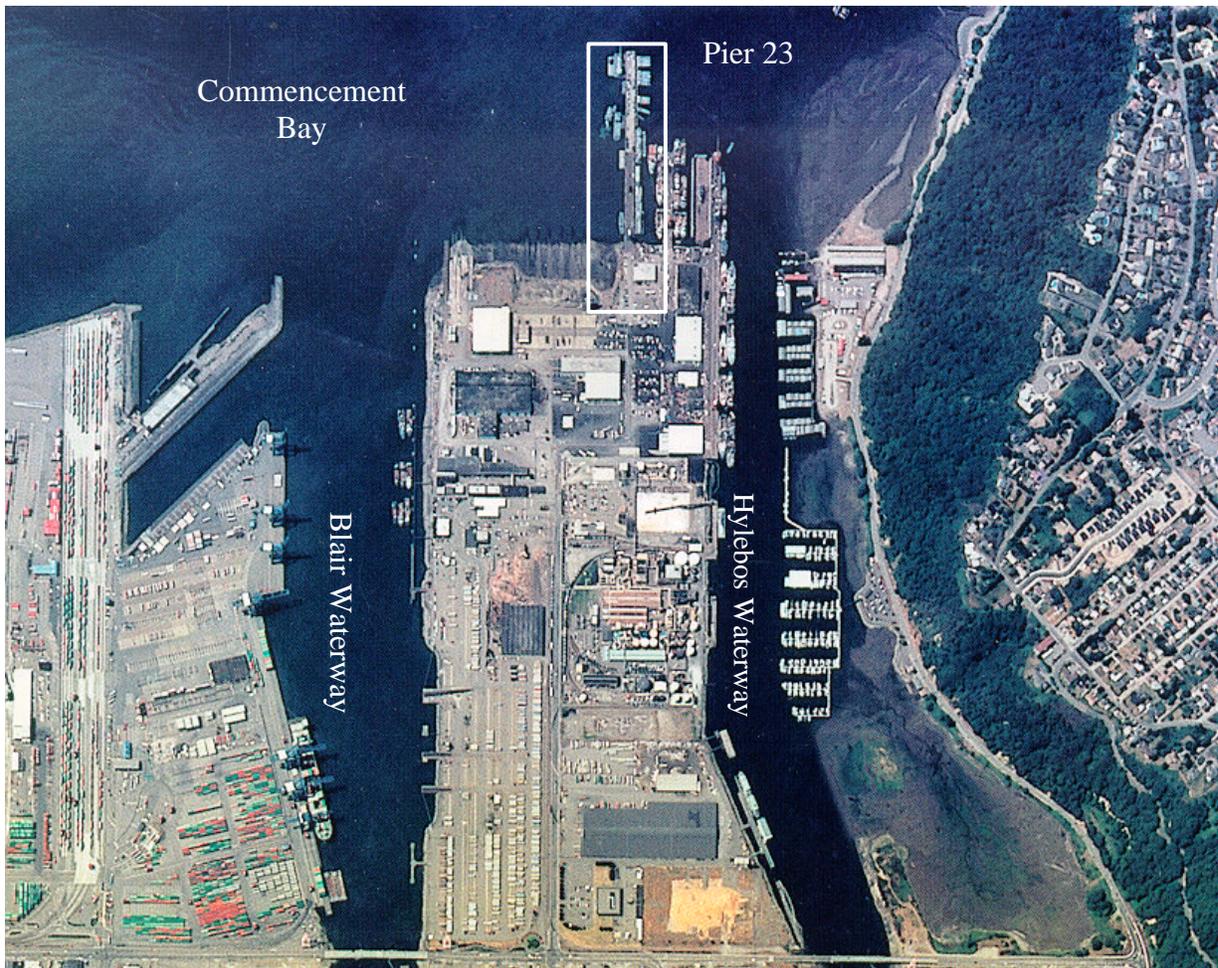


Draft Environmental Assessment

Army Reserve Pier 23 Upland Construction Pierce County, Washington

July 2001



**70th Regional
Support Command**



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

Army Reserve Pier 23 Upland Construction Pierce County, Washington

Draft Environmental Assessment July 31, 2001

Responsible Agencies: The agencies responsible for this work are the U.S. Army Reserve Command, 70th Regional Support Command and the U.S. Army Corps of Engineers, Seattle District (construction and environmental compliance agent).

Summary: The Army Reserve is proposing to upgrade facilities at Pier 23 on Commencement Bay in the City of Tacoma, Pierce County, WA. The proposed project includes demolition of existing buildings on the site, and construction of new support buildings. The pier will not be upgraded as part of this action, however it is intended that the pier will be upgraded at a later date. The new facilities will be used for training, equipment and supply storage, maintenance of equipment and ship components, and general administration. In accordance with the National Environmental Policy Act, this document examines the potential impacts of the proposed project.

The Pier 23 property is currently used primarily for ship maintenance. Training of weekend reservists also occurs, but the ability to perform adequate training is low due to the highly deteriorated condition of buildings at the site. The proposed site renovation is intended to provide facilities that are safe, economical, and adequate for the effective, realistic, and meaningful training exercises that the Army Reserve must conduct to meet their readiness and mobilization missions.

Components of the proposed action include: demolition of existing upland structures, installation of sheet piles along the shoreward perimeter of the property (for foundation support), construction of two new buildings, and general site infrastructure improvements, including stormwater system upgrades. Short-term impacts from construction-related disturbance will occur, but are expected to be insignificant. Over the long term, water quality improvements will result from the new stormwater treatment capabilities and the transfer of maintenance operations currently on the pier to the new upland facilities.

**THE OFFICIAL COMMENT PERIOD ON THIS ENVIRONMENTAL ASSESSMENT ENDS
ON AUGUST 31, 2001.**

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ACRONYMS AND ABBREVIATIONS

ARC	Army Reserve Center
BA	Biological Assessment
CBNT	Commencement Bay/Nearshore Tideflats
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
DO	dissolved oxygen
DoD	Department of Defense
Ecology	Washington Department of Ecology
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FL	fork length
HQ USARC	Headquarters, U.S. Army Reserve Command
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
PCB	polychlorinated biphenyls
PFC	Properly Functioning Condition
PPM	parts per million
RI/FS	Remedial Investigation/Feasibility Study
ROC	Record of Communication
RSC	Regional Support Command
TSS	total suspended solids
USFWS	U.S. Fish and Wildlife Service
VCP	Volunteer Cleanup Program
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WQC	Water Quality Criteria
WSSMS	Washington State Sediment Management Standards

1. INTRODUCTION

The Army Reserve is proposing to upgrade facilities at Pier 23 in Tacoma, WA. The proposed project includes demolition of existing buildings on the site, and construction of new support buildings. The facilities will be used for training, equipment and supply storage, maintenance of equipment and ship components, and general administration. The new buildings will accommodate up to 300 Army Reservists per weekend. In accordance with the National Environmental Policy Act (NEPA), this document examines the potential impacts of the proposed project.

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 shoreline (T21N, R03E, Section 27). Please see Figure 1 in Appendix A. Properties directly adjacent to Pier 23 include Tyson Foods shipyard, a warehouse facility, and parking lots to the north and east. The property directly south of Pier 23 includes a number of rails perpendicular to the shoreline which were once used to launch large ships. Activities at nearby properties include yacht manufacturing, chemical manufacturing, and metal fabrication.

1.2 Site Information

The Pier 23 property is currently used primarily for ship maintenance. Training of weekend reservists also occurs, but the ability to perform adequate training is low due to the condition of buildings at the site. Pier 23 and 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 Vessel.

The Pier 23 Property consists of two connected but distinct areas: (1) a 1,134 foot long pier located on 7.4 acres of submerged land; and (2) 3 acres of attached headland which contains a warehouse building (Building 580), temporary trailer structure, storage yard, and parking area. Please see Figure 2 in Appendix A.

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 current lease extends until 2039. 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.

The pier structure is composed of a 540 foot long wooden section constructed prior to World War II, and a 594 foot long concrete surface and piling extension which was added in 1946. The total length of the pier is 1,134-feet, with a mean width of approximately 56 feet. The wooden section is supported by approximately 500 creosote-infused timber piles. Several Army Reserve office and maintenance/storage trailers are located on the paved surface. A large (100 ton) floating crane is situated on the south side at the end of the pier and is used to haul small vessels onto the pier for maintenance purposes. An Army-owned floating dock structure is attached to the end of the pier

along its north side and is used for mooring 12 vessels. A total of 24 vessels are currently moored along the pier, ranging in size from 45 feet to the 273 foot long Logistics Support Vessel. The waters surrounding the pier are sufficiently deep to allow large vessels easy access to the dock. The shorelines consist of a mixture of old smelter slag, concrete rubble, and decaying wood and creosote piles. The foot of Pier 23 is directly connected to the upland portion of the Pier 23 property. North of the pier, most of the shoreline is covered with concrete reinforced riprap. An intertidal zone composed of gently sloping mudflat is located directly south of the pier.

The 3 acre upland area is relatively flat and slopes very gently to the west toward Commencement Bay. Most of the land surface in the immediate area of Building 580 is paved. Exposed soil and fill material with weedy patches make up a narrow area along the southeastern border and southern shoreline. All landward borders are defined by a chain link fence that surrounds the property. Building 580 is a 15,000 square foot, two-story warehouse facility constructed by the Navy prior to World War II. It has a heavy wooden framework with an exterior of aluminum siding and a hot tar roof. The building is in an advanced state of disrepair, numerous windows are broken and the roof leaks in several locations. A small portion of the building is used as classroom/training space and storage; however, most of the building has been vacant for several years due to its deteriorated condition.

Pier 23 is surrounded by the Commencement Bay/Nearshore Tidelands (CBNT) Superfund site, but has not been listed as part of the Superfund site. Sediment sampling of the Pier 23 property's submerged lands indicates that two areas exceed the Washington State Sediment Management Standard biological criterion for total petroleum hydrocarbons. Screening levels for arsenic and zinc were occasionally exceeded in these areas but were below the minimum cleanup levels for Puget Sound. The Army Reserve is engaging in a CERCLA Volunteer Cleanup Program (VCP), to be supervised by the Washington State Department of Ecology (Ecology). As part of this cleanup, an estimated 5,900 cubic yards of sediment will be removed and taken to an approved disposal site. Recent testing indicates that the sediments to be removed have low levels of contamination and can be disposed of at approved landfill sites (PNL 1999). However, detailed remediation plans are not yet available, so the sediment cleanup is not included as part of the proposed action evaluated in this document. Please see Section 4.1.4 for more information on sediment contamination in the project area.

1.3 Project Purpose and Need

The proposed site renovation is intended to provide facilities that are safe, economical, and adequate for the effective, realistic, and meaningful training exercises that the Army Reserve must conduct to meet their readiness and mobilization missions. The existing facilities at Pier 23 are substandard, costly to maintain, and do not meet existing training needs. The facilities were constructed prior to World War II and are in a state of disrepair.

The Washington State Reserve Facilities Board has determined that there are no Federal, state, or privately-owned facilities within the area that could accommodate these Reserve units at a comparable cost. Most training is currently carried out at Kandle Hall, another U.S. Army Reserve Command (USARC) facility located in Tacoma. However, the Kandle Hall facility is currently

operated at levels above design capacity. In addition, moorage facilities are necessary for marine-oriented reserve units.

2. PROPOSED PROJECT

The new Army Reserve Center (ARC) facilities would accommodate up to 300 Army Reservists per weekend with the space and areas required to conduct training as integral units. The larger facilities would also allow for development of teamwork needed for readiness and mobilization operations and missions that do not occur on vessels. Unit personnel require functional and organizational space to conduct administration and training, and to store equipment and supplies. Assembly, classroom, medical, and physical fitness spaces would also support the training missions of the units. Maintenance and maintenance training would also be conducted in a new building.

The Army Reserve proposes several new, improved, and expanded activities related to facilities, infrastructure, and level of use at Pier 23. Specific components of the Proposed Action are shown in Figures 2 - 5 (Appendix A) and outlined below.

- Demolish Building 580 and remove the adjacent temporary trailer structure (see Photographs 1 and 2 in Appendix B).
- Install steel sheet piling around the northwest and southwest perimeters of the property to prevent bank failure. Soils of the site are unstable, unconsolidated fill that will not be able to support the weight of new facilities without stabilization measures. The Z-piles would be placed above the mean higher high water (MHHW) contour to maximize the buildable area of the property while minimizing impacts to the shoreline. An average of 6 feet of shoreline waterward of the sheet pile alignment will remain undisturbed. A large concrete slab adjacent to the existing pier will be removed or partially removed prior to installation of the sheet pile (see Photographs 3 and 4 in Appendix B). The piles will be capped with concrete.
- Construct and utilize a facility on the upland area that will serve 300 USARC members. The proposed new buildings would be approximately three stories high, and would total 66,359 ft² in size. The buildings will be permanent structures with reinforced concrete foundations and floor slabs, structural steel frames, architectural standing seam metal roofs. Steel pipe piling will be driven an average depth of 89 feet to provide building foundation support.
- Construct general site and infrastructure improvements, including paving, fencing, upgrading of telecommunications/lighting/electrical systems, landscaping, and stormwater drainage. All major underground site work is expected to be completed during site preparation. After the sheet piling work is complete, it is expected that all stormwater upgrades will be in place to treat water runoff during the majority of the construction period.

All construction debris generated from demolition would be handled using standard procedures to prevent materials from falling into the water. All construction debris would be disposed of properly according to its classification. Minor amounts of asbestos, lead paint, and polychlorinated biphenyls (PCBs) from fluorescent light fixtures were inventoried in Building 580 and would be handled and disposed of according to all applicable state and federal regulations.

Temporary construction trailers will be on site during construction. The existing employee lunch trailer will be relocated on site until the new facilities are occupied. A refueling truck will visit the site at regular intervals for the fueling of construction equipment, but any required routine maintenance will be performed off site.

Since the Army Reserve will be generating/handling petroleum products and other contaminants routinely, the careful management of stormwater runoff will be important for pollution prevention. Currently, most stormwater from the Pier 23 property is discharged directly into Commencement Bay. The proposed action includes the construction of a new stormwater system, consisting of new pipes and an oil/water separator, which will improve current conditions by separating oil and grease from runoff prior to discharge into Commencement Bay. Water that is used for engine tests will also be discharged to the new stormwater system, which will reduce wastewater temperature prior to discharges to Commencement Bay. The facility will continue to operate in accordance with the Pollution Prevention Plan developed for their NPDES permit.

Construction associated with the Proposed Action would begin in fall 2001 and occur over a 12- to 24-month timeframe. During construction, vessel operations and maintenance would continue along the existing pier structure. After construction is complete, most maintenance operations would be moved to the new facilities. This includes most of the hazardous material sheds and tanks currently located on the pier. These storage facilities, used to store oil, anti-freeze, paints, solvents, and batteries, are self-contained and designed specifically for hazardous materials (i.e., lighted, heated, ventilated, and explosion-proof with fire suppression capabilities).

After construction is complete, Army Reserve personnel would continue to train at the Pier 23 property one or two weekends per month. The number of Army Reserve personnel at the new ARC during training weekends would be approximately 300 members. Overflow parking would be provided on the adjoining Port of Tacoma property when weekend training exercises are scheduled. The number of full-time personnel utilizing the Pier 23 facility during weekdays and on weekends would increase from 30 to approximately 50.

2.1 Future Actions on the Pier 23 Property

Pier 23 is in a state of disrepair and needs to be replaced. The Army Reserve is planning to remove the pre-World War II wood surfaced section of the existing pier structure and replace it with a new concrete-surfaced pier on concrete pilings. However, this work is complicated by sediment contamination under the pier (as described in Sections 1.2 and 4.1.4). Since detailed plans for sediment remediation work are not yet complete, the pier/remediation work is not included as part of the proposed action. The pier reconstruction and sediment remediation work will occur simultaneously and are currently scheduled to begin in 2004.

The Army Reserve has decided to move forward with the upland work so that construction sequencing for facility improvements will provide for an efficient use of resources. By phasing the work in this manner, the pier can continue to be used during upland construction. After completion of the proposed buildings, many of the maintenance facilities and storage areas currently on the pier will be permanently moved to the new upland facilities. As part of the pier phase of this work, shoreline improvements will be made. Slag material and abandoned creosote pilings will be removed, and native species will be planted waterward of the sheet pile wall alignment.

3. ALTERNATIVES

As required by NEPA, this EA evaluates potential effects of the Proposed Action, as well as a No Action Alternative. The Army Reserve selected these two alternatives after consulting with the Navy and the Port Authorities of Tacoma and Seattle and determining that no other suitable locations were available. Based on this preliminary scoping, the Proposed Action was the only alternative that met the Army Reserve's purpose and need.

3.1 No Action Alternative

NEPA requires that EAs include an analysis of the "no action" or existing conditions alternative, against which the effects of "action" alternative(s) can be compared and evaluated. Under the No Action Alternative, the Army Reserve would continue to use its current facilities at the Kandle Hall facility. This facility is operating at 361% utilization and is inadequate to meet the Army Reserve's administrative, educational, assembly, and maintenance needs. Under the No Action Alternative, the Army Reserve would not construct any additional facilities, nor would they undertake any of the proposed site improvements described under the Proposed Action (e.g., stormwater system upgrades). The current substandard structures at the Pier 23 facility would continue to affect the morale of Army Reserve personnel and the various units' ability to conduct effective, realistic, and meaningful training to meet their readiness and mobility missions. Building 580 is inadequate for training because it fails to meet standards outlined in Army Regulation 140-483 and is substandard for storage of military equipment because of its deteriorated state. Reserve personnel would continue to be subjected to unsafe and substandard working conditions.

3.2 Alternatives Considered but Eliminated from Further Analysis

In planning for this proposed project, the Army Reserve attempted to identify other properties that could potentially meet the project's purpose and need. The Puget Sound Naval Shipyard and Bangor Navy Submarine Base were contacted 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. Based on this initial scoping, the Army Reserve is proceeding only with the Proposed Action on the currently occupied property and the No Action Alternative.

As described in Section 2.2 above, the Army Reserve is planning to remove contaminated sediments from beneath Pier 23 and replace a deteriorated portion of the pier. The Army Reserve initially wanted to include the replacement of the wood-surfaced section of the existing pier in the proposed action, with the sediment remediation work as a second, separate action. However, during scoping the Army Reserve decided to consolidate all in-water work (sediment remediation and pier reconstruction) into one action and have the upland construction work remain a stand-alone action. The rationale was that all the upland work had to be completed before the pier was demolished, so that the new buildings could house facilities currently on the pier, and all the in-water work will occur at the same time. Shoreline improvements, such as revegetation and removal of derelict pilings, will also occur during the in-water work phase. The sediment remediation, pier reconstruction, and shoreline work will be evaluated in a subsequent NEPA Environmental Assessment. Including all work at the site, both the upland and in-water phases, in the proposed action for this document would have unnecessarily delayed construction of the upland facilities. Since the Army Reserve is currently working with the Washington Department of Ecology

(Ecology) to develop a plan of action for the sediment remediation work, there is currently not enough information available to meaningfully evaluate the effects of the in-water phase.

Much care has been taken to design the new buildings in a manner which minimizes the impacts of the facilities, and their operation, on adjacent estuarine/marine habitats. Many alternatives for siting the facility requirements were developed but eliminated from further analysis due to adverse environmental impacts (e.g., building the new facilities on a pier extension, or filling tidelands to enlarge the property).

4. EXISTING ENVIRONMENT

Commencement Bay is a deep-water embayment of approximately 5,700 acres near Tacoma, Washington. The waters are deep throughout the bay, with a maximum depth of 540 feet near the entrance. The nearshore waters shoal abruptly to remnant mudflats that become exposed during ebb tides. Commencement Bay has significant freshwater and sediment inflow from the Puyallup River and, to a lesser extent, Hylebos and Wapato creeks.

The City of Tacoma is situated on the bay's south and southeast shores. Residential portions of northeast Tacoma and the Browns Point area of Pierce County occupy the north shore of the bay. Shoreline owners include the City of Tacoma, Port of Tacoma, Pierce County, the State of Washington, the Puyallup Indian Tribe, and numerous private entities. Much of the publicly owned land is leased to private industrial and commercial enterprises. Pier 23 is located on the eastern shoreline of Commencement Bay, between the Hylebos and Blair Waterways.

4.1 Water and Shoreline Resources

4.1.1 Surface Water

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, as well as habitat degradation. In addition to chemical contamination, problem parameters include elevated bacterial levels and high temperatures (USFWS and NOAA 1996).

In the area surrounding Pier 23, Commencement Bay waters are designated as Class B (good) by the Washington Administrative Code (WAC) 173-201A-140. Characteristic uses for Class B marine waters include, but are not limited to, the following: fish migration, rearing, and harvesting; shellfish and crustacean rearing, spawning, and harvesting; recreation; and commerce and navigation. However, inner Commencement Bay is on the 1998 303(d) list of Impaired and Threatened Water Bodies in Washington due to elevated fecal coliform levels, low dissolved oxygen, and the presence of a number of contaminants in bottom sediments.

Water circulation in the bay consists of a shallow surface layer of low-salinity water from the Puyallup River, and a more uniform saline deeper layer (USFWS and NOAA 1996). The surface layer is influenced primarily by tidal flows but is also strongly affected by wind stress. Tidal currents in the bay are strong compared to other deep-water areas of Puget Sound and are capable of resuspending fine sediments of the deep bay (USFWS and NOAA 1996).

Surface water runoff is generated by precipitation falling on impervious surfaces, including roadways, buildings, paved areas, and land cleared of vegetation. Currently, surface water runoff from the headland areas at Pier 23 as well as the pier itself is discharged directly to Commencement Bay. Stormwater is addressed in Section 4.9.3 below.

4.1.2 Groundwater

The shallow groundwater system in the project vicinity is influenced by tidal fluctuations (Pacific Western Services 1995). The depth to groundwater at the site is estimated to be approximately 8 feet below surface grade. Groundwater flow direction, both at high and low tides, is to the north-northeast (Pacific Western Services 1995). The shallow groundwater underlying the site is not used as a drinking water supply nor for other known beneficial uses. Groundwater samples collected at the site in 1995 detected concentrations of heavy metals which exceed the State of Washington's Model Toxics Control Act cleanup standards (Pacific Western Services 1995).

4.1.3 Shoreline Condition

The natural shoreline of Commencement Bay has been significantly modified. Since the early 1920s, the eastern shoreline of Commencement Bay, including the area surrounding Pier 23, has been heavily industrialized. During this period the waterfront has been altered by dredging several waterways to facilitate shipping, and concurrently filling adjacent areas for industrial sites. Common shoreline features within the waterways include bulkheads with structures such as piers, wharves, and buildings extending over the water, and steeply sloped banks armored with riprap, concrete slabs, and woody and miscellaneous debris.

The upland portion of the project site consists of filled tidelands, and is directly connected to the foot of Pier 23. The shoreline southwest of the pier is mostly covered with rubble composed of concrete and other fill. A large block of concrete is also present on the shore northeast of the pier. The bank directly adjacent to the northeast side of the pier is composed of slag (probably from the Asarco smelter), concrete, bricks, and other fill material. This bank extends south in a direction roughly parallel to the lease line. The bank is reinforced with debris ranging from cobbles, to refractory bricks to old timbers. A beach composed of gently sloping mudflat is located south of this fill bank and continuing onto the adjacent property. Numerous steel rails running along the beach from the shore into the water indicates that a shipyard once occupied portions of the site.

4.1.4 Sediment Contamination

The marine sediments in the vicinity of the project were largely deposited during the formation of the Puyallup River delta. Numerous channels have been dredged into the delta since the 1920s to facilitate shipping, modifying the distribution and thickness of sediments in the area. The stratigraphy of sediments near Pier 23 consist of a series of alternating silts and sands, with chaotic sequences in those areas disturbed by dredging. The intertidal area south of Pier 23 consists primarily of silts and silty fine sands (SCS Engineers 1991a), with cobble riprap and demolition debris near the headland.

For many years, the Commencement Bay waterfront has been the site of industrial and commercial activities such as pulp and lumber mills, shipbuilding and ship repair facilities, shipping, marinas, chemical production, concrete production, aluminum smelting, oil refining, food processing,

automotive repair shops, and railroad operations. As a result of these and other activities, a large portion of the sediments in Commencement Bay are contaminated with metals, including arsenic, lead, copper, and mercury, and organic compounds including polychlorinated biphenyls (PCBs), dibenzofurans, chlorinated pesticides, phthalates, and polycyclic aromatic hydrocarbons (SCS Engineers 1991a). In 1983, many of the contaminated areas were designated as the Commencement Bay/Nearshore Tideflats (CBNT) Superfund site, which is on the CERCLA National Priorities List (NPL).

The boundaries of the Superfund site include 10-12 square miles of shallow water, shoreline, and adjacent land. In a 1989 Record of Decision, the Environmental Protection Agency determined that source control and sediment cleanup were needed at eight contaminated sediment problem areas. The Hylebos Waterway was among those eight problem areas, and certain sections of the waterway were designated for further investigation. One of these areas is at the mouth of the Hylebos; the boundary for this problem area is the northern lease line of the Pier 23 property. Port of Tacoma Pier 24 & 25 properties are currently undergoing investigation to determine the nature and extent of contamination and propose alternatives for cleanup.

Pier 23 is surrounded by the CBNT Superfund site, but the Pier 23 property was not included as part of the Superfund site.¹ Analysis of subtidal marine sediments collected along the length Pier 23 in 1991, 1995, 1997, and 1998 detected the presence of heavy metals (arsenic, cadmium, copper, mercury, zinc and tributyl tin) in concentrations exceeding the Sediment Quality Objectives set forth in the CBNT Record of Decision. The distribution of the contamination is erratic, with elevated concentrations occurring at random locations.

Pier 23 was carried into the feasibility stage of the CERCLA Remedial Investigation/Feasibility Study process because two sampling locations exceeded the Washington State Sediment Management Standards (WAC 173-204-520) during the Remedial Investigation. Total petroleum hydrocarbons exceeded a reference value for cleanup at one of the sample locations north of the pier. Screening levels for arsenic and zinc were occasionally exceeded in two shallow subtidal/intertidal sites on either side of the pier, but the exceedances were below the minimum cleanup levels for Puget Sound (WAC 173-204-520). All other locations around the pier passed the regulatory criteria and require no further analysis (PNL 1999). The 70th RSC is currently working with the Department of Ecology (Ecology) and the Port of Tacoma to develop a plan to address this contamination.

¹ Prior to Army Reserve occupation, the Pier 23 property was leased to the Washington Army National Guard (WANG). In October 1995, the entire WANG operation was transferred to the Army Reserve. While under the control of the National Guard, the facility was placed on the Federal Facilities Docket, a listing of Federal facilities eligible (although not officially nominated) for listing on the CERCLA National Priorities List (NPL). In response to this listing and as required by the CERCLA, the WANG prepared a Preliminary Assessment and Site Investigation (PA/SI) and submitted the documents to EPA Region X for review. In October 1995, the EPA notified the WANG that they had completed their review, but had not made a final determination on the status of the property. In April 1997, the EPA notified the 70th RSC that they had evaluated the data on the site and as an alternative to inclusion in the CB/NT Superfund activities, recommended that cleanup on the property be pursued under the oversight of the Washington Department of Ecology (Ecology). Since then, the 70th RSC has initiated contact with the Ecology, entered the site into the Defense Site Environmental Restoration Tracking System, and officially requested funding to pursue remedial activities. The 70th RSC has completed a Pier 23 Management Plan that summarizes the existing data and Courses of Action, a Remedial Investment and Baseline Risk Assessment (1999), and a Remedial Feasibility Study (2000).

The most recent sampling was conducted at four different sites in the intertidal zone in 1998 and 1999 (PNL 1999). Samples were analyzed for chemical concentrations and bioassay tests were conducted to determine toxicity. Chemical analysis of the samples indicated the presence of zinc and total petroleum hydrocarbons at levels which exceeded regulatory screening levels. Bioassays of samples collected from the same sites indicated that the sediment failed State of Washington biological criteria.

4.2 Soils, Seismicity, and Topography

4.2.1 Soils

Upland soils adjacent to Commencement Bay consist almost entirely of fill material overlying natural delta sediments. Soil borings on the Pier 23 property identified intermittent layers of sand and silt with fill debris along the shore (Hart Crowser 2000). Construction debris was also used as fill for headland construction. Most of the land surface at the site and adjacent properties are paved. North of the pier, the area is paved and most of the shoreline is covered with reinforced concrete riprap. Exposed soil areas are present along the southern side of the site; this intertidal area consists primarily of silts and silty fine sands with overlying demolition debris and fill material.

Investigations conducted on the Pier 23 property for the Washington Army National Guard concluded that waste disposal practices and facility operations in the past, both on and off site, may have resulted in contamination of the property (SCS Engineers 1991b). Elevated levels of petroleum hydrocarbons, organotin, arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc have been found in soil and tideflat samples collected at the site (SCS Engineers 1991 and Pacific Western Services 1995). In general, concentrations did not exceed published or estimated MTCA sediment cleanup levels. However, cadmium in one soil sample and mercury in three samples exceeded MTCA standards. No PCBs or volatile organic compounds were detected in these soil samples. Most soils at the site are not exposed due to development at the site (e.g., pavement, structures).

4.2.2 Seismicity

The entire Puget Sound region is seismically active and susceptible to damage from earthquakes. Seismic hazards include ground failure, ground shaking, liquefaction, and the triggering of landslides. Ground shaking and associated ground failure are the principal cause of damage due to earthquakes. The potential for liquefaction of some soils is believed to greatly increase the potential for damage from seismic hazards.

Liquefaction, the tendency for soil particles to lose their structural cohesion and behave like a liquid during seismic agitation, occurs when earthquakes cause water-saturated soil particles to become physically rearranged. Soils underlying the site consist of unconsolidated sand and silt which is permanently saturated due to the high ground water table, and hence permanently susceptible to liquefaction.

4.2.3 Topography

The site is located at the terminus of the Puyallup River delta, and is dominated by low-lying filled tide flats. High bluffs are present to the northeast side of the bay, and hills are present on the

southwest side. The area of exposed headland at Pier 23 is relatively flat, with a gentle slope to the west, toward Commencement Bay.

4.3 Hazardous Materials

There are two types of hazardous materials present at Pier 23, those that are present as part of the environment (i.e., contaminated soils, sediment, groundwater) and those that are used as part of the operations of the facility.

Several heavy industries, including boat builders, refineries, smelters, and log yards have been located along the Hylebos Waterway, just north of Pier 23. Due to the intensity of current and historical industrial activity, the waterway has been included within the Commencement Bay Nearshore/Tideflats Superfund site. Although Pier 23 has not been identified as one of the problem properties, the site is in the vicinity of several documented environmental “areas of concern” within the Hylebos Waterway.

Ship maintenance is the probable source of historic on-site contamination of sediments around Pier 23. A pollution prevention program implemented by the Army Reserve addressed this problem in more recent years. Likewise, CBNT cleanup actions controlled or eliminated contaminant sources outside the Pier 23 site. The Port of Tacoma has performed extensive work on a storm drainage system as part of the Industrial Yard Catch Basin Investigation and Cleanup. New storm water drainage systems were installed in 1995 and 1996 including sediment traps and oil/water separators. The EPA removed the Blair Waterway from the CBNT Superfund Site list following removal of contaminated sediments by dredging.

Pier 23 itself has been used for industrial, manufacturing, and military purposes for the past 50 years. Currently, a limited amount of hazardous materials, including lubricants, corrosives, paints, solvents, and cylinder gases are stored on the Pier 23 property. These storage facilities are either metal sheds specifically designed to store hazardous materials or covered plastic pallets for 55-gallon drums. All storage facilities provide secondary containment in the event of a spill.

An above ground waste oil storage tank was formerly located southwest of Building 580. This tank was removed in 1989. Soil samples collected in 1991 revealed elevated concentrations of total petroleum hydrocarbons (TPH) in the area of the above ground storage tank (SCS Engineers 1991b). The concentration of TPH in this sample exceeded the MTCA clean-up standards.

Asbestos surveys were conducted on the Pier and in several buildings in 1999. Materials determined to contain asbestos included tar covering pipe fittings under the entire pier, tar and felt layers comprising the roof of Building 582 (transformer vault), and in pipe gaskets located at each valve or flange beneath the pier. Materials tested for asbestos but determined to be non-asbestos included felt paper under decking, rolled composition roofing, and various tars, caulks, sealant and insulating materials (Med-Tox 1999).

Paint chip sampling was also conducted in 1999 to determine the presence of lead. The testing results concluded that all painted surfaces in the buildings should be assumed to contain lead in measurable quantities (Med-Tox 1999).

The report also concluded that fluorescent light ballasts in light fixtures older than 1978 are assumed to contain Polychlorinated Biphenyls (PCBs) (Med-Tox 1999).

4.4 Biological Resources

4.4.1 Marine Resources

Intertidal habitat (+11.8' to -4' MLLW) is located southwest of the existing Pier 23, extending to the mouth of the Blair Waterway. The substrate is composed of a mixture of silts and sands with scattered gravels; a band of cobble bounds the upper margin, as a result of the fill placed for headland construction. This area is not vegetated. 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' to -10' MLLW) is located waterward of the intertidal habitat described above, beneath Pier 23, and northeast of Pier 23. The substrate is typically unconsolidated gravel to silt (Port of Tacoma 1992). 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 phocoena*). 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' to -30' MLLW) is located further waterward of the shallow subtidal habitat described above. The substrate is primarily mud. 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. The project site does not provide important habitat for shorebird and waterfowl species (USFWS and NOAA 1996).

4.4.2 Terrestrial Resources

Recent surveys of the Pier 23 area reported a greatly modified environment with limited species diversity and habitat value (SCS Engineers 1991b). The only portion of the site with vegetation is a small patch of weedy, herbaceous vegetation alongside the southwestern property line and the southern shoreline (SCS Engineers 1991b). The property itself has no undisturbed native vegetation.

Scattered patches of weedy vegetation within gravel and concrete road-side strips, as well as similar vegetation types within the sandy shoreline/riprap edge of the property (SCS Engineers 1991b). Species most likely to be found here include those found in the Compositae (Aster) and Graminae (Grass) families.

Bird and mammal diversity is very low due to the monotypic vegetation community and lack of habitat, which limits the amount of available cover, forage, and nesting opportunities. Due to the lack of habitat, only wildlife species that are adapted to human presence and disturbance are likely to occur in the project vicinity. Species such as the house sparrow (*Passer domesticus*), American crow (*Corvus brachyrhynchos*), black rat (*Rattus rattus*), and deer mouse (*Peromyscus maniculatus*) may use this site. Most of the avian use is limited to perching on pier structures.

Gulls (*Larus* spp.) have historically nested on the roof of Building 580, on adjacent sheds, and on some portions of the pier structure. So that nests were not destroyed during the demolition of Building 580, a deterrent system consisting of a grid of kevlar lines and metal cables was installed at the suggestion of WDFW. The system, installed during the spring of 2001, was only moderately successful, as six nests were established on the roof. The gridline system was eventually removed after four months since the demolition of Building 580 was delayed until after the nesting and fledging seasons.

4.4.3 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 4.5 below.

A variety of forage fish utilize Commencement Bay 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.

Great blue herons (*Ardea herodias*) are classified as a "priority species" by WDFW due to their vulnerability during nesting. Great blue herons are commonly observed in Commencement Bay, and may forage in the intertidal habitat available on the project site. The WDFW Priority Species and Habitats database indicated that a heron nesting colony is located approximately 0.5 mile from the Pier 23 site. However, additional information from the WDFW urban wildlife biologist for Pierce County indicates that this colony experienced a bald eagle incursion in 2000 and has been abandoned (M. Terhee, pers. comm., July 10, 2001).

Federal species of concern that may occur in the project vicinity include the long-eared myotis (*Myotis evotis*), the long-legged myotis (*M. volans*), and Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*). No site-specific data exist (Wunder, pers. comm., February 5, 1998) and no known occurrences have been recorded in the project area. These three species, though, have been known to inhabit man-made structures, including abandoned buildings and mines as well as the undersides of bridges and piers (Nagorsen 1993). Due to the history of intense industrial activity and frequency of disturbance at the Pier 23 property, it is not expected that any of these species would inhabit the project area.

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).

4.5 Threatened and Endangered 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 the Biological Evaluation (BE) prepared for the proposed project. This document is available online at <<http://www.nws.usace.army.mil/ers/envirdocs.html>> and is briefly summarized in section 5.5. The project area is adjacent to designated critical habitat for Puget Sound chinook salmon.

Table 1. Protected Species Potentially Occuring in the Project Vicinity

Species	Listing Status	Critical Habitat
Bald Eagle <i>Haliaeetus leucocephalus</i>	Threatened	—
Coastal/Puget Sound Bull Trout <i>Salvelinus confluentus</i>	Threatened	—
Puget Sound Chinook Salmon <i>Oncorhynchus tshawytscha</i>	Threatened	Designated
Steller Sea Lion <i>Eumetopias jubatus</i>	Threatened	Designated
Humpback Whale <i>Megaptera novaeangliae</i>	Endangered	—
Leatherback Sea Turtle <i>Dermochelys coriacea</i>	Endangered	Designated
Puget Sound/Strait of Georgia Coho Salmon <i>Oncorhynchus kisutch</i>	Candidate	—

4.6 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 Indians. The Puyallup engaged in diverse economic activities including fishing, gathering, and hunting (Haeberlin and Gunther 1930).

No survey for archeological resources has ever occurred at the site. However, given the fact that the entire site has experienced extensive filling and grading over the years, the possibility of archeological resources being present at the proposed site is remote.

The area of Commencement Bay including the proposed site has been used for industrial purposes since the 1920s, including sawmills, fuel refineries, smelters, chemical manufacturers, boat builders, and military operations. The proposed site was owned and operated by the U.S. Navy from the World War II era until 1961, when the Port of Tacoma acquired title to the land. The Washington Army National Guard began leasing portions of the pier from the Port of Tacoma in 1964 (SCS Engineers 1991a). In 1995, the Army Reserve began using the Pier 23 property.

The Washington State Office of Archaeology and Historic Preservation (OAHP) has reviewed the 70th RSC's determination on potential resources at the site and concurred that none are eligible for inclusion in the NRHP. No other known historic resources are present at or near the site.

4.7 Transportation, Traffic, and Parking

The following sections describe the roadway network, weekend peak hour intersection volumes and operations, and pedestrian/bicycle/transit facilities in the vicinity of the proposed Reserve Center. On-site parking and the supply and availability of off-site parking are also addressed.

Roadway Network

The existing roadway and intersection characteristics in the vicinity of the proposed Reserve Center are illustrated in Figure 6. A detailed description of the study area's roadway network is given below.

Alexander Avenue is a two-lane arterial with a posted speed limit of 40 miles per hour (mph) north of State Route (SR) 509 and 35 mph north of Lincoln Avenue. Alexander Avenue is located east of, and parallel to, the Port of Tacoma's Blake Waterway. Its northern terminus is at the entrance of the Earley Business Center (Port Industrial Yard) and its southern terminus is at the intersection with SR 99-Pacific Highway. The roadway is in good condition and does not require resurfacing at this time.

Alexander Avenue is approximately 38 feet wide north of 11th Street and includes two travel lanes. The paved width of this road widens to approximately 48 feet south of the Alexander Avenue/11th Street intersection and includes 14 foot travel lanes and 10 foot shoulders. On-street parking was observed on both sides of Alexander Avenue at this location. Between Lincoln Avenue and SR 509, the paved width is approximately 32 feet with 13-foot travel lanes and 3-foot shoulders. At the signalized intersection with 11th Street, there exists a northbound and southbound through-lane as well as an exclusive northbound right turn lane and southbound left turn lane. A traffic signal controls the southbound traffic at the intersection with SR 509. Rail lines exist on the west side of this road between Lincoln Avenue and its northern terminus. In addition, there are a number of at-grade railroad crossings on Alexander Avenue used for transporting containers.

Taylor Way is a two to three-lane roadway located between the Blair and Hylebos Waterways and runs parallel to Alexander Avenue. Taylor Way terminates at 11th Street to the north and becomes 54th Avenue south of SR 509. 54th Avenue has a full interchange with Interstate 5, providing access to the regional highway system. The posted speed limit varies between 40 mph north of SR 509 and 30 mph north of Lincoln Avenue. The paved roadway section is approximately 24 feet wide north of Lincoln Avenue. Between Lincoln Avenue and SR 509, the paved roadway is approximately 44 feet wide and consists of 16-foot travel lanes and a 12-foot, two-way left turn lane. At the signalized intersection with SR 509 there exists an exclusive southbound left turn lane, through-lane, and shared through-right turn lane. Like Alexander Avenue, at-grade railroad crossings exist along this roadway and connect to rail lines on the east side of the road.

The City of Tacoma recently completed reconstruction of Taylor Way between 11th Street and Lincoln Avenue. The project include a new roadway surface and construction of curb and gutter on both sides of the street. These improvements were primarily necessary due to poor storm water drainage. Improvements to at-grade railroad crossings and street lighting were also completed with this project. Driveway curb-cuts were defined on both the east and west sides of Taylor Way.

SR 509 is a three- to five-lane state highway with a posted speed limit of 40 mph. It connects the Northeast Tacoma and Federal Way areas to Tacoma at Interstate 705. This roadway is also known as Marine View Drive east of the intersection with Taylor Way-54th Avenue. SR 509 is a divided four-lane highway that includes 12 foot travel lanes, 5 to 8 foot on-street bicycle lanes, and 4 foot paved shoulders west of Taylor Way. East of Taylor Way, the paved roadway is approximately 60 feet wide and includes 12 foot travel lanes and a 12 foot, two-way left turn lane. At the intersection with Taylor Way-54th Avenue, the eastbound and westbound approaches include an exclusive left turn lane, through-lane, and shared through-right turn lane. The paved roadway width south of 11th Street is approximately 44 feet and includes a 16 foot travel lanes and a 12 foot, two-way left turn lane. Rail spur lines do not cross this highway.

11th Street is a two- to five-lane roadway with a posted speed limit of 35 mph. This road no longer crosses the Blair Waterway as the bridge was closed in early 1997 to support redevelopment of the waterway. The paved roadway width varies between 52 feet and 24 feet at the 11th Street Bridge over the Hylebos Waterway. Eastbound traffic is controlled with a stop sign at the intersection with SR 509. The westbound approach at the intersection with Alexander Avenue includes an exclusive left and right turn lane. West of the Taylor Way intersection there are rail lines on the north side of the road.

Lincoln Avenue is a two-lane road with a posted speed limit of 35 mph. The eastbound approach at Taylor Way and the westbound approach at Alexander Avenue are controlled with stop signs. The roadway includes a 22 foot wide paved surface and gravel shoulders of varying width. The existing road is in poor condition and in need of repair. There are rail spur lines on the north side of the road which connect with lines along Alexander Avenue and Taylor Way.

54th Avenue is a five-lane arterial that forms the southern leg of the SR 509/Taylor Way intersection. It connects the Port of Tacoma and SR 509 with Interstate 5. The posted speed limit on this road is 35 mph. 54th Avenue includes four 12 foot travel lanes and a 12 foot, two-way left turn lane. There exists an exclusive northbound left turn lane, through-lane, and a shared through-right turn lane at the intersection with SR 509. This approach is controlled with a traffic signal.

There are no planned roadway improvements in the immediate vicinity of the proposed project (Tacoma Public Works Department, Six-Year Comprehensive Transportation Program, 1998-2003, June 1997). However, the City's 1998-2018 Transportation Improvement Project List (Unfunded Project List Amendment) recommends future roadway improvements on Alexander Avenue between 11th Street and SR 509.

Intersection Traffic Volumes and Operations

Although there is more traffic on the Port's roadways during weekday conditions, weekend traffic volumes were evaluated because the proposed facility would generate the most amount of traffic on training Saturdays and Sundays. Therefore, existing traffic volumes were collected on Saturday, November 8, 1997 during the weekend PM peak period (3:30-5:30 p.m.) at the signalized intersections of Alexander Avenue/11th Street and SR 509/Taylor Way-54th Avenue. The peak hour was determined to be 4:15 to 5:15 p.m. at the intersection of Alexander Avenue/11th Street. The peak hour occurred 15 minutes earlier (4:00-5:00 p.m.) at SR 509/Taylor Way-54th Avenue. Figure 7 illustrates the existing PM peak hour traffic volumes at the two study intersections.

The City of Tacoma has defined level of service (LOS) standards for roadways within the Port of Tacoma area. One of these standards is that 85 percent of the arterial lane miles must exhibit a LOS D or better (Tacoma Planning and Development Services Department, Transportation Program, December 1995). The study roadways are currently operating at acceptable levels of service during an average weekend day (pers. comm., Brown, D., Urban Planner, City of Tacoma, November 1997).

The operational characteristics of an intersection are determined by calculating the intersection's level of service. The intersection as a whole and its individual turning movements can be described with a range of levels of service (LOS A-F), with LOS A indicating free-flowing traffic and LOS F indicating extreme congestion and long vehicle delays. A nationally recognized level of service methodology was applied to the study intersections to estimate the existing weekend PM peak hour levels of service (Transportation Research Board, National Research Council, Highway Capacity Manual, October 1994). In most jurisdictions, LOS A-D is considered satisfactory operation, LOS E is acceptable but undesirable, and LOS F is unacceptable operation and requires mitigation measures. There are currently no adopted intersection standards for the City of Tacoma. Table 2 shows the results of the LOS calculations.

Table 2. Existing Levels of Service and Delays

Location	Weekend PM Peak Hour	
	LOS1	Delay2
<u>Signalized Intersections</u> ³		
Alexander Avenue/11th Street	A	4.4
SR 509/Taylor Way-54th Avenue	B	14.0
1. LOS = Level of service 2. Delay = Average delay in seconds per vehicle 3. LOS and delay are reported for the intersection as a whole		

Alexander Avenue/11th Street – Overall, this intersection is currently operating at LOS A during the weekend peak hour. All individual turning movements are operating in the LOS A-B range and experience little delay.

SR 509/Taylor Way-54th Avenue – During the weekend peak hour, the overall intersection is operating satisfactory (LOS B). Left-turning traffic experiences the most vehicular delay, operating at LOS C. The average through and right-turning movements experience less than 15 seconds of delay and operate at LOS B.

Pedestrian, Bicycle, And Transit Facilities

Within the study area, there are a number of sidewalks that facilitate pedestrian and bicycle movement. These sidewalks range in width and are all in good condition. Between Taylor Way and 11th Street, SR 509 has 5 foot sidewalks on both sides of the street. In addition, 5 foot sidewalks exist on both sides of 54th Avenue, south of SR 509. North of the Alexander Avenue/11th Street intersection, there is an 8 foot sidewalk east of Alexander Avenue and adjacent to the existing Naval and Marine Corps Reserve Center. The 11th Street Bridge over the Hylebos Waterway includes two 4 foot sidewalks for pedestrian and bicycle crossing of the waterway. As part of the construction on Taylor Way, the City has built a 5 foot sidewalk on the west side of the road between 11th Street and Lincoln Avenue.

At the intersection of SR 509 and Taylor Way-54th Avenue, there are pedestrian push buttons and pedestrian signal heads that assist pedestrians and bicyclists in crossing these roadways. In addition, there are painted crosswalks on all legs of this signalized intersection. The Alexander Avenue/11th Street intersection includes pedestrian push buttons and pedestrian signal heads but does not have painted crosswalks.

West of the SR 509/Taylor Way-54th Avenue intersection, there are 5 to 8 foot on-street bicycle lanes on SR 509. These bicycle lanes are the only lanes designated for bicycle use within the study area. As was mentioned above, there are 4 foot sidewalks on the 11th Street Bridge over the Hylebos Waterway. Signing encourages bicyclists to walk their bicycles across the bridge due to the narrow width of the sidewalk.

Pierce County Transit provides transit service within the study area. Route 61 (Northeast Tacoma-Browns Point) provides transit service between Downtown Tacoma and Dash Point State Park and

includes a stop on northbound SR 509 near the intersection of 11th Street. This route provides weekend service, including scheduled stops on Saturdays at approximately 11:00 a.m., 4:00 p.m., and 7:55 p.m. and Sundays at approximately 8:55 a.m., 11:55 a.m., and 5:05 p.m. Route 60 provides four and one half daily round trips between the Earley Business Center and downtown Tacoma, however, this route has no weekend service.

Parking Supply and Demand

To quantify the amount of on-site parking supply, both marked and unmarked spaces were counted. It was estimated that there are parking spaces for approximately 58 vehicles on the existing site. Four of these spaces are marked and the remaining number of spaces are unmarked. Approximately 20 of these unmarked spaces are located southwest of the existing two-story warehouse. Southeast of the warehouse there is an unmarked surface lot that can accommodate approximately 34 vehicles. On-site parking is prohibited in the areas adjacent to the warehouse due to restricted fire lanes.

Southeast of the site there is a paved parking lot that is used by employees of Graham Steel and the Tyson Seafood Group. This surface lot is well maintained and includes 185 marked parking spaces. The Army has indicated that it uses this surface lot for overflow parking on training weekends.

There is a greater demand for privately owned vehicle (POV) parking on weekends than weekdays due to Army reserve training (pers. comm., Godlewski, R., Facility Supervisor, Pier 23, November 1997). On training weekends, Reserves meet off site and carpool to Pier 23. These organized carpools minimize the parking demand and result in all on-site and approximately 30 to 35 off-site parking spaces being utilized.

4.8 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 site is located in the Puget Sound carbon monoxide non-attainment area and the Puget Sound ozone non-attainment area. Carbon monoxide, a product of incomplete combustion, is generated by automobiles and other fuel burning activities (e.g. residential heating with wood). The highest ambient concentrations of carbon monoxide tend to occur in localized areas such as major roadways and intersections during periods of low temperatures, light winds, and stable atmospheric conditions. Motor vehicles are the primary source of carbon monoxide in the project area. Ozone is a highly reactive form of oxygen created by sunlight-activated chemical reactions of nitrogen oxides and volatile organic compounds. Unlike high carbon monoxide concentrations, which tend to occur close to emission sources, ozone problems tend to be regional since ozone precursors can be

transported far from their sources. Ozone precursors are primarily generated by motor vehicle engines.

4.9 Utilities and Public Services

4.9.1 Potable Water

The Tacoma Water Department currently provides potable water to the site via a 10 inch water main. Water usage between September 1997 and October 1998 ranged from a low of about 5,000 gallons in August to a high of 383,000 gallons in March (USARC RISER Database, accessed February 8, 2000). Water is used at the Pier 23 facility to accommodate facility operations. The large use of water is a result of the needs of the vessels that dock at Pier 23.

4.9.2 Sanitary Sewer

The site utilizes the City of Tacoma infrastructure for sewer systems service. Sanitary sewer service is currently only available to the employee trailer located behind Building 580. No sewage service is provided on the pier, where portable toilets are used. Between October 1998 and September 1999, sewer usage ranged from approximately 2,000 gallons in January to about 59,000 gallons in November. The 59,000 gallons of sewage was exceptionally high; the next highest usage was only 9,000 gallons. The average is 9,500 gallons, however without January, the average would be closer to 5,000 gallons (USARC RISER Database, accessed February 8, 2000).

4.9.3 Stormwater

Currently stormwater runoff from the headland areas at Pier 23 is discharged directly to Commencement Bay via three existing out falls. The first is located directly under the pier at the shoreline, the second is located on the neighboring Pier 24 property, and the third is south of the Pier 23 property. Two outfalls are operated by the Port of Tacoma while the other is operated by the Army Reserve. Runoff currently generated on the pier itself is discharged directly to Commencement Bay.

The Port of Tacoma is in the process of upgrading current stormwater facilities. As part of this work, the existing discharge to the Hylebos Waterway will be eliminated, and runoff will be re-routed to an existing out fall to Commencement Bay near Pier 23.

4.9.4 Solid Waste

Solid waste is removed from Pier 23 by a licensed private contractor and disposed of in a permitted landfill. To the extent possible, all metal products, used oil, and anti-freeze are sent to an approved recycling center.

4.9.5 Electricity

Electricity is provided by Tacoma City Light, a municipally owned electric utility. Electricity is currently routed onto the Pier 23 property via an underground line. Between June 1998 and March 1999, electric usage ranged from 10,196 kWh in October to 109,880 kWh in June (USARC RISER Database, accessed February 8, 2000). Facilities at Pier 23 properties do not have an emergency back-up generator.

4.9.6 Natural Gas

Currently, Pier 23 is not served by natural gas. The site falls within the natural gas service area of Puget Sound Energy.

4.9.7 Law Enforcement and Emergency Services

The Tacoma Police Department has primary responsibility for law enforcement and security at Pier 23. The Tacoma Fire Department provides fire and emergency services to Pier 23, including both land and water-based response.

4.10 Land Use

The project area has been characterized by industrial uses for several decades (City of Tacoma 1993). 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. This area, the former Port Industrial Yard, was renamed in honor of long-time Port of Tacoma Commissioner Robert G. Earley in 1997.

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 UARC, 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 north and east.

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 (pers. comm. Arleth, 2/3/00). 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).

Tacoma Generalized Land Use Plan

The City of Tacoma's Generalized Land Use Plan describes where and when growth and development should occur and what types of growth and development will be permitted (City of Tacoma 1993). The Plan has designated all portions of the city for high, medium, or low intensity development. These designations refer to the intensity of permitted development. In addition, areas of the City have been given various land use designations, indicating the type of land uses permitted.

The Port of Tacoma, including the Pier 23 property, is one of two high intensity development areas designated for industrial uses. Goals and policies for high intensity industrial land encourage the development of industrial uses that provide regional employment centers and take advantage of major existing transportation infrastructure. In addition, since such types of industrial uses typically create high levels of pollution, traffic, noise, and other undesirable impacts, the goals and policies call for the concentration of such uses in specific areas and the creation of buffers between these areas and less intense land uses.

In addition, the Plan created urban growth tiers, which direct the timing of future growth and development to appropriate areas. Those areas that already are served by adequate infrastructure are designated as Tier I-Primary Growth Areas, and future growth and development will be first directed to these areas and away from areas where infrastructure is not yet adequate. The Port of Tacoma, including the Pier 23 property, lies within a Tier I-Primary Growth Area.

Shoreline Management Act

In accordance with the Federal Coastal Zone Management Act, shorelines of the State of Washington are governed by the Shoreline Management Act of 1971. The purpose of the Shoreline Management Act is to provide for management of Washington's shorelines by planning and fostering reasonable and appropriate uses for shoreline environments. The Shoreline Management Act requires local jurisdictions like the City of Tacoma to regulate shorelines according to locally adopted Master Programs (SMPs). Tacoma's SMP is called the *Master Program for Shoreline Development*, and is a section of the Land Use Management Plan 1996 Amendment (August 1996). The Master Program for Shoreline Development designates the area around the site 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."*

Significant redevelopment projects have been completed and others are on-going in the Port of Tacoma Industrial Area and surrounding Port properties.

4.11 Noise

Noise is defined as unwanted sound and can cause hearing loss, interference with human activities at home and work, and various injuries to people's health and well-being. Although hearing loss is the most clearly measurable health hazard, noise is linked to many other physiological and psychological problems. Community response to noise is generally not based on a single event but a series of events over the day and/or night. Factors found to affect the subjective assessment of the daily noise environment include the noise levels of individual events, the number of events per day, and the times of day at which the event(s) occur (Departments of the Air Force, the Army Reserve, and the Navy 1978). Noise sensitive land uses, known as sensitive receptors, include residences, schools, and hospitals and can also include parks, recreation areas, and wildlife habitat.

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 a 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: 60 dBA for residential areas; 65 dBA for commercial areas; and 70 dBA for industrial areas (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. The City of Tacoma has a similar noise ordinance limited construction noise to daytime hours (pers. comm. City of Tacoma, 1998).

4.12 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. This area includes mostly paved surfaces surrounding Building 580, a 15,000 square foot, two-story warehouse with metal corrugated siding and a low-angle metal shed roof. The building is in an advanced state of disrepair. Exposed soil and fill material with weedy patches make up a narrow area along the southeastern border and southern shoreline. All landward borders are defined by a chain link fence that surrounds the property.

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.

4.13 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." The EPA's Office of Solid Waste and Emergency Response (OSWER) is the agency responsible for coordinating the EPA's environmental justice programs. 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.

Executive Order 13045 requires all federal agencies to place a high priority on the identification and assessment of environmental health and safety risks of its programs, policies, and activities that may disproportionately affect children. This executive order recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks for a variety of reasons, including: (1) children's bodily systems are not fully developed; (2) children eat, drink, and breathe more in proportion to their body weight than adults; (3) children's size and weight can diminish protection from standard safety features; and (4) children's behavior patterns can cause them to be more susceptible to accidents.

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.

5. EFFECTS OF THE PROPOSED ACTION AND ALTERNATIVES

5.1 Water and Shoreline Resources

5.1.1 Surface Water

Proposed Action Alternative

During construction activities, soils may be deposited in the bay from site preparation activities and headland construction activities. Even with stringent construction erosion control techniques, it is possible that sediments in runoff from the headland construction would reach the bay. These impacts would be short-term and may include: increased turbidity, localized increased oxygen demand, and deposition of upland soil particles in the bay. Suspended upland particles can carry along with them heavy metals and other toxics. Given the erosion control measures which will be implemented during construction, the quantity of sediment reaching the bay will be quite small so any effects will be insignificant.

Construction of the new facility would result in increased impervious area and increased stormwater runoff generation. After installation of the new stormwater system, runoff from this area will pass through an oil/water separator before discharge. Water that is used for engine tests will also be discharged to the new stormwater system, which will reduce wastewater temperature prior to discharges to Commencement Bay. Also, after construction is complete, maintenance operations currently housed on the pier will be moved to the new upland facilities, thereby reducing the potential for accidental spills directly into Commencement Bay. The net effect of the proposed project will thus be an improvement over existing conditions.

No Action Alternative

Under this alternative, the Army Reserve would continue to use the current facilities on the Pier 23 property. No new construction would be undertaken and the existing level of activity would continue unchanged. Daily operations, although in compliance with all applicable NPDES permit conditions and the site Pollution Prevention Plan, will continue to affect the quality and temperature of adjacent surface waters. Water that is used for engine tests will be discharged directly into the bay without cooling, oil and grease will not be separated from runoff before being discharged into the bay, and heavy use of facilities on the pier will occasionally result in accidental spills.

Mitigation Measures

- Appropriate measures would be implemented as part of the construction to control stormwater and sediment runoff, and resuspension of sediments within the bay. Standard erosion control methods (e.g. silt fences) will be a requirement of contract documents. One of the first construction tasks will be the installation of new stormwater pipes and the oil/water separator, so most construction runoff from the site will have some level of treatment.
- Precautions will be taken to prevent the discharge of petroleum products, chemicals, or other material into Commencement Bay. Equipment and work vehicles will be stored on-site during construction; however, refueling will occur away from the water. No breakdown maintenance on engines will occur near the water. Numerous fuel spill kits with absorbent pads and other spill supplies will be onsite at all times

5.1.2 Groundwater

Proposed Action Alternative

Although the new facilities will be constructed above ground, encountering groundwater during construction is possible during pile driving work. The driving of sheet pile along the perimeter of the property is not expected to impact tidal flows. It is unlikely that groundwater will be withdrawn during construction activities, or operation of the new facilities. However, if removal is necessary all appropriate disposal measures will be taken.

No Action Alternative

Groundwater resources would not be affected by this alternative.

5.1.3 Shoreline Condition

Proposed Action Alternative

The proposed work will occur entirely above mean higher high water (MHHW). Most of the construction activities at the site are expected to have little, if any, impact on the waters and nearshore habitats of Commencement Bay. Demolition of the existing buildings and construction of the new buildings will occur about 100 feet from the shoreline. The sheet pile bank stabilization work and the removal of the large concrete slab adjacent to the existing pier will occur directly adjacent to the shoreline, however. This work is not expected to alter existing intertidal habitat, but given the unstable soils along a small portion of the shoreline northeast of the pier there is a chance that some slumping could occur (see Photographs 3 and 4 in Appendix B). This portion of shoreline has experienced cracking and slumping since the 2/28/01 Nisqually earthquake. Significant

slumping is not anticipated because the slag is fairly solid and cohesive. An average of 6 feet of shoreline waterward of the sheet pile alignment will remain undisturbed, with no vegetation removed. Since no “hard” structures will be on the face of the shoreline, no scour is anticipated.

As part of the in-water work phase of the Pier 23 project (as described in Section 3.2), shoreline improvements such as revegetation with native species and removal of derelict pilings will occur.

No Action Alternative

Current shoreline conditions would not be altered by the No Action Alternative.

Mitigation Measures

- The sheet pile alignment is several feet landward of MHHW. This alignment serves to maximize the buildable area of the property while minimizing impacts to shoreline and nearshore habitats.

5.2 Soils, Seismicity, and Topography

5.2.1 Soils

Proposed Action Alternative

Construction of the new facilities would significantly increase the building footprint at the site. Generally, there will not be significant earth-moving work. Construction will result in some degree of short-term, localized erosion. The extent of erosion impacts would depend upon the duration of construction, the extent of the area exposed, precipitation, and success of erosion control methods.

The Army Reserve and Corps are anticipating that contaminated soils will be encountered during construction. During site demolition, there is also a potential for finding buried oil and paint cans. If suspicious materials are encountered, work in that area will cease and samples will be taken. Any contaminated soils will be excavated and disposed in an approved landfill or appropriately treated prior to disposal elsewhere.

Long-term negative impacts to soils are not anticipated. Pavement would encapsulate any remaining contamination, thereby removing the possibility of transport via stormwater.

No Action Alternative

Under this alternative, no new construction would be undertaken so soil conditions at the site would remain unchanged.

Mitigation Measures

- Exposed soil shall be limited to active construction areas only.
- Disturbed areas shall be covered with plastic sheeting.
- Silt fences, geo-netting, and/or hay bales will be installed along the edge of the construction site.

- Upland construction will be scheduled for the drier months, to the extent possible.

5.2.2 Marine Sediments

Proposed Action Alternative

Since all construction work will occur in an upland area, no contaminated marine sediments will be disturbed. As part of the in-water work phase of the Pier 23 project (as described in Section 3.2), contaminated sediments beneath Pier 23 will be removed from Commencement Bay.

No Action Alternative

No contaminated marine sediments would be disturbed under the No Action Alternative.

5.2.3 Seismicity

Proposed Action Alternative

Since the site is situated on saturated, unconsolidated alluvial deposits covered by fill material, there is a risk of damage due to earthquakes. While this risk is higher than that posed by construction in upland areas, it is not likely to be greater than any other development along the shoreline of Commencement Bay. The pier and building design incorporate a number of seismic protections, including the use of reinforced concrete piles driven to deeper consolidated soils less susceptible to liquefaction, and the use of sheet piles around the perimeter of the upland development to reduce the risk of bank failures.

No Action Alternative

Under this alternative, no seismic upgrades to existing facilities will be made.

Mitigation Measures

- Design and construction of the facilities shall incorporate criteria to maximize the integrity of structures in the event of seismic activity.

5.2.4 Topography

Proposed Action Alternative

Significant regrading at the site is not anticipated. Compacted fill will be added landward of the sheet pile wall to provide a denser base for grade beams and floor slabs. No fill will be placed below the mean higher high water line.

No Action Alternative

Under this alternative, no new construction would be undertaken so topography at the site would remain unchanged.

5.3 Hazardous Materials

Proposed Action Alternative

During the course of daily operations at Pier 23, the Army Reserve routinely handles and generates petroleum products and other contaminants. Currently, many satellite waste accumulation areas are located on Pier 23. Once the new facilities have been constructed, most of these accumulation areas

will be moved to the upland buildings. This includes most of the hazardous material sheds and tanks currently located on the pier. These storage facilities, used to store oil, anti-freeze, paints, solvents, and batteries, are self-contained and designed specifically for hazardous materials (i.e., lighted, heated, ventilated, and explosion-proof with fire suppression capabilities). Moving them upland will further reduce the potential for accidental spills to reach surface waters. All floor drains in the main buildings will be routed through an oil/water separator and into Tacoma's sewer system, rather than the stormwater system.

All construction debris would be disposed of properly according to its classification. Minor amounts of asbestos, lead paint, and polychlorinated biphenyls (PCBs) from fluorescent light fixtures were inventoried in Building 580 and would be handled and disposed of according to state and federal regulations.

No Action Alternative

Under this alternative, hazardous material storage sheds would remain on Pier 23. Routine maintenance work would occur in accordance with NPDES permits, but despite all operational precautions, accidental spills could reach surface waters. The asbestos, lead, and PCBs in building 580 would remain in building materials on the property.

Mitigation Measures

- All construction debris contaminated with asbestos, lead paint, or polychlorinated biphenyls (PCBs) will be handled and disposed of in accordance with all applicable state and federal regulations.
- All hazardous material storage sheds used on the Pier 23 property will be designed specifically for containment of such materials. They will be lighted, heated, ventilated, and explosion-proof with fire suppression capabilities.

5.4 Biological Resources

5.4.1 Marine Resources

Proposed Action Alternative

The proposed work will occur entirely above mean higher high water (MHHW). Most of the construction activities at the site are expected to have little, if any, impact on the waters and nearshore habitats of Commencement Bay. Temporary, construction-related disturbance associated with the driving of "Z" sheet pile along a small section of shoreline northeast of the pier could occur, however. This area has experienced cracking and slumping since the 2/28/01 Nisqually earthquake, so there is a chance that some slumping could occur during pile-driving. Such minor, localized slumping is not expected to appreciably affect benthic productivity or other marine resources. As a precaution, however, this work will be conducted during the portion of the year when salmonids are least likely to be present in the area.

Over the long term, the Proposed Action Alternative will result in water quality improvements which will benefit marine organisms. After installation of the new stormwater system, runoff from this area will pass through oil/water separator before discharge. Water that is used for engine tests will

also be discharged to the new stormwater system, which will reduce wastewater temperature prior to discharges to Commencement Bay. Also, after construction is complete, maintenance operations currently housed on the pier will be moved to the new upland facilities, thereby reducing the potential for accidental spills directly into Commencement Bay.

No Action Alternative

Although marine resources would not be affected by temporary construction impacts under the No Action Alternative, routine daily operations could contribute to water quality degradation. For instance, water that is used for engine tests would continue to be discharged directly into the bay without cooling and oil/grease would not be separated from runoff before being discharged into the bay. In addition, use of facilities on the pier could occasionally result in accidental spills.

5.4.2 Terrestrial Resources

Proposed Action Alternative

Construction of the proposed project would result in the loss or modification of a small area of marginal vegetation and terrestrial habitat. It would also result in the temporary displacement of the few mammal and bird species that utilize the limited terrestrial habitat available on site, and the avoidance of the immediate project vicinity by waterfowl, gulls, and shorebirds during the construction period. Demolition of Building 580 is scheduled to occur outside of the gull nesting season. If construction is delayed, and demolition is to occur when nests and eggs are present, WDFW will be contacted to relocate them prior to demolition.

No Action Alternative

Under this alternative, the Army Reserve would continue to use its current facilities at the Pier 23 area. No new construction would be undertaken and the existing level of activity would continue unchanged. Therefore, no additional impacts to terrestrial species and/or would occur.

5.4.3 Sensitive Species

Proposed Action Alternative

As discussed in Section 5.4.1 (Marine Resources) above, the proposed work will occur entirely above mean higher high water (MHHW) but the driving of sheet piles along a small section of shoreline northeast of the pier could result in localized slumping. Such slumping would not be expected to impact salmonids or forage fish, but as a precaution pile-driving will occur outside of the juvenile salmonid outmigration season.

The noise associated with construction activities may also cause any great blue herons and marine mammals in the project vicinity to avoid the area. Such displacement would 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.

No Action Alternative

Under this alternative, the Army Reserve would continue to use its current facilities at the Pier 23 area. No new construction would be undertaken and the existing level of activity would continue unchanged. Therefore, no additional impacts to sensitive species would occur.

Mitigation Measures

- Since slumping could occur during the removal of the slab and/or the driving of sheet piling adjacent to the shoreline, this work will occur outside of the WDFW juvenile salmon outmigration in-water closure period (March 16 – August 15). This closure period is the portion of the year thought to be the time when juvenile salmon are most likely to be present in Commencement Bay. Restricting work to times outside the closure period will greatly reduce the likelihood for harm to juvenile salmon.

5.5 Threatened and Endangered Species

Proposed Action Alternative

Pursuant with Section 7 of the Endangered Species Act (ESA), the Army Reserve prepared a Biological Evaluation (BE) to assess potential impacts of the proposed work on species protected under the Act. This document is available online at: <<http://www.nws.usace.army.mil/ers/envirdocs.html>>. The BE was submitted to USFWS and NMFS on June 7, 2001. The Army Reserve will not proceed with the proposed work until letters concurring with the determinations made in the BE have been received.

Potential effects to protected species discussed in the BE include those associated with habitat modification, noise, and turbidity. The proposed work will occur entirely above mean higher high water and will not affect salmonid spawning, rearing, refuge, or foraging habitat. Construction activities would occur in an area with substantial human activity on both the waterward and landward sides of the shoreline. Additional noise from the shore-side operation of heavy equipment, especially pile drivers, may have an effect on any bald eagles and Steller sea lions in the project area. However, short-term impacts of any sound disturbance related to construction activities would likely result in displacement of animals rather than injury. No bald eagle nests are located within two miles of the project site.

Most of the construction activities at the site are expected to have little, if any, impact on the waters and nearshore habitats of Commencement Bay. Demolition of the existing buildings and construction of the new buildings will occur about 100 feet from the shoreline. Sedimentation and erosion control measures (e.g., silt fences) will be in place during construction. One of the first construction tasks will be the installation of new stormwater pipes and the oil/water separator, so most construction runoff from the site will have some level of treatment.

The sheet pile bank stabilization work and the removal of the large concrete slab adjacent to the existing pier will occur directly adjacent to the shoreline, however. This work is not expected to alter existing intertidal habitat, but given the unstable soils along a small section of shoreline northeast of the pier there is a chance that some slumping could occur. This portion of shoreline has experienced cracking and slumping since the 2/28/01 Nisqually earthquake. If slumping does occur during the removal of the slab and/or the driving of sheet piling, effects on the water column would include increased turbidity and perhaps contaminant resuspension. The salmonid life history stages requiring the lowest suspended sediment concentration—spawning, incubation, and fry rearing—do not occur in project action area thus any resultant effects would not be significant. Any disruptions to benthic production resulting from slumping would be temporary and highly localized, therefore

having no significant impacts on forage fish populations. No scour is anticipated since piles will be driven several feet from the shore and no other “hard” structures will be installed.

The BE concluded that the proposed action was **not likely to adversely affect** the bald eagle (*Haliaeetus leucocephalus*), marbled murrelet (*Brachyramphus marmoratus*), Coastal/Puget Sound bull trout (*Salvelinus confluentus*), Puget Sound chinook salmon (*Oncorhynchus tshawytscha*) or designated critical habitat for this species, and Steller sea lion (*Eumetopias jubatus*), and would have **no effect** on the humpback whale (*Megaptera novaeangliae*) or leatherback sea turtle (*Dermochelys coriacea*). Effect determinations are not made for candidate species, such as the Puget Sound ESU coho salmon (*O. kisutch*).

No Action Alternative

Under the No Action Alternative, the Army Reserve would continue to use its current facilities at Pier 23. No new construction would be undertaken and the existing level of activity would continue unchanged. Therefore, no additional impacts to species protected under the Endangered Species Act would occur.

Mitigation Measures

- Since slumping could occur during the removal of the slab and/or the driving of sheet piling adjacent to the shoreline, this work will occur outside of the in-water work closure periods designated by USFWS for bull trout (February 15 - July 15) and NMFS for chinook (March 1 – July 1). The closure periods are the portion of the year thought to be the time when bull trout and chinook are most likely to be present in marine/estuarine waters. Restricting work to times outside the closure period will greatly reduce the likelihood for harm to bull trout and/or chinook.

5.6 Cultural Resources

Proposed Action Alternative

No impacts to cultural resources are anticipated to result from the proposed construction activities. However, if any archaeological materials are encountered during construction, work will be halted immediately and the State Historic Preservation Officer (SHPO) will be notified.

No Action Alternative

Under the No Action Alternative, Kandle Hall would continue to be used as the Army Reserve Center. No new construction would be undertaken and there would be no adverse impacts on cultural resources.

5.7 Transportation, Traffic, and Parking

Proposed Action Alternative

This section describes the anticipated traffic impacts of the proposed action on the surrounding roadway network, as well as the temporary impacts of construction traffic on the surrounding roadways and intersections. On- and off-site parking is also evaluated for the proposed action,

including the estimated parking demand on training weekends. Transportation impacts were evaluated for future year 2002

Trip Generation and Distribution. To estimate the number of site-generated trips, daily and PM peak hour trip rates were established based on: (1) a 24-hour hose count at the driveway to Kandle Hall, the current location of the Reserve Center; and (2) the number of participating soldiers that day. By dividing the number of existing trips by the number of soldiers, trip rates were determined. These rates, multiplied by the expected number of participating soldiers, were used to calculate the number of trips the proposed Reserve Center would generate.

On Saturday, December 6, 1997, approximately 1,350 daily trips and 190 PM peak hour trips were counted at the driveway to the Reserve Center. On this day, approximately 385 soldiers participated in reserve training. The following weekend trip rates and distributions were determined:

Daily trip rate: $1,350 \text{ trips} / 385 \text{ soldiers} = 3.50 \text{ trips/soldier}$ (50% in/50% out)

PM peak hour trip rate: $190 \text{ trips} / 385 \text{ soldiers} = 0.49 \text{ trips/soldier}$ (20% in/80% out)

The proposed facility would provide training for the 175th Floating Craft Company, 185th Medium Boat Company, 467th Transportation Terminal, and the 805th Logistics Support Vessel Detachment. The current collective strength of these units is approximately 500 soldiers. However, on an average Saturday or Sunday, approximately 430 soldiers actually participate in Reserve training. By multiplying the estimated trip rates by the number of participating soldiers, it is estimated that the Reserve Center would generate approximately 1,505 daily trips and approximately 210 PM peak hour trips on an average Saturday or Sunday. During the PM peak hour, it is estimated that approximately 42 and 168 trips would enter and exit the site, respectively.

Distribution of these PM peak hour trips was based primarily on the accessibility to Interstate 5 and its connections to the greater Tacoma area and the communities north and south of Tacoma. It was estimated that approximately 85 percent of the site-generated traffic would travel to/from the south and east, the majority of which would access Interstate 5. The remaining traffic would travel to/from the north, including the communities of northeast Tacoma and Federal Way. Figure 8 illustrates site-generated PM peak hour traffic volumes based on the assumed trip distribution patterns.

Intersection Traffic Volumes and Operations. Assuming the Army begins building the proposed Reserve Center in 2001, there would be additional truck traffic on the surrounding street network. Due to the existing propensity of truck traffic in the area and the industrial character of the Port, construction traffic should not significantly influence the operations of study intersections or Port roadways.

Therefore, the existing roadway capacities and traffic signal operations would adequately serve construction and background traffic volumes in 2001.

Figure 9 illustrates weekend PM peak hour traffic volumes for the Proposed Action. These peak hour volumes were calculated by adding site-generated traffic volumes to background 2001 traffic volumes. Based on the City's roadway level of service standards, it is anticipated that the study roadways would continue to operate better than LOS D.

The study intersections would operate at levels of service similar to existing conditions for the proposed action alternative. Table 3 illustrates 2001 weekend peak hour levels of service and delays at the two study intersections.

Table 3. 2001 (Proposed Action) Levels of Service and Delays

Location	Weekend PM Peak Hour	
	LOS ¹	Delay ²
<u>Signalized Intersections³</u>		
Alexander Avenue/11th Street	A	4.8
SR 509/Taylor Way-54th Avenue	B	14.6
1. LOS = Level of service 2. Delay = Average delay in seconds per vehicle 3. LOS and delay are reported for the intersection as a whole		

Alexander Avenue/11th Street – With or without the proposed Reserve Center, this intersection would operate at LOS A in 2001. As was the case for existing conditions, the westbound approach would experience the most delay at this intersection (LOS B).

SR 509/Taylor Way-54th Avenue – In 2001, this intersection would operate at LOS B during the peak hour. The left-turning movements would experience the most delays and operate acceptably at LOS C. For each approach, the through and right-turning movements would operate at LOS B.

Parking Supply and Demand. Vehicular parking demand is calculated by dividing the number of Reserve soldiers by the average auto occupancy (number of individuals per vehicle). Based on the 24-hour count on December 6, 1997, the number of participating soldiers that day, and information provided by the Army Reserve, the average auto occupancy is estimated to be between 1.25 and 1.75. Therefore, approximately 245 to 345 parking spaces would be required to accommodate 430 participating soldiers with the Proposed Action.

As was discussed in Section 4.7, there are 185 off-site parking spaces. To meet the anticipated parking demand, the Army would need to provide more parking spaces than currently exist on-site. Approximately 60 to 160 additional on-site parking spaces would be required to accommodate the anticipated parking demand, assuming that all 185 off-site parking spaces would be available on training weekends.

No Action Alternative

Intersection Traffic Volumes and Operations. To estimate 2001 peak hour traffic volumes at the two study intersections, an average growth rate of 3 percent per year was assumed. This growth rate is consistent with the Port’s expected annual increase in daily traffic volumes over the next 12 years (HDR Engineering, Inc., Port of Tacoma Tidelands Circulation Study Report. November 1996). Future traffic volumes in the Port area were estimated using the Puget Sound Regional Council (PSRC) traffic model, including traffic volumes on 11th Street, Alexander Avenue, and Taylor Way.

Year 2001 weekend peak hour volumes at the intersections of Alexander Avenue/11th Street and SR 509/Taylor Way-54th Avenue are illustrated on Figure 10.

The incremental increase in traffic volumes would not significantly degrade the existing levels of service on the Port’s roadways. Therefore, the study roadways would continue to exhibit acceptable levels of service based on the City of Tacoma’s standards.

Assuming the proposed Reserve Center is not constructed, the study intersections would operate at levels of service similar to existing conditions. Table 4 illustrates 2001 weekend peak hour levels of service and average vehicular delays for the No Action Alternative.

Table 4. 2001 (No Action) Levels of Service and Delays

Location	Weekend PM Peak Hour	
	LOS ¹	Delay ²
<u>Signalized Intersections³</u>		
Alexander Avenue/11th Street	A	4.4
SR 509/Taylor Way-54th Avenue	B	14.5
1. LOS = Level of service 2. Delay = Average delay in seconds per vehicle 3. LOS and delay are reported for the intersection as a whole		

Alexander Avenue/11th Street – This intersection would operate at the same levels of service in 2001 as it does today. Of all the approaches, the westbound approach would operate at LOS B and experience the most delays.

SR 509/Taylor Way-54th Avenue – This intersection would operate acceptably at LOS B during the weekend PM peak hour. As is the case today, the left-turning movements would experience the most delays in 2001 (LOS C).

Mitigation Measures

Based on the preceding analysis, mitigation measures such as additional turn lanes and/or modifications to the existing traffic signal timing would not be necessary at the study intersections. The surrounding roadway network would not require any forms of mitigation to meet the City’s minimum roadway standards in 2001.

- An organized carpool program is recommended. Such a program would reduce the demand for on- and off-site parking and would result in less site-generated traffic on the Port’s roadway network.

5.8 Air Quality

Proposed Action Alternative

Construction is not expected to result in significant air quality degradation. The excavation phase of construction is estimated to last approximately six to eight months and would generate small quantities of particulate matter (fugitive dust). The impacts of this dust would be localized and temporary. Construction vehicles and heavy equipment would 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. Repaving disturbed areas with asphalt will generate odors in the vicinity of the site.

Operation of the new facility may result in increased vehicle emissions in the Pier 23 area as more Army Reservists would utilize the new facility. This impact is not expected to be significant impact since the project will not generate new traffic, but only reroute existing traffic from the Kandle Hall facility.

No Action Alternative

The no action alternative would not impact air quality, since emissions would not increase over existing levels.

Mitigation Measures

- During construction, steps shall be taken to minimize dust generation, including daily or periodic watering of exposed surfaces, street cleaning, and periodic cleaning of haul trucks. (Care will be taken to prevent any runoff from reaching surface waters without treatment.)
- To minimize exhaust emissions, prolonged vehicle idling shall be avoided and vehicles and equipment shall be well maintained and serviced.
- Electric-powered equipment, rather than fossil-fueled equipment, will be used where possible.

5.9 Utilities and Public Services

5.9.1 Potable Water

Proposed Action Alternative

Under the Proposed Action, the overall amount of water used at the Pier 23 property would be expected to increase slightly. Since operations currently conducted at Kandle Hall would be transferred to the new facility, the projected increase in water usage would be similar to the current water usage at Kandle Hall. For the period of October 1998 to September 1999, water consumption at Kandle Hall ranged from approximately 5000 gallons in November to about 20,000 gallons (cf) in October. The monthly average water usage was approximately 8,700 gallons (USARC RISER Database, accessed February 8, 2000). This increase represents an average increase of approximately one fifth of one percent above existing water usage levels. This transfer of service would not represent a significant impact.

No Action Alternative

Under this alternative, no changes to existing water usage at the Pier 23 property would occur.

5.9.2 Sanitary Sewer

Proposed Action Alternative

Under the Proposed Action, the overall amount of sewer usage at the installation would be expected to increase slightly. Since operations currently conducted at Kandle Hall would be transferred to the new facility, the projected increase in sewer usage would be similar to the current sewer usage at Kandle Hall. For the period of October 1998 to September 1999, sewer usage at Kandle Hall ranged from approximately 5000 gallons in November to about 20,000 gallons in October. The monthly average water usage was approximately 8,700 gallons. (USARC RISER Database, accessed February 8, 2000). This transfer of service would not represent a significant impact.

No Action Alternative

Under this alternative, no changes to existing sewer usage at the Pier 23 property would occur.

5.9.3 Stormwater

Proposed Action Alternative

Under the Proposed Action Alternative, impervious surfaces at the facility would increase, but not significantly. As described in Section 5.5.1 (Surface Water), a stormwater system consisting of new pipes and an oil-water separator will be installed on the site. The new system will result in a reduction in petroleum hydrocarbons discharged into Commencement Bay from the property. The stormwater system will also allow water used for engine tests to cool before it is discharged.

No Action Alternative

Under the No Action Alternative, runoff from the Pier 23 property would continue to enter Commencement Bay untreated.

Mitigation Measures

- Appropriate measures would be implemented as part of the construction to control stormwater and sediment runoff. Wash water used in the cleaning of machines and equipment would not be discharged into surface waters except as authorized by a National Pollutant Discharge Elimination System (NPDES) or state waste discharge permit. Wash water, if produced, will outfall through the newly installed storm water and oil-water separator system. Standard erosion control methods (e.g. silt fences) will be a requirement of contract documents.
- The stormwater system improvements will be one of the first construction tasks, so most construction runoff from the site will have some level of treatment.

5.9.4 Solid Waste

Proposed Action Alternative

Construction activities would result in the demolition and removal of Building 580 and other construction-related debris. These would be disposed of to permitted refuse and recycle centers. All

construction debris contaminated with asbestos, lead paint, or polychlorinated biphenyls (PCBs) will be handled and disposed of in accordance with all applicable state and federal regulations. Operations activities would generate additional solid waste at the Pier 23 facility. However, a corresponding reduction in solid waste generation would occur at Kandle Hall. Therefore, no significant impacts to solid waste services would result from the Proposed Action.

No Action Alternative

There would be no change in solid waste generation under the No Action Alternative.

Mitigation Measures

- Precautions will be taken to prevent construction debris from entering Commencement Bay during the demolition and building process. Demolition activities will occur above the ordinary high water line, and as far away from the water's edge as possible. No construction debris will be stockpiled below the mean high water mark or adjacent to the shoreline.

5.9.5 Electricity

Proposed Action Alternative

Electricity to the new ARC would continue to be supplied by Tacoma City Light. Under the Proposed Action, the overall amount of electricity used at the installation would be expected to increase. Since operations currently conducted at Kandle Hall would be transferred to the new facility, the projected increase in electrical usage would be similar to the current usage at Kandle Hall. For the period of November 1998 to October 1999, electricity usage at Kandle Hall ranged from 7,400 kWh in August to 82,800 kWh in July. The monthly average electricity usage was 18,250 kWh (USARC RISER Database, accessed February 8, 2000). This increase represents approximately a 20 percent increase over current electrical usage. However, a corresponding decrease in electrical usage would occur at Kandle Hall, thus having no impact on electrical usage in the area or to the region's electrical system.

No Action Alternative

There would be no change in electricity consumption under the No Action Alternative.

5.9.6 Natural Gas

Proposed Action Alternative

The buildings will be heated with natural gas. Kandle Hall is currently heated by natural gas. The most gas (217,100 cubic feet) was consumed in December of 1999. The lowest amount of gas was burned in July (3,600 cubic feet). On average, 112,000 cubic feet of gas is consumed per month. The region's natural gas supply and service would not be greatly impacted by the Proposed Action Alternative.

No Action Alternative

The region's natural gas supply and service would not be impacted by this alternative

5.9.7 Law Enforcement and Emergency Services

Proposed Action Alternative

Pier 23 is currently and will remain off-limits to the general public. With the transfer of operations from Kandle Hall to Pier 23, the number of individuals at the installation at any given time would increase. As a result, the potential exists for a greater need for security/law enforcement at Pier 23 under the Proposed Action. However, the Tacoma Police Department has capacity to cover any such increase. Moreover, the facility would be fenced and staffed by Army security personnel. Therefore, the Proposed Action would not likely have any impacts on security and law enforcement at Pier 23.

The Tacoma Fire Department has been directly involved in the planning of the new facilities to ensure proper life safety and fire prevention measures are established (e.g., adequate smoke detectors, sprinkler systems, fire hydrants, fire-fighting equipment access). During each construction phase and operations of the facility, it would be the Army Reserve's responsibility to maintain emergency vehicle access to the construction site and the rest of Pier 23 and to ensure that water supply is adequate for extinguishing any potential fires. The Proposed Action is not likely to affect fire and emergency services.

No Action Alternative

Under the no action alternative, the Army Reserve would continue to use its current facilities at Kandle Hall. No new construction would be undertaken and the existing level of activity at both properties would continue unchanged. Therefore, no impacts to law enforcement and emergency services would occur.

5.10 Land Use

Proposed Action Alternative

Under the Proposed Action, building 580 will be demolished and two new, larger buildings will be constructed in its place. The net result of this construction activity would alter the land use of approximately 1 acre of land from surface parking lot to an office/training/maintenance building. Such a land use is consistent with the existing land use pattern as well as land use policies and goals governing the area. The reservist units which will utilize the facility include 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 Vessel. Thus, the Army Reserve's use of the property is water-dependant.

No Action Alternative

Under the No Action Alternative, Kandle Hall would continue to be used as the Army Reserve Center. Kandle Hall is currently operated at levels above design capacity, so overuse of the facility would continue if no action is taken. Overuse of residential streets by reservist traffic would continue.

5.11 Noise

Proposed Action Alternative

Potential noise impacts of the proposed action could be associated with both construction activities and routine operation of the new facilities. The degree of impacts is dependant on the proximity of noise-sensitive receptors to noise generated by the facility.

Demolition and Construction. Noise impacts from land-based construction and demolition activities would be short term and limited to daytime hours. Peak construction noise emissions will be associated with pile driving. Peak noise levels 50 feet from pile driving would be approximately 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 more common 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). Note that these estimates are likely high, as the formula used to calculate them assumes no intervening obstructions (line-of-sight). Actual Noise associated with construction activities is not expected to be significant for several reasons, including their temporary nature, their distance from sensitive receptors, and the presence of other noise producing activities in the area.

Operations. Effects on ambient sound levels from routine operations of the new facilities would include noise emitted from motor vehicles and noise associated with training exercises. Existing site activities, including vessel/engine maintenance, and mooring/shipping operations would also continue. Noise associated with operation of the new facilities is not expected to be significant for several reasons, including the relatively low level of noise emissions, their distance from sensitive receptors, and the presence of other noise producing activities in the area.

No Action Alternative

Under the No Action Alternative, the 70th RSC would continue to use its current facilities at Kandle Hall. No new construction would be undertaken and the existing level of activity and operation at both the Kandle Hall and Pier 23 properties would continue unchanged.

Mitigation Measures

- Construction will occur only during daylight working hours.

5.12 Aesthetics

Proposed Action Alternative

The proposed project is compatible with its immediate environment and would be a significant improvement over existing conditions. The new building will reflect its waterfront setting with blue, green and red colors, glazing and a standing-seam vaulted metal roof. The proposed three-story structure would be in scale with, and surrounded by, other large industrial buildings and piers to the

south and east. The Port of Tacoma Industrial Yard has been in continuous use as an industrial center since the 1920s; therefore, the proposed project would be in keeping with the historical use of the area. The renovation and expansion of the Pier 23 facilities would not result in a negative impact to visual resources (i.e., sensitive viewsheds, or historic or significant viewing areas). The Proposed Action Alternative would likely result in a positive impact through the removal of deteriorated Building 580 and its replacement with a modern structure, and general cleanup and organization of the Pier 23 area.

No Action Alternative

Under the No Action Alternative, existing visual conditions at Pier 23 and its immediate environs would not change. Building 580 would continue to deteriorate, thereby to reducing the aesthetics of the immediate area. As industrial landscapes in general are not considered as having a high scenic value, this is not considered a significant impact.

5.13 Environmental Justice and Child Protection

Proposed Action Alternative

The proposed action would not have any disproportional adverse impacts on minority or low-income communities. The proposed site is in a highly industrial area and is not located near any residential communities, including predominantly minority or low-income communities.

Furthermore, the Proposed Action Alternative would not have any significant adverse impact on children's health and safety. No children live near the site of the proposed action. The site is largely inaccessible and children would not be present during operational activities. In addition, the new facilities would be surrounded by a chain-link fence and the entrance would be staffed by security personnel, preventing unauthorized entry to the facility by children or others.

No Action Alternative

Under the No Action Alternative, there would be no disproportional adverse impacts on minority or low-income communities, nor any significant impacts to children's health and safety.

6. CUMULATIVE EFFECTS

Cumulative impacts may be caused by the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. As discussed in Section 4., Commencement Bay's marine and estuarine habitats have been altered by previous dredging, filling, sewage and industrial discharges, and other anthropogenic activities over the past 100 years. Much 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).

Cleanup efforts are ongoing within and around the bay, and there is a general improving habitat trend. Ecology estimates that about 90 percent of the upland sites that require cleanup have been remediated. Continued cleanup efforts, such as dredging and capping of contaminated sediments in

the Hylebos waterway, may result in temporary stress to protected species, but long term effects of these efforts would be beneficial.

The proposed action encompasses a relatively small portion of Commencement Bay. The project area is highly disturbed, and the project will not restore the area to historic conditions (for instance, by removing nearshore fill). However, the project is not expected to further deteriorate current conditions as no remnant habitat features will be modified. With respect to water quality, effects of the proposed action will be beneficial. Stormwater system upgrades will prevent untreated runoff from entering surface waters. By moving maintenance operations currently situated on the pier to the new upland facilities, the potential for accidental spills of petrochemicals or other hazardous substances to reach surface waters will be reduced.

7. RELATIONSHIP BETWEEN SHORT-TERM USE OF THE ENVIRONMENTAL AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

No properties currently in use or in reserve for resource production would be affected by the Proposed Action. The Army Reserve's Pier 23 property has been used for military purposes since the 1920s, with major development occurring during World War II. The Proposed Action would result in the continued viability of the Army Reserve as contributing to the effective functioning 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 Vessel in the Pacific Northwest. The proposed construction activities will not disturb previously undisturbed tracts of land, and thus will not degrade shoreline habitat. Water quality improvements associated with the project may enhance productivity in the immediate project area.

8. PROBABLE IRRETRIEVABLE AND IRREVERSIBLE COMMITMENTS OF RESOURCES

Construction activities would require the commitment of labor, fossil fuels, various construction materials, and natural resources such as timber. Additional commitments of resources and materials would result from operation and maintenance of the proposed facilities. The length of commitment of these resources depends on the ultimate life of the Pier 23 facilities. The proposed facility resources could be committed to other uses if the operation of the facility closed, although this is not expected in the foreseeable future. The type and quantity of resources that would be committed to the Proposed Action are typical of new development and would not involve rare or scarce resources.

9. ENVIRONMENTAL COMPLIANCE

9.1 National Environmental Policy Act

This Environmental Assessment (EA) satisfies the documentation requirements of NEPA. After the comment period for this document has ended, a Finding of No Significant Impact (FONSI) will be prepared for inclusion with the final EA.

9.2 Endangered Species Act

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 or proposed threatened or endangered species. Potential impacts of the proposed project on protected species were evaluated in a Biological Evaluation (BE). The BE concluded that the proposed action would not adversely affect any species protected under the Act. The BE was submitted to USFWS and NMFS on June 7, 2001 and is available online at: <http://www.nws.usace.army.mil/ers/envirdocs.html>. The Army Reserve will not proceed with the proposed work until letters concurring with the determinations made in the BE have been received.

9.3 Clean Water Act

Since the proposed action will occur entirely above the mean higher high water depth contour, a Section 404 permit from the Corps of Engineers and a Section 401 Water Quality Certification from the Washington Department of Ecology are not required. Current NPDES permit will be modified and updated to reflect the changes prior to completion of the project.

9.4 Coastal Zone Management Act

The Coastal Zone Management Act of 1972, as amended, requires Federal agencies to carry out their activities in a manner which is consistent to the maximum extent practicable with the enforceable policies of the approved Washington Coastal Zone Management Program. The Army Reserve has prepared a Coastal Zone Management Act Consistency Determination for proposed upland construction. This determination, which was submitted to the Ecology on April 4, 2001, established that the proposed work complies with the policies, general conditions, and general activities specified in the City of Tacoma Shoreline Management Master Plan. The proposed action is thus considered consistent to the maximum extent practicable with the State of Washington Shoreline Management Program.

9.5 National Historic Preservation Act

The National Historic Preservation Act (16 USC 470) requires that the effects of proposed actions on sites, buildings, structures, or objects included or eligible for the National Register of Historic Places must be identified and evaluated.

Since the Pier 23 property has experienced extensive filling and grading over the years, the possibility of archeological resources being present at the proposed site is remote. The Army Reserve determined that no resources included or eligible for inclusion in the National Register of Historic Places would be effected by the proposed project, and the State Historic Preservation Officer's concurred with this determination.

10. CONCLUSIONS

Based on the above analysis, this project is not a major Federal action significantly affecting the quality of the human or natural environment, and therefore does not require preparation of an environmental impact statement.

11. REFERENCES

- City of Tacoma. 1993. Generalized Land Use Plan. Planning & Development Services Department. Growth Management Services Division. June 1993.
- City of Tacoma. 1995. Transportation Program, The 1996 Implementing Strategy of the Transportation Plan. Planning and Development Services Department. December 1995.
- City of Tacoma. 1996. Land Use Management Plan - 1996 Amendment. Planning and Development Services Department. Growth Management Services Division. August 1996.
- City of Tacoma. 1997. Six-Year Comprehensive Transportation Program, 1998-2003. Public Works Department. June 1997.
- Department of the Army. 1982. Environmental Assessment: Leisy USARC Army Helipad, Fort Lawton.
- Department of the Army. 1997. U.S. Army Reserve FY 2000 Military Construction Project Data - Project Number CAR 00-10522. August 1997.
- Department of the Navy. 1994. Draft Environmental Impact Statement, Reuse of Naval Station Puget Sound, Sand Point.
- Departments of the Air Force, the Army Reserve, and the Navy. 1978. Environmental Planning in the Noise Environment. June 15, 1978.
- 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. 1989. Commencement Bay Nearshore/Tideflats Record of Decision, as cited on NOAA Commencement Bay Natural Resource Damage Assessment Website, <<http://www.darcnw.noaa.gov/cb.htm>>.
- Environmental Protection Agency. 1978. Project Noise Levels: Condensed Version of EPA Levels Document. November 1978.
- Haeberlin, Herbert and Erna 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.

- HDR Engineering, Inc. 1996. Port of Tacoma Tidelands Circulation Study Report. Prepared for the Washington State Legislative Transportation Committee. November 1996.
- 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.
- Med-Tox Northwest. 1999. *Asbestos, Lead-Based Paint and Hazardous Materials Survey for Pier 23 Renovation and/or Replacement*. Contract No. DACA67-D-1004.
- Naagorsen, D. W., Brigham, R. M. Bats of British Columbia. UBC Press. Vancouver, BC. 1993
- Pacific Northwest National Laboratory. 1999. *Pier 23 Remedial Investigation/Feasibility Study*. Pacific Northwest National Laboratory, Richland, WA.
- Pacific Western Services. 1995. *Final Sampling and Analysis Report Watercraft Support Maintenance Center, Pier 23*. Prepared for 124th U.S. Army Reserve Command. June 1995.
- Parametrix. 1996. *Blair Waterway Turning Basin Expansion Project Habitat Plan*.
- Port of Tacoma. 1992. *Habitat/Mitigation Plan for the Milwaukee Waterway Fill and Fisheries Mitigation Project and the Sitcum Waterway Remediation Project*. Tacoma, Washington.
- Quinn, T., and R. Milner. 1999. Great blue heron (*Ardea herodias*). In E. M. Larsen and N. Nordstrom, editors. Management Recommendations for Washington's Priority Species, Volume IV: Birds. <<http://www.wa.gov/wdfw/hab/pbs/vol4/gbheron.htm>>.
- SCS Engineers. 1991a. *Final Preliminary Assessment Washington Army National Guard Watercraft Support Maintenance Center, Pier 23 and Building 580*. Prepared for Washington Army National Guard. October 7, 1991.
- SCS Engineers. 1991b. *Final Report Site Investigation Washington Army National Guard Watercraft Support Maintenance Center, Pier 23 and Building 580*. Prepared for Washington Army National Guard. October 4, 1991.
- Transportation Research Board (TRB), National Research Council. 1994. Highway Capacity Manual, Special Report 209. October 1994.
- 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. 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.

U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration. 1997. *Commencement Bay Natural Resource Damage Assessment: Restoration Plan and Final Programmatic Environmental Impact Statement*.

Washington State Department of Ecology. 1995. *1995 Air Quality Data Summary*. Publication Number 97-201.

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.

Washington Department of Fish and Wildlife. 1997. Important Wildlife Information Public Data Release Map. Olympia, Washington.

Williams, R.W., R.M. Laramie, and J.J. James. 1975. *A Catalog of Washington Streams and Salmon Utilization: Volume 1, Puget Sound Region*. Washington State Department of Fisheries. Olympia, Washington.

Yates, Steve. 1988. Marine Wildlife of Puget Sound, the San Juans, and the Strait of Georgia. The Globe Pequot Press. Old Saybrook, Connecticut..

Letters and Personal Communication

Arleth, Robert C. Manager, City of Tacoma Economic Development Department. Telephone Conversation with Mike Usen, 2/3/00.

Baranski, Chuck, WDFW, Olympia, Washington. Telephone communication with C. Connolly, Sr. Biologist, Adolfson Associates, Inc., February 6, 1998.

Brown, D., Urban Planner, City of Tacoma, Washington. Telephone conversation with K. Jones, Transportation Engineer, The TRANSPO Group, Inc., Bellevue, Washington, November 1997.

Burley, Craig, WDFW, . Olympia, Washington. Telephone communication with C. Connolly, Sr. Biologist, Adolfson Associates, Inc., February 9, 1998.

City of Tacoma, Zoning Enforcement. Telephone communication to Kent Whitehead, EDAW, January 13, 1998.

Gilmur, Dick, Port of Tacoma. Personal communication, November 5, 1997.

Godlewski, R., Facility Supervisor, Pier 23. Telephone conversation with K. Jones, Transportation Engineer, The TRANSPO Group, Inc., Bellevue, Washington, November 1997.

Griffith, Gregory A. Letter to Paul McGuff, Installation Cultural Resources Management Officer, Fort Lewis, September 26, 1995.

McGuff, Paul R. Letter to David Hansen, Office of Archaeology and Historic Preservation, September 15, 1995.

Negri, S., Biologist, WDFW. Telephone conversation with S. Bondi, Biologist, EDAW, Inc., Seattle, Washington, February 4, 1998.

Orders, L., Environmental Coordinator, 70th Regional Support Command (RSC). Telephone conversation with K. Jones, Transportation Engineer, The TRANSPO Group, Inc., Bellevue, Washington. November 1997.

Orders, Louise, U.S. Army 70th Regional Support Command. Telephone communication with Kevin Butterbaugh, EDAW, Inc. November 19, 1997.

Thompson, Patricia, Biologist, WDFW. Telephone conversation with S. Bondi, Biologist, EDAW, Inc., Seattle, Washington, February 4, 1998.

Turpin, Theresa, Land Use Planner, City of Tacoma. Fax communication to Kent Whitehead, EDAW, Inc., January 13, 1998.

Wunder, Lori, Biologist, WDFW Telephone conversation with S. Bondi, Biologist, EDAW, Inc., Seattle, Washington, February 5, 1998.

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Kent Whitehead	Planner. Provided sections on Cultural Resources, Noise, Land Use, Utilities and Public Services, and Environmental Justice and Child Protection.
Brad Brewster	Planner. Provided section on Visual Resources.
Steve Bondi	Biologist. Provided Terrestrial Biology portion of Biological Resources section.
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Kyle Sasaki	Graphic Designer. Provided graphics for document.
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David Grant Archaeologist. Reviewed and finalized Sections 4.6 and 5.6. Coordinated with the State Historic Preservation Officer.

Appendix A.
Figures and Design Drawings

APPENDIX A
Figures and Design Drawings

Figure 1. Region and Vicinity Map

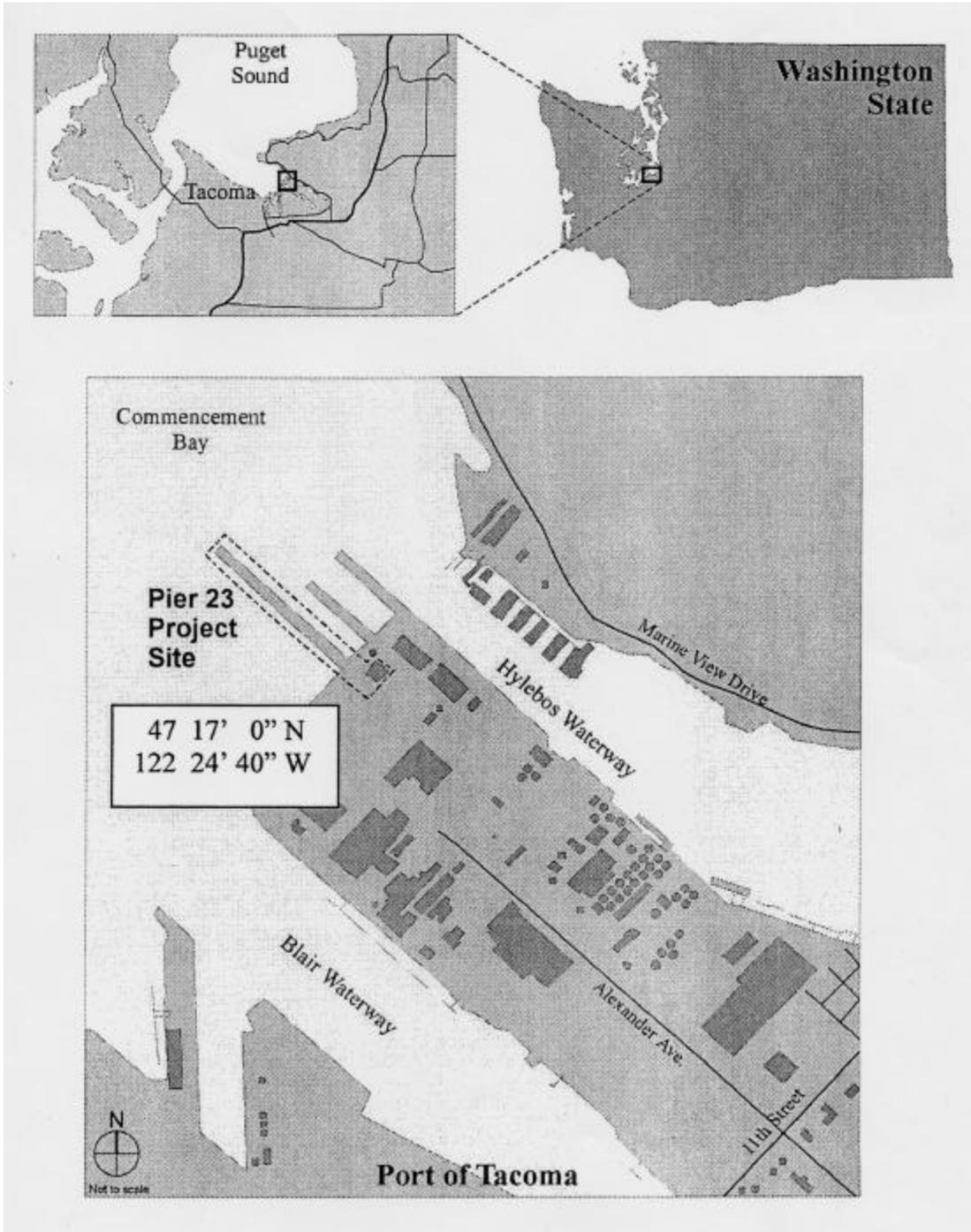


Figure 2. Existing and Proposed Plan View

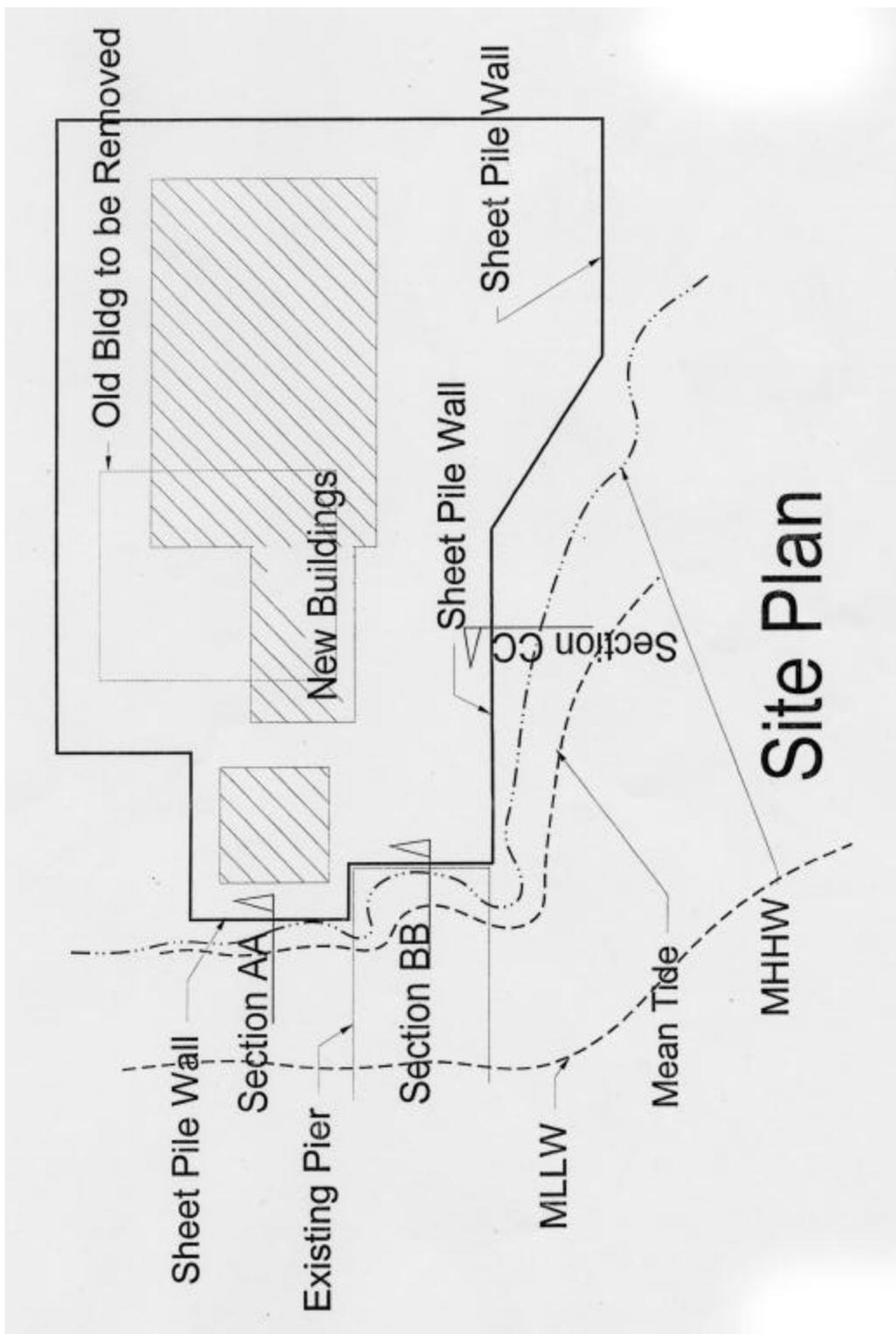


Figure 3. Cross Section A-A

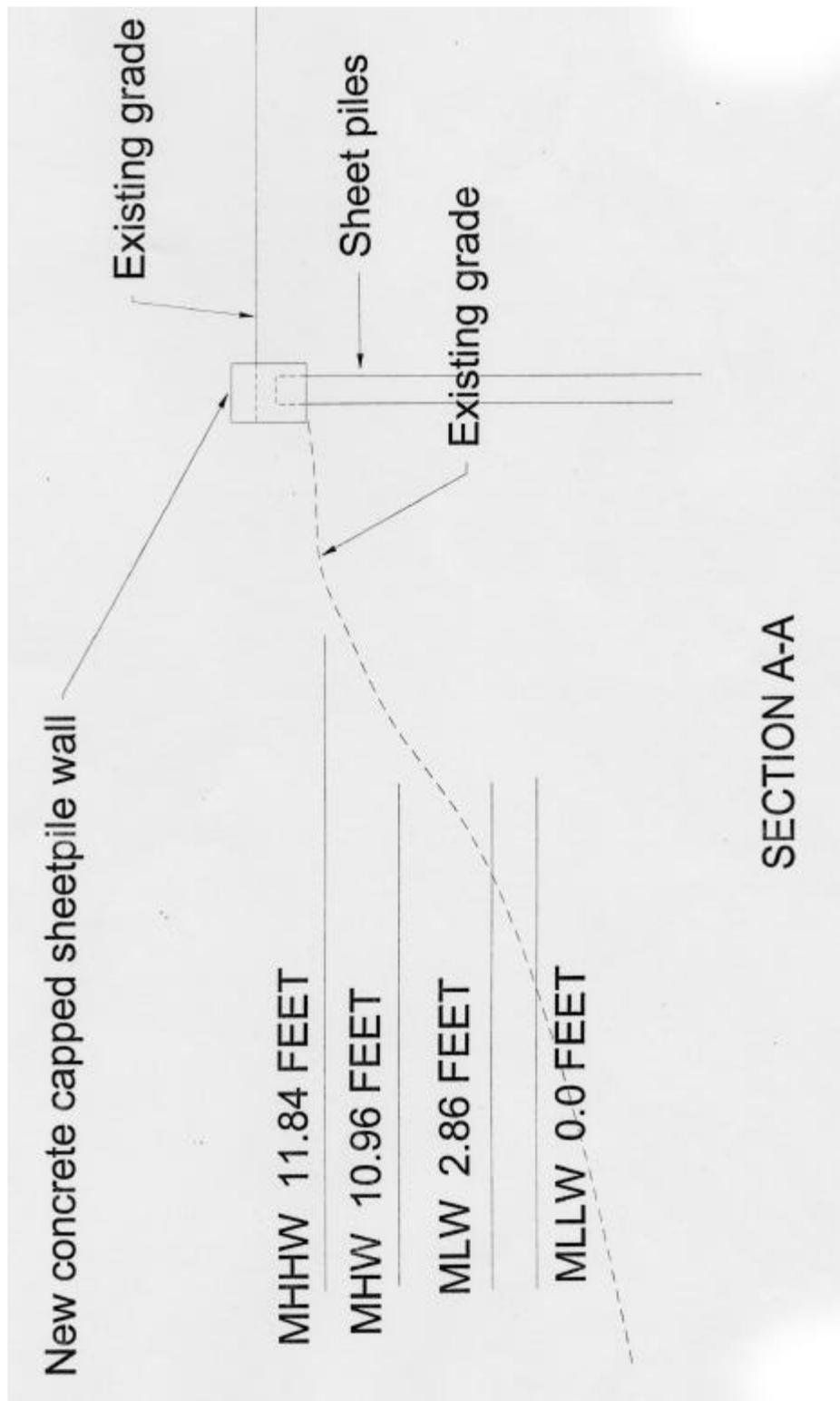


Figure 4. Cross Section B-B

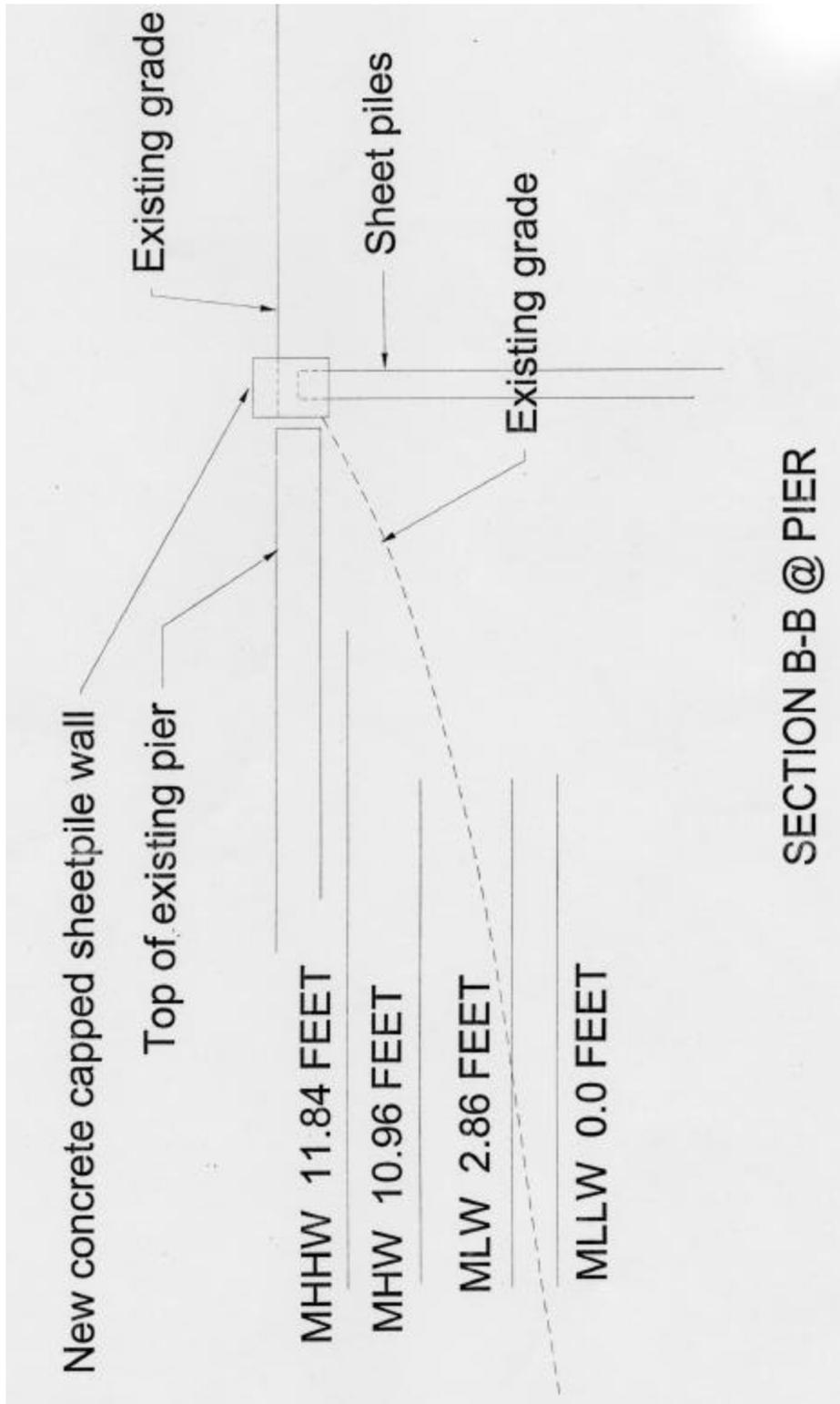


Figure 5. Cross Section C-C

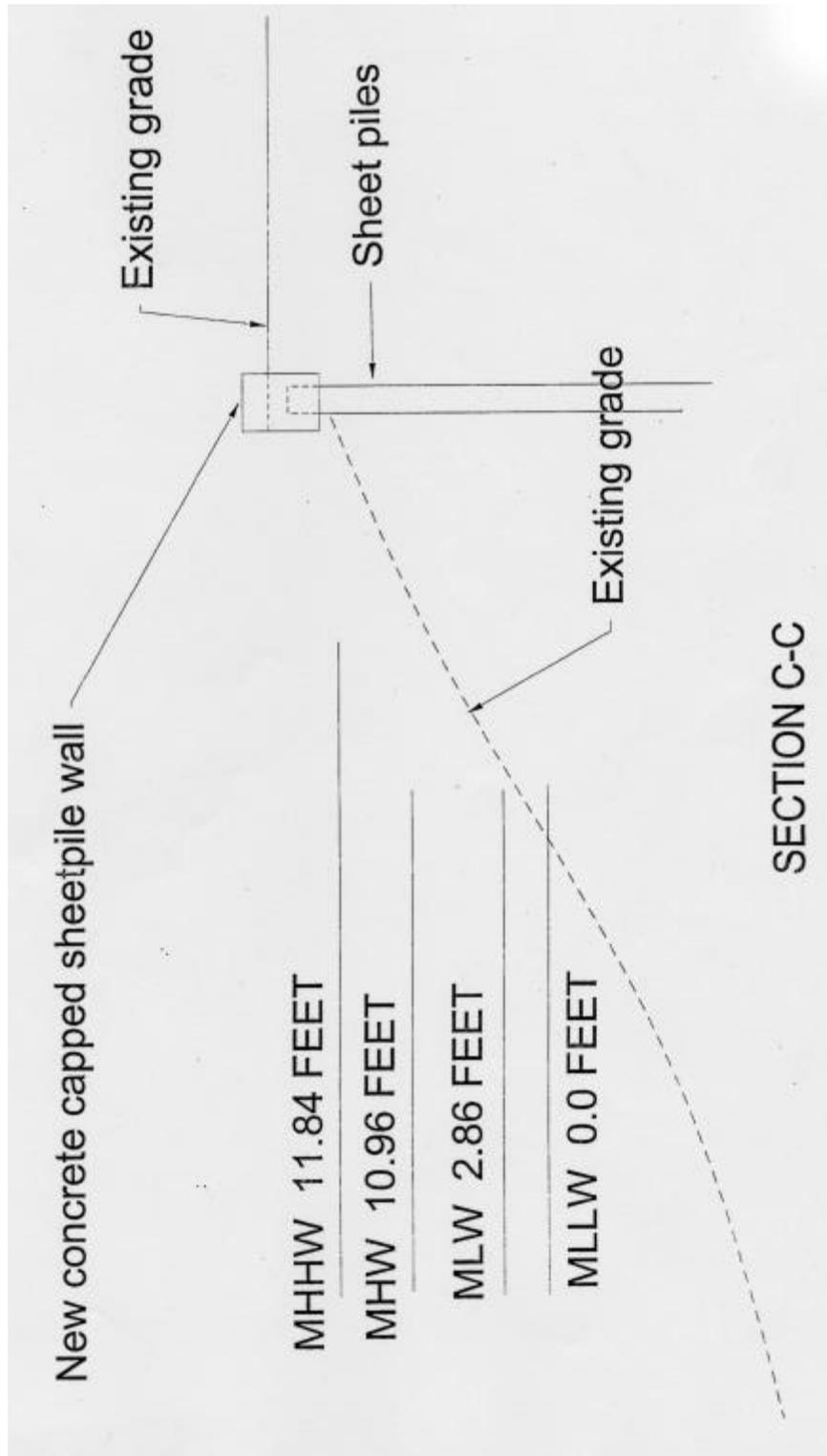
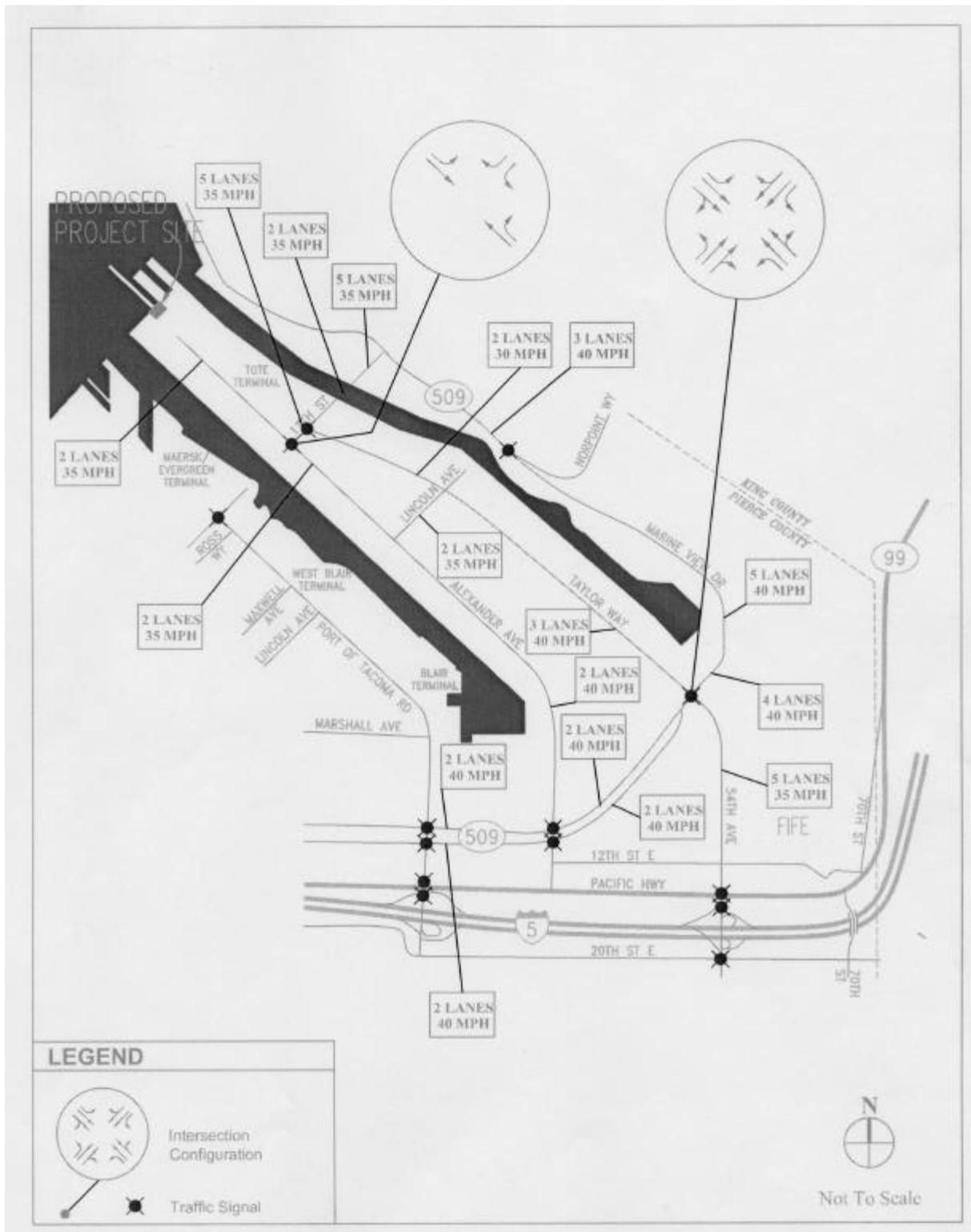
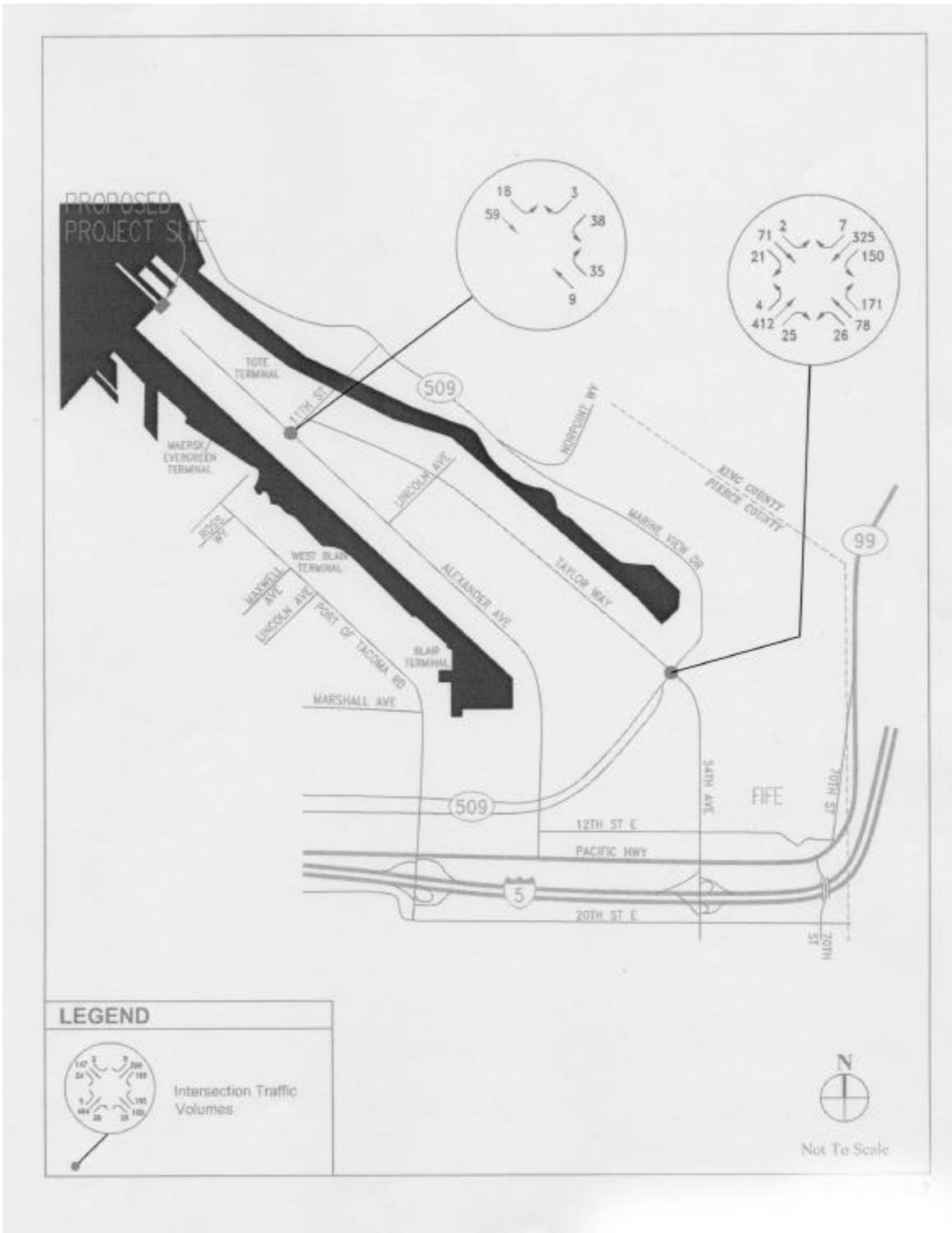


Figure 6. Existing Roadway and Intersection Characteristics



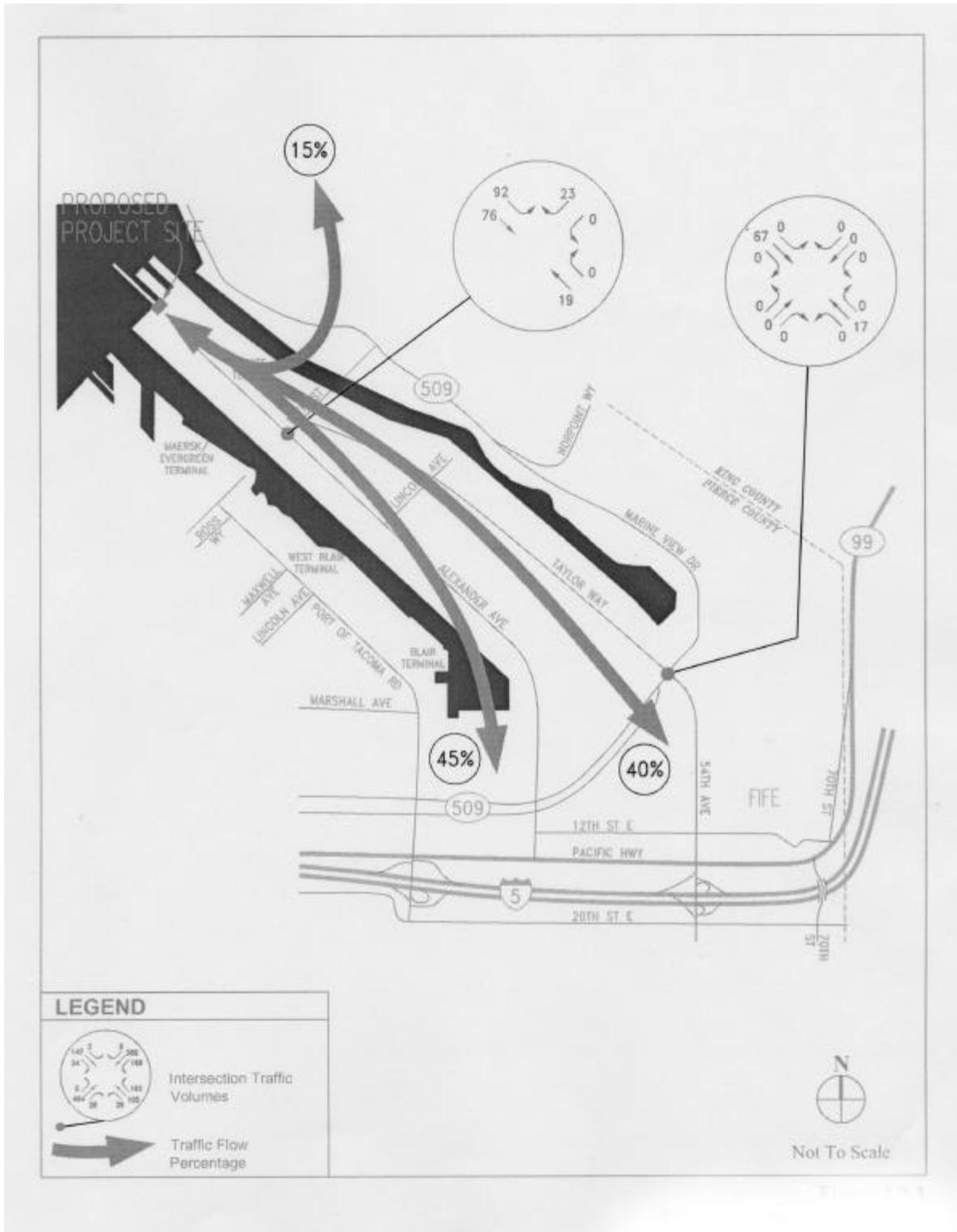
Source: The TRANSP0 Group, Inc.

Figure 7. Existing Weekend PM Peak Hour Traffic Volumes



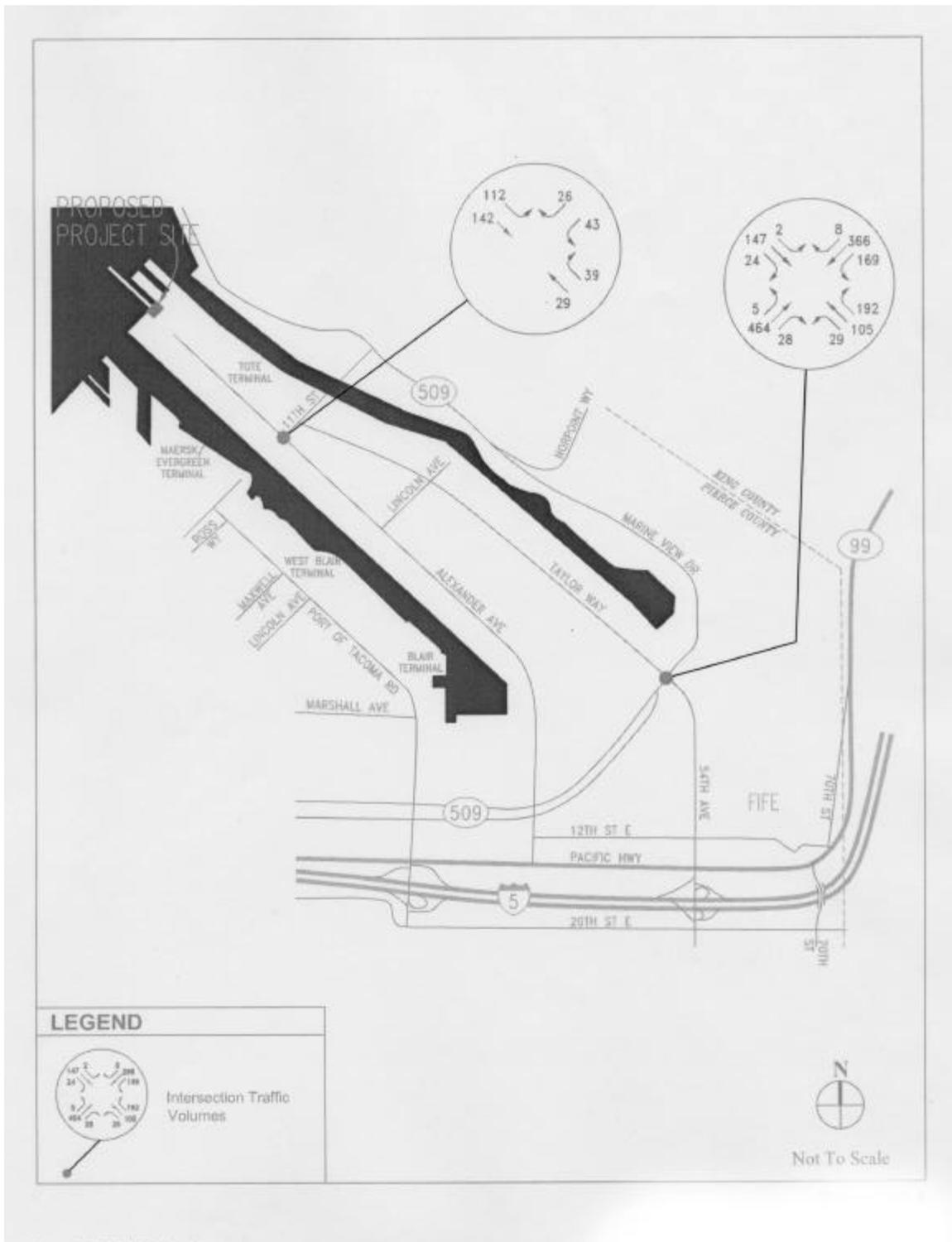
Source: The TRANSPRO Group, Inc.

Figure 8. 2001 Site-Generated Weekend PM Peak Hour Traffic Volumes



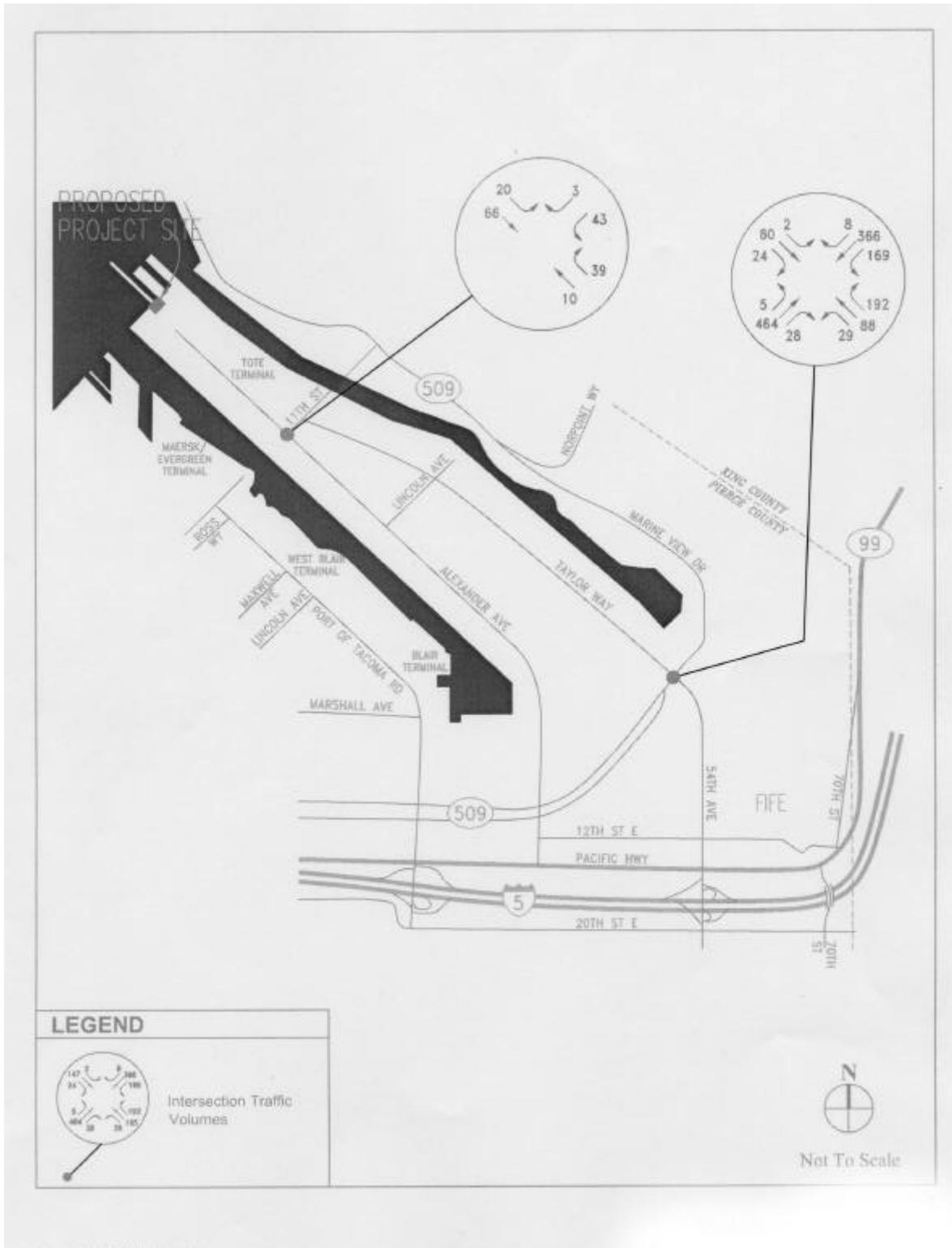
Source: The TRANSPRO Group, Inc.

Figure 9. 2001 (Proposed Action) Weekend PM Peak Hour Traffic Volumes



Source: The TRANSPO Group, Inc.

Figure 10. 2001 (No Action) Weekend PM Peak Hour Traffic Volumes



Source: The TRANSPO Group, Inc.

Appendix B.
Photographs of the Project Site

APPENDIX B
Photographs of the Project Site



Photo 1 Building 580 and adjacent uplands, view towards the northwest (4-01).



Photo 2 Building 580 and adjacent uplands, view towards the southeast (4-01).



Photo 3 Concrete slab to be removed. Sheet pile alignment is behind fence.



Photo 4 Concrete slab and sheet pile alignment, with Building 580 in the background (4-10).



Photo 5 View of the western property boundary, facing southeast (4-01).
The sheet pile alignment will follow the fence.



Photo 6 View towards Pier 23, facing the northwest, with Building 580 in the foreground (4-10).