surface water mixing zone established in the certification.

DRET results met marine acute and chronic AWQC compliance criteria with the exception of total mercury, which exceeded the chronic criteria. The total mercury concentration was 0.0748 µg/l compared to the chronic AWQC of 0.025 µg/l. The mercury appears to be associated with suspended particulate since the concentration of dissolved mercury was only 0.0003 µg/l. However, this result for mercury does not take into account expected dilution between the point of sediment disturbance and the mixing zone boundary. Given the small amount of sediment resuspension expected to occur during piling removal and driving (as compared to dredging), it is anticipated that dilution will occur and the chronic criteria will be met at the mixing zone boundary (Brenda Bachman, HTRW technical specialist, Seattle District, pers comm. 2004).

During construction activities, accidental release of fuel, oil, and other contaminants may occur. The contractor will be required to submit a spill prevention control and countermeasures (SPCC) plan prior to the commencement of any construction activities. The SPCC plan will identify and recognize potential spill sources at the site, outline best management practices, delineate responsive actions in the event of a spill or release, and identify notification and reporting procedures. Implementation of the SPCC plan will minimize the effect of construction activities on the quality of surrounding waters.

Several other practices to avoid and minimize sediment resuspension and other water quality impacts during construction will be implemented. They include:

- The crane operator will remove piles slowly. This will minimize turbidity in the water column as well as sediment disturbance.
- The operator will “wake-up” piles to break up bond with soil. Vibrating will break the skin friction bond between pile and soil; this avoids pulling out a large block of soil and possibly breaking off the pile in the process.
- Removed piles and stubs will be contained in a basin. The basin may be constructed of durable plastic sheeting with sidewalls supported by hay bales or another support structure.
- Upon removal from substrate, a pulled pile will be moved expeditiously from the water into the containment basin. The pile will not be shaken, hosed-off, left hanging to drip or any other action intended to clean or remove adhering material from the pile.
- Any sediments spilled on work surfaces will be contained and disposed of with the pile debris.
- A floating surface boom surrounding the work area will be used during pile removal to contain and collect any floating debris or sheen. The contractor will retrieve any debris generated during construction with a skiff and net. Retrieval will occur at slack tide or when current velocity is low.
- Cut up piling, sediments, construction residue, and plastic sheeting from the containment basin will be packed into container and disposed in a landfill which meets the State and Federal standards, such as Rabanco/Seattle or Weyco in Longview.

- Wash water resulting from wash down of equipment or work areas will be contained for proper disposal, and shall not be discharged into state waters unless authorized through a state discharge permit.
- Equipment that enters the surface water will be maintained to prevent any visible sheen from petroleum products appearing on the water.
- There will be no discharge of oil, fuels, or chemicals to surface waters, or onto land where there is a potential for reentry into surface waters.
- No cleaning solvents or chemicals used for tools or equipment cleaning will be discharged to ground or surface waters.
- The contractor will regularly check fuel hoses, oil drums, oil or fuel transfer valves, fittings, etc. for leaks, and will maintain and store materials properly to prevent spills.

Impacts to water quality are not expected to be significant because they would be short-term (during construction) and localized. No exceedences of State water quality standards are anticipated. In addition, implementation of the construction best management practices (BMPs) listed above will minimize any adverse impacts resulting from the proposed action.

4.1.4 Sediment Contamination

By removing over 500 creosote-treated piling from the marine environment, the proposed action would remove a chronic source of polycyclic aromatic hydrocarbons (PAH) contamination. However, the replacement of these pilings with ACZA-treated timber would result in some leaching of metals to adjacent sediments.

Poston (2001) summarized available information on the effects of treated wood on the marine environment; the following discussion presents his findings. Newly-treated ACZA wood contains a reservoir of leachable metals (copper, zinc, chromium, and arsenic) that are released when the wood is first installed into aquatic environments. The reservoir is limited because metals that comprise the treatment process literally become fixed to the wood. The risk associated with immersed wood (e.g., pilings) decreases over a short period of time (days to weeks) because the reservoir of metals is depleted and leaching of metal contaminants drops off. In the case of over-water structures (e.g., pier decking), the reservoir is not immediately depleted because removal is a function of precipitation events rather than constant emersion. Over-water structures may have numerous episodes of releases with precipitation events until the reservoir of leachable metals is depleted. The introduction of wood debris into the water is a third mechanism for contaminant introduction. Holes drilled into the treated wood during construction may introduce sawdust into the environment, which due to increased surface area may exacerbate the release of preservative.

Field studies summarized by Poston (2001) indicate that any toxicity associated with the release of metals into the water column is minimized by dilution of receiving waters, and diminishes with the age of the structure. Areas with low flow or turnover and low pH have the greatest potential for adverse impacts. Released metal contaminants will likely be incorporated into the

sediment, however. Metals will not degrade in the long term, but they may become physically sequestered, mineralized, or chemically sequestered, thereby reducing their bioavailability.

Spatially, the potential for impacts is determined by the amount of treated wood installed and the physical condition of the installation site (e.g., water turnover, and sediment characteristics such as percentage fines and organic carbon content). Numerous studies have found that the impacts of leached metals to sediments were localized in areas immediately adjacent (within 10 ft) to small wood structures. No studies were conducted on large (>100 piles) treated wood structures, largely because researchers have avoided areas in large coastal harbors because it is difficult to separate effects associated with treated wood structures and other sources of PAH or metal contamination.

As compared to creosote, the treatment of wood with AZCA results in metal leaching rates that are of shorter duration than the leaching of PAH from creosote-treated timber. Overall, relative risk associated with ACZA-treated wood is less than that of creosote-treated wood, both temporally and spatially (Poston 2001). The marine waters of the project site do not exhibit the characteristics associated with the highest potential for metal leaching and accumulation (low flow/turnover and low pH). For projects requiring treated wood in Washington State marine waters, Federal and State resource agencies recommend the use of ACZA products.

Implementation of the following BMPs will minimize adverse sediment quality impacts:

- Removed creosote treated piles will be cut to maximum lengths of 4 feet after the mud has dried, but prior to disposal, in order to prevent re-use.
- Untreated wood will be used for the pier decking to avoid numerous episodes of metal releases associated with precipitation events.
- The fender pilings will have rub railings to avoid the splintering and subsequent introduction of small (but high surface area) pieces of treated wood into the marine environment.

The proposed action is not expected to have significant impacts on sediment contamination because the replacement pilings will pose less risk to marine organisms than the existing pilings; the water chemistry and hydrology of the project area should minimize the potential for leaching and accumulation of metals; and BMPs will be implemented to reduce the magnitude of any adverse impacts.

4.2 Biological Resources

4.2.1 Marine Resources

Noise. Pile driving operations have been observed to affect the distribution and behavior of fish schools (Feist 1991). Noise associated with pile driving may also affect bald eagles and other birds present in the project area. The potential for injury to fishes from pile driving depends on the type and intensity of the sounds produced (NOAA Fisheries 2003). These characteristics are greatly influenced by a variety of factors, including the type of hammer and the type of substrate. Vibratory hammers are less harmful than impact hammers because they produce pressure waves

with less potential to harm fish, and they are more likely to elicit an avoidance response in fishes (NOAA Fisheries 2003). Firmer substrates require more energy to drive piles into, and produce more intense sound pressures.

Although an increase in ambient noise levels is likely to be the most geographically widespread impact of the proposed action, the size of this increase will be minimized through the use of a vibratory extractor and the likely use of a vibratory hammer. The soft substrates present at the site should also lead to relatively low noise levels. Impacts would be temporary.

Water Quality Degradation and Contaminant Exposure. Potential biological effects of increased turbidity associated with construction activities include: reduced primary productivity, interference with fish respiration, alteration of the suitability of spawning areas, smothering of benthic organisms, temporary loss of benthic organisms and other prey due to substrate disturbance, and reduction of benthic habitat diversity. In the case of the proposed project, none of these potential impacts are expected to occur because of the relatively minor increases in turbidity generally associated with the equipment to be utilized for piling removal and driving. Given the lack of eelgrass and forage fish spawning areas beneath or adjacent to the pier, it would be extremely unlikely for project-induced increases in turbidity to affect these critical resources. Construction activities may adversely affect benthic organisms, but smothering and substrate disturbance effects would be temporary and highly localized around individual pilings.

The proposed project does have the potential to expose marine organisms to contaminants. Disturbance of sediments may result in exposure to PAH leached from creosote piles and metals known to be present in sediments adjacent to the pier. However, as described in Section 4.1.3 above, no exceedences of state water quality criteria are expected to result from sediment resuspension caused by piling removal and driving. Since those criteria were developed for the protection of marine organisms, any impacts resulting from exposure caused by this project would be insignificant.

The use of ACZA-treated piles will result in an increase in the concentrations of some metals in the sediments beneath and directly adjacent to the pier. Since installation will occur during a time of the year when juvenile salmon are least likely to be present in the action area, acute impacts due to exposures to copper, arsenic, zinc, or chromium during the 9 to 12 days when the most leaching will occur are unlikely (Poston 2001). The most probable route of exposure to leached or diffused contaminants from treated wood for salmon is through the consumption of contaminated prey (Poston 2001). However, as discussed in Section 4.1.4, exposures will be highly localized around the individual pilings and over time the contaminants may become physically sequestered, mineralized, or chemically sequestered, thereby reducing their bioavailability. These factors would limit body burdens in benthic invertebrates within the action area, thereby reducing the likelihood of exposure to fish.

In-water treated wood structures are likely toxic to aquatic organisms that may contact the surface. Tolerant species of sessile algae, barnacles, and bivalve mollusks may attach themselves to pilings, but often by metabolically inert structures.

Artificial Light. In order to maintain Army Reserve operations on the pier during construction, some repair work will occur at night. As a result, some artificial lighting will be necessary to operate equipment safely. Studies in the Pacific Northwest report potential changes in fish migration behavior and the distribution of fishes in night-lighted areas (Nightingale and Simenstad, 2002). Juvenile chum and their predators, such as hake, dogfish, sculpin, large Chinook and coho, appear to congregate below night security lights. Night lighting has also been found to attract juvenile herring and sand lance, along with their predators. Any effects resulting from increased night lighting at the site would last only during construction activities. In addition, the work would occur outside the juvenile salmon outmigration period to reduce the potential for effects to salmonids.

Several BMPs will be implemented to reduce the scope of potential adverse impacts to marine organisms:

- All in-water work activities will occur during August 16 to March 1 to reduce the likelihood of impacts to migrating juvenile salmon and bull trout.
- All night-time lighting will be kept to the minimum that is necessary for the intended purpose, in terms of both the intensity and area illuminated. Lights shall be directed on to the work area and away from the water to the extent practicable.
- Barges will not be allowed to ground out in the intertidal zone. Operation of heavy equipment will not occur on the sediment surface in the intertidal zone.

4.2.2 Sensitive Species

As discussed in Section 4.2.1 above, the proposed work will result in temporary, localized water quality degradation. This localized water quality degradation is not expected to impact salmonids or forage fish because it will occur outside of the juvenile outmigration period and larger fish can readily avoid any turbidity plume. In addition to timing restrictions, other BMPs will be implemented to minimize disturbance caused by construction activities. For a more complete discussion, please refer to the surface water and marine resources sections.

As discussed in Section 4.2.1 above, the proposed work will also increase ambient noise levels. This noise may cause any marine mammals in the project vicinity to avoid the area. Displacement will be temporary and highly localized with respect to the range of these species, and thus is not expected to cause significant injury. Upon completion of the project, these species are likely to return to foraging and haul-out areas near the Pier 23 property.

4.2.3 Threatened and Endangered Species

Pursuant with Section 7 of the Endangered Species Act (ESA), potential impacts of the proposed project on protected species were evaluated by the Corps on behalf of the 70th RRC in a Biological Evaluation (BE) submitted to USFWS and NOAA Fisheries in July 2004. The BE concluded that the proposed action would not adversely affect any species protected under the Act. A letter from NOAA Fisheries concurring with the determinations made in the BE was received on August 18, 2004 (Consultation #2004/00848). A copy of this concurrence letter, as

well as subsequent correspondence regarding minor changes to the project since the submittal of the BE, can be found in Appendix C. The USFWS has not yet completed their review.

Potential negative effects to protected species discussed in the BE include those associated with turbidity and metal leaching as described in Section 4.2.1. The salmonid life history stages requiring the lowest suspended sediment concentration—spawning, incubation, and fry rearing—do not occur in project action area. No in-water work will occur between March 1 and August 16. This closure period corresponds to the portion of the year when Chinook and bull trout are most likely to be present in nearshore marine waters. Finally, any disruptions to benthic production resulting from any construction-related sediment discharges will be temporary and highly localized, therefore having no significant impacts on prey populations. Thus, the potential for any harm to listed fish species attributable to increased turbidity or contaminant resuspension will be low.

The generation of additional noise from the operation of heavy equipment, especially pile drivers, may also have a negative effect on any bald eagles and salmonids, and Steller sea lions in the project area. However, short-term impacts of any sound disturbance related to construction activities are more likely to result in displacement of animals rather than injury. No bald eagle nests are located within two miles of the project site.

The BE concluded that the proposed action is **not likely to adversely affect** the bald eagle (*Haliaeetus leucocephalus*), Coastal/Puget Sound bull trout (*Salvelinus confluentus*), Puget Sound Chinook salmon (*Oncorhynchus tshawytscha*), and Steller sea lion (*Eumetopias jubatus*). The project will have **no effect** on the humpback whale (*Megaptera novaeangliae*), leatherback sea turtle (*Dermochelys coriacea*), or marbled murrelet (*Brachyramphus marmoratus*).

4.3 Cultural Resources

No impacts to cultural resources are anticipated to result from the proposed construction activities. On April 23, 2004, the Washington State OAHP concurred with the Army determination that no historic properties will be adversely affected as a result of the proposed project (Log No: 042304-01-COE-S). In the event that archaeological or historic materials are discovered during project activities, work in the immediate vicinity will be discontinued, the area secured, and an Army archaeologist contacted immediately. The Army archaeologist will in turn determine if an inadvertent discovery has occurred and will contact the concerned tribes and OAHP to arrange for evaluation and treatment of the material.

4.4 Air Quality

Construction is not expected to result in significant air quality degradation. Construction activities are estimated to last less than five months. Construction vehicles and heavy equipment will generate gasoline and diesel exhaust fumes, carbon monoxide, and dust on roadways. There will be a temporary and localized reduction in air quality due to emissions from heavy machinery. These emissions will not exceed EPA's *de minimis* threshold levels (100 tons/year

for carbon monoxide and 50 tons/year for ozone) or affect the implementation of Washington's Clean Air Act implementation plan.

4.5 Land Use

The proposed pier repair work would not change existing conditions in the project area. The current land use is consistent with surrounding land use patterns, as well as land use policies and goals governing the area.

4.6 Noise

Construction activities associated with the proposed action will increase ambient noise conditions in the project area. However, these impacts will be short term; construction activities will occur over a four to five month time frame. No sensitive human noise receptors are located in close proximity of the project. Peak construction noise emissions will be associated with pile driving; this element of the project is expected to occur over two months. Peak noise levels 50 feet from pile driving would be as high as 105 dBA (EPA 1978). Sites in flat-lying areas, such as the Pier 23 site, experience construction noise attenuation at a rate of 6 dBA for each doubling for distance between the source and the receptor (EPA 1978). During pile driving, the residences lying approximately 0.5 mile to the north of Pier 23 would therefore experience peak level noise of approximately 70 dBA. Based on similar construction activities, operation of other heavy equipment at the site would likely generate noise (at 50 feet) between 80 and 90 dBA (EPA 1978). Under the normal operating conditions at the site, areas 0.5 mile from the Pier 23 property would experience noise between 45 and 55 dBA. For the sake of comparison, the range of human speech is between 50 and 70 dBA at one meter (U.S. Department of Housing and Urban Development 1985). These estimates are likely high, as the formula used to calculate them assumes no intervening obstructions (line-of-sight).

As discussed in Section 4.2.1, the increase in ambient noise levels is likely to be the most geographically widespread impact of the proposed action. However, the size of this increase will be minimized through the use of a vibratory extractor and the likely use of a vibratory hammer. In addition, no sensitive noise receptors are located in close proximity to the site. Therefore, impacts will not be significant.

4.7 Aesthetics

The proposed pier repair work would not change existing conditions in the project area.

5. CUMULATIVE EFFECTS

NEPA requires the evaluation of cumulative impacts to assess the overall effect of a proposed action on resources, ecosystems, or human communities in light of past, present, and reasonably foreseeable future projects. The cumulative impact analysis includes actions that are Federal, non-Federal, and by private entities.

The historic habitats of Commencement Bay have been altered by previous dredging, filling, sewage and industrial discharges, and other anthropogenic activities over the past 100 years. A portion of Commencement Bay was designated as a Superfund site in 1981. Toxic chemicals and heavy metals introduced into the bay from a number of industrial activities continue to have adverse effects on the aquatic environment including benthic organisms, fish, marine mammals, and marine birds. In 1993, the effects of these changes were assessed in the Commencement Bay Cumulative Impacts Study (Corps 1993). The historic trend in Commencement Bay is one of degradation, particularly with respect to habitat quantity and water/sediment quality.

Cleanup efforts are ongoing within and around the bay, and there is a general trend of improving habitat conditions. Continued cleanup efforts, such as dredging and capping of contaminated sediments in the neighboring Hylebos waterway, may result in temporary stress to species utilizing the bay, but long-term effects of these efforts are expected to be beneficial.

Reasonably foreseeable future actions planned for Commencement Bay, the Hylebos Waterway, and the Blair Waterway were identified by querying the City of Tacoma govME web site (<http://govme.cityoftacoma.org/govme/panelBeta/permitInfo/LandUse/landUse.aspx>) for land use notices and the Seattle District Regulatory Branch permit application database (RAMS). Several projects similar to the proposed project (i.e., involving maintenance of existing pier or moorage facilities) are planned for this area, along with some restoration actions. Two permit applications involving a large amount of dredging, wharf construction, and pier reconfiguration on the Blair Waterway were also found. Overall, these reasonable foreseeable future actions would tend to maintain or improve habitat conditions in the project vicinity, as any large projects with substantial impacts would require mitigation, thereby avoiding further significant degradation and a reversal of current trends.

Cumulative effects of the proposed action must be also considered along with the effects of all the upgrades the Army Reserve has recently completed and/or has planned for this site. The project area is highly disturbed, and the pier repair project will not restore the area to historic conditions. However, like Commencement Bay as a whole, the overall trend at this site is one of improvement. The recently completed upland construction activities have resulted in improved stormwater collection and treatment. Petroleum-contaminated sediments have been removed from the property's shoreline. The shoreline reconstruction activities planned for late summer and early fall 2004 will remove fill from intertidal habitats and provide enhanced migratory corridors for juvenile salmonids. The Army Reserve also plans to remediate contaminated sediments on the Pier 23 property under the direction of the Department of Ecology in 2005 or 2006.

Any adverse impacts associated with all these activities have been and/or will be temporary, occurring primarily during construction, and localized to the general project site. The mitigation measures employed as part of project designs (new stormwater system, fish-friendly habitat features), and the focus on removal of contaminated material from the property, will result in a net positive benefit from a biological perspective. Overall, these projects are consistent with recent trends in the project area but will not result in improvements on the scale of Superfund clean-up actions. When considered together, and in light of the past trend of loss in Commencement Bay, the cumulative impacts of the upland construction, shoreline

reconstruction, pier repair, and sediment remediation projects would not significantly affect the quality of the human or natural environment.

6. ENVIRONMENTAL COMPLIANCE

6.1 National Environmental Policy Act

This Environmental Assessment (EA) satisfies the documentation requirements of the National Environmental Policy Act (NEPA). A draft EA and draft Finding of No Significant Impact (FONSI) was available for public comment between September 20 and October 19, 2004.

One comment letter was received from the Washington Department of Natural Resources (DNR). After review of orthophotos and management overlays, DNR determined that a portion of the pier may extend onto State owned aquatic lands managed by DNR. They requested additional information about the proposed work and ownership of the project area. Realty records were reviewed to prepare a response to this comment. Pier 23's submerged lands, including the aquatic lands outside the meander line (low tide line) are controlled by the United States under a Land Lease from the Port of Tacoma. The Port of Tacoma had authority to manage and rent these lands to third parties under Aquatic Lands Management Agreement No. 20-080007, dated 1 October 1984, between the Washington State Department of Natural Resources and the Port of Tacoma.

A FONSI signed by the Commander of the U.S. Army Reserve, 70th Regional Readiness Command can be found in Appendix D.

6.2 Endangered Species Act

In accordance with Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended, Federally funded, constructed, permitted, or licensed projects must take into consideration impacts to Federally listed or proposed threatened or endangered species.

Pursuant with Section 7 of the ESA, potential impacts of the proposed project on protected species were evaluated in a Biological Evaluation (BE) submitted to USFWS and NOAA Fisheries in July 2004. The BE concluded that the proposed action would not adversely affect any species protected under the Act. A letter from NOAA Fisheries concurring with the determinations made in the BE was received on August 18, 2004 (Consultation #2004/00848). A copy of this concurrence letter, as well as subsequent correspondence regarding minor changes to the project since the submittal of the BE, can be found in Appendix C. The 70th RRC has not yet received a concurrence letter from USFWS; however, USFWS staff have indicated that a concurrence letter will be completed soon. No contracts will be awarded or work begun until the Section 7 consultation with USFWS is complete.

6.3 Clean Water Act

Under Section 404 of the Clean Water Act (CWA), a permit is required for discharges of dredged or fill material into water of the United States. Under Section 401 of the CWA, a certification ensuring that a discharge will comply with State water quality standards is required.

Placement of pilings constitutes a discharge of fill material and requires a Section 404 permit only when such placement has the effect of a discharge of fill material. Applicable guidance indicates that pilings act as fill where: (1) the pilings are so closely spaced that sedimentation rates are increased, (2) the pilings effectively replace the bottom of the waterbody, (3) the pilings reduce the reach or impair the flow of circulation of a waterbody, or (4) the pilings result in the adverse alteration or elimination of aquatic functions (Federal Register 58(163), p. 45036). Significant factors in determining whether placement of pilings has the effect of fill material are how densely the piles are placed, the size of the pilings, the ground clearance of the structures built on the pilings, and the overall areal coverage of the structures built on the pilings (Federal Register 58(163), p. 45030).

The Army Reserve submitted project information to the Regulatory Branch of the U.S. Army Corps of Engineers, Seattle District and Washington Department of Ecology for review. The Corps' Regulatory office determined the proposed placement of pilings does not constitute a discharge of fill material. Therefore, no 404 permit or 401 certification is required.

6.4 Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 prohibits the unauthorized obstruction or alteration of any navigable water of the United States. Activities that involve the construction of dams, bridges, dikes etc. across any navigable water, or placing obstructions to navigation outside established Federal lines and excavating from or depositing material in such waters, require permits from the Corps. The Corps conducts public interest reviews to ensure that proposed projects comply with Section 10, and as part of these reviews coordinates with other Federal, State, and local agencies.

A Rivers and Harbors Act Section 10 review occurred concurrent with the Clean Water Act Section 404 review described in section 6.3 above. The Corps' Regulatory office issued a letter authorizing the work under Nationwide Permit 3 (Maintenance) on November 16, 2004 (Reference #200400911).

6.5 Coastal Zone Management Act

The Coastal Zone Management Act of 1972, as amended, requires Federal agencies to carry out their activities in a manner that is consistent to the maximum extent practicable with the enforceable policies of a state's approved Coastal Zone Management (CZM) Program. The Shoreline Management Act of 1972 (RCW 90.58) is the core of authority of Washington's CZM Program. Primary responsibility for the implementation of the SMA is assigned to local government. The City of Tacoma implemented the SMA through the preparation of a Shoreline Master Program, codified in Chapter 13.10 of the Tacoma Municipal Code, which has been approved by the Department of Ecology.

Section 173-27-040(b) of the Washington Administrative Code exempts normal maintenance of existing structures from substantial development permit requirements. The proposed action will simply restore the pier to a state comparable to its original condition before damage by the elements occurred. Work will not extend beyond the footprint of the original project, and will

not cause substantial adverse effects to shore resources or the environment. Section 13.10.005 of the Tacoma Municipal Code adopts the WAC 173-27-040 exemption of normal maintenance activities. The Army Reserve therefore considers the pier repair proposal to be consistent to the maximum extent practicable with the State of Washington Shoreline Management Program.

A coastal zone consistency statement was sent to the Department of Ecology on August XX, 2004. The 70th RRC has not received correspondence from the Department of Ecology indicating concurrence with or objection to the Federal consistency determination. Pursuant to Federal Coastal Management Consistency Regulations, a Federal agency may presume State agency concurrence if a State's response is not received within 60 days from receipt of the Federal agency's consistency determination [15 CFR 930.41(a)].

6.6 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (16 USC 470) requires that a federal agency having direct or indirect authority to issue a license authorizing an undertaking shall take into account the effect of the undertaking on historic properties.

The Section 106 process includes research and field investigation in consultation with the Washington State Office of Archaeology and Historic Preservation (OAHP), the Advisory Council on Historic Preservation, concerned Tribes, and local governments. The process generally includes identifying historic properties that may be affected by the project; gathering information sufficient to evaluate the eligibility of properties found for the National Register; and consulting among agencies and other concerned parties to avoid or mitigate adverse impacts on significant properties.

Cultural resources investigations for this project included a search of the National Register of Historic Places, the Washington Office of Archaeology and Historic Preservation (OAHP) electronic historic site database, other background research, and an archaeological reconnaissance survey. There are no historic properties listed in the NRHP or the OAHP database within or close to the area of potential effects.

On April 23, 2004, the Washington OAHP concurred with the Army determination that no historic properties will be adversely affected as a result of the proposed project (Log No: 042304-01-COE-S). This letter can be found in Appendix C. In the event that archaeological or historic materials are discovered during project activities, work in the immediate vicinity will be discontinued, the area secured, and an Army archaeologist contacted immediately. The Army archaeologist will in turn determine if an inadvertent discovery has occurred and will contact the concerned tribes and OAHP to arrange for evaluation and treatment of the material.

6.7 Magnuson Fishery Conservation and Management Act

The Magnuson Fishery Conservation and Management Act requires Federal agencies to consult with the National Marine Fisheries Service (NMFS) regarding actions that may affect Essential Fish Habitat (EFH) for Pacific coast ground fish, coastal pelagic species, and Pacific salmon. The Act defined EFH as "those waters and substrate necessary to fish for spawning, breeding,

feeding, or growth to maturity. Descriptions of EFH are provided in Fishery Management Plans produced by the Pacific Fisheries Management Council.

The project area is designated as EFH for various life stages of 17 species of groundfish, 5 coastal pelagic species, and three species of Pacific salmon. An evaluation of the proposed action's effects on EFH was included in the Biological Evaluation submitted to NOAA as part of the ESA Section 7 consultation. This evaluation concluded that the proposed action will not reduce the quality and/or quantity of EFH. No adverse effects to EFH are expected to result from the proposed action. NOAA concurred with this determination in their August 11, 2004 letter (Appendix C).

6.8 Clean Air Act

The Clean Air Act required states to develop plans, called State implementation plans (SIP), for eliminating or reducing the severity and number of violations of National Ambient Air Quality Standards (NAAQS) while achieving expeditious attainment of the NAAQS. The Act also required Federal actions to conform to the appropriate SIP. An action that conforms with a SIP is defined as an action that will not: (1) cause or contribute to any new violation of any standard in any area; (2) increase the frequency or severity of any existing violation of any standard in any area; or (3) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The project area is not located in a non-attainment area, and any adverse impacts to air quality associated with the project will be temporary and highly localized, so the project will not cause or contribute to any new violation of any standard in the project area.

6.9 Executive Order 12898 - Environmental Justice and Child Protection

Executive Order 12898 requires all Federal agencies to seek to achieve environmental justice by "identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Generally, the environmental justice assessment effort seeks to identify any minority or low-income communities affected by a proposed action, the health and safety risks associated with a proposed action, and the availability of information to affected communities regarding a proposed action and its potential effects.

Pier 23 is located in the Port of Tacoma Industrial yard within the City of Tacoma. This area is highly industrial in nature and no residential communities (including minority or low-income communities) are located within the area. The nearest residential area is a neighborhood of single-family homes approximately 0.5 mile north of the proposed site. This neighborhood is separated from the proposed site by Hylebos Waterway. Moreover, no children live in the general vicinity of the proposed action. The site is largely inaccessible, and no facilities or activities in the area involve or attract children.

The proposed action does not involve the siting of a facility that will discharge pollutants or contaminants, so no human health effects would occur. Pier maintenance would not negatively affect property values in the area, or socially stigmatize local residents or businesses in any way.

No interference with Native American Nations' treaty rights would result from the proposed project. The proposed action will not have any disproportional adverse impacts on minority or low-income communities, or have significant adverse impact on children's health and safety.

6.10 Executive Order 13175 - Consultation and Coordination With Indian Tribal Governments

Executive Order 13175 requires all Federal agencies to establish regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.

The proposed action would not have substantial direct effects on one or more Indian tribes. The 70th RRC consulted with the Puyallup Tribe, which has treaty fishing rights in the project area, early in the process of developing alternatives for the project. No tribe has raised any concerns about the proposed action.

7. CONCLUSION

The repair of Pier 23 will not result in significant impacts to the human or natural environment. Therefore, the proposed project does not constitute a major Federal action, and an environmental impact statement is not required. This EA fulfills the requirements of the National Environmental Policy Act and Army Regulation 200-2. Coordination with other agencies has been conducted as required by the Endangered Species Act.

8. REFERENCES

City of Tacoma. 1997. Six-Year Comprehensive Transportation Program, 1998-2003. Public Works Department. June 1997.

Duker, G., C. Whitmus, and E.O. Salo. 1989. Distribution of Juvenile Salmonids in Commencement Bay, 1983. Fisheries Research Institute, University of Washington School of Fisheries.

Environmental Protection Agency. 1978. Project Noise Levels: Condensed Version of EPA Levels Document. November 1978.

Feist, B.E., J.J. Anderson, and R. Miyamoto. 1992. Potential impacts of pile driving on juvenile pink (*Oncorhynchus gorbuscha*) and chum (*O. keta*) salmon behavior and distribution. FRI-UW-9603. U.W. Fisheries Research Institute.

Haerberlin, H. and E. Gunther. 1930. The Indians of Puget Sound. University of Washington Press. Seattle.

Hart Crowser. 2000. Geotechnical Engineering Design Recommendations for Pier 23 Wharf Improvements. Prepared for Berger/ABAM, Contract J-7283.

Hart Crowser. 2004. Final Remedial Design Investigation Sediment and Groundwater Sampling and Analysis Pier 23, Phase II Tacoma, Washington. Prepared for the U.S. Army Corps of Engineers, Seattle District, Contract DACA67-02-D-2002.

Jeffries, S. J., P.J. Gearin, H.R. Huber, D.L. Saul, and D.A. Pruett. 2000. Atlas of Seal and Sea Lion Haulout Sites in Washington. Washington Department of Fish and Wildlife, Wildlife Science Division, Olympia WA.

National Oceanic and Atmospheric Administration – Fisheries. 2003. Endangered Species Act – Section 7 Consultation Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Hood Canal Bridge Retrofit and Replacement Project. NOAA Fisheries No. 2002-00546.

Nightingale, B. and C. Simenstad. 2001. Overwater Structures: Marine Issues White Paper. Submitted to: Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation.

Nightingale, B. and C. Simenstad. 2002. “Artificial night-lighting effects on salmon and other fishes in the Northwest.” Paper presented at the Ecological Consequences of Artificial Night Lighting Conference, February 23-24, 2002, sponsored by The Urban Wildlands Group and the UCLA Institute of the Environment.

Pentilla, D. and D. Doty. 1990. Results of 1989 eelgrass shading studies in Puget Sound. Progress Reports Data. WDFW Marine Fish Habitat Investigations Division.

Poston, T. 2001. Treated Wood Issues Associated with Overwater Structures in Marine and Freshwater Environments White Paper. Submitted to: Washington Department of Fish and Wildlife, Washington Department of Ecology, and Washington Department of Transportation.

Roni, P. and L. Weitkamp. 1996. Environmental Monitoring of the Manchester Naval Fuel Pier Replacement, Puget Sound, Washington, 1991-1994. Prepared for the Department of the Navy, Naval Facilities Engineering Command, Western Division; and Coastal Zone and Estuarine Studies Division, NMFS, NOAA, Seattle, WA.

Shreffler, D.K. and R. Moursund. 1999. Impacts of ferry terminals on migrating juvenile salmon along Puget Sound shorelines: Phase II field studies at Port Townsend Ferry Terminal, Contract GCA-1723. Washington State Department of Transportation.

Smith, M. 1940. The Puyallup-Nisqually. Columbia University Press, New York.

U.S. Army Corps of Engineers. 1993. Commencement Bay Cumulative Impacts Study (Volume 1: Assessment of Impacts). U.S. Army Corps of Engineers, Seattle District, in coordination with the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and National Oceanographic and Atmospheric Administration.

U.S. Army Reserve. 2002. U.S. Army Reserve Pier 23 Upland Construction Final Environmental Assessment. Prepared by the U.S. Army Corps of Engineers, Seattle District for the 70th Regional Readiness Command.

U.S. Army Reserve. 2004. U.S. Army Reserve Pier 23 Shoreline Reconstruction Final Environmental Assessment. Prepared by the U.S. Army Corps of Engineers, Seattle District for the 70th Regional Readiness Command.

U.S. Department of Housing and Urban Development. 1985. The Noise Guidebook. U.S. Department of Housing and Urban Development, Washington, D.C.

U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration. 1996. Commencement Bay Programmatic Environmental Impact Statement Volume I: Draft EIS. In cooperation with Muckleshoot Indian Tribe, Puyallup Tribe of Indians, Washington Department of Ecology, U.S. Environmental Protection Agency, and U.S. Army Corps of Engineers. June 1996.

Washington Department of Fish and Wildlife and Western Washington Treaty Indian Tribes. 1994. 1992 Washington State Salmon and Steelhead Stock Inventory: Appendix 1, Puget Sound Stocks, South Puget Sound Volume. Olympia, Washington.

9. PREPARERS

This assessment draws on previous work from a variety of sources, including those listed in the reference section. Not all sources were directly credited. This is common in documents of this type and does not represent either a lack of appreciation nor an attempt to claim their work as our own. The following organizations and staff contributed to the preparation of this document:

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