Final

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT FOR PIER 2 MODERNIZATION AND REPAIR DESIGN CHANGES AT MILITARY OCEAN TERMINAL CONCORD, CA

JANUARY 2017

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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

FOR

PIER 2 MODERNIZATION AND REPAIR DESIGN CHANGES AT

MILITARY OCEAN TERMINAL CONCORD, CA

Proponent: Military Ocean Terminal Concord

NEPA Lead Agency: Military Ocean Terminal Concord

APPROVAL

This Supplemental Environmental Assessment meets the requirements of NEPA, 40 CFR 1500-1508 and 32 CFR 651.

_____	_____
Date	LTC James R. Wiley Commanding Officer

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EXECUTIVE SUMMARY

The Department of the Army (Army) signed a Record of Decision (ROD) for the February 2015 Final Environmental Impact Statement (EIS) for the Modernization and Repair of Piers 2 and 3 at MOTCO, California on April 14, 2015. In the ROD, the Army selected Alternative 1 for implementation. Alternative 1 included demolition of a considerable portion of Pier 2 and replacement of the main platform and trestles and reorienting the west end of the pier. The EIS and ROD are hereby incorporated by reference per 40 Code of Federal Regulations (CFR) Part 1502.21 and consistent with 32 CFR Part 651.12(a)(3).

As the design of the modernization and repair progressed, the Army identified changes in the proposed Pier 2 layout (primarily consolidating two trestles into one) that would result in more efficient pier operations and a reduction in construction costs. The Army has prepared this Supplemental Environmental Assessment (SEA) to assess the differences in the potential environmental and social impacts associated with the design changes for Pier 2 as compared with those analyzed for Alternative 1 in the EIS. Supplemental National Environmental Policy Act (NEPA) documentation is required when the Army makes substantial changes in the proposed action that are relevant to environmental concerns such as the changes in the proposed Pier 2 repair and modernization design.

This SEA analyzes the following alternatives:

- **Alternative A.** Under the no action alternative, the Army would implement the design for Pier 2 exactly as evaluated in the EIS as Alternative 1 and adopted in the resulting ROD, which reduced the Pier 2 footprint from the existing structure (including piers and trestles) by approximately 17,442 square feet (SF). As further detailed in Section 2.3, this calculation varies slightly from the EIS as better data became available to refine these estimates as the planning and design for Pier 2 progressed.
- **Alternative B.** Under this action alternative, the Army would adopt the recommended design changes for Pier 2. As compared to Alternative A, these design changes include consolidating the west and forklift trestle layout to a single trestle and reducing the Pier 2 footprint (including piers and trestles) by an additional approximately 17,982 SF (for a total reduction of 33,405 SF).

MOTCO is an Army Military Surface Deployment and Distribution Command munitions and general cargo transshipment facility located in north central Contra Costa County, California (**Figure ES-1)**. This Department of Defense (DOD) installation is a West Coast common-user ammunition terminal and is home to the Surface Deployment and Distribution Command's 834th Transportation Battalion. MOTCO is in the East San Francisco Bay region, approximately 10 nautical miles inland past the Carquinez Strait that connects Suisun Bay to San Pablo Bay.

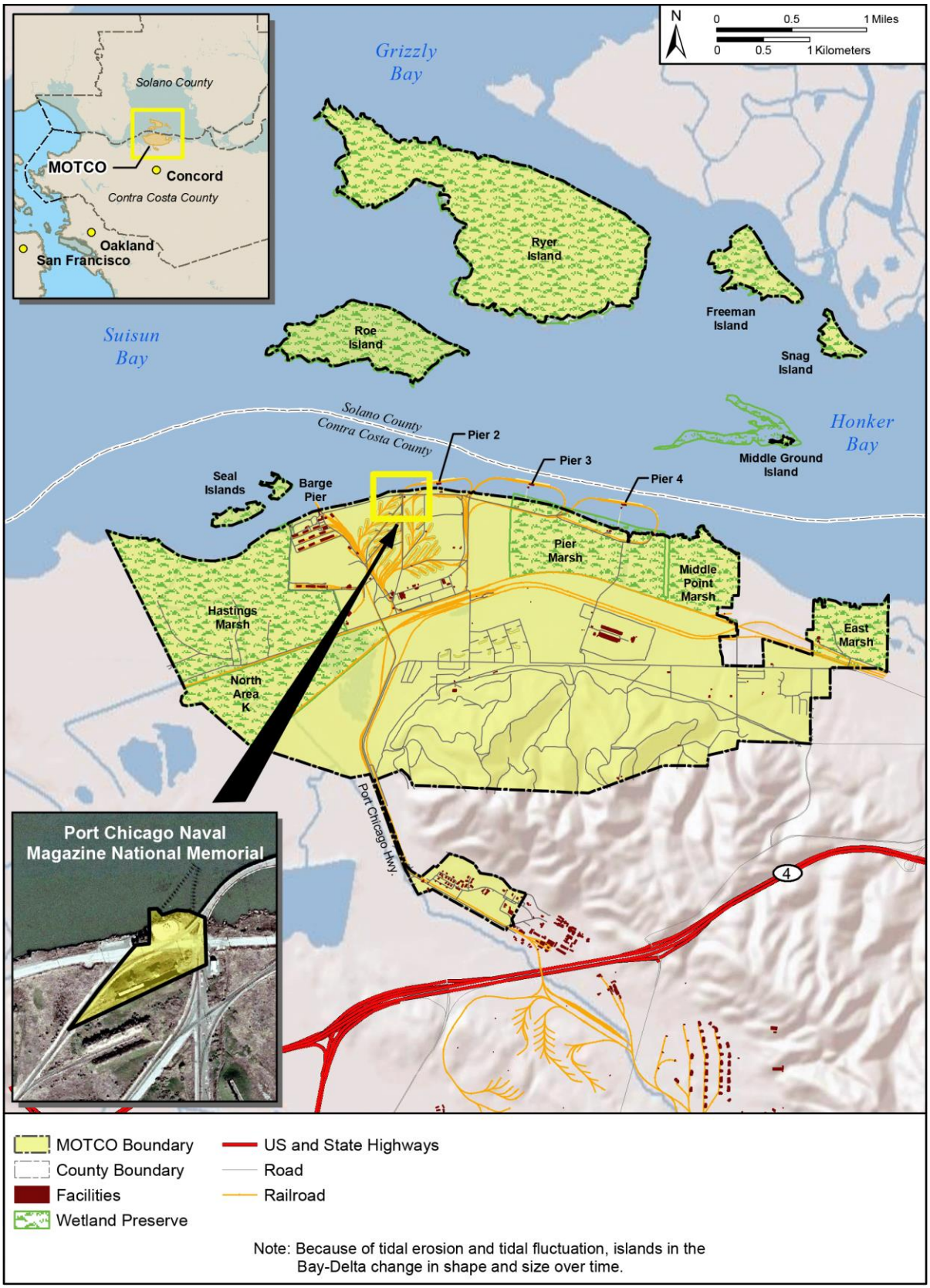

Figure ES-1. MOTCO Location and Property

The installation is composed of an approximately 115-acre Inland Area administrative complex and an approximately 6,526-acre Tidal Area. The Tidal Area includes piers, staging, and transfer facilities, as well as 2,045 acres in offshore islands (see **Figure ES-1**). The Port Chicago National Memorial, which is administered by the National Park Service (NPS), is also located in the Tidal Area near Pier 2 (see **Figure ES-1**). The Memorial honors those who gave their lives and were injured in the Port Chicago munitions explosion on July 17, 1944; recognizes those who served at the Port Chicago Naval Magazine; and commemorates the role of the installation during World War II. The Memorial was designated in 1992 by Public Law 102-562 and became the 392nd unit of the NPS in 2009 (NPS 2013).

ES.1 Purpose and Need

The purpose and need for the revised design of Pier 2 is higher quality, improved operational efficiency, and lower life-cycle cost, which would ultimately save taxpayer dollars. The purpose and need for the repair and modernization of Pier 2 remains the same as evaluated in the EIS and ROD: to ensure MOTCO continues to meet its designated mission.

ES.2 Description of the Proposed Action and Alternatives

The Army proposed to adopt recommended design changes for Pier 2 that emerged in the design process subsequent to the completion of the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and signing of the ROD. Whereas the EIS and ROD were based on preliminary design information for Pier 2, the United States Army Corps of Engineers (USACE) completed the 100 percent final design for the modernization of Pier 2 in October 2016. These design changes would provide the Army with the required modernized Pier 2 that meets all construction code requirements with the lowest life-cycle cost.

Alternative A: No Action Alternative. Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Council on Environmental Quality (CEQ) regulations require analysis of a No Action Alternative in an Environmental Assessment (EA) to provide a benchmark, enabling decision makers to compare the magnitude of the potential environmental effects caused by the proposed action and other alternative actions. An analysis of the No Action Alternative is required even if the agency is under a court order or legislative mandate to act.

Some of the calculations of areas of potential effect presented in the SEA under Alternative A have been refined from those presented in the EIS. The calculations were updated based on refined mapping and engineering data available as a result of the ongoing planning and design of Pier 2. Whereas the EIS analysis was largely based on constructability and preliminary concept design information, this SEA analysis draws from the 100 percent design of Pier 2. These updated calculations are administrative, factual corrections that have no bearing on the conclusions of the EIS and ROD.

Key elements of Alternative A are as follows:

- the total Pier 2 footprint is reduced by 17,442 SF;
- construction and demolition activities are estimated to occur over a 27-month period with demolition completed in 7 months;
- 876 24-inch octagonal concrete piles and 125 16-inch piles are installed and 4,514 creosote timber piles are removed; and
- landside trestle approaches and 1,350 linear feet of White Road are regraded and repaved and a new electrical substation is constructed in the northwest corner of the Pier 2 parking lot.
- habitat restoration, including a greater than 2:1 wetlands mitigation ratio (approximately 0.028 acre restoration for the estimated 0.013-acre area of unavoidable impact to wetlands), assuming the same mitigation ration under both alternatives.

Alternative B: Implement Pier 2 Design Changes (Preferred Alternative). The Pier 2 configuration under Alternative B includes a pier layout with the consolidation of two trestles into a single trestle. Alternative B is based on the 100 percent design for Pier 2 and includes assumptions regarding how construction and demolition activities would be sequenced and conducted. Key elements of Alternative B are as follows:

- the total Pier 2 footprint is reduced by 33,405 SF;
- construction and demolition activities are estimated to occur over a 27-month period with demolition spanning a 7-month period;
- 793 24-inch octagonal concrete piles and 134 16-inch piles are installed and an estimated 4,514 creosote timber piles are removed;
- landside trestle approaches and 1,350 linear feet of White Road are regraded and repaved and a new electrical substation is constructed at the south end of the existing Pier 2 parking lot; and
- habitat restoration, including a greater than 2:1 wetlands mitigation ratio (approximately 0.57 acre restoration for the estimated 0.26-acre area of unavoidable impact to wetlands), as specified in a Habitat Restoration Plan.

ES.3 Anticipated Environmental Consequences

The SEA evaluated the difference in the potential environmental and social effects associated with the design changes as compared with those analyzed for Alternative 1 in the EIS. Like the EIS, the analysis addressed potential environmental effects to earth resources; water resources; air quality; biological resources; land use and coastal zone management; transportation and utilities infrastructure; visual resources; recreational resources; noise; socioeconomics and environmental justice; cultural resources; and hazardous materials, hazardous waste, toxic

substances, and contaminated sites. While some potential for cumulative effects are addressed in Chapter 5.0 of the SEA, no significant cumulative impacts were identified.

As with the EIS, the analysis presented in the SEA concludes that all potential impacts are anticipated to be less than significant. The proposed action, however, will include implementation of avoidance and minimization measures for potential impacts to federally listed species, critical habitat, and historic resources within the proposed action area. Minimal updates and refinements were made to mitigation measures from the EIS (see Chapter 6 of the SEA).

Overall, Alternative B has a lower magnitude of impacts than Alternative A on earth resources, water resources, biological resources, land use/coastal zone management, cultural resources, and visual resources due to the smaller Pier 2 footprint (an additional -17,982 SF for a total -33,405 SF under Alternative B). The impacts to the Port Chicago National Memorial are less under Alternative B as the west trestle, which is currently adjacent to the Memorial and would remain so under Alternative A, is relocated to the east approximately 750 feet under Alternative B. Transportation/utilities infrastructure and air quality impacts are similar under both alternatives.

Under Alternative B, there are slightly greater landside impacts to wetlands and within the 100-year floodplain due to the new, single west trestle abutment. The Army has carefully considered alternative designs for the proposed action, with the goal of ensuring the operational adequacy of the new pier while minimizing the size of the new structure and the extent of new construction and fill in the waters of Suisun Bay. Alternative B, the new preferred alternative, would have lesser impacts to aquatic resources than the EIS-preferred alternative, Alternative A. Therefore, the Army has determined that Alternative B is the Least Environmentally Damaging Practicable Alternative in accordance with Section 404(b)(1) of the Clean Water Act. Similarly, the Army has found that there are no practicable alternatives to the proposed implementation of the project elements sited in the 100-year floodplain and the Army has taken all practicable measures to minimize harm to the floodplain.

There is negligible difference between the alternatives in terms of potential impacts to the following resources: recreation; noise; socioeconomic/environmental justice; and hazardous material, hazardous waste, toxic substances, and contaminated sites.

ES.4 Agency and Public Involvement

Early in the SEA development process (January 2016), MOTCO sent scoping letters to the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), NPS, U.S. Environmental Protection Agency (USEPA) Region 9, U.S. Army Corps of Engineers (USACE) Regulatory Division, California State Clearinghouse, California State Historic Preservation Office (SHPO), San Francisco Bay Conservation and Development Commission (BCDC), San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), California Department of

Fish and Wildlife (CDFW), Cortina Band of Indians, and Ione Band of Miwok Indians. These letters notified these agencies and federally recognized tribes of the proposed action and associated consultations and solicited comments. No responses to these letters were received. As detailed in Section ES.5, additional coordination continued with USFWS, NMFS, USACE Regulatory Division, SHPO, BCDC, NPS, and SFBRWQCB on consultation and permitting in support of the proposed action.

In accordance with 32 CFR Part 651.35, the draft Finding of No Significant Impact (FNSI) for this SEA will be made available to the public for review and comment for 30 days prior to the initiation of the proposed action. A notification of the draft FNSI will be published in the *Contra Costa Times.* The draft FNSI will be distributed to agencies and tribes listed in the above paragraph and any other agencies, organizations, and individuals that have expressed interest in the project. The draft FNSI will articulate the deadline for receipt of comments, availability of the SEA for review, and steps required to obtain the SEA. The draft FNSI, SEA, and documents incorporated by reference will be available at the Concord Public Library and Bay Point Library and at: https://www.sddc.army.mil/Pages/motco.aspx.

ES.5 Intergovernmental Coordination, Consultation, and Permitting

In accordance with 32 CFR Part 651.14(2), the following permit and agency coordination requirements have been identified as applicable to the proposed action. Appendix A includes the results of the consultations and permitting efforts that occurred in parallel with development of this SEA, which are summarized below.

- Endangered Species Act of 1973, Section 7 consultation with NMFS and USFWS regarding potential impacts to threatened and endangered species and designated critical habitat. Both NMFS and USFWS have concurred with the Army's conclusions that revised design for the project to replace/upgrade Pier 2 does not change the determinations of the Biological Opinions issued by these agencies, and that re-initiation of formal consultation pursuant to 50 CFR Part 402.16 is not necessary.
- Magnuson-Stevens Fishery Conservation and Management Act consultation with NMFS regarding potential impacts to Essential Fish Habitat (EFH). NMFS concurred with the Army's assessment that reinitiation of EFH consultation was not warranted.
- Combined Section 10 (Rivers and Harbors Act)/Section 404 (Clean Water Act [CWA]) permitting from the USACE San Francisco District to perform in-water construction and for the discharge of fill in jurisdictional wetlands. The Army has begun the permitting process.
- In conjunction with the Section 10/404 permit, obtaining a CWA Section 401 Water Quality Certification from the SFBRWQCB. The Army has begun the permitting process.
- Coastal Zone Management Act Coastal Consistency Determination concurrence from the BCDC. The Army continues to adhere to the terms of the Conditional Concurrence (C2033.003.05) obtained during the EIS process.

- National Historic Preservation Act Section 106 consultation with the SHPO, NPS, and federally recognized Tribes regarding potential impacts to historic properties. Consultation was conducted and concluded the design changes would have no adverse effect to historic properties.
- Demonstration that project-related construction emissions are below any applicable General Conformity Rule *de minimis* levels in accordance with the Clean Air Act and California Clean Air Act. A Record of Non-Applicability has been prepared.

Although this SEA is not a joint NEPA/California Environmental Quality Act (CEQA) document, it includes CEQA-specific analysis to facilitate and expedite permit issuance from state agencies. The intent is for state agencies issuing permits to be able to use this SEA to meet CEQA requirements.

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
ACP	Access Control Point
APE	Area of Potential Effect
BCDC	San Francisco Bay Conservation and Development Commission
BGEPA	Bald and Gold Eagle Protection Act
BMP	Best Management Practice
BO	Biological Opinion
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CO	Carbon Monoxide
CWA	Clean Water Act
CX	Categorical Exclusion
CY	Cubic Yard
CZMA	Coastal Zone Management Act
dB	Decibel
dBA	A-weighted decibel
DNL	Day-Night Average Sound Level
DOD	Department of Defense
DOR	Designer of Record
DPS	Distinct Population Segment
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
EPACT	Energy Policy Act
ESA	Endangered Species Act
ESS	Explosive Safety Submission
ESU	Evolutionarily Significant Unit
FICUN	Federal Interagency Committee on Urban Noise
FNSI	Finding of No Significant Impact
FRP	Facility Response Plan
FY	Fiscal Year
GHG	Greenhouse Gas
HM	Hazardous Material
HMMP	Hazardous Material Management Plan
HRP	Habitat Restoration Plan
HW	Hazardous Waste
HWMP	Hazardous Waste Management Plan
Hz	Hertz
IRP	Installation Restoration Program
LBP	Lead-Based Paint
LEDPA	Least Environmentally Damaging Practicable Alternative
LEED	Leadership in Energy and Environmental Design
L_{eq}	Sound Equivalent Level
LF	Linear Feet
LID	Low Impact Development
LOS	Level of Service
LPS	Lightning Protection System
LUC	Land Use Control
m	Meter
MARAD	Maritime Administration
MEC	Munitions of Explosive Concern
MLLW	Mean Lower Low Water
MMPA	Marine Mammal Protection Act
MMRP	Military Munition Response Program
MOTCO	Military Ocean Terminal Concord
MRS	Munitions Response Site

NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO_x	Nitrogen Oxides
NPS	National Park Service
NRHP	National Register of Historic Places
NWSSBD	Naval Weapons Station Seal Beach Detachment
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
$PM_{2.5}$	Particulate Matter Less Than or Equal to 2.5 microns in diameter
PM_{10}	Particulate Matter Less Than or Equal to 10 microns in diameter
re 1 µPa	referenced to 1 micro Pascal
REC	Record of Environmental Consideration
RMS	Root Mean Square
ROD	Record of Decision
RONA	Record on Non-Applicability
RPMP	Real Property Master Plan
SAV	Submerged Aquatic Vegetation
SEA	Supplemental Environmental Assessment
SEL	Sound Exposure Level
SF	Square Feet
SFBRWQCB	San Francisco Bay Regional Water Quality Control Board
SHPO	State Historic Preservation Officer
SOP	Standard Operating Procedure
SO_2	Sulfur Dioxide
SPCC	Spill Prevention Control and Countermeasure
SPL	Sound Pressure Level
SPP	Shoreline Protection Plan
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TEF	Temporary Exclusion Fence
TWW	Treated Wood Waste
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound
WQMP	Water Quality Management Plan

1.0 INTRODUCTION

The Department of the Army (Army) signed a Record of Decision (ROD) for the February 2015 Final Environmental Impact Statement (EIS) for the Modernization and Repair of Piers 2 and 3 at Military Ocean Terminal Concord (MOTCO), California on April 14, 2015. In the ROD, the Army selected Alternative 1 for implementation. Alternative 1 included demolition of a considerable portion of Pier 2 and replacement of the main platform and trestles and reorienting the west end of the pier. The EIS and ROD are hereby incorporated by reference per 40 Code of Federal Regulations (CFR) Part 1502.21 and consistent with 32 CFR Part 651.12(a)(3).

As the design of the modernization and repair progressed, the Army identified changes in the proposed Pier 2 layout (primarily consolidating two trestles into one) that would result in more efficient pier operations and a reduction in construction costs. This Supplemental Environmental Assessment (SEA) is being prepared to assess the differences in the potential environmental and socioeconomic impacts and cumulative effects associated with the design changes for Pier 2 as compared with those analyzed for Alternative 1 in the EIS. Supplemental National Environmental Policy Act (NEPA) documentation is required when the Army makes substantial changes in the proposed action that are relevant to environmental concerns such as the changes in the proposed Pier 2 repair and modernization design.

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- **Alternative B.** Under this action alternative, the Army would adopt the recommended design changes for Pier 2. As compared to Alternative A, these design changes include consolidating the west and forklift trestle layout to a single trestle and reducing the Pier 2 footprint (including piers and trestles) by an additional approximately 17,982 SF (for a total reduction of 33,405 SF). Additional modifications are included in Alternative B and discussed in detail in Section 2.3.

1.1 INSTALLATION DESCRIPTION AND CURRENT SITUATION

MOTCO is an Army Military Surface Deployment and Distribution Command munitions and general cargo transshipment facility located in north central Contra Costa County, California (**Figure 1-1**). This installation is a West Coast common-user ammunition terminal and is home to the Surface Deployment and Distribution Command's 834th Transportation Battalion. MOTCO is in the East San Francisco Bay region, approximately 10 nautical miles inland past the Carquinez Strait that connects Suisun Bay to San Pablo Bay.

Figure 1-1. Regional Location

San Francisco is 30 miles to the southwest, Oakland is 20 miles to the southwest, Sacramento is 65 miles to the northeast, and the City of Concord is located approximately 5 miles south.

The installation is composed of an approximately 115-acre Inland Area administrative complex and an approximately 6,526-acre Tidal Area. The Inland Area and the Tidal Area are connected by a road running parallel to and west of Port Chicago Highway. The Tidal Area includes piers, staging and transfer facilities, as well as 2,045 acres in offshore islands (**Figure 1-2**). Two public rail lines, Union Pacific Railroad and Burlington Northern Santa Fe, traverse the Tidal Area and interconnect with Army-owned MOTCO rail lines.

The Port Chicago National Memorial, which is administered by the National Park Service (NPS), is also located on MOTCO (see **Figure 1-2**). The Memorial honors those who gave their lives and were injured in the Port Chicago munitions explosion on July 17, 1944; recognizes those who served at the magazine; and commemorates the role of the facility during World War II. The Memorial was designated in 1992 by Public Law 102-562 and became the 392nd unit of the NPS in 2009 (NPS 2013).

MOTCO installation property was formerly owned by the Department of the Navy as part of Naval Weapons Station Seal Beach Detachment (NWSSBD) Concord. On October 1, 2008, MOTCO properties were transferred from the Navy to the Army per 2005 Defense Base Closure and Realignment Commission.

1.2 Purpose and Need for the Proposed Action

The purpose and need for the revised design of Pier 2 is higher quality, improved operational efficiency, and lower life-cycle cost, which would ultimately save taxpayer dollars. The purpose and need for the repair and modernization of Pier 2 remains the same as evaluated in the EIS and ROD: to ensure MOTCO continues to meet its designated mission.

1.3 Scope and Content of This Supplemental Environmental Assessment

The Army has prepared this SEA to address the potential environmental impacts of the proposed action in accordance with NEPA of 1969 (42 United States [U.S.] Code Section 4321 *et seq.*); its implementing regulations (40 CFR Parts 1500–1508); the Army's regulation implementing NEPA (32 CFR Part 651), and, to the extent applicable, the California Environmental Quality Act (CEQA) (California Public Resources Code, section 21000 *et seq.*). The Army is the lead agency for the proposed action; there are no cooperating agencies (per 40 CFR Part 1501.6) for this SEA.

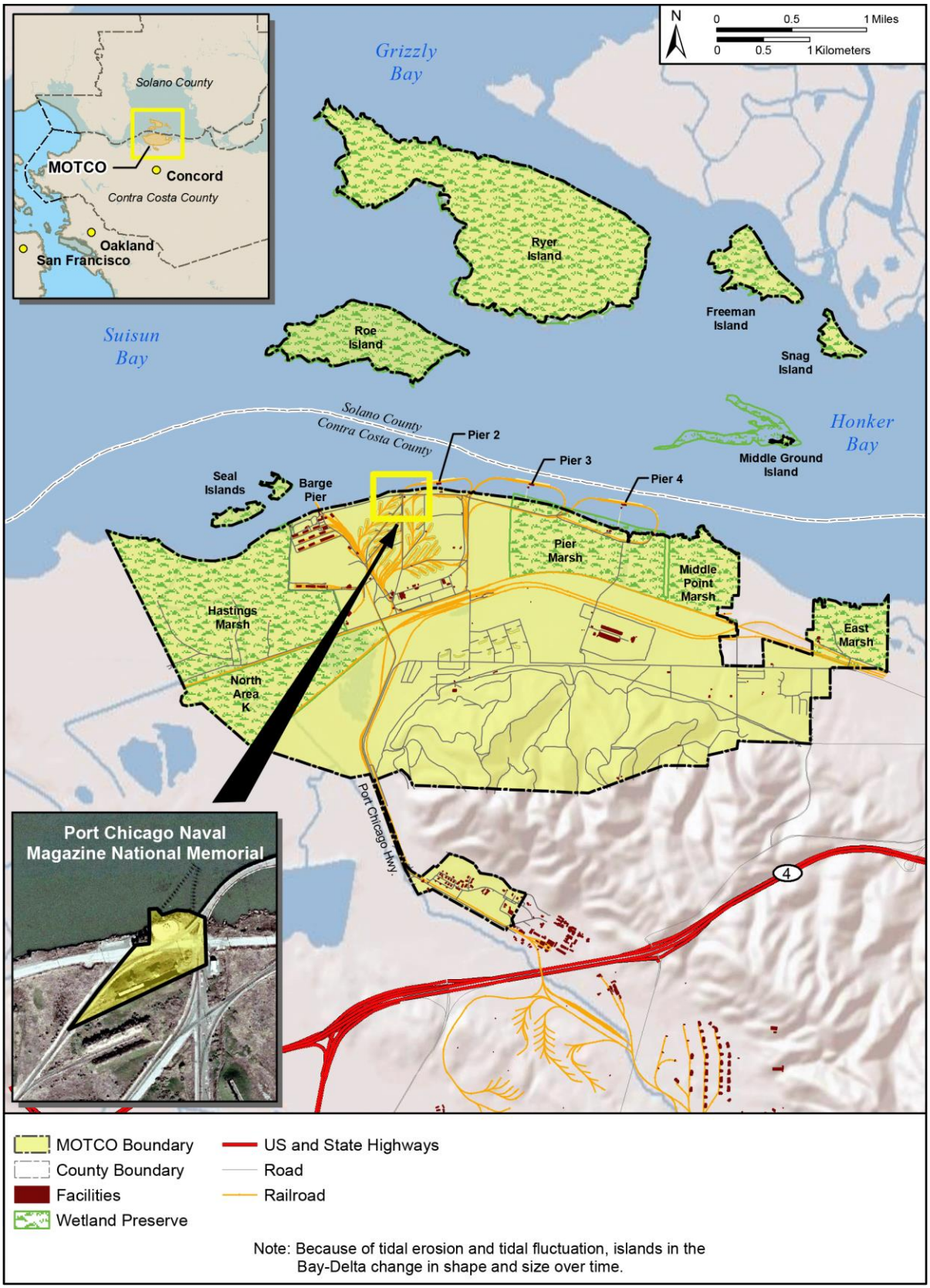

Figure 1-2. MOTCO Property

This SEA evaluates the potential environmental impacts of implementing Alternative A (EIS Alternative 1, the no action alternative for this SEA) or Alternative B (revised Pier 2 design, based on the current best available data). It contains discussions of mitigation measures, permit requirements, and conclusions regarding whether or not described impacts are significant in accordance with NEPA. As noted in Section 1.0, the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and the resultant ROD are incorporated into this SEA by reference per 40 CFR Part 1502.21 and consistent with 32 CFR Part 651.12(a)(3).

1.4 AGENCY AND PUBLIC INVOLVEMENT

Early in the SEA development process (January 2016), MOTCO sent scoping letters to the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), NPS, U.S. Environmental Protection Agency (USEPA) Region 9, U.S. Army Corps of Engineers (USACE) Regulatory Division, California State Clearinghouse, California State Historic Preservation Office (SHPO), San Francisco Bay Conservation and Development Commission (BCDC), San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), California Department of Fish and Wildlife (CDFW), Cortina Band of Indians, and Ione Band of Miwok Indians. These letters notified these agencies and federally recognized tribes of the proposed action and associated consultations and solicited comments. No responses to these letters were received. As detailed in Section 1.5, additional coordination continued with USFWS, NMFS, USACE Regulatory Division, SHPO, BCDC, NPS, and SFBRWQCB on consultation and permitting in support of the proposed action.

In accordance with 32 CFR Part 651.35, the draft Finding of No Significant Impact (FNSI) for this SEA will be made available to the public for review and comment for 30 days prior to the initiation of the proposed action. A notification of the draft FNSI will be published in the *Contra Costa Times.* The draft FNSI will be distributed to agencies and tribes listed in the above paragraph and any other agencies, organizations, and individuals that have expressed interest in the project. The draft FNSI will articulate the deadline for receipt of comments, availability of the SEA for review, and steps required to obtain the SEA. The draft FNSI, SEA, and documents incorporated by reference will be available at the Concord Public Library and Bay Point Library.

1.5 INTERGOVERNMENTAL COORDINATION, CONSULTATION, AND PERMITTING

In accordance with 32 CFR Part 651.14(2), the following permit and agency coordination requirements have been identified as required for the proposed action. Appendix A includes the results of the consultations and permitting efforts that occurred in parallel with development of this SEA, which are summarized below.

- Endangered Species Act (ESA) of 1973, Section 7 consultation with NMFS and USFWS regarding potential impacts to threatened and endangered species and designated critical habitat. Both NMFS and USFWS have concurred with the Army's conclusions

that revised design for the project to replace/upgrade Pier 2 does not change the determinations of the Biological Opinions (BOs) issued by these agencies, and that re-initiation of formal consultation pursuant to 50 CFR Part 402.16 is not necessary (see Appendix A). These BOs (NMFS BO SWR-2013-9819 dated November 19, 2014 and USFWS BO 08FBD-2014-F-0002-5 dated February 4, 2015) are available in Appendix D of the EIS.

- Magnuson-Stevens Fishery Conservation and Management Act consultation with NMFS regarding potential impacts to Essential Fish Habitat (EFH). NMFS concurred with the Army's assessment that reinitiation of EFH consultation was not warranted (see Appendix A). NMFS' EFH Response is included in the NMFS BO available in Appendix D of the EIS.
- Combined Section 10 (Rivers and Harbors Act)/Section 404 (Clean Water Act [CWA]) permitting from the USACE San Francisco District to perform in-water construction and for the discharge of fill in jurisdictional wetlands. In support of the permit application, the Army has prepared a draft Section 404(b)(1) alternatives analysis, included in this SEA as Appendix B, identifying the Army's preferred alternative as the Least Environmentally Damaging Practicable Alternative (LEDPA), as required for permitting. The draft 404(b)(1) analysis will be revised following public review of the SEA, and submitted as part of the permit application to the USACE San Francisco District Regulatory Branch. The final determination of compliance with the 404(b)(1) guidelines is made by the District as part of the permit review process.
- In conjunction with the Section 10/404 permit, obtaining a CWA Section 401 Water Quality Certification from the SFBRWQCB. The Army has begun the permitting process.
- Coastal Zone Management Act (CZMA) Coastal Consistency Determination concurrence from the BCDC. The Army continues to adhere to the terms of the Conditional Concurrence (C2033.003.05) obtained during the EIS process.
- National Historic Preservation Act (NHPA) Section 106 consultation with the SHPO, NPS, and federally recognized Tribes regarding potential impacts to historic properties. Concurrence with regard to no adverse effect to historic properties is provided in Appendix A.
- Demonstration that project-related construction emissions are below any applicable General Conformity Rule *de minimis* levels in accordance with the Clean Air Act and California Clean Air Act. A Record of Non-Applicability (RONA) has been prepared (Appendix D).

Although this SEA is not a joint NEPA/CEQA document, it includes CEQA-specific analysis to facilitate and expedite permit issuance from state agencies. The intent is for state agencies issuing permits to be able to use this SEA to meet CEQA requirements.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Army proposed to adopt recommended design changes for Pier 2 that emerged in the design process subsequent to the completion of the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and signing of the ROD. Whereas the EIS and ROD were based on preliminary design information for Pier 2, the USACE completed the 100 percent final design for the modernization of Pier 2 in October 2016. These design changes would provide the Army with the required modernized Pier 2 that meets all construction code requirements with the lowest life-cycle cost.

2.1 ALTERNATIVES CONSIDERED AND PREFERRED ALTERNATIVE

This SEA evaluates two alternatives in detail, which are described in Sections 2.2 and 2.3. Alternatives considered but not carried forward for detailed evaluation in this SEA are summarized in Section 2.5. **Figure 2-1** depicts the main elements of Alternatives A and B in comparative format. The Army has identified Alternative B as the preferred alternative based on higher quality, increased operational efficiency, and lower life-cycle cost, which would ultimately save taxpayer dollars.

2.2 ALTERNATIVE A: NO ACTION ALTERNATIVE

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD (Figure 2-1). Council on Environmental Quality (CEQ) regulations require analysis of a No Action Alternative in an Environmental Assessment (EA) to provide a benchmark, enabling decision makers to compare the magnitude of the potential environmental effects caused by the proposed action and other alternative actions. An analysis of the No Action Alternative is required even if the agency is under a court order or legislative mandate to act.

Some of the calculations of areas of potential effect presented in this SEA under Alternative A have been refined from those presented in the EIS. The calculations were updated based on refined mapping and engineering data available as a result of the planning and design of Pier 2. Whereas the EIS analysis was largely based on constructability and preliminary concept design information, this SEA analysis draws from the 100 percent design of Pier 2. These updated calculations are administrative, factual corrections that have no bearing on the conclusions of the EIS and ROD. Under Alternative A, the total Pier 2 footprint would be reduced by 17,442 SF. Tables 2-1, 2-5, and 2-6 compare specific aspects of the two alternatives.

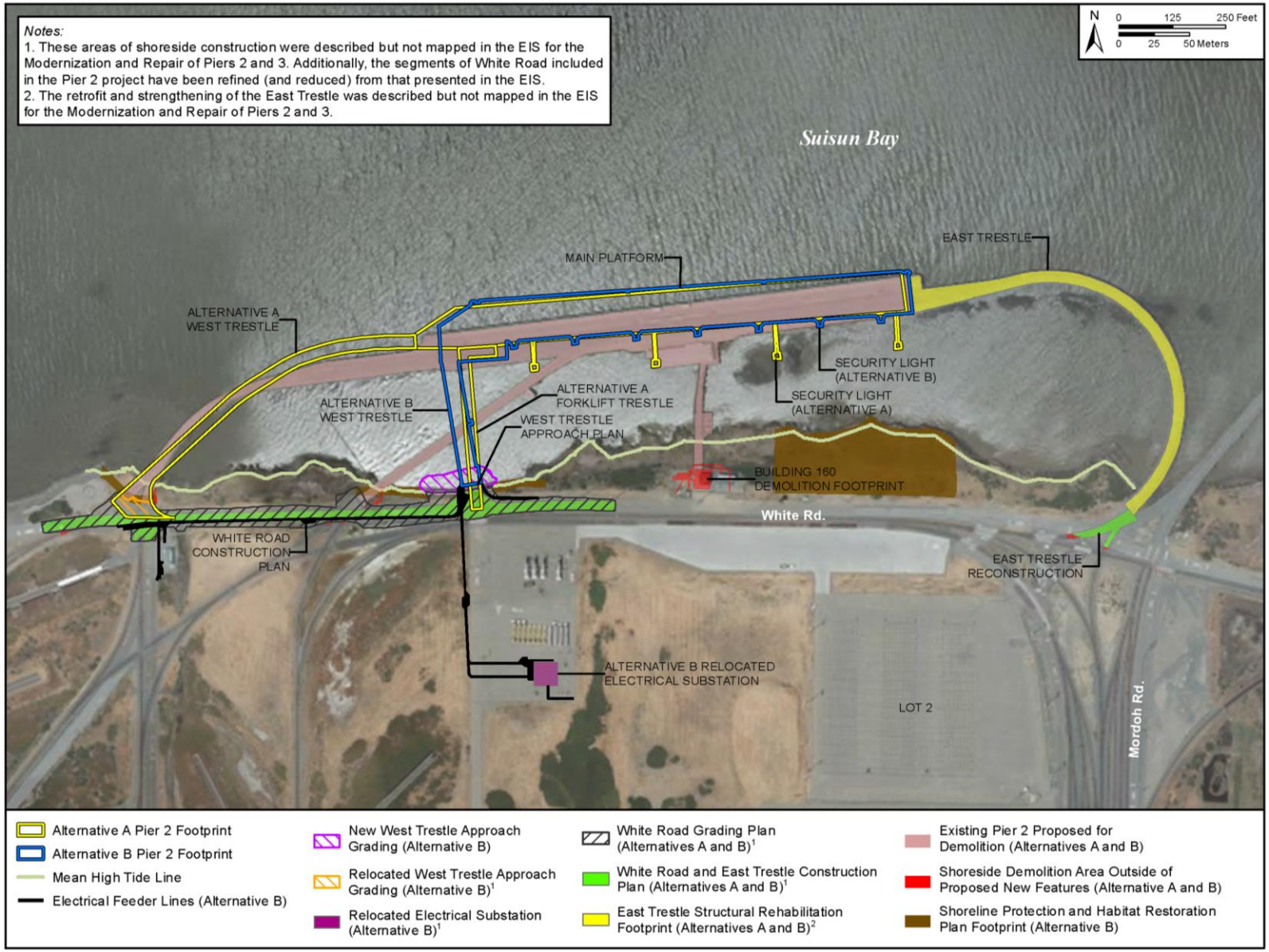

Figure 2-1. Alternative A and Alternative B Demolition and Construction Footprints

2.3 ALTERNATIVE B: IMPLEMENT PIER 2 DESIGN CHANGES

The Pier 2 configuration under Alternative B includes a pier layout that consolidates two trestles into a single trestle. Under the Alternative B configuration, the total Pier 2 footprint would be reduced by 33,405 SF, 17,982 SF more than Alternative A. Alternative B is based on the 100 percent design for Pier 2 and includes assumptions regarding how construction and demolition activities would be sequenced and conducted.

2.3.1 Demolition

Footprint. The proposed area of demolition of Pier 2 waterside under Alternative B does not differ from Alternative A (see Figure 2-1). The landside demolition would primarily be within the footprint of the proposed construction and is not further detailed here. The exception is the demolition of Building 160 and associated pavement and utilities at the landside of the existing Pier 2 pedestrian trestle. This demolition footprint is the same under Alternative A and Alternative B; however, additional detail regarding this footprint has become available since the EIS was completed.

Creosote-Treated Timber Piles to be Removed/Cut. As with Alternative A, it is anticipated that the existing creosote-treated timber piles below the footprint of the new pier that would interfere with the installation of the new piles would be removed. These piles are approximately 55 to 75 feet in length. Piles that would not impact the installation or that lie outside the footprint of the new pier would be cut off 2 feet below the mud line and the portion below the mud line would be left in place. Table 2-1 provides the estimate of the creosote-treated timber piles to be removed under both alternatives. These estimates are based on best available data and include an approximate 5 percent margin of error. More accurate estimates would not be available until after the construction contractor has conducted a pre-construction survey.

Table 2-1. Creosote Timber Pile Removal Estimates under Alternatives A and B

	Alternatives A and B[1]
Extractions	2,000
Cuts	2,514
Total	**4,514**

Note:
[1]The EIS estimated 4,514 total piles to be removed with 2,155 extracted and 2,359 cut. Whereas the EIS estimates were based on pier inspection reports, these estimates are based on as-built drawings of the piers.

Demolition Timeline and Operations. As with Alternative A, the timeline for demolition under Alternative B would be approximately 7 months (or approximately 152 working days/30 weeks). Under Alternative B, demolition could begin at the western end of the main platform and proceed east before returning to demolish the west trestle. This would allow debris to be trucked off over the west trestle, which may result in reduced barging of demolition debris. (Under Alternative A, the demolition would begin at the west trestle abutment and proceed

east). The method would be determined by the means and methods selected by the Army's contractor.

Table 2-2 compares the estimated demolition activity at the peak of demolition operations under both alternatives.

Table 2-2. Peak Activity Demolition Operations under Alternatives A and B

Demolition Activity	Alternative A	Alternative B
Equipment Working at Pier	Up to four excavators or a mix of excavators and cranes working • two or three mounted on barges • one at the Barge Pier transferring materials to shore • one cutting debris into manageable pieces in the stockpile area	Same as Alternative A
Demolition Operations	• Two to three trucks per day hauling material away from the demolition site to the stockpile site. • One tug boat moving the two barges around. • Two skiffs managing the debris boom and shuttling crew members between barges and shore.	Same as Alternative A
Off-installation Truck Trips per Day	1,300 to 1,350 truck trips (round trips), amounting to 8 to 12 round trips per day.	1,580 to 1,650 truck trips (round trips), amounting to 4 to 8 round trips per day
Workers at the Job Site Every Day	10 to 20 workers	Same as Alternative A

Worker Access. As with Alternative A, it is expected the workers would park at the parking lot near Gate 1 and be shuttled to the work site. Should Gate 1 become unavailable for this use at any time during project implementation, another centralized worker parking site would be established at another appropriate and existing site approved for supporting MOTCO's construction staging and parking needs.

Alternative B provides additional flexibility for the potential use of Gate 5 for demolition-related truck traffic. Gate 5 is located in the eastern portion of the Tidal Area at the intersection of Port Chicago Highway and Nichols Road. Whereas under Alternative A, Gate 2 (located at Port Chicago Highway and Taylor Boulevard) would primarily be used, Alternative B clarifies that Gate 5 would occasionally be used for oversized materials and equipment throughout the project. Additionally, Gate 5 is planned for upgrades and would be a primary truck gate for MOTCO once completed. Once the upgrades are completed, truck traffic would also potentially be routed through Gate 5. Based on the current planned construction, an upgraded Gate 5 should be available for use in 2019 (during the later stages of the Pier 2 project based on the current project execution schedule).

2.3.2 Modernization and Repair

Main Platform. Under Alternative B, the main platform of the repaired and modernized pier would be 95,000 SF (the same as under Alternative A). Access to the main platform is provided by the existing east trestle and the new west trestle.

West Trestle. Under Alternative B, the west trestle would be reconstructed at roughly the same location as the Alternative A forklift trestle and no dedicated forklift trestle would be included. This results in a reduction of the total over water Pier 2 footprint of 17,982 SF additional area as compared to Alternative A. The existing west trestle would potentially be temporarily repaired to accommodate construction vehicles such as a mobile crane (pile driver). The new west trestle would be a pile supported concrete structure with a nominal deck elevation of +13.5 feet mean lower low water (MLLW) (includes an allowance for projected sea level rise). The approach to the new west trestle from White Road would provide a safe turning radius for operational vehicles, and would be ramped to transition between the White Road grade and the new trestle grade and alignment. The abutment includes a rock revetment and fill below the mean high water line. Due to the soft soils onsite, surcharge fill would be required to pre-compress/preload the soft soils to avoid settlement of embankment fill that would be included in the west trestle approach construction. Surcharge fill at the west trestle abutment would be at a height proportional to the height of fill plus an average additional 2 feet for a period of not less than 22 weeks. The surcharge fill would be sloped from an elevation of +11 feet MLLW to +20 feet MLLW. The elevation of the abutment would be at +12.3 feet MLLW.

Surcharge fill refers to fill that is used on a temporary basis to apply stress to underlying soils so that the soils compact and water is displaced from the soil grains. A surcharge consists of fill material above the top of the proposed finished grade.

Pile Driving: Under Alternative B, there would be 793 24-inch octagonal pre-stressed concrete piles installed for Pier 2 modernization and repair. The proposed concrete piling work for these would occur consistent with Alternative A as described in the EIS; however, the number of piles would be fewer as detailed in Table 2-3.

Table 2-3. Summary of Pier 2 24-inch Octagonal Concrete Piling Work Under Alternative B

Location	Number of Piles, Each	Duration, Work Days	Average Piles per Day
Indicator Piles	14	8	2
West Trestle	36	24	1.5
Main Platform	743	170	4.5
Total	**793**	**202**	**4.0**

Note:
Pile driving will occur at the same rate as analyzed in the EIS (4-5 piles per day, on average) even with the potential contemporaneous use of two pile driving rigs.

Additionally, under Alternative B, there is a potential that there would be contemporaneous pile driving with two pile driving spreads and rigs at the West Trestle and the Main Platform. Such a contemporaneous operation is estimated to extend over approximately 15 days, but in actuality would involve about 1 to 5 days within that timeframe when both drivers are operating. To avoid additive sound pressure levels experienced by species in the vicinity of the work area, the Army is committed to implementing management practices to ensure piles will not be driven simultaneously by these rigs. Specifically, the contractor will be required to ensure that there is communication between the two operations regarding start/stop of pile driving activity. This will allow one rig to commence pile driving activities while the second is positioning and staging the next pile installation.

The smaller, 16-inch square concrete fender piles (about 134 piles) along the face of the main platform would be driven in about 26 days after all the other pile driving is complete. An estimated 54 of these piles would be salvaged/reused piles from Pier 2 and an estimated 80 would be new piles. These numbers are estimates since it is not possible to precisely determine breakage during pile salvage operations.

West Trestle Approach. Under Alternative B, the current west trestle approach would be converted to a standard intersection (White Road/Anderson Road) and a new west trestle approach would be constructed at the Alternative B location. The new, relocated west trestle approach under Alternative B would cover a similar area as the Alternative A west trestle approach (see Figure 2-1).

East Trestle Approach. Under Alternative B, the east trestle approach would be reconstructed to make a smooth transition from the trestle to White Road since the railroad tracks would be demolished. This area also was included in EIS Alternative 1; however, additional details about this construction now available are included in the analysis of Alternative A and Alternative B in this SEA.

East Trestle Rehabilitation. The east trestle rehabilitation includes removal of rail and removal and replacement of pavement surface, demolition/replacement of some deck panels at the western end of this trestle adjacent to the main platform, strengthening of the remainder of the deck panels, and miscellaneous concrete damage repairs. This rehabilitation was included in the EIS Alternative 1, but additional details are now available and are analyzed for Alternatives A and B.

Lighting. Under Alternative B, eight 45-foot-tall light poles for the high mast lighting for the main platform would be mounted at the landside of the deck. Each of the poles would have between 8 and 11 light fixtures. The trestles would be lit using street-light fixtures mounted on 25-foot poles.

Fender Camels. Under Alternative B, the fender pile/camel system has been further refined to better accommodate barge berthing without the need for temporary camels. The rubber fenders

and the steel wales would be replaced, and the timber camels would not be used in the new fender system for typical ship berthing.

White Road Repairs. Repairs to White Road included in Alternative B would be made between Anderson Road and approximately 300 feet east of Pruitt Road. Improvements would include raising the elevation of approximately 1,350 feet of existing road (see Figure 2-1) from approximately 8 to 10 feet to 10 to 12 feet to restore the elevation of White Road. The width of the paved surface would be 24 feet (includes 11-foot lanes, with one additional foot between the lane line and edge of pavement, and two additional feet of aggregate shoulder). Access for individuals with disabilities would run from the existing parking lot to the new west trestle. Existing railroad lines crossing White Road would be removed at the west, middle, and east trestle approaches, and terminated adjacent to the south side of White Road, where railroad wheel stops would be installed.

Since the EIS was prepared, the Army's plan for installation-wide repairs to roads and bridges progressed to the point where an EA and associated agency consultations have been prepared to assess the potential environmental impacts of these projects. As the Pier 2 design progressed concurrently, the decision was made to include only those elements of the White Road repairs that are included as part of the Pier 2 repair and modernization project in this SEA. Additional analysis of the road and bridge repairs, including segments of White Road that connect with these improvements is provided in Chapter 5.0, *Cumulative Impacts*.

Electrical Substation. The site of this facility under Alternative B is within the existing Pier 2 parking lot at the southern end, which is located just south of the Alternative B west trestle (see Figure 2-1). Under Alternative A, the proposed location of the electrical substation would be at the northwest corner of the existing Pier 2 parking lot. Under Alternative B, new electrical lines would be installed to connect the substation with existing electrical lines in a conduit installed within approximately 1.1 linear feet of existing disturbed roadbeds (see Figure 2-1). Approximately 1,936 SF of concrete pad would be constructed as the foundation for the new electrical substation.

Inland Area Substation Upgrades. The footprint of the existing substation would be expanded by an area conservatively estimated at 700 SF for a complete and usable electrical system to support the cranes for the upgraded Pier 2. No new transmission lines would be required, and new cabling would be run through existing conduits. The potentially impacted area has been extensively disturbed from prior construction projects.

Habitat Restoration and Shoreline Protection. The Army has prepared a Draft Habitat Restoration Plan (HRP) and Shoreline Protection Plan (SPP) for Alternative B. Like the HRP for Alternative A, the HRP details the EIS commitments to restore impacts to wetlands located within the existing Pier 2 footprint and the wetlands located within the 100-foot buffer of the new Pier 2 footprint at the conclusion of the project. As with Alternative A, restoration methods will

include establishing desired elevations for tidal marsh communities and the removal of bordering stands of invasive perennial pepperweed, including excavation of the roots, surface soil, and seedbank (within 1 inch of the surface). Native high marsh species such as alkali heath and gumplant would be reestablished in these areas using locally obtained material. Alternative B incorporates additional restoration for the wetlands impacted by the west trestle abutment and shoreline protection practices that are overall similar to Alternative A but include additional impacts. The HRP provides additional specifics that would apply for both alternatives; plus, addresses the additional unavoidable shoreline and wetland impacts associated with the west trestle abutment under Alternative B. The HRP provides for no net loss of wetlands and a greater than 2:1 wetlands mitigation ratio (approximately 0.57 acre) for the estimated 0.264-acre area of unavoidable impact to intertidal and palustrine wetlands associated with implementation of Alternative B (USACE Sacramento 2016).

The objectives of the HRP are to:

- Restore 0.71 acre of subtidal and 0.08 acre of shoreline and tidal brackish marsh habitat within areas currently occupied by Pier 2 structures.
- Reduce the cover of invasive non-native plants in the tidal brackish marsh and upland buffer (upland buffer is the area between White Road and the wetland boundary to the north) to not more than 5 percent within 5 years of HRP implementation.
- Establish 1.32 acres of self-sustaining, native tidal marsh wetland vegetation in areas that are disturbed during construction. This includes 0.67 acre of re-establishment in wetlands impacted during construction, 0.57 acre of wetlands restored in existing uplands, and 0.08 acre of re-establishment of wetlands in areas previously shaded by trestle structures.

As with Alternative A, the SPP addresses erosion of the shoreline west of Pier 2, including removal of any non-functional material (i.e., the material does not serve as a structural component to prevent shoreline erosion) and repair of the shoreline rock revetment along White Road. Additionally, the SPP for Alternative B addresses the interface of the existing shoreline rock revetment with the west trestle abutment and reflects a design that also considered aesthetic compatibility of the shoreline protection west of Pier 2 with the Port Chicago National Memorial (see Figure 2-1). The Draft HRP has been provided to NMFS, USFWS, and USACE and the final HRP will incorporate comments provided by these agencies (USACE Sacramento 2016 *in prep*).

2.3.3 Other Project Activities not included in the Design Changes

There are a number of elements of Alternative A that this SEA does not focus on because they do not pertain to the design changes; however, these actions may still occur at some future time under both alternatives. These include the following:

- Relocation of Building 100 – this modular building would be moved from its present location on the north side of White Road near the pedestrian trestle to the Pier 2 parking area south of White Road.
- Expansion of Lot T-10 – this expansion to allow for additional room for handling containers has ongoing operational value even though it has been omitted from the Pier 2 project.
- As the impacts from these elements of Alternative B have not changed since evaluated in the EIS, the analysis of these impacts from the EIS is incorporated by reference.

In addition, due to design changes, maintenance dredging is no longer associated with the Pier 2 project. However, MOTCO has now begun planning for maintenance dredging needs for access to the piers under a separate effort, which is further described and analyzed in Chapter 5.0, *Cumulative Impacts*.

2.3.4 Construction Timeline and Operations

The estimated timeline for project activities under Alternatives A and B is 27 months, beginning in the third quarter of 2017. This estimate does not include interruptions to the schedule that could occur due to conflicts with mission activities, severe weather, materials or equipment issues, etc. The potential impacts that such interruptions may have on the execution schedule are not reasonably foreseeable. Therefore, the analysis herein is based on the 27-month schedule as the best available estimate.

The demolition portion of the project would overlap with construction and would be completed in approximately 7 months. It is anticipated that both the in-water construction and landside construction would be completed within 24 months, though staggered with the start of landside construction activities following the start of waterside construction activities by approximately 2 months. This estimated construction schedule was based on a 10-hour day, 5-day work week, but work could be extended to 7 days per week as needed (i.e., if the contractor falls behind schedule). The conceptual schedule for the implementation of the HRP has most of the work occurring in fall 2018 concurrent with Pier 2 construction activities. This is followed by a 5-year period of maintenance and monitoring and a 10-year period of long-term management.

Worker Access. As with the demolition activity, it is expected that the workers would park at the lot near Gate 1 or another centralized location on MOTCO and be shuttled to the work site. Additionally, Gate 5 could potentially be used for construction-related truck traffic. Table 2-4 provides estimates of construction operations, equipment, and workers under Alternatives A and B.

Table 2-4. Peak Activity Construction Operations under Alternatives A and B

Construction Activity	Alternative A	Alternative B
Construction Operations	• Construction would proceed from west to east following the demolition work • Assuming a driving rate of one pile every 2 hours (or four to five piles per day), the pile driving would proceed at a rate of about one bent per day for the trestle and one bent every 2 days for the main platform	Same as Alternative A
Construction Equipment	• Pile driver (Delmag Pile Hammer D62-22 or equivalent) • Concrete pump • Other typical construction equipment such as grader, paver, roller, welder, generators, forklifts, and loaders • Crane barge or Derrick barge	Same as Alternative A
Workers at the Job Site Every Day	Would vary: • Pile driving derrick: at least 7 workers • Formwork: 8 workers • Concrete crew: 12 workers • When work is concurrent, at least 30 workers	Same as Alternative A

2.4 COMPARISON OF ALTERNATIVES

Table 2-5 provides a comparison of the major components of the timeline and total waterside and landside demolition and construction under Alternatives A and B.

Table 2-5. Comparison of Major Construction/Demolition Under Alternatives A and B

Project Element	Alternative A	Alternative B
Timeline		
Demolition	7 months	7 months
Waterside Construction	24 months	24 months
Landside Construction	Not specified	24 months
Total Timing	27 months	27 months
Dates	3rd quarter 2017 to 4th quarter 2019	3rd quarter 2017 to 4th quarter 2019
Working Hours	Normal business hours	10-hour days, 5 days per week[1]
Total Waterside Footprint[2]		
Demolition Only	156,130 SF[3]	156,130 SF
Construction Only	138,688 SF[3]	122,725 SF
Demolition and Construction	217,816 SF[3]	203,009 SF
East Trestle Rehabilitation	36,500 SF[3]	36,500 SF
Total Landside Footprint[2]		
Demolition Only	52,353 SF[3]	45,885 SF
Construction Only	71,902 SF[3]	71,716 SF
Demolition and Construction	19,549 SF[3]	25,831 SF
New Footprint (Platform and Trestles)	138,688 SF[3]	122,725 SF
East Trestle Rehabilitation Footprint	36,500 SF	36,500 SF

Table 2-5. Comparison of Major Construction/Demolition Under Alternatives A and B

Project Element	Alternative A	Alternative B
Total Pier 2 Footprint	175,188 SF	159,225 SF
Reduction from Existing 192,630 SF Pier 2 Footprint[2]	-17,442 SF[3]	-33,405 SF

Notes:
[1] The estimated timeline was based on 10-hour days, 5 days a week, but allowing work during weekends to make up time only.
[2] For this table, waterside footprints were calculated as below the mean high tide line (+4.4 feet MLLW contour) and landside footprints were calculated as above the mean high tide line.
[3] These calculations include factual corrections to the EIS, which reported the existing Pier 2 footprint (piers and trestles, including the East Trestle) as 211,065 SF, demolition of the pier structure as 159,900 SF, transitions to the west and forklift trestle and construction around Building 100 as 11,500 SF, Pier 2 reduction of 27,222 SF, and west trestle reduction of 989 SF. The EIS did not present quantities for total construction, total demolition, or provide specific demolition and construction quantities for the west trestle, forklift trestle, or pedestrian walkway.

Table 2-6 provides a more detailed comparison of the quantities of various aspects of this construction. This table parallels Table 2.5-1 in the EIS. Note that project elements of Alternative A that are not evaluated as changing under Alternative B in this SEA are detailed in Table 2.5-1 of the EIS.

Table 2-6. Comparison of Alternatives (Additional Quantities)

Project Element	Alternative A	Alternative B
Waterside Construction[1]		
Main Platform Size	95,000 SF	95,000 SF
Transitions and Trestles	43,688 SF	27,725 SF
Trestle Approach and Shoreline Protection Fill	2,170 CY over 2,865 SF	3,010 CY over 9,100 SF
Pile Installation	1,001 piles installed (876 24-inch and 125 16-inch)	927 piles installed (793 24-inch and 134 16-inch)
Crane Rail	1,924 LF	1,924 LF
Operations Building/Break Room	1,800 SF[1]	1,800 SF
Lighting	Four, 80-foot steel poles on individual pile-supported platforms offset from the main platform with 10 lights each	8, 45-foot-tall light poles with 8 to 11 lights each attached to main platform and street light fixtures on 25 foot poles attached to trestles
Waterside Habitat Restoration[1]		
Clearing-Grading	95,000 SF	Same as Alternative A
Waterside Demolition[1]		
Piles Extracted and Cut	4,514 total piles = 2,000 extracted and 2,514 cut[2]	Same as Alternative A
Piers and Trestles	156,130 SF[2]	Same as Alternative A
Waterside Rehabilitation[1]		
East Trestle	Rehabilitate 36,500 SF[2]	Same as Alternative A
Landside Demolition/Reconstruction[1]		
East Trestle Approach	Remove rail and reconstruct 5,300 SF[2]	Remove rail and reconstruct 3,930 SF
White Road Repairs, West Trestle Approach, Shoreline Protection, Grading, and Adjacent Utilities	71,320 SF and approximately 7,420 CY of fill	45,720 SF and approximately 6,365 CY of fill[3]

Table 2-6. Comparison of Alternatives (Additional Quantities)

Project Element	Alternative A	Alternative B
Landside Construction[1]		
Diesel Generators	(2) 1,500 kilowatt	Same as Alternative A
Electrical Substation Including Associated Utilities	2,580 SF concrete pad at northwest corner of the existing Pier 2 employee parking lot	1,936 SF concrete pad at south end of the existing Pier 2 employee parking lot and 1,130 linear foot trenching along existing roadways for electrical line
Landside Demolition[1]		
Building 160 and Associated Pavement and Utilities	620 SF	Same as Alternative A
Landside Habitat Restoration[1]		
Restore impacts to wetlands located within the existing Pier 2 footprint and the wetlands located within the 100-foot buffer of the new Pier 2 footprint	Re-establishment of wetlands disturbed during construction and 0.041 acre of wetlands where trestle structures are removed. Assuming equal mitigation ratio under both alternatives, the estimated 0.03 acre of unavoidable impact to wetlands would be mitigated over 0.07 acre HRP to detail desired elevations for tidal marsh communities, and the removal of bordering stands of invasive perennial pepperweed, including excavation of the roots and surface soil and seedbank (within 1 inch of the surface)..	Re-establishment of 0.67 acre of temporary disturbance and 0.08 acre of wetlands where trestle structures are removed. The estimated 0.26-acre area of unavoidable impact to wetlands is mitigated over 0.57 acre (a greater than 2:1 ratio). In aggregate, 4.95 acres of combined wetland re-establishment, restoration, and enhancement, as well as 3.33 acres of buffer enhancement.

Notes:
[1] For this table, waterside footprints were calculated as below the mean high tide line (+4.4 feet MLLW contour) and landside footprints were calculated as above the mean high tide line.
[2] Includes the following factual corrections to the EIS: EIS estimated Pier 2 demolition at 159,000 SF, 2,155 piles to be removed by extraction, and 2,359 to be removed by cutting, reported the operations building/break room as a 1,500 SF building (no change to the footprint analyzed), and the quantity estimates for the east trestle rehabilitation and the east trestle approach repairs were not included in the EIS.
[3] Includes only that portion of the White Road repairs that are included in the current Pier 2 repair and modernization project. EIS Alternative 1 and Alternative A includes White Road repairs from Johnson Road to 3,000 feet east of Mordoh Road, but the road segments not included in the Pier 2 repair and modernization project are now being addressed in an EA addressing installation-wide road and bridge repair projects and are further analyzed in Chapter 5, Cumulative Effects. The impacts analysis of this SEA is limited to the White Road segments that are part of the Pier 2 project for both Alternatives (see Figure 2-1).
LF=linear feet; CY = cubic yard

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER CONSIDERATION

The Army considered additional recommended changes that emerged during the design process for Pier 2, but for various reasons eliminated them from further consideration. Some of these design changes would have had the potential for substantial changes in the proposed action as analyzed in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California. The proposed Pier 2 design changes that were considered, but eliminated from further detailed evaluation are summarized as follows:

- Reducing the pier length or surface area and/or shorten crane rails for cost savings – this was deemed an unacceptable risk for pier performance.
- Reducing heating/cooling units for the pier side building – this was proposed as a potential cost savings but after further evaluation it was determined that this would be an unjustified change, as it would add cost and time to the project.
- Use cast-in-place piles rather than driving piles – this was deemed an unjustified additional cost and time.
- Designing the pier for primary use by a different vessel class (Large, Medium-Speed Roll-on/Roll-off design vessel in lieu of a Cape class) – this was deemed an unjustified additional cost and time.
- Replace east trestle concurrent with other modernization and repair – this was deemed unnecessary and unjustified in terms of operational need and additional cost at this time.

2.6 SECTION 404(b)(1) ALTERNATIVES ANALYSIS (LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE)

Under Section 404(b)(1) of the CWA, a Section 404 CWA permit for the placement of fill in waters of the U.S., and in particular within a special aquatic site, including wetlands, vegetated shallows, and mudflats – all of which are present within the project footprint – can only be issued for the LEDPA. Section 404(b)(1) requires a detailed comparison of potential project alternatives, and must demonstrate that there is no other practicable alternative to the proposed action that can meet the project's objectives with lesser impacts to the aquatic ecosystem and special aquatic sites, and which does not result in significant impacts to other resources. A practicable alternative is one that is capable of being implemented, taking into account such factors as cost, logistics, and technical feasibility. Appendix B provides the draft 404(b)(1) analysis prepared in support of the permit application. The USACE San Francisco District Regulatory Branch conducts the final 404(b)(1) analysis as part of the permit review process.

As documented in the previous EIS, summarized in preceding Sections 2.4 and 2.5, and detailed in Appendix B, the Army has carefully considered alternative designs for the proposed action, with the goal of ensuring the operational adequacy of the new pier while minimizing the size of the new structure and the extent of new construction and fill in the waters of Suisun Bay. Alternative B, the new preferred alternative, would have lesser impacts to aquatic resources than the EIS-preferred alternative, Alternative A. Other alternatives considered but eliminated as not being practicable are described above. In summary, these considerations support the Army's conclusion that the preferred alternative, Alternative B, is the LEDPA. Appendix B provides additional detail regarding this conclusion.

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3.0 AFFECTED ENVIRONMENT

NEPA and associated regulations promulgated in 40 CFR Parts 1500–1508 and 32 CFR Part 651 require that an EA address the general conditions and nature of the affected environment and establish the environmental setting against which environmental effects are evaluated in Chapter 4. This chapter presents relevant general baseline conditions, focusing on specific aspects of the environment that may be impacted by the alternatives. The evaluation is limited to resource areas that are potentially affected by the proposed action and alternatives.

As noted in Chapters 1.0 and 2.0, the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California and the resultant ROD are incorporated into this SEA by reference per 40 CFR Part 1502.21 and consistent with 32 CFR Part 651.12(a)(3). The affected environment is described in detail in Chapter 3 of the Final EIS. Therefore, this section will only address:

- any existing conditions that have changed,
- relevant new data or studies that have been completed since the Final EIS, and
- areas that would now potentially be impacted by the proposed action as analyzed in this SEA that were not addressed in the Final EIS.

3.1 EARTH RESOURCES

There has been no change in the soils/sediments, surface soils, submerged sediment quality, maintenance dredging history, seismic conditions, or mineral resources on MOTCO from what was described in the EIS.

3.2 WATER RESOURCES

3.2.1 Surface Water

MOTCO completed an update to the installation-wide Stormwater Pollution Prevention Plan (SWPPP) in 2015 (MOTCO 2015). The SWPPP addresses compliance with MOTCO's General Permit for Discharges of Storm Water Associated with Industrial Activities (General Permit No. CAS000001, effective 1 July 2015). The objectives of the SWPPP are to:

- identify and evaluate pollutant sources associated with industrial activities that may affect the quality of stormwater discharges and authorized non-stormwater discharge from the facility;
- identify and describe the minimum Best Management Practices (BMPs) and any advanced BMPs implemented to reduce or prevent pollutants in industrial stormwater discharges and authorized non-stormwater discharge; and
- identify and describe conditions or circumstances which may require future revisions to be made to the SWPPP (MOTCO 2015).

MOTCO is working with a USACE Sacramento SWPPP practitioner to complete required annual reviews of the installation's SWPPP (Personal communication, G. Romine, 2016).

3.2.2 Groundwater

There has been no change in the groundwater conditions on MOTCO from what was described in the EIS.

3.2.3 Wetlands

There has been no change from the general description and definition of wetlands and related regulations from that described in the EIS. However, additional jurisdictional wetland delineations have been completed on MOTCO since the EIS was finalized. In support of the analysis for the separate EA for Repair of Bridges, Roads, and Utilities at MOTCO, a field jurisdictional wetland delineation was completed in March 2015 to assess the extent of wetlands within the affected environment for that EA. Specifically, jurisdictional wetland delineation was conducted 50 feet on either side of the bridges and roads in areas where National Wetlands Inventory data or direct observations indicated the potential for wetlands. The results identified a total of approximately 40 acres of total wetland habitat within the surveyed area. Of this, 37.45 acres was found to be estuarine, 2.25 acres palustrine, and 0.15 acre riverine wetland habitat. In addition, a wetlands delineation was completed for a portion of the Tidal Area that was considered for routing the electrical feeder line to the substation that would be relocated under Alternative B. This routing has since been eliminated in favor of routing the lines along roadways (see Figure 2-1). The delineated wetlands near the Pier 2 project footprint along with National Wetland Inventory Data are depicted in **Figure 3-1**.

3.2.4 Floodplains

There has been no change from the general description and definition of floodplains and related regulations from that described in the EIS. However, on January 30, 2015, the president signed Executive Order (EO) 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, which amended EO 11988. Once implemented by federal agencies, the Federal Flood Risk Management Standard is intended to reduce the risk and cost of future flood disasters by ensuring that federal investments in and affecting floodplains are constructed to better withstand the impacts of flooding. Neither the Department of Defense (DOD) nor Department of the Army has updated their regulations and procedures to incorporate the amendments from EO 13690. The Army must comply with EO 11988 until DOD/Department of the Army update their regulations and procedures to incorporate the amendments from EO 13690, which is not expected prior to the finalization of this SEA.

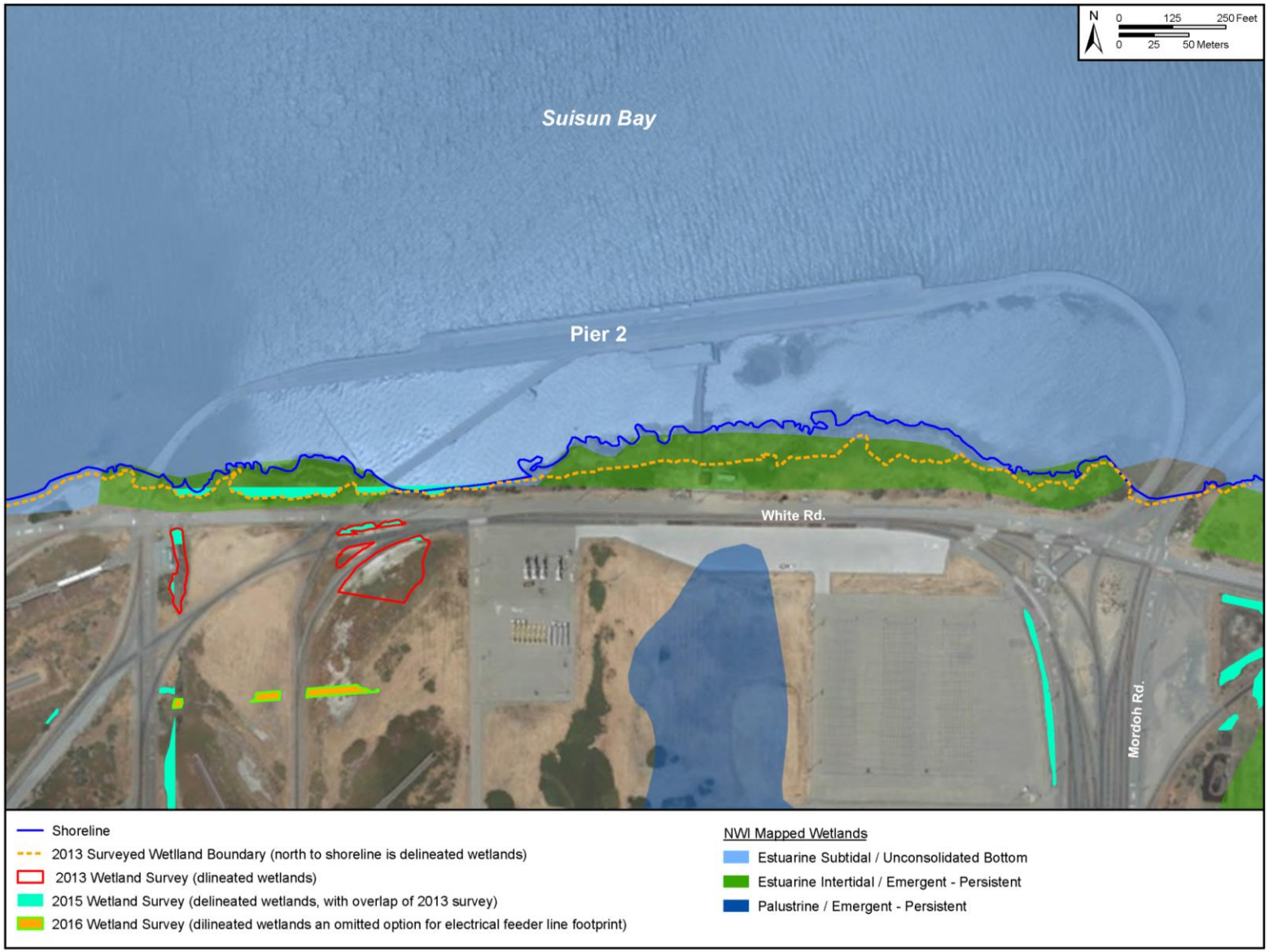

Figure 3-1. Potential and Delineated Wetlands Near Pier 2

The 100-year floodplain represents those areas that could be inundated in the event of high flood water levels, which are expected to occur once every 100 years from the combination of heavy rainfall, high tides, and storm surges. EO 11988 directs federal agencies to provide leadership in avoiding direct or indirect development of floodplains, as well as to restore and preserve the natural and beneficial values of floodplains. An engineering-level analysis of the 100-year floodplain was conducted in support of the proposed action. As shown in **Figure 3-2**, elements of the proposed action occur within the 100-year floodplain.

3.3 AIR QUALITY

3.3.1 Conformity Requirements

The proposed action would be located in the Bay Area Air Quality Management District and the general conformity requirements apply to the ozone precursors, volatile organic compounds (VOCs) and nitrogen oxides (NO_x); particulate matter less than or equal to 2.5 microns in diameter ($PM_{2.5}$); and sulfur dioxide (SO_2), which is considered a $PM_{2.5}$ precursor. Carbon monoxide (CO) was included in the EIS, but the Bay Area Air Quality Management District is no longer a maintenance area for CO, so General Conformity no longer applies for this pollutant. In accordance with the air conformity requirements of 40 CFR Part 93.153(b)(1), the applicable *de minimis* levels are presented in **Table 3-1**.

Table 3-1. General Conformity *de Minimis* Thresholds (tons/year)

	VOC	NO_x	SO_2	$PM_{2.5}$
Applicable *de minimis* Thresholds	100	100	[2]100	100

Source: 40 CFR Part 93.153.
Note:
SO_2 is included as a potential precursor for $PM_{2.5}$ formation.

3.3.2 Greenhouse Gases

The existing conditions for greenhouse gas (GHG) emissions at MOTCO are unchanged from those described in the EIS.

3.3.3 Permitted Stationary Sources

There has been no change to MOTCO permitted stationary sources from that reported in the EIS.

3.4 BIOLOGICAL RESOURCES

Biological resources discussed include habitats (Section 3.4.1), flora (Section 3.4.2), fauna (Section 3.4.3), and special status species (Section 3.4.4).

3.4.1 Habitats

Habitats within the project area are shown in **Figure 3-3**. Other than changes in aquatic vegetation as shown in the figure, there have been no changes in habitats on MOTCO from what was described in the EIS.

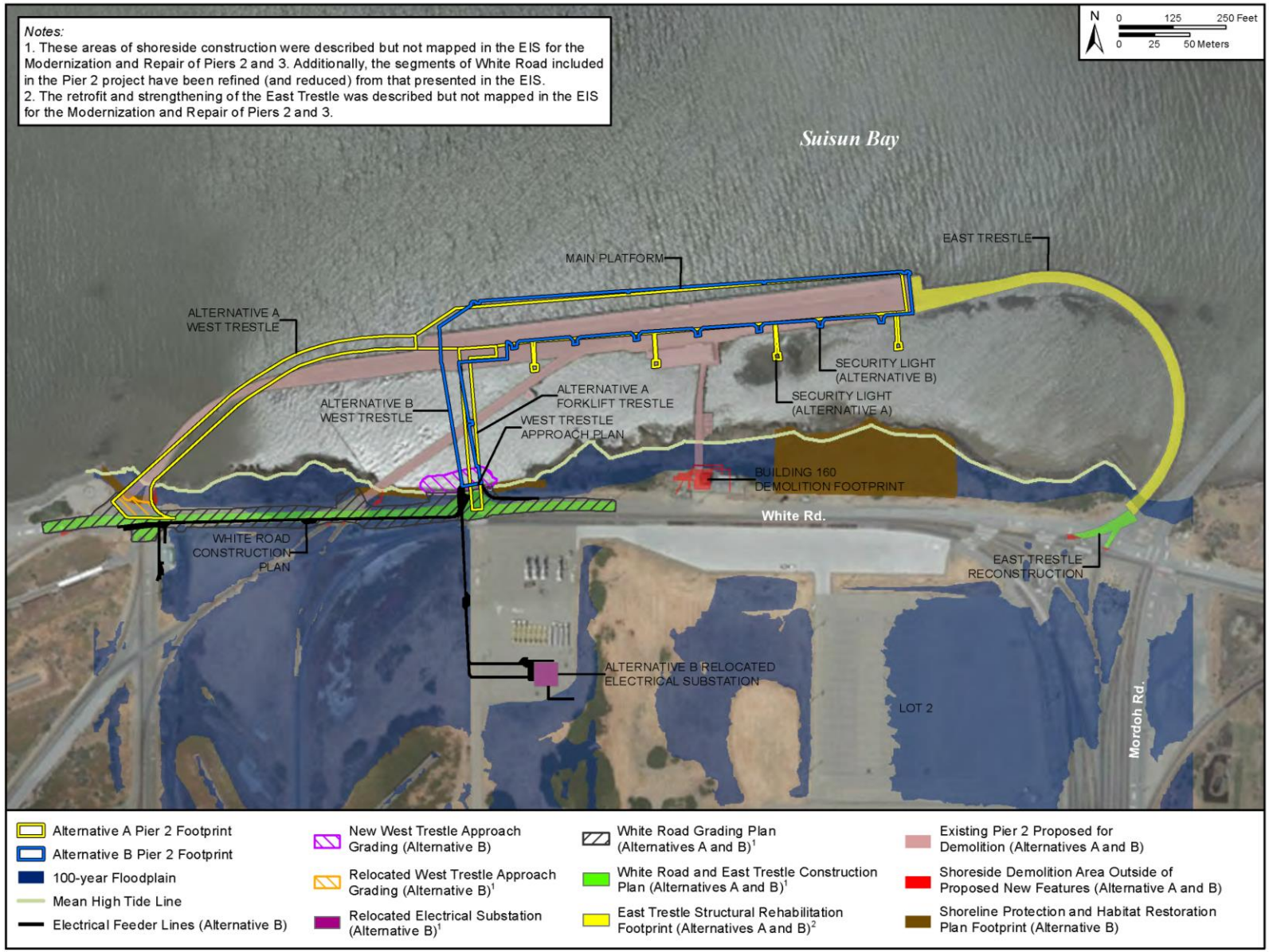

Figure 3-2. 100-Year Floodplain in Pier 2 Vicinity

Figure 3-3. Habitats

3.4.2 Flora

3.4.2.1 Aquatic Vegetation

Aquatic flora includes submerged aquatic vegetation (SAV) and various species of algae and phytoplankton. Overall, there has been no change in the type of aquatic vegetation from what is described within the EIS. However, a 2015 SAV survey at Pier 2 conducted as a requirement of the EIS indicated a reduction in SAV relative to previous results (Appendix C). A recent post-construction survey of SAV at Pier 3 has correlated SAV population trends (especially pondweed cover and spatial distribution) to local water salinity and depth and concluded that there is no evidence to suggest that variations in plant cover among surveys has been influenced by similar construction activities at Pier 3 (MOTCO 2016).

3.4.2.2 Terrestrial and Wetland Vegetation

There has been no change in the affected environment for terrestrial and wetland vegetation on MOTCO from what was described in the EIS (see Figure 3-7 in the Final EIS).

3.4.3 Fauna

There has been no change in the affected environment for fauna (invertebrates, fish and EFH, reptiles and amphibians, birds, and mammals) on MOTCO from what was described in the EIS.

3.4.4 Special Status Species

Table 3-2 lists the federal and/or state listed threatened or endangered species and other state or federal species of concern that have the potential to occur within MOTCO (as in the species has been located, there's been a verified sighting, or the species is known or assumed to be present based on what is known about the foraging area or home range size of the species). This list of federal and/or state listed threatened or endangered species has not changed from that described in the EIS. However, there have been some more recent surveys since the EIS that were completed. Any species specific surveys conducted are described below in their respective subsections.

3.4.4.1 Special Status Plants

The habitat and known locations for the federally endangered soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*) has not changed from that described within the EIS. However, the Tidal Area marshes were re-assessed in May 2015 (HT Harvey and Associates 2015). For on-site reference locations, the areas along the Barge Pier, Pier 4, and other marsh areas along White Road were assessed. In addition, 2010, 2013, and recent aerial images were compared to identify whether disturbances or habitat changes occurred at the locations where rare plants had been reported in prior years. It was determined habitat conditions had not changed significantly since the 2010 surveys. Soft bird's-beak survey area and survey results within the project area are shown in **Figure 3-4**.

Table 3-2. Special Status Species Potentially Occurring in the Action Area

Common Name	Scientific Name	Status* Federal/State/CNPS *Critical Habitat Present?*	Occurrence within Project Area	Responsible Agency	Habitat/Regional Occurrence
Plants					
Soft Bird's-beak	*Cordylanthus mollis* ssp. *mollis*	E / R / -1B	Unlikely, not detected in surveys	USFWS	Low marsh zone and eroding banks of Delta tidal brackish marshes. No occurrences were found within or adjacent to the project action area during 2010 or 2013 surveys.
Delta Mudwort	*Limosella subulata*	-- / -- / 2B	Possible	CDFW	Mud banks of the Delta, usually in marsh associations with Mason's lilaeopsis.
Mason's Lilaeopsis	*Lilaeopsis masonii*	-- / R / 1B	Confirmed	CDFW	Exposed sediments, mud banks along Delta brackish-tidal shorelines. On base, found in Middle Point Marsh.
Delta Tule Pea	*Lathyrus jepsonii ssp. jepsonii*	-- / -- / 1B	Confirmed	USFWS	Upper edges of fresh and brackish marshes and along streams and rivers of the Delta. On base, found on Ryer Island.
Suisun Marsh Aster	*Symphyotrichum lentum*	-- / -- / 1B	Confirmed	USFWS	High marsh zone of Delta freshwater and tidal brackish marshes, also along slough and creek banks. On base, found in Middle Point Marsh, Pier Marsh, Hastings Slough, and on Ryer Island.
Fish					
Delta Smelt	*Hypomesus transpacificus*	T / -- / -- *Suisun Bay Designated as Critical Habitat*	Presumed	USFWS	Larval, juvenile, and adult delta smelt may all be found in Suisun Bay, including the shallow edges and backwater sloughs.
Sacramento Splittail	*Pogonichthys macrolepidotus*	-- / SC / --	Presumed	USFWS	Occurs in Suisun Bay, but prefers shallow water with low salinity (0-10 parts per thousand).
Longfin Smelt	*Spirinchus thaleichthys*	C / T / --	Confirmed	USFWS	Larval and juvenile longfin smelt may be found in Suisun Bay.
Green Sturgeon	*Acipensir medirostris*	T / -- / -- *Suisun Bay Designated Critical Habitat*	Presumed	NMFS	Suisun Bay supports juvenile, sub-adult, and adult Southern Distinct Population Segment fish, serving as important rearing habitat and an important migratory corridor from the San Pablo and San Francisco Bays to and from the Delta and Sacramento River system.
Central Valley Steelhead	*Oncorhynchus mykiss irideus*	T / -- / --	Presumed during migration	NMFS	An ocean-maturing species that migrates through Suisun Bay, primarily December-April, to spawn upstream.

Table 3-2. Special Status Species Potentially Occurring in the Action Area

Common Name	Scientific Name	Status* Federal/State/CNPS *Critical Habitat Present?*	Occurrence within Project Area	Responsible Agency	Habitat/Regional Occurrence
Central California Coast Steelhead	*Oncorhynchus mykiss*	T / -- / --	Presumed during migration	NMFS	An ocean-maturing species that migrates through Suisun Bay, primarily January-April, to spawn upstream.
Sacramento Chinook Salmon, *Winter Run*	*Oncorhynchus tshawytscha*	E / -- / -- *Suisun Bay Designated as Critical Habitat*	Presumed during migration	NMFS	Adults migrate through Suisun Bay in December-July, with smolts returning downstream to the ocean within one year.
Central Valley Chinook Salmon, *Spring Run*	*Oncorhynchus tshawytscha*	T / -- / --	Presumed during migration	NMFS	Adults migrate through Suisun Bay in March-July, with smolts returning downstream to the ocean within one year.
Central Valley Chinook Salmon, *Fall and Late-Fall Run*	*Oncorhynchus tshawytscha*	SOC / -- / --	Presumed during migration	NMFS	Adults migrate through Suisun Bay in June-December, with smolts returning downstream to the ocean within one year.
Reptiles					
Northwestern Pond Turtle	*Actinemys m. marmorata*	-- / SC / --	Confirmed	CDFW	Permanent or near-permanent freshwater ponds. Was found in Tidal Area on base in Otter Slough and Seal Creek Marsh.
Birds					
California Ridgway's Rail (formerly the California Clapper Rail)	*Rallus obsoletus (*formerly *Rallus longirostris obsoletus*)	E / E / --	Extremely unlikely; limited potential habitat, no recent occurrences, and not detected in surveys	USFWS	Salt and brackish marshes. Rare in Suisun Bay. No occurrences were found within or adjacent to the project action area during 2010, non-protocol 2013 survey, or during 2015 protocol survey.
California Black Rail	*Laterallus jamaicensis coturniculatus*	-- / T / --	Confirmed	CDFW	Low-lying salt marshes with abundant pickleweed. Found during 2010 and other surveys at numerous sites within Tidal Area.
California Least Tern	*Sternula antillarum browni*	E / E / --	Possible transient occurrence	USFWS	Colonial breeder on bare or sparsely vegetated sand beaches or alkali flats. Last observed on installation in 1982. Nesting colony ~10 mi up Delta in Montezuma Slough.

Table 3-2. Special Status Species Potentially Occurring in the Action Area

Common Name	Scientific Name	Status* Federal/State/CNPS *Critical Habitat Present?*	Occurrence within Project Area	Responsible Agency	Habitat/Regional Occurrence
San Francisco Common Yellowthroat	*Geothlypis trichas sinuosa*	-- / SC / --	Confirmed	CDFW	Endemic to marshes bordering San Francisco Bay. Observed on base in numerous tidal marsh areas (2009).
Suisun Song Sparrow	*Melospiza melodia maxillaris*	-- / SC / --	Confirmed	USFWS	Endemic to marshes bordering San Francisco Bay. Observed on base in numerous tidal marsh areas (2009).
Loggerhead Shrike	*Lanius ludovicianus*	-- / SC / --	Confirmed	USFWS	Dry grasslands with scattered trees and shrubs. Observed on base at numerous locations within Tidal Area (2009).
Mammals					
Salt Marsh Harvest Mouse	*Reithrodontomys raviventris*	E / E / --	Unlikely given limited extent of potential habitat	USFWS	Requires large pickleweed flats with adjoining refuge areas above the High Tide line. There is an up to 30 percent probability for this species to occur on MOTCO, primarily in areas of Pier Marsh; occurrence in other marsh areas cannot be discounted, but regarded as very low potential.
Salt Marsh Wandering Shrew	*Sorex vagrans halicoetes*	-- / SC / --	Unlikely given limited extent of potential habitat	USFWS	Mid-marsh (6-8 feet above MSL) pickleweed habitat, similar to the harvest mouse and the California Ridgway's rail.
Humpback Whale	*Megaptera novaeangliae*	E, MMPA / -- / --	Extremely unlikely	NMFS	Rare occurrence in Suisun Bay-Delta.
Pacific Harbor Seal	*Phoca vitulina richarii*	MMPA/ -- / --	Possible	NMFS	Small numbers present in Suisun Bay.
California Sea Lion	*Zalophus californianus*	MMPA/ -- / --	Possible	NMFS	Spotted periodically in Suisun Bay.

Sources: USACE 2011; H.T. Harvey and Associates 2011.
Notes:
***** T = Threatened; E = Endangered; C = Candidate; SOC = Species of Concern; R = Rare; SC = Special Concern; BGEPA = Bald and Gold Eagle Protection Act; MMPA = Marine Mammal Protection Act; 1B = Plants that are considered by the California Native Plant Society (CNPS) as Rare, Threatened, or Endangered in California and elsewhere; and 2B = Plants that are considered by CNPS as Rare, Threatened, or Endangered in California, but more common elsewhere, Threatened, or Endangered in California but are more common elsewhere. The Species of Concern category does not apply at the federal level as it is an informal term and is not defined in the federal ESA.

Figure 3-4. Soft Bird's-Beak Survey Area and Survey Results

The habitat and known locations within MOTCO for the Delta mudwort, Mason's lilaeopsis, Delta tule pea, and the Suisun Marsh aster have not changed from that described in the EIS. Non-federally listed special status plants within the project area are shown in **Figure 3-5.**

3.4.4.2 Special Status Fish

With the exception of the delta smelt and the Central Valley Chinook Salmon, Fall Run, the status, habitat, and known locations for the special status fish species within MOTCO have not changed from that described in the EIS.

The status of the Central Valley Chinook Salmon, Fall Run, changed from a Candidate Species to a Species of Concern. However, its habitat and known locations within MOTCO have not changed.

The status and habitat of the delta smelt has remained much the same as described in the EIS. More recent surveys conducted by the CDFW and its regional partners in 2015-2016 (CDFW 2016) provide the best available data on the recent abundance and distribution of delta smelt and generally confirm the EIS description indicating that the species' range has generally contracted eastward and upstream since 2011. Although survey results from 2015 and early 2016 indicated the near-absence of delta smelt from Suisun Bay, the most recent data suggest that with the lessening of drought, in response to increased outflow and reduced salinities, delta smelt spawned upstream during the spring and that larvae subsequently moved downstream to Suisun Bay, making occurrence near MOTCO likely.

3.4.4.3 Special Status Wildlife

Federally listed special status animals within the project area are shown in **Figure 3-6**. The status, habitat, and known locations for the California least tern and the California red-legged frog have not changed from that described in the EIS. However, additional targeted surveys were conducted for the California red-legged frog and California tiger salamander within the MOTCO Tidal Area during the 2013-2014 and 2015-2016 seasons, but neither of these species has been detected (USFWS 2016).

<u>California Ridgway's Rail</u>

The status, habitat, and known locations on MOTCO for the California Ridgway's rail (*Rallus obsoletus obsoletus),* formerly known as the California clapper rail (*Rallus longirostris obsoletus*), are the same as that described in the EIS. However, a breeding season survey was conducted in 2015 on MOTCO in support of a separate EA for Repair of Bridges, Roads, and Utilities at MOTCO. During this survey, no California Ridgway's rails were detected in the four rounds of targeted surveys conducted. These surveys covered portions of the Tidal Area in the narrow strips of marshes near the bridges located on White Road, the bridge on Taylor Boulevard that crosses over Waterfront Road, and other areas along Taylor Boulevard, White Road, Mordoh Road, and Port Chicago Highway (HT Harvey and Associates 2015). Likewise, a

Figure 3-5. Non-Federally Listed Special Status Plants in the Project Area

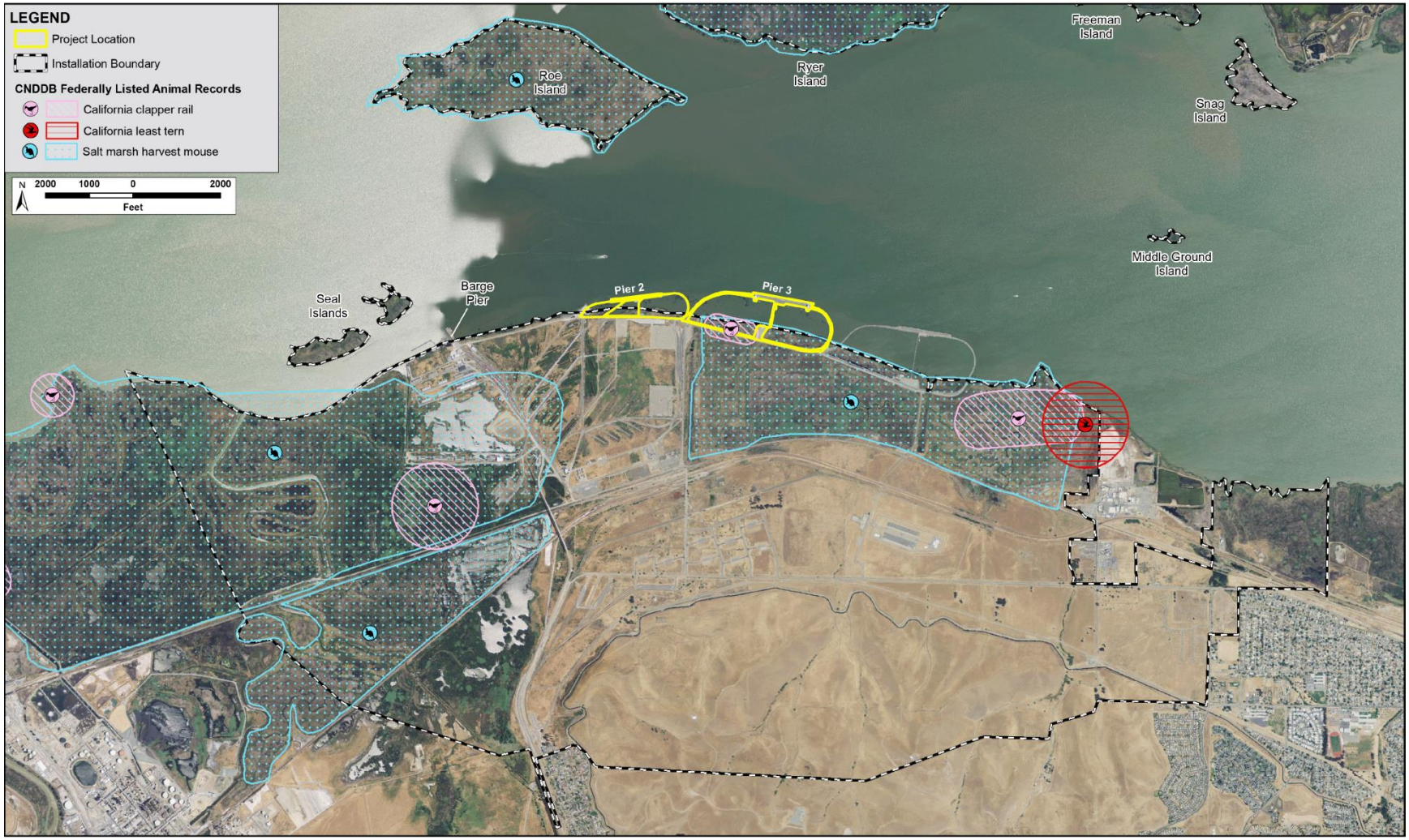

Figure 3-6. Federally Listed Special Status Animals in the Project Area

call counting survey along White Road adjacent to the Pier 3 Repair project site concluded that the Ridgeway's Rail was also not using potential habitat at this location during the 2016 breeding season (WRA Environmental Consultants 2016).

Salt Marsh Harvest Mouse

The status, habitat, and known locations on MOTCO for the salt marsh harvest mouse are the same as that described in the EIS (**Figure 3-7)**. However, the MOTCO Tidal Area was assessed in May 2015 to determine whether conditions at the time of the visit closely resembled conditions assessed in 2010 and 2013 (HT Harvey and Associates 2015).

Suitable salt marsh harvest mouse habitat occurs in the project area south of Pier 2. However, this area has a very low potential for occurrence. These areas of "very low potential" are very unlikely to support harvest mice. However, the potential for occurrence cannot be eliminated, and there is at least a minimal probability that these areas could be used on occasion for dispersal or may represent "sink" habitat that mice disperse into from higher quality areas but that do not provide habitat of sufficient quality to support a self-sustaining population.

3.5 LAND USE AND COASTAL ZONE MANAGEMENT

3.5.1 Land Use

There has been no change to the land use affected environment from what was described in the EIS.

3.5.2 Coastal Zone Management

There has been no change to coastal zone management of waters surrounding MOTCO from what was described in the EIS. The BCDC is the federally designated state coastal management agency for the San Francisco Bay segment of the California coastal zone.

3.6 TRANSPORTATION AND UTILITIES INFRASTRUCTURE

There has been no change to the affected environment for most transportation resources (mass transit, rail transport, and water transport) and infrastructure (sanitary sewer, natural gas, potable water, electricity, telecommunications, and solid waste) from what was described in the EIS.

There has been no change from the general description of the road network surrounding MOTCO from the EIS; however, since the finalization of the EIS, new traffic data has become available. This new data is summarized below.

A summary of Annual Average Daily Traffic (AADT) data from 2014 for locations near MOTCO is provided in Table 3-3.

Figure 3-7. Areas of Potential Salt Marsh Harvest Mouse Occurrence

Table 3-3. 2014 AADT Volumes Near MOTCO

ID	Description	S/W AADT	S/W Peak Hour	S/W Peak Month	N/E AADT	N/E Peak Hour	N/E Peak Month
1	Junction Interstate-680	88,000	7,600	91,000	82,000	5,800	84,000
1	Junction State Route 4	133,000	10,700	136,000	116,000	9,300	118,000
2	Solano Way	82,000	5,800	84,000	80,000	5,700	82,000
3	Concord, Junction State Route 242	80,000	5,700	82,000	93,000	6,600	95,000
3	Concord, Junction State Route 4	106,000	7,300	111,000	NA	NA	NA
4	Concord, Port Chicago Highway West	93,000	6,600	95,000	153,000	10,900	156,000
5	Willow Pass Road	153,000	10,900	156,000	150,000	10,700	153,000
6	Port Chicago Highway East	150,000	10,700	153,000	133,000	9,500	136,000
7	Bailey Road	133,000	9,500	136,000	132,000	9,400	135,000

Source: Caltrans 2016a.
Notes:
S/W and N/E denote travel on the roadway in the South or West, or North or East direction, respectively, depending on the orientation of the roadway.

In addition, available AADT data for truck traffic is provided in Table 3-4. Note that truck traffic volumes are not collected at all the locations where total AADT data is collected. Based on these data, truck traffic in the area ranges from 2.7 to 6.8 percent of total traffic. For comparison, the highest truck traffic percentage in Contra Costa County is approximately 15 percent at the Junction of State Route 4 and Byron Highway, which is approximately 25 miles east of MOTCO.

Table 3-4. Truck AADT Volumes Near MOTCO

ID	Description	S/W Total AADT	S/W Truck AADT	S/W Truck %	N/E Total AADT	N/E Truck AADT	N/E Truck %
1	Junction Interstate 680	88,000	4,242	4.82	82,000	4,173	5.09
1	Junction State Route 4	133,000	3,592	2.70	116,000	7,900	6.81
3	Concord, Junction State Route 242	80,000	5,409	6.76	93,000	5,822	6.26
3	Concord, Junction State Route 4	106,000	5,438	5.13	NA	NA	NA
6	Port Chicago Highway East	150,000	7,756	5.17	133,000	7,343	5.52
7	Bailey Road	133,000	NA	NA	132,000	6,071	4.60

Source: Caltrans 2016b.
Notes:
S/W and N/E denote travel on the roadway in the South or West, or North or East direction, respectively, depending on the orientation of the roadway.

Figure 3-8 shows the road network near MOTCO. The AADT count locations in the figure correspond to the location ID numbers from Tables 3-3 and 3-4.

Figure 3-8. AADT Data Locations Near MOTCO

The Contra Costa Congestion Monitoring Program analyzes roadway Level of Service (LOS) for the entirety of Contra Costa County. LOS is represented by one of the letters "A" through "F." A LOS of "A" is considered the least restricted, or freest, flow of traffic while a LOS of "F" is considered the most restricted flow of vehicles. Out of the 65 intersections monitored, all achieved acceptable LOS (LOS D or better). Out of 21 freeway segments monitored, one freeway segment was below its acceptable LOS: the segment of State Route 4 between Interstate-680 and State Route 242. This segment, located between data locations 1 and 3 on Figure 3-8, has an LOS standard of E for peak hours, and achieved an LOS level of F on the eastbound segment during the p.m. peak hour (Contra Costa County 2014).

3.7 VISUAL RESOURCES

There has been no change to the affected environment for visual resources from what was described in the EIS.

3.8 RECREATIONAL RESOURCES

There has been no change to the general description of recreational resources on MOTCO from what was described in the EIS; however, updated data regarding Port Chicago Naval Magazine National Memorial visitation have become available. NPS personnel report that in 2015 there were a total of 81 tours for 663 visitors. In addition, 300 visitors attended the annual Memorial Event on July 17, 2015 (Personal Communication, T. Leatherman, 2016).

The Port Chicago Naval Magazine National Memorial is administered by the NPS. It honors the memory of those who gave their lives and were injured in the Port Chicago munitions explosion on July 17, 1944, recognizes those who served at the magazine, and commemorates the role of the facility during World War II. All public access conditions to the Port Chicago Naval Magazine National Memorial remain as described in the affected environment in the EIS.

3.9 NOISE

There has been no change to the affected environment for noise from what was described in the EIS. The primary source of noise in the study area is vehicular traffic along California Highway 4 and local roads.

3.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.10.1 Socioeconomics

Slight changes from the general description of socioeconomic conditions from that described in the EIS are provided. Though there are slight variations in military, civilian, and contractor personnel employed, MOTCO employs approximately 125 personnel and the Army Reserve Center employs approximately 10 personnel on a daily basis. During missions, an additional 75 to 85 personnel are present for contracted terminal operations and as stevedore personnel and,

during Army Reserve drill weekends, 200 to 300 reservists may drill at MOTCO. Total personnel employed at or otherwise supported part-time by MOTCO comprises less than 1 percent of the total number of people employed in Contra Costa County, which was 517,311 in 2014 (U.S. Bureau of Economic Analysis 2016).

Since the EIS was completed, more recent demographic estimates have become available. Based on the 2015 U.S. Census Bureau Quickfacts, the population of Contra Costa County increased 7.4 percent since the 2010 Census, from 1,049,025 to an estimated 1,126,745 persons. The total minority population in Contra Costa County is 55.0 percent as compared to California, which is at 62 percent. There are 408,708 total housing units in Contra Costa County and the owner-occupied housing unit rate is 64.6 percent as compared to 54.3 percent in California. The median household income in Contra Costa County is $80,185 as compared to $61,818 for California. The poverty rate in Contra Costa County is 10.5 percent as compared to 15.3 percent for California. The population under 18 years old is 23.2 percent, which is similar to California, at 23.3 percent (U.S. Census Bureau 2016).

3.10.2 Environmental Justice

The two census tracts that include MOTCO (Census Tracts 3142 and 3150) have greater proportions of minority and low-income populations as compared to Contra Costa County as a whole. Census Tract 3142 includes the eastern MOTCO Tidal Area, a portion of Bay Point, and the Shore Acres neighborhood east of the MOTCO Tidal Area and Nichols Road. Census Tract 3150 includes the remainder of MOTCO and the area between California Highway 4 and Suisun Bay, including a portion of Bay Point and Clyde, extending to the western boundary of Point Edith State Wildlife Management Area. As noted in the EIS, the total minority population of Census Tract 3142 is 52.5 percent. The total minority population of Census Tract 3150 is 44.4 percent. Contra Costa County's minority population is 41.4 percent. The percent of the population below the poverty level is 21.5 percent in Census Tract 3142, 12.1 percent in Census Tract 3150, and 8.6 percent in Contra Costa County (U.S. Census Bureau 2010). Therefore, adverse impacts that extend beyond the MOTCO property boundary are evaluated for potential disproportionate impacts to these populations.

As noted in the EIS, the nearby community of Bay Point was awarded an Environmental Justice grant by the USEPA in 2007. All conditions associated with the grant are the same as described in the EIS.

3.11 CULTURAL RESOURCES

There has been no change to the general description of cultural resources on MOTCO from what was described in the EIS. However, one additional archaeological survey has been conducted in the interim. Cardno (2016) completed an archaeological survey and inventory of roads in support of a separate EA for Repair of Bridges, Roads, and Utilities at MOTCO. A portion of White Road, which falls within the project Area of Potential Effect (APE), was

surveyed and no cultural resources were recorded. The inventoried roads are located in both the Tidal Area and the Inland Area. All of the inventoried roads were recommended not eligible for listing in the National Register of Historic Places (NRHP), including those that fall within the project APE. MOTCO is consulting with the California SHPO on its eligibility determination.

3.12 Hazardous Materials, Hazardous Waste, Toxic Substances, and Contaminated Sites

There has been no change in the management of hazardous materials (HM), hazardous waste (HW), and toxic substances from what was described in the EIS. With respect to contaminated sites, there have been actions taken under the ongoing Military Munitions Response Program (MMRP) and Installation Restoration Program (IRP) for assessment and cleanup of sites; however, these are not detailed here, as these actions did not occur within the area potentially affected by the proposed action.

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4.0 ENVIRONMENTAL CONSEQUENCES

Chapter 4.0 presents an analysis of the potential direct and indirect effects of each alternative on the affected environment. As noted in Chapter 3.0, the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California and the resultant ROD are incorporated into this SEA by reference per 40 CFR Part 1502.21 and consistent with 32 CFR Part 651.12(a)(3). This discussion addresses the differences in the potential environmental and social impacts associated with the design changes for Pier 2 as compared with those analyzed for Alternative 1 in the EIS. An assessment of the potential cumulative impacts of the proposed action alternatives with other past, present, and foreseeable future actions is provided in Chapter 5.

The terms below are used to describe the intensity of effects and to assess significance. Significance was determined according to NEPA implementing regulations at 40 CFR Part 1508.27, which requires considerations of both context and intensity as follows. Consistent with 32 CFR Part 651.39, factors considered in determining significance of impacts are identified for each resource area. These include thresholds, which are based on regulatory requirements, wherever appropriate. Potential impacts are characterized as adverse or beneficial, direct or indirect, and short- or long-term.

4.1 EARTH RESOURCES

Impacts would be considered significant if ground disturbance or other activities would violate applicable federal or state laws and regulations, and result in the potential for Notices of Violation for the failure to receive or follow stipulations within applicable state permits.

4.1.1 Alternative A: No Action Alternative

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Therefore, impacts to earth resources would be as described in the EIS. The administrative/factual corrections to project footprints and additional clarifications on project elements that would be the same under Alternatives A and B do not affect the conclusion of the EIS. In consideration of all factors, there would be negligible adverse impacts to topographical conditions and minor impacts to soil and sediments under Alternative A.

4.1.2 Alternative B

4.1.2.1 Topography

No significant impacts to soils or sediments would occur as a result of the implementation of Alternative B. The main difference as compared to Alternative A is in the localized change to topography to accommodate the new west trestle approach under Alternative B. An estimated 3,010 cubic yards (CY) of permanent fill over an area of 9,100 SF would be added below the mean high tide line for the new west trestle approach and shoreline protection. This would

create a 3:1 slope at the shoreline with rock slope protection abutting the new west approach and underlying the southernmost end of the new west trestle. Additionally, an estimated 6,365 CY of fill would be added over approximately 45,720 SF associated with the west trestle approach and the White Road construction footprint. The existing height of the segments of White Road proposed for repair would be slightly raised from 8-10 feet to 10-12 feet. Clearing and grading for waterside habitat restoration would cover an approximately 95,000 SF area. Similar impacts would occur under Alternative A; although there is additional information available to quantify impacts of both alternatives in this SEA.

4.1.2.2 Soil/Sediments

No significant impacts to soils or sediments would occur as a result of the implementation of Alternative B. As compared to Alternative A, the following main differences in impacts to soils/sediments under Alternative B would be localized to the following areas:

- Former west trestle, forklift trestle, and pedestrian trestle: in these localized areas, there would no longer be a pile-supported structure affecting the flow and settlement of sediments where piles are removed and, unlike Alternative A, no new piles are installed. Given the flow rate and sedimentation rates in the area, this impact is expected to be localized and temporary as the sediment disturbed by the pile removals would recover over a short period of time. The pattern of localized shoreline erosion that currently occurs to the west of the existing west trestle may be reduced as a result of removal of the existing west trestle, which should result in more evenly distributed sediment transport throughout the shoreline area.
- New west trestle approach and shoreline protection waterside fill: in addition to the permanent fill noted in Section 4.1.2.1, temporary surcharge fill at the west trestle abutment would provide for localized compaction of soils. Once the surcharge is complete, the materials would be removed from the site and used elsewhere on MOTCO in accordance with the installation's Standard Operating Procedures (SOPs) for stockpiling and use of excess fill material.
- White Road repairs: the segments of White Road repairs included in Alternative B would be improved to a 24-foot wide roadbed as opposed to a 20-foot wide roadbed as described in the EIS. There would be a minor, localized increase of permanent and temporary (construction-related) disturbance in these areas. The potentially impacted area is largely previously disturbed and any additional impacts would be minimized with adherence to BMPs for sedimentation and stormwater control.

4.2 WATER RESOURCES

The threshold level of significance for water resources is defined as any long-term impacts (chemical, physical, or biological effects) that would adversely alter the historical baseline or

violate standard water quality conditions. Additionally, project actions adversely impacting a water body currently considered impaired under CWA would be considered significant.

4.2.1 Alternative A: No Action Alternative

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Therefore, impacts to water resources would be as described in the EIS with the exception of some additional floodplains impact analysis and slight refinement of wetland acreages. Under Alternative A, there would be no adverse impacts to surface water flow or groundwater. Alternative A would result in moderate, temporary adverse impacts to water quality. In addition, Alternative A would not result in any net loss of wetlands since the new Pier 2 footprint would be smaller than the existing Pier 2 footprint.

Under Alternative A, there would be 0.037 acre of wetlands directly impacted and 0.041 acre of wetlands restored (where structures are removed) for a net gain of 0.002 acre of wetlands. As with the EIS, the potential temporary impacts to wetlands with the implementation of the proposed action were evaluated using a 100-foot potential disturbance buffer added around the Pier 2 revised design footprint to account for the maneuvering of equipment and worker access during demolition and construction activities. However, this 100-foot buffer was refined from that in the EIS to account for new information regarding White Road repair, shoreline protection, and the intertidal brackish marsh restoration area as defined in the HRP. The area now included in the 100-foot buffer is larger than previously estimated in the EIS and is a refined estimate of the maximum area of potential short-term, indirect impact. These impacts include construction-related disturbance and HRP implementation (additional enhancement and control of exotic and invasive plant species with both mechanical and chemical control methods) (USACE Sacramento 2016 *in prep*). An estimated 3.02 acres of wetlands are within this area, including 2.71 acres of estuarine intertidal wetlands and 0.310 acre of palustrine wetlands (also see Table 4-2).

Newly available floodplain data indicate that an approximately 0.95-acre portion of the Alternative A construction footprint, including the west trestle and forklift trestle approaches and portions of the White Road repairs, occur within the 100-year floodplain. Pursuant to EO 11988, *Floodplain Management*, the Army has determined that there are no practicable alternatives to these necessary infrastructure elements due to the location of Pier 2 and supporting infrastructure and the magnitude of cost and decreased safety of alternative means of construction. Although this construction would result in approximately 6,365 CY of new landside fill, some of which would be within the 100-year floodplain, this loss in volume would result in a negligible increase in surface water elevation because Suisun Bay is an open system that can absorb storm surge over a very large area.

4.2.2 Alternative B

4.2.2.1 Hydrology

Surface Water

The demolition and re-construction of Pier 2 under Alternative B would result in localized changes in surface water movements that would not adversely affect the hydrology of the surface waters. As compared with Alternative A, there would be a decrease in the pile supported structures with the new west trestle providing a consolidation of the existing west trestle, forklift, and pedestrian trestles. The estimated net reduction in the volume of pilings below the mean high water line would be at least 47.8 CY over approximately 3,059 SF than the existing Pier 2 pilings. In these highly localized areas, the more open structure of the pilings would lead to improved circulation under the piers.

Groundwater

The demolition and re-construction of Pier 2 under Alternative B would not adversely affect groundwater and would be as described in the EIS.

4.2.2.2 Water Quality

Given the reduced number of piles to be installed under Alternative B, potential impacts to water quality would be less than those predicted for Alternative A. The reduced construction footprint for the new pile-supported structure would result in less in-water use of equipment with the potential to cause increased temporary turbidity in shallow areas, such as tugboats, barge mounted cranes, construction crew support vessels, and pile driving equipment. There would also be reduced impacts from pile driving activity, which can also result in localized increased turbidity from the pressure of the blows to the piles to drive the piles down into the bay bottom.

The demolition of the old pier structures and construction of the new pier structures would require permitting under both Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the CWA. A Section 401 Water Quality Certification from the SFBRWQCB would also be needed and include assurances that BMPs would be used to minimize potential impacts to water quality. This permitting process would ensure that state water quality standards would not be affected by implementation of these demolition or construction activities. To minimize the impacts from temporary elevated turbidity, control floating debris, and to ensure that floating creosote-related contamination is constrained to the construction site, in-water floating booms would be in place during the duration of the demolition and construction to surround both piers.

The remaining temporary impacts associated with stormwater runoff, short-term localized impacts to water quality from increased turbidity from pile removal and cleaning, and new pile construction would be the same as under Alternative A. In conclusion, although the magnitude of potential impacts to water quality under Alternative B would be slightly less than under Alternative A, Alternative B would also result in moderate, temporary impacts to water quality.

4.2.2.3 Wetlands

As with Alternative A, the Army has determined, consistent with EO 11990, *Protection of Wetlands*, that there is no practicable alternative to locating Pier 2 outside wetlands habitat due to the Pier's existing location. The net potential direct permanent impacts to wetlands under Alternative B would be similar but slightly increased as compared to those under Alternative A, primarily due to the wetlands that are at the west trestle abutment and the wetlands affected by implementation of the HRP. Table 4-1 summarizes the potential direct permanent wetland impacts under Alternatives A and B from construction and restoration activities, and Section 2.5 provides a discussion of the LEDPA analysis. Impacts to aquatic habitats and the benefits of the smaller pier footprint under Alternative B to these habitats, including SAV and mud flats special aquatic sites, are addressed in Section 4.4.2.1. Under Alternative B, there is an estimated 0.264-acre area of unavoidable, direct adverse impact to wetlands from construction. Though ultimately benefiting and increasing wetlands, the HRP implementation also has direct adverse impacts to wetlands. Specifically, the proposed positive impacts from the establishment of 1.32 acre of self-sustaining, native tidal marsh wetlands in the 100-foot buffer area involves adverse impacts associated with excavation and fill removal and perennial pepperweed removal within 0.67 acre of intertidal brackish marsh wetlands. This allows for the restoration of the adjacent upland 0.57-acre area at the upper edge of the marsh plain to tidal marsh wetlands. In addition, there would be restoration of 0.08 acre wetland areas currently occupied by trestle structures (USACE Sacramento 2016 *in prep*). Per CWA regulations, the 0.67 acre and 0.08 acre of existing wetlands that are restored in place do not contribute to a "net gain" in wetlands. Therefore, the net gain of wetlands under Alternative B would be 0.31 acre of estuarine intertidal wetlands.

The potential temporary impacts to wetlands with the implementation of the proposed action were evaluated using a 100-foot potential disturbance buffer, which (as noted in Section 4.2.1) was expanded from that evaluated in the EIS and includes a greater area and provides a refined estimate of the maximum area of potential temporary, indirect effects. Table 4-2 summarizes the potential short-term wetland impacts under Alternatives A and B. These impacts include construction-related disturbance and HRP implementation (additional enhancement and control of exotic and invasive plant species with both mechanical and chemical control methods) (USACE Sacramento 2016 *in prep*).

Table 4-1. Potential Direct Wetland Impacts Under Alternatives A and B

Wetland Type	Alternative A			Alternative B		
	Construction	*Restoration[1]*	*Net[2]*	*Construction*	*Restoration[3]*	*Net[4]*
Estuarine Intertidal Wetlands (acres)	-0.013	0.113	0.0100	-0.244	1.32	1.076
Palustrine Wetlands (acres)	-0.020	0.000	-0.020	-0.020	0.00	-0.020
Total	**-0.033**	**0.113**	**0.008**	**-0.264**	**1.32**	**1.056**

Notes:

[1]Includes re-establishment of 0.041 acre of wetlands in areas previously shaded by trestle structures (per the EIS) and 0.072 acre of wetland restoration for the 0.033 acre of wetlands impacted during construction, assuming the same 2:19 restoration ratio for estuarine intertidal wetlands under both alternatives.

[2]The net presented here includes all wetlands impacts. The net gain of wetlands is based on CWA regulatory definitions; the net gain is 0.039 acre and does not include the 0.041 acre of restoration in place.

[3]Includes wetlands restoration as specified in the HRP: 0.67 acre of re-establishment in wetlands impacted during construction, 0.57 acre of wetlands restored in existing uplands, and 0.08 acre of re-establishment of wetlands in areas previously shaded by trestle structures.

[4]The net presented here includes all wetland impacts. The net gain of wetlands is based on CWA regulatory definitions; the net gain is 0.306 acre and does not include the 0.67 acre + 0.08 acre of restoration in place (USACE Sacramento 2016 *in prep*).

Table 4-2. Potential Short-Term Wetland Impacts Under Alternatives A and B[1]

Wetland Type	Alternative A	Alternative B
Estuarine Intertidal Wetlands (acres)	2.71	2.70
Palustrine Wetlands (acres)	0.31	0.37
Total	**3.02**	**3.07**

Note:

[1]Defined as wetlands within the 100-foot buffer area beyond the area of direct impact. The 100-foot buffer was refined from that in the EIS to account for new information/revised design and is generally a more conservative estimate of the area of potential short-term, indirect impact.

4.2.2.4 Floodplains

Under Alternative B, the new west trestle and portions of the White Road repairs would be within the 100-year floodplain. The total area of new project footprint within the floodplain is estimated at 1.05 acre as compared with 0.95 acre under Alternative A. As with Alternative A, the Army evaluated the action pursuant to EO 11988, *Floodplain Management*, and determined that there are no practicable alternatives to these necessary infrastructure elements due to the location of Pier 2 and supporting infrastructure and the magnitude of cost and decreased safety of alternative means of construction. Although this construction would result in approximately 6,365 CY of new landside fill, some of which would be within the 100-year floodplain, this loss in

volume would result in a negligible increase in surface water elevation because Suisun Bay is an open system that can absorb storm surge over a very large area. In addition, the Habitat Restoration Plan includes excavation and fill removal to restore the marsh plain within the 1.32-acre wetlands restoration area, which is also within the 100-year floodplain.

4.3 AIR QUALITY

Air quality impacts within the affected environment were reviewed for significance in light of federal air pollution standards and regulations. Potential air quality impacts include: 1) exceeding the General Conformity Rule *de minimis* thresholds for the ozone precursors VOCs or NO_x, the $PM_{2.5}$ precursor SO_2, or $PM_{2.5}$; or 2) increasing net mobile source emissions in excess of 250 tons per year for CO or particulate matter less than or equal to 10 microns in diameter (PM_{10}).

Pollutants considered in this analysis include the criteria pollutants, excluding lead (airborne emissions of lead are not included because there are no known significant lead emission sources in the region or associated with the proposed action). For PM_{10} and CO emissions, 250 tons per year per pollutant was used as a comparative analysis threshold. This value is used by the USEPA in their New Source Review Standards as an indicator for impact analysis for listed new major stationary sources in attainment areas. No similar regulatory threshold is available for mobile source emissions, which are the primary emission sources for the proposed action. Lacking any mobile source emissions thresholds, the 250 tons per year major stationary source threshold was used to equitably assess and compare mobile source PM_{10} emissions.

Air quality impacts were assessed by comparing the emissions generated by the demolition/construction activities to these defined thresholds. The demolition/construction emissions represent the additive short-term net change in emissions within the MOTCO environs as compared to the already existing operational emissions.

4.3.1 Alternative A: No Action Alternative

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Therefore, impacts to air quality would be as described in the EIS. Although the refined estimates for the demolition and construction activities as summarized in Table 2-5 for Alternative A vary slightly from the analysis in the EIS, the analytical process and conclusions remain valid.

4.3.2 Alternative B

Under Alternative B, there would be reductions in the Pier 2 construction footprint as compared to Alternative A. In general terms, the estimated schedule for the demolition and construction activities would be the same under both alternatives. For the purposes of the analysis, it was

anticipated that project activities (i.e., demolition and construction) would begin in the 3rd quarter of 2017 and run through the 4th quarter of 2019.

There are no new stationary sources anticipated under Alternative B.

The major differences between demolition and construction under Alternatives A and B is summarized in Table 2-5.

As indicated in Table 4-3, none of the pollutants would be emitted in excess of the impact thresholds for any year of construction. Therefore, a general conformity determination is not required. A RONA has been prepared (Appendix D).

Table 4-3. Alternative B Estimated Air Emissions from Demolition and Construction Activities

Year	VOCs[2]	CO	NO_x[2]	SO_2[2]	PM_{10}	$PM_{2.5}$
2017	0.27	1.32	2.68	0.04	10.01	1.09
2018	2.26	9.31	20.79	0.35	25.47	3.44
2019	0.51	2.88	5.59	0.14	10.09	1.17
de minimis thresholds[1]	100	250	100	100	250	100
Exceedance?	No	No	No	No	No	No

Notes:
[1]40 CFR Part 93.153.
[2]VOCs and NO_x are precursors for O_3 and SO_2 is a precursor for $PM_{2.5}$.

4.4 BIOLOGICAL RESOURCES

4.4.1 Alternative A: No Action Alternative

Under Alternative A, impacts would be essentially the same as described in the EIS. There would be a net gain of subtidal habitat due to the removal of portions of existing Pier 2, the replacement of existing infrastructure with structures that have a smaller footprint, and the revegetation of disturbed areas of SAV and tidal marsh with native plant species. Impacts to EFH, special status species, and the associated regulatory conclusions are unchanged from those documented in the EIS.

As detailed in Section 4.2.2.3, the estimated wetlands habitat impacts would be slightly increased from that analyzed in the EIS.

The EIS analysis of underwater acoustic impacts from impact pile driving provided estimates of unattenuated versus attenuated sound pressure levels (SPLs), (peak and root mean square [RMS]) and sound exposure level (SEL), all at 10 meter (m) distance. The use of a cushion block was assumed to provide 7 decibel (dB) of attenuation at the source. In recent guidance, however, Caltrans (2015) recommends against applying a specific sound level reduction credit for the use of a cushion block. The guidance notes that the data are limited, the amount of sound reduction varies considerably depending on the material used for the cushion block, and that most impact pile driving already uses cushion blocks, making it difficult to extrapolate source levels from other projects *and* predict a specific amount of reduction. Accordingly, as a worst case for this analysis, no attenuation due to the use of a cushion block is assumed for

Alternative A. Accordingly, the sound source levels at the 10 m distance associated with impact driving 24-inch octagonal concrete piles for Pier 2 are as follows (these are the unattenuated values analyzed in the EIS):

- Peak SPL of 185 dB (referenced to 1 micropascal [re 1 µPa])
- RMS SPL of 173 dB (re 1 µPa)
- Single strike SEL of 162 dB (re 1 μPa^2-sec)

The relevant thresholds for fish injury and behavioral effects and the distances within which those thresholds would be exceeded are as follows (unattenuated distances as in the EIS):

- Injury to fish at peak SPL > 206 dB re 1 µPa (< 1 m from source)
- Behavioral disturbance to fish at RMS SPL > 150 dB re 1 µPa (341 m from source)
- Injury to fish < 2 g at cumulative SEL of 183 dB re 1 μPa^2-sec (40 m from source)
- Injury to fish ≥ 2 g at cumulative SEL of 187 dB re 1 μPa^2-sec (22 m from source)

4.4.2 Alternative B

4.4.2.1 Habitats

The direct impacts of the alternatives to habitats are provided in Table 4-4. Under Alternative B, the total overwater structure of Pier 2 would be smaller than Alternative A due to the removal of the existing west trestle and forklift trestle (Table 4-4). This would result in an overall beneficial impact to aquatic habitats similar to that evaluated for Alternative A. However, with the smaller overall footprint of the pier structure under Alternative B, there would be overall greater benefits to aquatic habitats, including SAV and mudflats both of which are considered special aquatic sites under CWA guidelines. The beneficial gain in subtidal aquatic habitat under Alternative B would be more than double that of Alternative A (a gain of 0.71 acre under Alternative B as compared to 0.35 acre under Alternative A). Although Alternative B results in greater adverse impacts to intertidal wetlands and uplands as compared to Alternative A primarily as a result of the construction of the west trestle approach abutment (and some restoration actions), the implementation of the HRP would result in positive impacts for all habitat types over the long-term. The overall beneficial 0.57-acre gain in intertidal wetlands would be through restoration of existing adjacent uplands to wetlands resulting in the overall positive impact of a net gain of 0.31 acre in wetlands. In comparison, the net gain in wetlands under Alternative A would be 0.039 acre. The HRP also provides for the enhancement of intertidal wetlands and uplands in the intertidal brackish marsh within the 100-foot buffer including control of exotic species (USACE Sacramento 2016 *in prep.*).

Table 4-4. Potential Habitat Impacts of Project Alternatives

Habitat	Alternative A				Alternative B			
	Structure Removed (Possible Gain)	Direct Loss	HRP Gain[1]	Net Gain/Loss	Structure Removed (Possible Gain)	Direct Loss	HRP Gain/ Loss	Net Gain/Loss
Palustrine Wetlands (acres)	0.000	-0.020	N/A	-0.020	0.000	-0.020	N/A	-0.020
Estuarine Intertidal Wetlands (acres)	0.080	-0.013	0.072	0.059	0.080	-0.244	0.570	0.326
Subtidal (acres)	3.53	-3.18	N/A	0.35	3.53	-2.82	N/A	0.71
Graded or Paved (acres)	0.115	-1.23	N/A	-1.12	0.140	-1.40	N/A	-1.26
Upland (acres)	0.026	-0.40	N/A	-0.37	0.004	-0.443	-0.570	-1.01

Note:
[1]HRP not developed for Alternative A, but assumed same wetlands restoration ratio and restoration of estuarine intertidal wetland under both alternatives.
N/A = not applicable.

Table 4-5 summarizes the potential area of adverse impacts to habitat types within the 100-foot buffer area (beyond the area of direct impact) under both alternatives. As noted previously, the 100-foot buffer area was expanded to include a larger area/provide a more conservative estimate of potential temporary impacts. Under Alternative B, the Army would address all adverse impacts to habitat through with the beneficial impacts of a total of 4.95 acres of wetland habitat restoration, reestablishment, and enhancement as designated in the HRP as well as enhancement of approximately 3.33 acres of adjacent upland buffer habitat (USACE Sacramento *in prep* 2016).

Table 4-5. Potential Short-Term Habitat Impacts Under Alternatives A and B[1]

Wetland Type	Alternative A	Alternative B
Subtidal (acres)	20.4	20.3
Estuarine Intertidal Wetlands (acres)	2.71	2.70
Palustrine Wetlands (acres)	0.31	0.37
Upland (acres)	4.99	6.74
Graded or Paved (acres)	4.26	5.74
Total	**32.7**	**35.9**

Note:
[1]Defined as habitat within the 100-foot buffer area beyond the area of direct impacts. The 100-foot buffer area was refined from that in the EIS to account for new information/revised design and is generally a more conservative estimate of the area of potential short term, indirect impact.

4.4.2.2 Flora

Aquatic Vegetation

Alternative B would increase the amount of unshaded bay surface by 33,405 SF compared to 17,442 SF under Alternative A. Assuming a 100-foot disturbance buffer around demolition and construction areas and based on distribution of SAV, temporary impacts to aquatic habitat and SAV could be larger for Alternative B as compared to Alternative A. However, the increased availability of unshaded surface (which is 15,962 SF greater than the increased availability under Alternative A) should lead to a greater long-term increase in SAV under Alternative B as

compared to Alternative A. The temporary increase in turbidity associated with Alternative B would be similar to Alternative A and would result in only a minor adverse impact.

Terrestrial and Wetland Vegetation

Potential impacts to terrestrial and wetland vegetation under Alternative B would be similar to Alternative A. The quantities for Alternative A are updated in Table 4-4 based on better data that has become available as planning and design has progressed after completion of the EIS.

4.4.2.3 Fauna

Invertebrates

The impacts of Alternative B would be essentially similar to those of Alternative A although the footprints of construction and demolition would be different. Specifically, benthic invertebrates would experience localized mortality and displacement due to demolition, construction, and repair activities. Any impacts to benthic invertebrates would be discountable due to the small area of disturbance and the fact that the free-living larval stages of benthic invertebrates are a very minor constituent of the zooplankton that fish use as food. It is anticipated the affected areas would be recolonized within a short time, on the order of 1 to 2 years, following work completion. In addition, the net decrease in pier coverage of the bay under Alternative B would incrementally increase circulation and sunlight penetration while reducing the amount of hard substrate to which invertebrates could attach. Therefore, implementation of Alternative B would have a minor adverse impact on invertebrates.

Fish and Essential Fish Habitat

Fish

As noted above, the reduced area of over- and in-water structure associated with Alternative B would have a larger beneficial impact on fish and EFH. Impacts of pile driving on fish and EFH would be the same as described for Alternative A in the EIS, except for relatively minor differences associated with the potential for contemporaneous use of two pile drivers (one at the west trestle and one at the main platform). However, to avoid additive SPLs experienced by species in the vicinity of the work area, the Army is committed to implementing management practices to ensure piles will not be driven simultaneously. Specifically, the contractor will be required to ensure that there is communication between the two operations that will allow one rig to commence pile driving activities while the second is positioning and staging the next pile installation during the approximately 15-day period that two rigs may be in the water at the same time. **Figure 4-1** depicts the area of potential injury and behavioral effects to fish from pile driving.

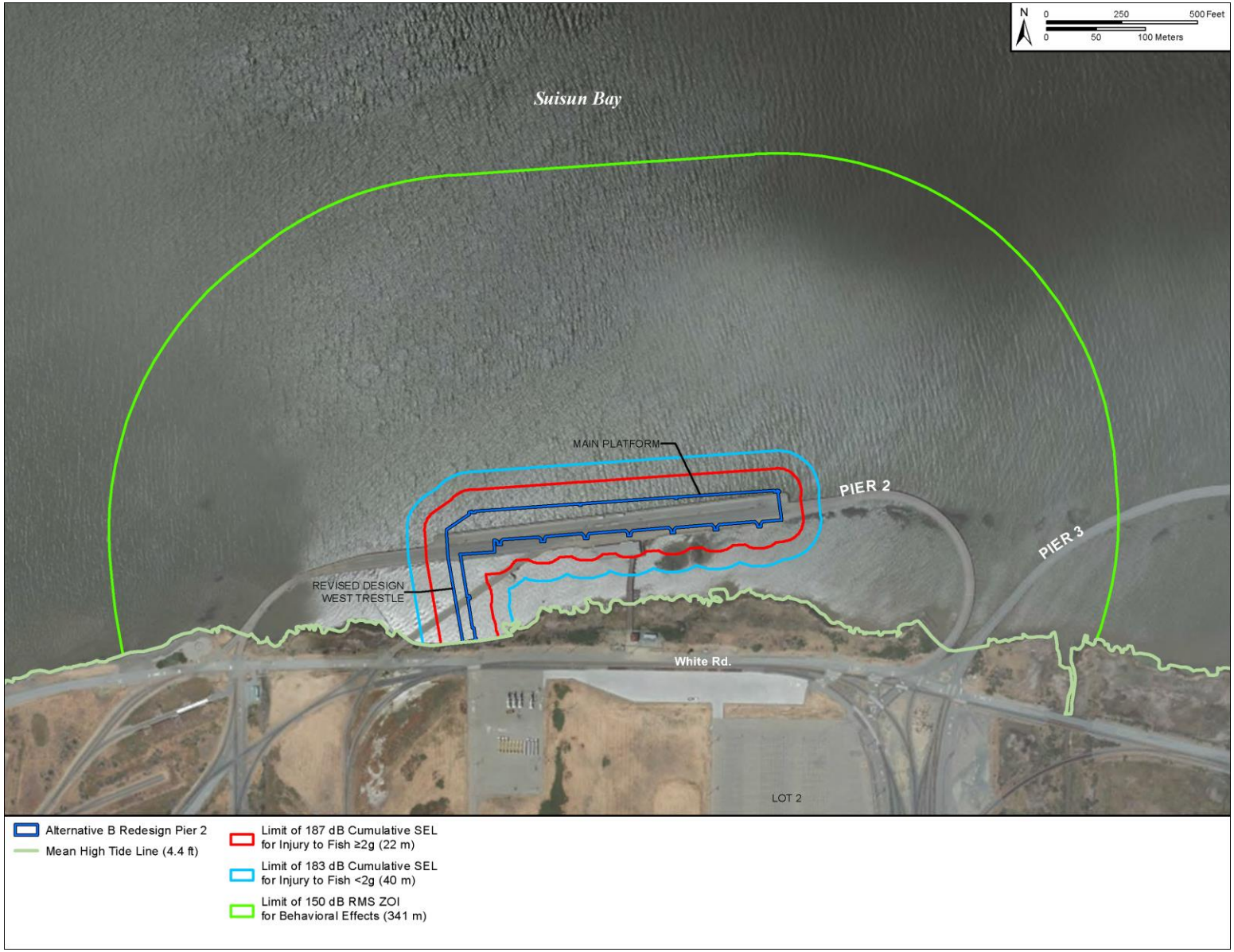

Figure 4-1. Acoustic Analysis of Pile Driving Noise and Impacts to Fish under Alternative B

This analysis was based on the following parameters:

- The west trestle and landside margin of the main platform are on the mud flat at an elevation of approximately +13.5 feet MLLW, which may reduce sound transmission into the water and alleviate concerns about the impacts to fish. To investigate this possibility, the Caltrans (2015) compendium of acoustic measurements from pile driving, which provides many examples of piles being driven on land or in very shallow water adjacent to deep water, was reviewed. Hydroacoustic measurements from land-based or very shallow (1 to 2 m depth) pile driving show no clear pattern of reduced (or increased) SPLs measured in the adjacent water body relative to SPLs observed from the same sizes and types of piles driven in deeper water. Therefore, it is not appropriate to assume that received SPLs in the adjacent water would be reduced when pile driving occurs on the mud flat.
- The second pile driver is assumed to be of the same type as the first, with the same sound source characteristics. Simultaneous strikes would not occur, but a fish in the water could be exposed to sound from both pile drivers, and thus might experience a greater cumulative SEL than if only one pile driver were operating. If it were to occur, such a contemporaneous operation is estimated to extend over approximately 15 days, but in actuality would involve about 1 to 5 days when both drivers are operating. Actual driving time for each pile is about 10 minutes; most of a day's activity consists of setting up and repositioning the pile driver.
- Consistent with the NMFS Pile Driving Calculator, when the received SEL from an individual pile strike is below a certain level, then the accumulated energy from multiple strikes would not contribute to injury, regardless of how many pile strikes occur. This SEL is referred to as "effective quiet," and is assumed, for the purposes of this spreadsheet, to be 150 dB (re: 1 μPa^2*sec). Effective quiet establishes a limit on the maximum distance from the pile where injury to fishes is expected – the distance at which the single-strike SEL attenuates to 150 dB. Beyond this distance, no physical injury is expected, regardless of the number of pile strikes.
- A worst-case analysis assumes the pile drivers are equally loud. Based on the assumed single-strike SEL for the 24-inch piles of 162 dB re 1 μPa^2-sec at 10 m, the effective quiet distance – the distance at which the single-strike SEL becomes less than 150 dB re 1 μPa^2*sec - is 63 m. As a result, there would be no additive effect unless a fish is less than 63 m from both pile drivers while they are both operating, a circumstance which is unlikely to occur for any appreciable length of time given that fish would be swimming or drifting through the project area. Furthermore, because of the logarithmic decay of sound intensity over distance, the fish's received SEL will be dominated by sound from the nearest pile driver. As a result, the zones of potential injury and

behavioral effects based on a single pile driver as shown in Figure 4-1 are unlikely to change with the addition of a second pile driver.

In conclusion, the addition of a second pile driver during construction would make virtually no difference in the extents of zones of potential injury or behavioral effects to fish.

Essential Fish Habitat

Short-term impacts to EFH would be essentially the same for Alternative B as for Alternative A. Long-term beneficial impacts which would be greater for Alternative B than Alternative A include the removal of overwater and in-water structures, and the removal of creosote-treated timber piles.

Reptiles and Amphibians

As with Alternative A, there would be no impacts to reptiles and amphibians under Alternative B.

Birds

Impacts to birds would be the same under Alternative B as for Alternative A, and would include the same avoidance and minimization measures.

Mammals

Impacts to mammals would be the same for Alternative B as for Alternative A.

4.4.2.4 Special Status Species

Essentially the same conclusions that were reached for the preferred alternative in the EIS would apply to Alternative B. The Army has reinitiated the ESA Section 7 consultations with USFWS and NMFS pertaining to the consultations completed for the Pier 2 EIS with the NMFS issuance of a BO on November 19, 2014 and the USFWS issuance of a BO on February 4, 2015 (EIS Appendix D). The conclusions of these consultations are re-stated or revised below as applicable to Alternative B. Both NMFS and USFWS have concurred with the Army's conclusions that revised design for the project to replace/upgrade Pier 2 does not change the determinations of the BOs issued by these agencies, and that re-initiation of formal consultation pursuant to 50 CFR Part 402.16 is not necessary (see Appendix A).

Federally Listed Plant Species

Soft Bird's Beak

Alternative B is not likely to adversely affect the soft bird's-beak. No work will occur within 0.5 mile of the nearest populations of this species, and establishment of a temporary exclusion fence (TEF) between work areas and adjacent marsh habitat will reduce or eliminate the potential for direct loss of individuals or occupied habitat to occur. Alternative B would result in a very small loss of salt marsh (i.e., 0.046 acre as compared to 0.060 acre under Alternative A) that could be occupied by this species. However, the marsh to be impacted is of low quality for

this species, and marsh restoration of the 0.012 acre gained by replacing the existing Pier 2 with a smaller structure would compensate for loss of unoccupied marsh habitat. Negligible impacts to soft bird's beak from implementation of Alternative B would occur.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the soft bird's beak. This conclusion was based on the relatively small size of suitable habitat being affected, the conservation measures being implemented, and the design of the project to minimize the project footprint within the marsh. As part of the proposed action, the Army will implement the same avoidance, minimization, and compensation measures identified in the EIS and updated in Chapter 6 of this SEA.

Other State Special Status or California Native Plant Society Plant Species

Delta Mudwort

Delta mudwort is not known to occur in the project area; therefore, no impacts to this species would occur from implementation of Alternative B.

Mason's Lilaeopsis

The Piers 2 and 3 areas were re-assessed in May 2013 and it was determined habitat conditions had not changed significantly since the 2010 survey and thousands of Mason's lilaeopsis still occur along the shoreline of Piers 2 and 3 (Cardno TEC et al. 2013). Therefore, some areas occupied by Mason's lilaeopsis may be directly or incidentally (within the 100-foot buffer zone) impacted by the construction of shoreline components of Pier 2. However, the net increase of intertidal habitat associated with Alternative B would potentially offset these impacts, to the extent that the re-created intertidal habitat is suitable for this species. As part of the proposed action, existing locations of Mason's lilaeopsis would be protected, where possible, through the use of construction silt fencing; Mason's lilaeopsis plants and the substrate that supports them would be salvaged from areas that would otherwise be impacted; and habitat would be re-created using the salvaged plants and substrate where structures are removed from low-intertidal habitat. Successful reestablishment of Mason's lilaeopsis in an area equivalent to what is impacted would avoid a significant impact to this species.

Delta Tule Pea

The Piers 2 and 3 areas were re-assessed in May 2013. Although it was determined habitat conditions had not changed significantly since the 2010 survey, only one Delta tule pea was present by the eastern approach to Pier 3 (Cardno TEC et al. 2013). Based on the limited occurrence of Delta tule pea in the project area and the removal of the structure nearest to the only known occurrence at Pier 2, no impact to Delta tule pea is anticipated from Alternative B.

Suisun Marsh Aster

The Piers 2 and 3 areas were re-assessed in May 2013. Although it was determined habitat

conditions had not changed significantly since the 2010 survey, the 20 to 30 Suisun Marsh aster plants near the west approach to Pier 3 that were documented in 2010 were absent. However, the timing of the May 2013 survey may have been too early to detect this species (Cardno TEC et al. 2013). Any Suisun Marsh aster plants near the west approach to Pier 2 would be flagged or fenced to avoid impacts by construction activities. Therefore, implementation of Alternative B would have no direct or indirect impacts to Suisun Marsh aster.

Federally Listed Fish Species

Central California Coast Steelhead Distinct Population Segment (DPS), Central Valley Steelhead DPS, Central Valley Spring-run Chinook Evolutionarily Significant Unit (ESU), and Sacramento River Winter-run Chinook ESU

Individuals of the Central Coast steelhead and Central Valley steelhead DPSs may experience localized, temporary, and relatively minor effects resulting from project-related noise and turbidity. Such effects would be manifested as individuals alter their movements and activities in response, with minor, if any, effect on energetics and survival. Injurious effects are not anticipated. Long-term effects on habitat would be beneficial, resulting from the removal of sources of contaminants and a net reduction in the area of overwater structures.

NMFS issued a BO on November 19, 2014 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the Central California Coast Steelhead, Central Valley Steelhead, Central Valley spring-run Chinook salmon, and Sacramento River winter-run Chinook salmon, or destroy or adversely modify Sacramento River winter-run Chinook designated critical habitat. The anticipated effects to these species and/or critical habitat will be in the form of temporary partial loss of foraging habitat in the area of behavioral effect for Pier 2 during the 12-month period of pile driving. As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in the EIS and updated in Chapter 6 of this SEA.

Green Sturgeon Southern DPS

Individuals of the green sturgeon DPS may experience localized, temporary, and relatively minor effects resulting from project-related noise and turbidity and from prey removal and displacement. Such effects would be manifested by changes in behavior as individuals alter their movements and activities in response. Injurious effects are not anticipated. Long-term effects on habitat would be beneficial, resulting from the removal of sources of contaminants and a net reduction in the area of overwater structures. Impacts would be short-term and minor and would not result in significant impacts.

NMFS issued a BO on November 19, 2014 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the Southern DPS green sturgeon, or destroy or adversely modify their designated critical habitat. The anticipated effects to this species and/or critical habitat will be in the form of temporary partial loss of foraging habitat in the area of

behavioral effect for Pier 2 during the 12-month period of pile driving. As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in the EIS and updated in Chapter 6 of this SEA.

Delta Smelt

Individual delta smelt may experience localized, temporary, and relatively minor effects resulting from project-related noise and turbidity. Such effects would be manifested by changes in behavior as individuals alter their movements and activities in response. Injurious effects are not anticipated. Long-term effects on habitat would be beneficial, resulting from the removal of sources of contaminants and a net reduction in the area of overwater structures. The project-related effects would be short-term and minor and would not result in significant impacts.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the delta smelt, or adversely modify delta smelt designated critical habitat. This conclusion was based on the following:

- the *General and Species Specific Conservation Measures* and construction BMPs proposed by the Army to help minimize adverse project effects to delta smelt and its critical habitat;
- the implementation of water quality and turbidity monitoring by the Army's contractor(s);
- compliance with SFBRWQCB permit thresholds for water quality parameters that minimize adverse effects to delta smelt, its prey and critical habitat primary constituent element #2;
- the Army's adherence to the August 1st to November 30th work-window for dredging activities that helps minimize adverse dredging effects to delta smelt and its prey;
- the proposed use of a bed-leveler as the preferred dredging method that reduces delta smelt entrainment risk due to a low entrainment zone;
- the removal and wrapping of 4,514 and 1,753, World War II-era creosote piles at Piers 2 and 3, respectively, that will benefit delta smelt critical habitat primary constituent element #2, delta smelt and its prey, by eliminating the ongoing release of decaying creosote timber and polycyclic aromatic hydrocarbons into Suisun Bay Channel at Pier 2 and reduce further creosote pile deterioration at Pier 3; and
- the completed, modernized Pier 2 will result in a smaller, pile footprint leading to a net gain of approximately 0.781 acre channel substrate and aquatic habitat in Suisun Bay Channel because of 3,513 fewer piles.

As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in EIS and updated in Chapter 6 of this SEA. A specific update added during the development of this SEA is the management measure that would apply if two pile drivers are in operation over the same time period. In the event that this occurs, the Army will require the contractor to ensure that there is communication between the two pile

driving operations regarding start/stop of pile driving activity to ensure that simultaneous pile strikes will not occur

Other Special Status Fish Species

Central Valley Fall, Late-fall Chinook Salmon ESU

Impacts to the Central Valley fall, late-fall Chinook salmon ESU would be the same as those described for the federally listed Chinook species above. Temporary increases in turbidity and sound may result in avoidance of the area. However, these impacts would be short-term and minor and would not result in significant impacts to the Central Valley fall, late fall Chinook salmon ESU with implementation of Alternative B.

Sacramento Splittail

Juvenile Sacramento splittail are likely to be present within Suisun Bay in late spring and early summer. Impacts to this species would be similar to those described above for federally listed species by way of turbidity and elevated noise within the project area. However, impacts would be temporary and minor. Therefore, no significant impacts to Sacramento splittail would result with implementation of Alternative B.

Federally Listed Wildlife Species

California Ridgway's Rail

The project site is located within the range of the California Ridgway's rail, near areas where the species has been recorded in the past, and thus was initially concluded that the project may affect and would be likely to adversely affect the California Ridgway's rail, and the Army has formally consulted with USFWS on that basis. However, the non-detection of the species in the marshes near Piers 2 and 3 in recent years, including the protocol surveys conducted during early 2014 and January-March 2015, indicates that the species rarely, if ever, occurs in the project action area. Furthermore, the project action area is deficient in the features of tidal marsh habitat typically used by California Ridgway's rails. In particular, the marshes near the piers lack extensive channel networks with tidally exposed mud banks and channel bottoms that California Ridgway's rails could use for foraging, as well as bordering stands of Pacific cordgrass, pickleweed, and marsh gumplant that California Ridgway's rails would be most likely to nest in. Therefore, no loss of individuals or occupied habitat is expected.

Pre-construction surveys will be conducted as a precautionary measure and, in the unlikely event that California Ridgway's rails are found, avoidance areas will be established within 700 feet of rail calling centers during the breeding season, in order to minimize any disturbance impacts. Relatively small, temporarily impacted areas of tidal marsh in the narrow zone seaward of White Road would be restored, and in any case there are no indications that California Ridgway's rails use these areas. Therefore, implementation of Alternative B would result in no significant impact to the California Ridgway's rail.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the California Ridgway's rail. This conclusion was based on the relatively small size of suitable habitat being affected, the low quality of available habitat, the conservation measures being implemented, and the design of the project to minimize the project footprint within the marsh. As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in EIS and updated in Chapter 6 of this SEA.

California Least Tern

Although the species may occasionally disperse past MOTCO, least terns do not nest on or very near the MOTCO site. Moreover, disturbance to individuals is not expected because this species is not known to forage in the immediate vicinity of MOTCO. No individuals are expected to experience loss of foraging opportunities as a result of the in-water work. Impacts under Alternative B would be the same as described under EIS Alternative 1. Therefore, implementation of Alternative B would result in minor adverse impacts to the California least tern. The Army made a preliminary determination that implementation of EIS Alternative 1 may affect, but is not likely to adversely affect, the California least tern. USFWS concurred with the Army's determination (EIS Appendix D).

Salt Marsh Harvest Mouse

The project site is located within the range of the salt marsh harvest mouse, near areas where the species has been recorded in the past, and thus it is concluded that the project may affect the salt marsh harvest mouse. Salt marsh harvest mice are unlikely to occur in or adjacent to the mainly freshwater marsh habitats near Piers 2 and 3 due to a lack of salt marsh habitat. However, this species cannot be determined to be absent without conducting an extensive trapping study and thus it is determined that the project may result in minor to moderate adverse impacts with the implementation of Alternative B. To avoid injury or mortality of harvest mice, marsh vegetation that would be permanently or temporarily impacted would be removed by hand under supervision of a biological monitor. Disturbance to individuals that are adjacent to work areas is unlikely given the low probability of occurrence of the species in the vicinity.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the salt marsh harvest mouse. This conclusion was based on the relatively small size of suitable habitat being affected, the conservation measures being implemented, and the design of the project to minimize the project footprint within the marsh. As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in the EIS and updated in Chapter 6 of this SEA.

California Red-legged Frog

Past surveys for the California red-legged frog in the Tidal Area of MOTCO, including surveys by USFWS in 2013–2014, 2015, and 2016 have not detected this species, but have identified several aquatic features that could support breeding. As discussed in Section 3.4.4.3, the Army believes that the likelihood of the California red-legged frog's occurrence in the action area is so low as to be discountable and that the species would not be affected by the implementation of the proposed action. However, given the presence of suitable upland habitat, the proximity of suitable aquatic breeding habitat, and the lack of recent conclusive survey data, USFWS has determined that the species may occur within the action area. Therefore, the Army will implement precautionary mitigation measures so that, in the unlikely event of long-distance dispersal to the staging areas (i.e., E-Lots), implementation of the proposed action would be less than significant.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the California red-legged frog. This conclusion was based on the relatively small size of suitable habitat being affected and the conservation measures being implemented. As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in the EIS and updated in Chapter 6 of this SEA.

<u>State-Listed Threatened and Endangered Species</u>

California Black Rail

The occurrence of California black rails is limited to the inboard Pier 3 marsh area. Given no direct disturbance and limited activity on the shoreline of this area, negligible impacts to California black rails would occur from the implementation of Alternative B.

<u>Other State Special Status Wildlife Species</u>

Northwestern Pond Turtle

Since Alternative B would have no direct or indirect impact on tidal creeks that could be inhabited by this species, no impacts are anticipated to the northwestern pond turtle.

Bird Species of Concern

Several bird species of concern may occur in the marshes inshore of Piers 2 and 3. With the implementation of measures described above for migratory birds, the disturbance of these species would be largely avoided. No long-term adverse effects to habitat are anticipated. As a result, minor adverse impacts would occur to bird species of concern from the implementation of Alternative B.

Marine Mammals

Marine mammals are considered very unlikely to occur within potential zones of influence for acoustic harassment. In particular, for impact pile driving, NMFS uses a threshold of 160 dB re 1 µPa for behavioral disturbance, and this distance would only be exceeded within a distance of 242.8 feet. Given the operation of equipment and human activity, it is very unlikely sea lions or harbor seals would approach the construction area this closely. Therefore, negligible to minor adverse impacts to marine mammals would occur from the implementation of Alternative B.

4.5 LAND USE AND COASTAL ZONE MANAGEMENT

4.5.1 Alternative A: No Action Alternative

4.5.1.1 Land Use

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Therefore, impacts to land use would be as described in the EIS. Alternative A would be consistent with existing land uses, management, and ownership and conform to plans and regulations. No reasonably foreseeable impacts to land use would occur from implementation of Alternative A.

4.5.1.2 Coastal Zone Management

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. The Army determined that the proposed action of the EIS was consistent to the maximum extent practicable with the BCDC coastal management program for the San Francisco Bay segment of the California coastal zone. BCDC issued Conditional Consistency Concurrence No. C2033.003.05 (originally issued on August 1, 2003, as amended through March 24, 2015) with special and standard conditions for the Pier 2 repairs analyzed under the EIS.

4.5.2 Alternative B

4.5.2.1 Land Use

Alternative B would not result in any changes to land use as the proposed action would occur in areas consistent with their purpose. In addition, the proposed action is not expected to introduce incompatibilities with adjacent land use areas. All elements related to the demolition and construction of Pier 2 under Alternative B would be consistent with existing land uses, management, and ownership, and conform to plans and regulations. No reasonably foreseeable impacts to land use would occur from implementation of the proposed action under Alternative B.

4.5.2.2 Coastal Zone Management

Procedurally, Alternative B is the same as Alternative A with respect to continued CZMA compliance. The changes to the proposed action fall within the special conditions of BCDC's March 25, 2015 Concurrence for Plan Review that specify that the final precise site, engineering, restoration, and grading plans and any other relevant criteria, specifications, and plan information for work within the Commission's jurisdiction must be submitted to, reviewed, and approved in writing by or on behalf of the Commission. Accordingly, the Army has continued to coordinate with BCDC per the terms of the Letter of Conditional Concurrence (C2033.003.05) regarding the design changes (i.e., Alternative B). BCDC intends to issue an administrative amendment to the Conditional Consistency Concurrence to reflect the design changes and the Army will seek the aforementioned plan approval through the final plan review process.

4.6 TRANSPORTATION AND UTILITIES INFRASTRUCTURE

4.6.1 Alternative A: No Action Alternative

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Therefore, impacts to transportation and utilities infrastructure would be as described in the EIS. Under Alternative A, there would be short-term minor impacts to road transport, no impacts to mass transit or rail transport, and negligible impacts to water transport. In addition, negligible impacts are anticipated to the sanitary sewer, natural gas, potable water, electricity, and telecommunications, and minor impacts to solid waste from implementation of Alternative A.

4.6.2 Alternative B

4.6.2.1 Road Transport

Under Alternative B, road transport is anticipated to be similar to that estimated for Alternative A. However, additional details are now available regarding some aspects of the project (e.g., east trestle structural rehabilitation and White Road repairs included in the proposed action) and some aspects of the revised design would result in different trip estimates (e.g., less construction materials due to smaller pier structure, need for fill including surcharge fill for new west trestle, and changes in the construction schedule affecting worker trips and trips per week). Table 4-6 shows the anticipated number or vehicular trips needed for Alternative B compared to Alternative A. The vehicle trips required for the implementation of the HRP are not quantified in Table 4-6, but would be expected to be similar under both alternatives.

Table 4-6. Anticipated Number of Vehicular Trips for Pier 2

Material	Total Trips	
	Alternative A	***Alternative B***
Demolition-Related Truck Trips		
Rail	16	16
Asphalt	106	269
Timber	1,042	1,090
Concrete	108	226
Miscellaneous Materials	28 to 78	70
MEC Clearance Operations Worker Vehicles[1]	1,200	1,200
Worker Vehicles[2]	1,400 to 2,800	1,400 to 2,800
Number of Total Trips for Pier 2 Demolition	3,900 to 5,350	4,271 to 5,671
Average Number of Total Trips Per Week[3]	139 to 191	153 to 202
Average Number of Total Trips Per Day[4]	28 to 38	31 to 41
Construction-Related Truck Trips		
Concrete Mixer	1,627	1,432
Rebar	120	112
Rail (Railroad Rail and Crane Rails)	3	3
Dump Truck[5]	269	1,190
Asphalt Truck	69	75
Worker Vehicles[6]	14,250	14,250
Number of Total Trips for Pier 2 Construction	16,338	17,062
Average Number of Total Trips Per Week [7]	172	180
Average Number of Total Trips Per Day[4]	34	36

Notes:
[1] It is estimated that there would be 40 workers at the job site every day for 6 weeks of MEC clearance (assuming a five-day work week). This estimate assumes no carpooling or alternative modes of transportation would be taken, and lunch would be eaten on-site.
[2]During demolition, it is anticipated there would be 10 to 20 workers at the job site every day for 28 weeks (assuming a five-day work week). This estimate assumes no carpooling or alternative modes of transportation would be taken, and lunch would be eaten on-site.
[3]Assumed equal distribution over the entire demolition period (i.e., 28 weeks); excludes rail trips.
[4]Assumed a five-day week (i.e., no weekend work).
[5]Alternative B includes additional dump truck trips for rip-rap and surcharge fill.
[6]During construction, it is anticipated that there would be 30 workers at the site for 95 weeks. This estimate assumes no carpooling or alternative modes of transportation would be taken, and lunch would be eaten on-site.
[7]Assumed equal distribution over the entire construction period (i.e., 95 weeks); excludes rail trips.

As shown in Table 4-6, the vehicular trips associated with demolition and activities would be similar under both alternatives. As compared to Alternative A, there would be an estimated 1,000 more trips under Alternative B (~300 more trips for demolition and ~700 more trips for construction) over the same expected time period. As with Alternative A, impacts to road transport from implementation of Alternative B would be short-term and minor.

4.6.2.2 Mass Transport

As with Alternative A, no changes to area mass transit would occur from implementation to Alternative B.

4.6.2.3 Rail Transport

As with Alternative A, the use of rail transportation is not anticipated during demolition and construction activities. Should rail transport become necessary, it would be at a low volume with negligible impact.

4.6.2.4 Water Transport

Under Alternative B, barge use at the project site, transporting materials between the shore and the offshore construction site, may be somewhat reduced. This would potentially occur if the existing west trestle is used to stockpile materials associated with Pier 2 main platform and other transition and trestle areas as conceived under the concept of operations. However, overall, the potential impact to water transport under Alternative B would be similar, but less than the negligible impacts as compared to Alternative A.

4.6.2.5 Sanitary Sewer

As with Alternative A, negligible impacts are anticipated to the sanitary sewer from implementation of Alternative B.

4.6.2.6 Natural Gas

As with Alternative A, negligible impacts are anticipated to natural gas from implementation of Alternative B.

4.6.2.7 Potable Water

As with Alternative A, negligible impacts are anticipated from implementation of Alternative B.

4.6.2.8 Electricity

There would be no changes to impacts on electricity from what is described under Alternative 1 in the EIS. Negligible impacts are anticipated from implementation of Alternative B.

4.6.2.9 Telecommunications

There would be no changes to impacts on telecommunications from what is described under Alternative A. Negligible impacts are anticipated from implementation of Alternative B.

4.6.2.10 Solid Waste

Under Alternative B, the estimated generation of solid waste would be similar to that of Alternative A resulting in similar short-term, minor impacts.

4.7 VISUAL RESOURCES

4.7.1 Alternative A: No Action Alternative

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Therefore, impacts to visual resources would be as described in the EIS. The changes to the middleground and background viewsheds from the Port Chicago Naval Magazine National Memorial as a result of implementation of Alternative A would not result in a negative impression of the Port Chicago Naval Magazine National Memorial viewshed. As noted in the EIS, SHPO concurred with this conclusion in a letter dated February 2015. In

addition, changes to the overall viewshed would be minor changes in form and line, but the development would be consistent with the existing shoreline/MOTCO port development in the viewshed. Therefore, although minor impacts to visual resources are anticipated, implementation of Alternative A would not substantially degrade or result in a negative impression of the viewshed. The design of the project has been further defined with respect to the planned protection of an area of erosion of the shoreline east of the memorial/west of Pier 2. The design continues the existing rock slope protection to the east where the shoreline has eroded in a manner that visually complements form, line, and texture of the existing shoreline and memorial features (see Figure 2-1). Additionally, as the Pier 2 design progressed, the Army incorporated minor pedestrian improvements to the Memorial (benches and improvements in the White Road pedestrian crossing). The design of these elements was coordinated to meet NPS aesthetic standards.

4.7.2 Alternative B

As with Alternative A, minor impacts to visual resources are anticipated; however, the overall footprint of the Pier 2 design under Alternative B would be smaller than proposed under Alternative A. Implementation of Alternative B would not substantially degrade or result in a negative impression of the viewshed. As compared with Alternative A, the most substantive difference in the potential impacts to visual resources under Alternative B are due to the reconstruction of the west trestle further to the east of the existing west trestle. The result would be that Pier 2 would become a less prominent feature within some foreground as well as middleground views from the Port Chicago Naval Magazine National Memorial. The remaining Pier 1 structure would become more dominant in the overall viewshed, which would be a positive impact in terms of the interpretive value of the historic event. Additionally, the widening and raising of the segment of White Road that bisects the current National Memorial site would potentially impact foreground views at the National Memorial site. Although the height that this road would be raised in this location is slight (less than 1 foot in most of this portion of the road), the wider and slightly raised road would potentially diminish the prominence of the Memorial features from some viewpoints. Additionally, during the period of construction, there could be additional visual impacts related to the possible use of the existing west trestle for stockpiling of materials, which would be in middleground views and some foreground views from the National Memorial. As with Alternative A, Alternative B includes providing pedestrian amenities to the Memorial (i.e., benches and improvements to the White Road crossing) that meet NPS aesthetic standards. The potential visual impacts were included in the consultation that was completed pursuant to Section 106 of the NHPA for the design changes (i.e., Alternative B) (see Section 4.11).

4.8 RECREATIONAL RESOURCES

4.8.1 Alternative A: No Action Alternative

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. While there might be a temporary disruption in access to the Port Chicago National Memorial site during the period of construction, there would be a long-term beneficial impact associated with more efficient pier operations as missions would last for a shorter period of time. As such, there would be minor short-term adverse impacts and beneficial long-term impacts to recreational resources as a result of the implementation of Alternative A.

4.8.2 Alternative B

Under Alternative B, potential impacts to recreational resources would be similar to those described under Alternative A. None of the changes to the Pier 2 design would be expected to change recreational access, opportunity, or experience as compared to Alternative A. The recreation experience may be slightly improved due to the lesser visual resource impact to the Port Chicago National Memorial under this alternative (see Section 4.7.2).

4.9 NOISE

Noise impacts result from perceptible changes in the overall noise environment that increase annoyance or affect human health. Annoyance is a subjective impression of noise wherein people apply both physical and emotional variables. To increase annoyance, the cumulative noise energy must measurably increase. Human health effects such as hearing loss and noise-related awakenings can result from exposures to noise. The evaluation criteria used in this noise analysis include the potential for:

- A person to be subjected to continuous noise exceeding 90 A-weighted decibels (dBA) for durations lasting more than 8 hours per day. dBA is an expression of the relative loudness of sounds in air as perceived by the human ear. In the A-weighted system, the decibel values of sounds at low frequencies are reduced, compared with unweighted decibels, in which no correction is made for audio frequency. This correction is made because the human ear is less sensitive at low audio frequencies, especially below 1000 Hertz (Hz), than at high audio frequencies. This evaluation criteria is based on Occupational Safety and Health Administration (OSHA) standards (29 CFR Part 1910.95), whereby employees should not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day (OSHA 2012).
- Noise to perceptibly change at sensitive receptor locations in the short and long term.
- Short-term construction and long-term, post-construction noise levels exceeding ambient background sound levels. This evaluation calculated the ambient background noise level based on population data and assumes the ambient for the City of

Concord, City of Pittsburg, and Bay Point Census Designated Place is 55 day-night average sound level (DNL) based on U.S. Department of Transportation methodology (U.S. Department of Transportation 2006).

- A long-term increase in cumulative noise levels to 65 DNL or greater, where it would be generally incompatible with residential land use. This evaluation criteria is based on research that indicates about 87 percent of the non-working population is not highly annoyed by outdoor sound levels below 65 DNL (Federal Interagency Committee on Urban Noise [FICUN] 1980).

Additional consideration is given to noise impacts to schools because studies suggest that loud and frequent background noise can affect the learning patterns of young children. For the most common size of classroom, a maximum 1-hour-average A-weighted background noise level of 35 to 40 dB is recommended in American National Standards Institute Standard 12.60-2002, *American National Standard Acoustical Performance Criteria, Design, Requirements, and Guidelines for Schools*. With the noise reduction level associated with a windows-closed, indoor school environment, an average 35 to 40 dB in the classroom is equivalent to 60 to 65 dB outdoors (DOD Noise Working Group 2009).

Under all alternatives, the Army would adhere to OSHA noise safety standards and ensure that construction workers and employees would not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day. Therefore, potential noise-related health effects to construction workers and employees are not addressed in further detail.

4.9.1 Alternative A: No Action Alternative

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Therefore, noise impacts would be as described in the EIS. Under Alternative A, there would be short-term minor noise impacts due to construction activities and no long term noise impacts.

4.9.2 Alternative B

Alternative B noise impacts would be similar to Alternative A, with some specific differences such as the use of two impact pile drivers for an estimated 1 to 5 days within a 15-day timeframe (management measures will be implemented to avoid simultaneous pile strikes). Alternative B noise impacts would derive from typical construction using standard construction and demolition practices. This would include the use of some heavy equipment over a temporary period. As detailed in EIS Table 4.10-2, construction-related noise emissions can range from 74 to 101 dBA when measured 50 feet from the respective piece of equipment.

The noise associated with construction and demolition activities would be most likely confined to general working hours (7:00 a.m. to 5:00 p.m.) and are unlikely to adversely alter the

surrounding noise environment. For the purposes of this SEA, construction noise was modeled using the Federal Highway Administration's Road Construction Noise Model Version 1.1, which was developed to calculate noise levels emanating from various types of construction equipment. Although developed for road construction, the equipment types and noise calculations apply to any type of construction activity.

Construction equipment planned for demolition would include up to 4 excavators, 10 to 12 trucks per day, 1 tugboat, and 2 workboats. Table 4-7 provides projected noise levels at the various receptors due to demolition activities. Demolition noise would be below 45 dB and consistent with typical ambient noise levels for suburban areas.

Table 4-7. In-Air Demolition-Related Noise at Sensitive Receptors

Sensitive Receptor Type	Location	Construction Noise Level (dB Leq)
Residential Home	Highland Court, Off of Port Chicago Highway	43.9
Residential Home	Jill Avenue and Driftwood Drive	43.0
Residential Home	Port Chicago Highway and Wharf Drive	43.0
Rio Vista Elementary School	Wharf Drive and Pacifica Avenue	41.8
Shore Acres Elementary School	Marina Road and Oceanview Drive	41.5
Riverview Middle School	Inlet Drive and Pacifica Avenue	40.8

Note: L_{eq} = sound equivalent level

Construction activity would include numerous pieces of equipment including impact pile drivers, graders, excavators, cranes, work boats, and various truck and other vehicles. The pile driver planned for use would be a DelMag D-62 or equivalent. Portions of the pier would utilize two pile drivers at the same time to facilitate construction schedule. Table 4-8 shows the anticipated noise levels at sensitive receptors due to construction activities.

Table 4-8. In-Air Construction-Related Noise at Sensitive Receptors

Sensitive Receptor Type	Location	Construction Noise Level (dB Leq)
Residential Home	Highland Court, Off of Port Chicago Highway	58.2
Residential Home	Jill Avenue and Driftwood Drive	57.3
Residential Home	Port Chicago Highway and Wharf Drive	57.3
Rio Vista Elementary School	Wharf Drive and Pacifica Avenue	56.1
Shore Acres Elementary School	Marina Road and Oceanview Drive	55.7
Riverview Middle School	Inlet Drive and Pacifica Avenue	55.1

Note: L_{eq} = sound equivalent level

As shown, construction noise levels associated with point source equipment likely to be used during construction, including pile drivers, would attenuate to under 60 dB which is less than the FICUN's suggested land use compatibility guideline of 65 DNL; and would approximate ambient background noise levels for the Cities of Concord and Pittsburg as well as Bay Point Census Designated Place (55 DNL) within approximately 12,800 feet (2.42 miles).

As listed in Table 4-8, the nearest public schools are Rio Vista Elementary School (located in the unincorporated community of Bay Point), Shore Acres Elementary School (located in the City of Pittsburg), and Riverview Middle School (located in the unincorporated community of Bay Point). As listed in Table 4-8, unmitigated construction-related noise would attenuate to approximately 56 dBA at these schools which is approximately the ambient background noise level for the Cities of Concord and Pittsburg as well as Bay Point Census Designated Place (55 DNL). This level also falls within the guidance for classroom noise.

Truck traffic noise during demolition and construction at the nearest homes to the access roads would be the loudest because the houses are relatively close to the roadways at around 40 feet from the house to the road. The highest would be Bay Point homes along Port Chicago Highway if that route to Gate 5 is selected for access and would be approximately 75 dB but would only be about one truck per hour. Residences in Clyde would experience noise levels on about 65 dB.

Noise impacts would be minimized through the implementation of the following BMPs and/or minimization measures previously identified:

- As stated in Section 4.4.2.4, the Army will require the contractor to place a time restriction of 5 minutes on unnecessary heavy equipment idle time.
- As stated in Section 4.4.2.4, the Army will require the contractor to maintain equipment engines.
- As stated in Section 4.4.2.4, the Army will require the contractor to lease new equipment, where practicable.
- As stated in Section 4.4.2.4, the Army will require the contractor performing pile driving to use a cushion block of wood or composite (Micarta) material to reduce the noise generated by impact pile driving, which would further attenuate noise.
- As stated in Section 2.3.2 and 4.4.2.4, if two pile drivers are in operation over the same time period, the Army will require the contractor to ensure that there is communication between the two pile driving operations regarding start/stop of pile driving activity to ensure that simultaneous pile strikes will not occur.

These BMPs and/or minimization measures, although required for minimizing impacts to air quality and biological resources, would also minimize noise impacts during construction and demolition activities by either limiting the use of equipment that is worn or attenuating the sound. In addition to these measures, the Army is committed to the following:

- A designated Army representative will provide advance notification to neighbors if construction activities are planned for weekends or holidays.
- A designated Army representative will remain in regular communication with nearby schools throughout the duration of the demolition and construction.
- A designated Army representative will notify nearby sensitive receptors in advance of commencing the noisiest phases of the planned construction projects, and use standard

DOD protocols to log and respond to noise complaints received during implementation of the proposed action.

Underwater noise from pile driving is unlikely to create any impacts to humans; however, the potential for impacts to protected species, marine mammals, and fish exists. These potential impacts are discussed in Section 4.4.

In conclusion, noise associated with construction and demolition would not adversely affect sensitive receptors since the noise would attenuate to either FICUN's suggested land use compatibility guideline of 65 DNL for nearby residential homes, or would attenuate to ambient background noise levels for nearby public schools. Moreover, BMPs and minimization measures will be implemented by the contractor and the Army will implement a public outreach program to further reduce noise impacts. Therefore, implementation of Alternative B would result in minor impacts during construction and demolition activities.

As with Alternative A, no long-term noise exposure impacts are anticipated under Alternative B.

4.10 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.10.1 Alternative A: No Action Alternative

4.10.1.1 Socioeconomics

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Therefore, impacts to socioeconomics would be as described in the EIS. Construction spending would result in minor short-term beneficial impacts to the local region. Therefore, there would be short-term beneficial socioeconomic impacts to the local region as a result of implementation of Alternative A.

4.10.1.2 Environmental Justice

The Army would implement the design for Pier 2 exactly as evaluated in the EIS, and as noted in the EIS, there would be no disproportionate impacts to minority or low-income populations or impacts that would adversely impact children's health and safety with the implementation of Alternative A.

4.10.2 Alternative B

4.10.2.1 Socioeconomics

Under Alternative B, impacts to socioeconomics would be similar to those described under Alternative A. As with Alternative A, the increase in construction spending would result in a small, short-term demand for construction and secondary jobs; however, these impacts would be minor and temporary. Overall, there would be short-term beneficial socioeconomic impacts to the local region as a result of implementation of Alternative B.

4.10.2.2 Environmental Justice

As discussed in Section 4.9, there are no populations that would be adversely affected by noise during construction and demolition activities. Construction-related traffic, including truck traffic, would occur en route to MOTCO including the arrival at Gate 2, near the community of Clyde or Gate 5, near the community of Bay Point, both of which are environmental justice communities. The construction contractor would be required to adhere to the City of Concord's designated truck routes and obtain special permits from Contra Costa County, as required. Traffic impacts would be short-term in nature, lasting no more than the duration of the Pier 2 demolition and re-construction, approximately 27 months (if the execution schedule is not interrupted by conflicts with mission activities, severe weather, materials or equipment issues, etc.). The vast majority of the truck traffic would be for materials delivery and non-hazardous demolition debris removal. As discussed in Section 4.6, the project-related traffic would not result in alterations of traffic patterns or provide any noticeable addition of air toxics such as ammonia, nickel, and diesel exhaust. Therefore, there would be no disproportionate impacts to minority or low-income populations or impacts that would adversely impact children's health and safety with the implementation of Alternative B.

4.11 CULTURAL RESOURCES

The term "historic property" refers to cultural resources that have been found eligible for listing, or are listed, in the NRHP. Section 106 of the NHPA of 1966, as amended, outlines the process in which federal agencies are required to determine the effects of their undertakings on historic properties. Any adverse effects on historic properties are considered to be significant. Effects are considered to be adverse if they alter, directly or indirectly, any of the characteristics of a cultural resource that qualify that resource for the NRHP so that the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association is diminished. Analysis of the potential impacts was based on evaluation of the changes to the existing historic properties that would result from implementation of the project.

In making a determination of the effects to historic properties, consideration was given to the following:

- specific changes in the characteristics of historic properties in the study area;
- the temporary or permanent nature of changes to historic properties;
- the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's historical features; and
- the existing integrity considerations of historic properties in the study area and how the integrity was related to the specific criterion that makes a historic property eligible for listing in the NRHP.

The threshold also applies to any cultural resource that has not yet been evaluated for its eligibility to the NRHP or if the proposed action disturbs a traditional cultural property. Analysis

of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment by introducing visual or audible elements that are out of character for the period the resource represents, or neglecting the resource to the extent that it deteriorates or is destroyed. Indirect impacts are those that may occur as a result of the completed project, such as increased vehicular or pedestrian traffic in the vicinity of a resource. Any adverse effects on cultural resources that are listed or eligible for listing in the NRHP are considered to be significant. Effects are considered to be adverse if they alter, directly or indirectly, any of the characteristics of a cultural resource that qualify that resource for the NRHP so that the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association is diminished.

4.11.1 Alternative A: No Action Alternative

Under the No Action Alternative, the Army would implement the design for Pier 2 exactly as evaluated in the EIS and adopted in the resulting ROD. The Port Chicago Naval Magazine National Memorial would continue to operate as a unit of the National Park system and access to the Memorial would continue as described in the EIS. In accordance with Section 106 of the NHPA, the Port Chicago Naval Magazine Explosion Site and potential submerged cultural resources at MOTCO would not be affected under the No Action Alternative. No effects to historic properties would occur under the No Action Alternative. As the Pier 2 design progressed, the Army incorporated minor improvements to the Port Chicago National Memorial in coordination with the NPS. Specifically, pedestrian amenities will be provided with benches and improvements in the pedestrian crossing of White Road.

4.11.2 Alternative B

Impacts to cultural resources associated with Alternative B would be the same or similar as those for Alternative A including the minor improvements to the Port Chicago National Memorial. Work occurring within the boundary of the NRHP-Eligible Port Chicago Naval Magazine Explosion Site and the NRHP-listed Port Chicago Naval Magazine National Memorial would not result in adverse effects to the integrity or characteristics that make the NRHP-listed and eligible properties significant and would not result in adverse effects to these historic properties or significant impacts to cultural resources. Pursuant to Section 106 of the NHPA, the Army concluded that the design changes in Alternative B would have no effect on historic properties and consulted with SHPO and NPS regarding this finding (see Appendix A). These consultations included an assessment of the differences in the potential visual resource impacts to the Port Chicago National Memorial as noted in Section 4.7.2.

Under Alternative B, portions of White Road and the east trestle abutment would be demolished and improved. These roadways have been inventoried and recommended as not eligible for listing in the NRHP (Cardno 2016), and concurrence on this recommendation has been sought

from the SHPO. White Road is not considered a historic property and its demolition and subsequent improvements would not result in significant impacts to cultural resources.

4.12 Hazardous Materials, Hazardous Waste, Toxic Substances, and Contaminated Sites

4.12.1 Alternative A: No Action Alternative

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. Therefore, impacts to HM, HW, toxic substances, and contaminated sites would be as described in the EIS. Under Alternative A, no impacts to or from HW and IRP sites are expected. Negligible impacts from HM and toxic substances are expected, including a negligible beneficial impact from the removal and proper disposal of creosote-treated pilings. Based on the proposed munitions of explosive concern (MEC) clearance operations and adherence to the Explosive Safety Submission (ESS), minor impacts from MMRP sites are expected.

4.12.2 Alternative B

4.12.2.1 Hazardous Materials

Due to reduced construction activities associated with Alternative B, there may be a slight corresponding decrease in the amount of HM required as compared to Alternative A. There would be no changes to the management of HM from what is described under Alternative 1 in the EIS. Negligible impacts are anticipated from implementation of Alternative B.

4.12.2.2 Hazardous Waste

Due to reduced construction activities associated with Alternative B, there may be a slight corresponding decrease in the amount of HW generated as compared to Alternative A. There would be no changes to the management of HW from what is described under Alternative 1 in the EIS. No impacts are anticipated from implementation of Alternative B.

4.12.2.3 Toxic Substances

Under Alternative B, there would be no changes to toxic substances exposure and the management of toxic substances as compared to Alternative A. Negligible impacts are anticipated from implementation of Alternative B.

4.12.2.4 Contaminated Sites

Under Alternative B, there would be no changes to contaminated sites as compared to Alternative A. As with Alternative A, there would be no impacts to IRP sites and potential minor impacts from MMRP sites from implementation of Alternative B.

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5.0 CUMULATIVE IMPACTS

5.1 APPROACH TO CUMULATIVE IMPACTS ANALYSIS

The approach taken in the analysis of cumulative impacts in this document follows the objectives of NEPA, CEQ regulations, and guidance (CEQ 2005, 1997; USEPA 1999). Cumulative impacts are defined in 40 CFR Part 1508.7 as follows:

> The impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

The cumulative impacts analysis presented in the original EIS and ROD for the Modernization and Repair of Piers 2 and 3 is incorporated by reference per 40 CFR Part 1502.21 and consistent with 32 CFR Part 651.12(a)(3). The cumulative impacts analysis herein revisits the original analysis presented in the EIS, including updating past, present, or reasonably foreseeable projects in the vicinity of the proposed action and evaluation of potentially cumulative impacts to common environmental receptors.

5.2 POTENTIAL CUMULATIVE EFFECTS BY RESOURCE

5.2.1 Resources of Concern

This cumulative impacts analysis focuses on those resource areas where the incremental impact of the proposed action could have the potential for significant direct or indirect cumulative effects, as well as those resources that are of concern in the MOTCO region. Based on the analysis presented in Chapters 3.0 and 4.0, the following resource areas were carried forward for further analysis of potential cumulative effects: water resources, air quality, biological resources, transportation and traffic, cultural resources, toxic substances, and environmental justice. Water resources, air quality, and biological resources were also previously carried forward in the EIS analysis of cumulative effects. This SEA also carries forward visual resources, transportation and traffic, cultural resources, toxic substances, and environmental justice due to the additional identification of planned MOTCO projects and/or details regarding those projects that have become available since the Final EIS was completed.

For the purposes of this SEA, the following resource areas were not carried forward for cumulative effects analysis: earth resources; land use, recreation, and coastal zone; utilities and service systems; noise; socioeconomics; and HM, HW, and contaminated sites. Since the direct and/or indirect effects to these resource areas are localized and temporary, and the respective resources are anticipated to recover within a short period of time, another action would need to occur in the same localized area at the same time for cumulative impacts to be possible. While a few of the other actions potentially affecting these resource areas may occur

in the same localized area, the potential for significant cumulative impacts due to the incremental impact of the proposed action would not exist as the proposed action was found to result in no, negligible, or minor direct/indirect adverse impacts to these resource areas.

5.2.2 Other Actions Affecting the Resources of Concern

Other past, present, and reasonably foreseeable actions that could influence the resource areas carried forward for further analysis (water resources, air quality, biological resources, transportation and traffic, cultural resources, toxic substances, and environmental justice) are addressed here. This includes consideration of the other past and present actions and their locations, the extent of their direct and indirect effects, any likely future actions, and their relative contribution to cumulative impacts on the specific resource.

5.2.2.1 Past, Present, and Reasonably Foreseeable Actions

In accordance with CEQ's guidance, past actions are relevant and useful in analyzing whether or not the reasonably foreseeable effects of the proposed action may have a continuing, additive, and significant relationship to those effects. CEQ guidance emphasizes a focus on the current aggregate effects of past actions without delving into the historical details of individual past actions unless such information is necessary to describe the cumulative impact of all past actions combined.

A comprehensive list of relevant recent past, ongoing, and reasonably foreseeable future actions, along with the status of the NEPA analysis (if applicable) is provided in **Table 5-1**. These actions focus on those that were found to have potential for cumulative effects with the proposed action on water resources, air quality, biological resources, visual resources, transportation/traffic, cultural resources, toxic substances, and/or environmental justice. Where mapping data for these projects were available, they are shown in **Figure 5-1. Table 5-1** identifies those projects that are described in this section as updates or no updates to actions as presented in the EIS and those newly identified actions. Other actions that were described in the EIS that are not carried forward into this discussion include the Security Boat Ramp Repair and Upgrade Project (which is now lumped with the Installation Maintenance and Master Plan projects) and the San Francisco Bay Area Water Trail and Concord Reuse/Redevelopment projects (which are analyzed in the EIS, lack potential for interaction with the proposed action).

Table 5-1. Cumulative Action Evaluation

Action	Level of Analysis Completed or Planned	Decision Document (Date)	Lead Agency	Relationship to EIS Analysis
Past Actions				
Pier 4 Structural Repair Project	CX	REC/ (March 2009)	Army	No update
Pier 3 Pile Wrapping	EIS	ROD (April 2015)	Army	New
Barge Pier Repair	CX	REC (Summer 2015)	Army	Updated
Repair Damaged Pilings at Piers 3 and 4	CX	REC (January 2011)	Army	No update, but moved to "Past"
Construction and Operation of a U.S. Army Reserve Center at MOTCO Inland Area	EA	FNSI (August 2012)	Army	No update, but moved to "Past"
Present and Reasonably Foreseeable Actions				
IRP Remedial Actions	Regulatory Consultations	NA	Army	Updated
Military Munitions Response Program	Regulatory Consultations	NA	Army	Updated
Real Property Master Plan Projects	EA	FNSI (June 2013)	Army	Updated
Facility Reduction Program Demolition	Programmatic EA and CXs	FNSIs and RECs (February 2014) (August 2014)	Army	Updated
Repair of Bridges, Roads and Utilities at MOTCO	EA	FNSI[2] (Summer 2017)	Army	Updated
Community Transportation Projects	NA	NA	Various	New
Lot 2 Lightning Protection System Modification	CX	REC[2] (TBD)	Army	New
Gate 5 Upgrades	EA	FNSI[2] (Early 2017)	Army	Updated
Homeporting of U.S. Maritime Administration (MARAD) Vessels at Pier 4[1]	TBD	TBD	MARAD	New
Gate 1 Upgrades	CX	REC[2] (TBD)	Army	Updated
Building 245 Renovations	CX	REC (June 2016)	Army	New
Periodic Dredging of Piers	EA	FNSI[2] (Fall 2017)	Army	New
Various Installation Maintenance Projects	Programmatic EA	FNSI[2] (Fall 2017)	Army	New
Mission Activities and Facility Reinvestment	Programmatic EIS	ROD[2] (Spring 2019)	Army	New

Notes:
[1]May be part of the Programmatic EIS for Mission Activities and Facility Reinvestment for MOTCO.
[2]Anticipated decision document subject to change.
EA = Environmental Assessment; EIS = Environmental Impact Statement; CX = Categorical Exclusion; FNSI = Finding of No Significant Impact; NA = not applicable; REC = Record of Environmental Consideration; ROD = Record of Decision; TBD = to be determined

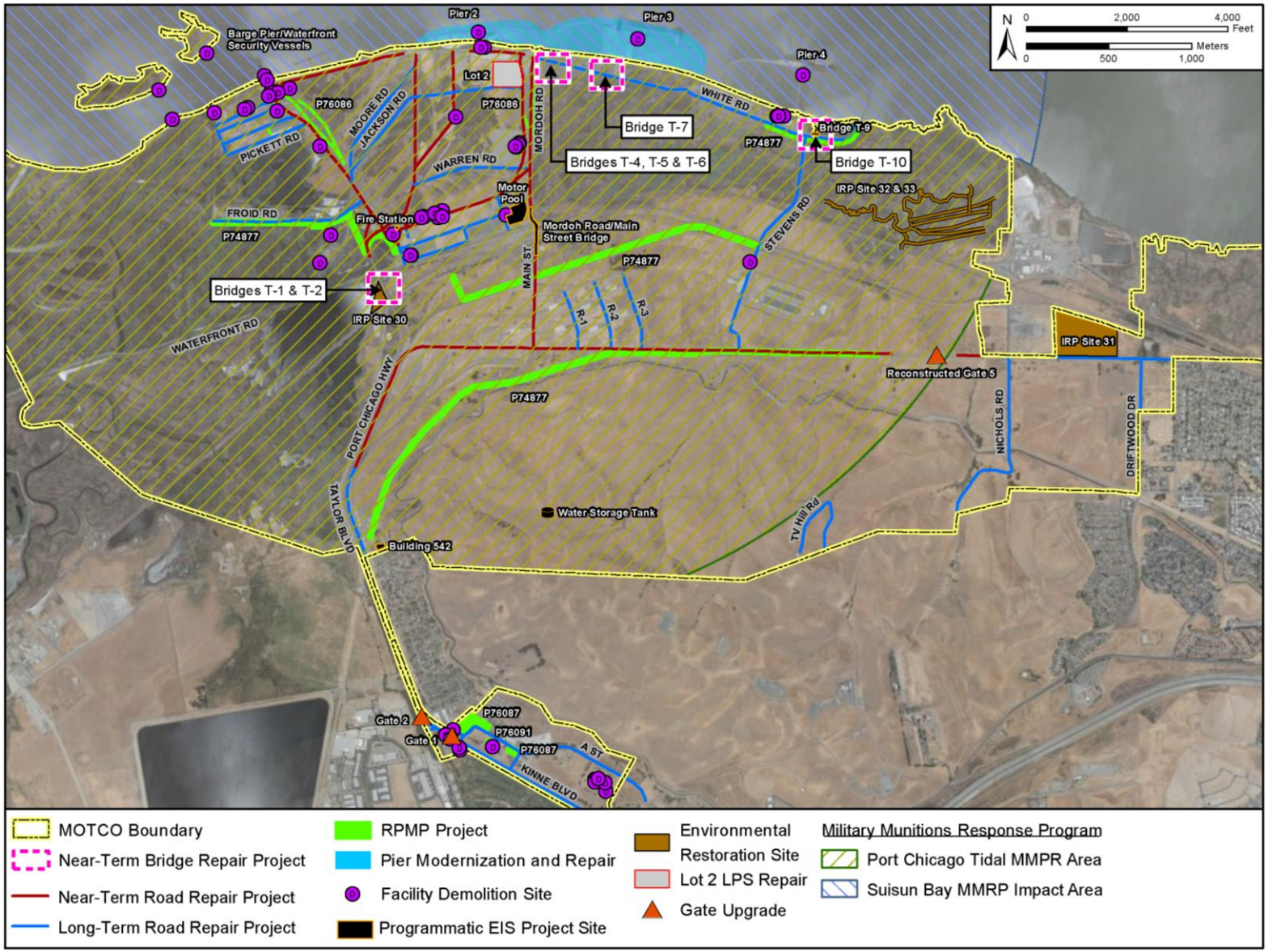

Figure 5-1. Past, Present, and Reasonably Foreseeable Project Locations at MOTCO

Pier 3 Pile Wrapping

This project was part of the Proposed Action analyzed in the EIS for Pier 3. Beginning in October 2015, the Army implemented the Pier 3 repairs analyzed in the EIS for Modernization and Repair of Piers 2 and 3 at MOTCO. Pier 3 was constructed in 1944 as an all timber structure. These timber structures had been subject to the effects of a marine borer infestation that has been increasing in association with the increasing salinity level in Suisun Bay, creating a more favorable habitat for the marine organism. In order to maintain its limited operational capability through 2019, the Army protected structurally significant timber piles located under the Main Platform and walkway by installing non-reactive high-density polyethylene jackets around the timber piles. The jackets or wraps, consisting of an inner adhesive layer protected by an outer jacket, are intended to protect the piles from further marine borer infestation. Not all the Pier 3 wrapping requirements were addressed in this past action and, thus, some additional Pier 3 pile wrapping needs are noted in the discussion of future actions.

All work was conducted in accordance with precautions for MEC and the ESS. Debris booms were placed around the Pier 3 work area in accordance with BMPs. The Army monitored turbidity during construction and required the contractor to limit the spread of turbidity (and any associated contaminants) in accordance with the project's CWA Section 401/404 requirements. In addition, the Army met the terms and conditions of the BOs issued by NMFS and USFWS including communication with NMFS and USFWS regarding aspects of the project as it was being implemented.

Barge Pier Repair

The EIS included a description of a structural project involving removal and replacement of 22 timber piles and wrapping for 46 timber piles. However, the project was subsequently downscaled to the installation of 8 fender piles, which was completed by October 2015 (Personal communication, G. Romine, 2016). Note that additional barge pier maintenance is currently planned for evaluation in the Programmatic Maintenance EA.

IRP Remedial Actions

The status of IRP actions is updated from that presented in the EIS and it was recategorized as a present/reasonably foreseeable action. As discussed in Section 3.12, remedial actions within the Tidal Area are ongoing. In addition to USEPA oversight, the Army completes ESA Section 7, BCDC, and NHPA Section 106 consultations and CWA permitting for these actions. The capping of contaminated sediment at Sites 32 and 33 was completed in November 2015 (MOTCO 2015). The action included establishing an in-situ cap of clean material over contaminated sediment in select former mosquito abatement ditches and slough with San Francisco Bay clay. The cap was put in place with a helicopter to spread the material in the mosquito ditches and slough, eliminating the need for road construction in order to minimize the

disturbance of the sensitive marsh surfaces and vegetation (USEPA 2011). With capping complete, Sites 32 and 33 are now in long-term management (estimated at 10 years).

The remediation of Site 31, which includes the excavation of metal-contaminated waste material and trucking an estimated 32,000 CY of contaminated soil to an off-site disposal facility, is scheduled for 2017 (MOTCO 2015). Site 31 is mostly vegetated with non-native grasses, although some areas of the site contain mature stands of coyote bush. There are two wetland areas (less than 1,000 SF each) at the northern boundary of the site. The haul route will go through the installation and out Gate 2, thus the trucking of contaminated soil through Bay Point would be avoided (USEPA 2012; Personal communication, G. Romine, 2017).

Military Munitions Response Program

The status of MMRP actions is updated from that presented in the EIS and it was recategorized as a present/reasonably foreseeable action. There are three MMRP Munitions Response Sites (MRS) at MOTCO, two of which are located within the proposed action area: MRS 8, Port Chicago Tidal Area and MRS 10, Suisun Bay Impact Area. The ongoing program for land use controls (LUCs) to prohibit residential development, to require installation-wide dig restrictions, and to note the LUCs in the installation's Real Property Master Plan (RPMP) (in the form of the LUC Implementation Plan) continues.

Real Property Master Plan Projects

The description and status of RPMP projects is updated from that presented in the EIS. In June 2013, the Army signed a FNSI for the implementation of several MOTCO RPMP projects. The action included the analysis of six construction projects, demolition of up to 50 structures, proposed livestock grazing/fire management/upland invasive species control and management, cantonment area wildlife control, perennial pepperweed control and management, and inventory and evaluation of cultural resources at MOTCO. Some elements of the construction projects have changed from those evaluated in the RPMP EA and addressed in the FNSI. The status of the six construction projects and notes regarding additional NEPA to address changes in project elements are as follows:

- P76086, Lightning Protection: included the installation of a Lightning Protection System (LPS) at sites with high levels of previous disturbance in the Tidal Area. The EA evaluated installation of approximately 280 steel poles ranging in heights from 60 to 80 feet set in concrete foundations, overhead wiring that serves the functions of both a strike termination device and a main conductor, and buried ground loop wires and rods. This project was completed in 2016.
- P74877, Visitor Control Center and Security Fencing: the security fencing was implemented, but the Visitor Control Center is now part of the Gate 1 improvement project further described below. The fenceline project installed 6 miles of existing chain link fenceline topped with barbed wire and approximately four swing gates to

connect with existing fencelines adjacent to existing roadways in the Tidal Area where there has been varying levels of previous disturbance. The trimming of tall or bushy vegetation that would impede visibility along the fenceline (in non-wetland areas) was also included.

- P76091, Facilities Maintenance Building: construction of this facility was completed and the building occupied in May 2016. This project is also commonly referred to as the Engineering Maintenance and Housing Shop.
- P76093, Gate 5 Truck Inspection Station: the location, scope, and potential impacts of this project were further analyzed in a separate EA, as described below.
- P76087, Equipment Maintenance Building: Final design has been completed and construction is planned for 2017. The planned construction footprint in the Inland Area is consistent with that evaluated in the EA and included an 8,848 SF maintenance building; 3,000 SF storage building; and site pavements and improvement for access, parking, sidewalks, and curbing. This project is also commonly referred to as the General Purpose/Equipment Maintenance Shop.
- P76092, Security Headquarters Building: this project has been reevaluated and repackaged as part of the Gate 1 project and the project for renovation of Building 245, which are further described below (MOTCO 2013; Personal communication, K. Garber, 2016).

As some of the building demolition projects were evaluated under the RPMP EA and others under the facility reduction program, they are discussed together below.

<u>Repair of Bridges, Roads, and Utilities at MOTCO</u>

The description and status of the Repair of Bridges, Roads, and Utilities at MOTCO is updated from that presented in the EIS. In order to address safety requirements, ensure long-term mission sustainment, and improve mission efficacy, the Army proposes to repair aged and damaged linear infrastructure at MOTCO. This includes the following actions:

- Road repairs. In the near-term (i.e., placed under contract in 2017-2021, with construction timeline to follow), repair of approximately 7 miles of various road segments with repair of no more than 6 miles total per calendar year. With the exception of the Port Chicago Highway segment, the proposed repairs are full depth repairs. A mill/overlay repair is proposed for Port Chicago Highway. This also includes realignment of a segment of Rinquist Road to improve intersection safety. In the long term (i.e., placed under contract in 2021+) an additional 12.3 miles of roads would be repaired.
- Repair of four vehicle bridges (T-2, T-4, T-7, and T-10) and three parallel rail bridges (T-1, T-5, and T-6) to be placed under contract in 2016 or 2017.

- Repair of utility systems (electrical, communication, water, and wastewater) that are under, above, or adjacent to the road network to keep the systems functional for the foreseeable future.
- Geotechnical exploration within the footprint of the road systems as needed to gather data in support of repairs.

The issuance of the Draft FNSI for this action is currently scheduled for summer 2017.

Community Transportation Projects

The description of Community Transportation Projects was not presented in the EIS although some information was provided in the description of the City of Concord Off-Site Street Improvement Program Update and the Concord Community Reuse Redevelopment Project. A unique feature of the road transportation network near MOTCO is the presence of the Bay Point Area of Benefits. The Bay Point Area of Benefits is located east of MOTCO and encompasses portions of the Bay Point neighborhood of unincorporated Contra Costa County as well as the cities of Concord and Pittsburg. The Area of Benefits is a traffic mitigation fee program that is used to improve the capacity and safety of the transportation network. Fees are collected from property developers that add vehicle trips to the road network. These fees are then used for improvement projects that mitigate impacts from new developments. Funds from the Bay Point Area of Benefits have been previously used to help pay for improvements to Willow Pass Road, Bailey Road, Port Chicago Highway, Evora Road, Pacifica Avenue, and Driftwood Drive (Contra Costa County 2013).

The City of Concord has identified the following transportation improvement projects near MOTCO.

- Arnold Industrial Place/State Route 4 Eastbound ramps: install a new traffic signal.
- Arnold Industrial Way/State Route 4 Westbound ramps: install a new traffic signal.
- Bates Avenue/Commercial Circle (east): install a new traffic signal.
- Bates Avenue – Industrial Way to Mason Circle (east): widen Bates Avenue to four lanes.
- Citywide: install traffic signals and/or other improvements/upgrades.
- Port Chicago Highway – Bates Avenue to Union Pacific Railroad crossing: widen Port Chicago Highway to four lanes (Kimley-Horn and Associates 2013).

Building Demolition

Building demolition was not previously described in the EIS. The building demolition program at MOTCO was analyzed in the RPMP EA and in the Army's February 2014 Final Programmatic EA for the U.S. Army Materiel Command Building Demolition Program (Army Materiel Command 2014) as well as tiered Records of Environmental Consideration (RECs) and

Categorical Exclusions (CXs) covering the site-specific conditions at MOTCO. The approximate summary of demolished facilities by demolition year is as follows:

- 2014: 1,800 SF
- 2015: 113,000 SF, four picnic shelters, two 25,000-gallon above ground storage tanks, three tennis courts, and a winch trainer facility
- 2016: 43,000 SF
- 2017 and/or 2018: 73,500 SF and a tower/wind direction indicator
- 2019: five lighter berth systems in the Suisun Bay (Personal communication, K. Garber, 2016). (Note, the demolition of these berthing systems was also included in the Pier 2 SAV Mitigation Plan cited in the EIS for the Modernization and Repair of Pier 2 and, therefore, could be used for SAV mitigation for the Pier 2 project or, if not needed for Pier 2, considered for mitigation for future projects.)

A reduced building footprint provides long-term beneficial impacts to the environment due to the reduced energy and water use and facilities maintenance requirements. Many of these buildings were built in the 1940s-1960s and lack the efficiencies of modern construction, systems, and fixtures.

All demolition activities are conducted in accordance with BMPs and SOPs for construction waste materials including:

- Waste diversion: is the prevention and reduction of generated waste through source reduction, recycling, reuse, or composting. EO 13693, *Planning for Federal Sustainability in the Next Decade*, requires diverting at least 50 percent of non-hazardous construction and demolition materials and debris annually beginning in fiscal year (FY) 2016, where life-cycle cost-effective.
- Toxic materials: buildings and suspect materials are screened for fixtures that may contain toxic materials prior to demolition and disposal. Buildings are tested for asbestos, lead-based paint (LBP), polychlorinated biphenyls (PCBs), and mercury prior to demolition and all applicable federal, state, and local requirements are adhered to in the demolition and disposal process. As described in Section 3.12.3, creosote-treated wood waste is evaluated for classification as a HW or treated wood waste (TWW) (creosote-treated lumber is not generally subject to regulation as a HW unless testing reveals that it leaches arsenic above a certain threshold) and is disposed of in a HW landfill or TWW-approved landfill facility. TWW may be recycled, but its use is limited only to onsite purposes consistent with the Federal Insecticide, Fungicide, and Rodenticide Act-approved use of creosote-treated wood (California Environmental Protection Agency 2011, California Department of Toxic Substances Control 2008, USEPA 2008).

Lot 2 LPS Repair

Lot 2 LPS Repair was not previously described in the EIS. A need to enhance the safety of the existing LPS at Lot 2 has been identified. The modifications would consist of strengthening and adjusting existing construction by installing two new steel poles at a height to match existing poles and relocating an existing pole to within 10 feet of its existing location to support the reconfiguration of the catenary system. Two of the east-west running catenaries will be reconfigured and a third, located in the center of the lot, would be removed. The poles will sit on 36-inch diameter pile foundations (USACE Sacramento 2015). Work on this project is currently planned to occur in 2018.

Gate 5 Upgrades

The discussion of Gate 5 Access Control Point (ACP) Upgrades has been updated from that presented in the EIS, which analyzed potential impacts as previously categorized within the 2013 MOTCO RPMP and RPMP EA. A separate EA has since been prepared specific to the construction of the new ACP with updated location, design, and analysis of potential use and impacts (MOTCO 2017).

The RPMP EA evaluated the construction of the ACP at a site near Nichols Road south of Port Chicago Highway. The preferred site was subsequently updated to occur near the existing ACP 5 location on the north side of Port Chicago Highway.

The Gate 5 upgrades would encompass a 374,616-SF (8.6-acre) footprint with an additional 169,884 SF (3.9 acres) of paved surfaces. The project includes the demolition of road signage, fencing, and the existing 25-square-foot guard booth at ACP 5. The project would also include the relocation of aerial communication and Pacific Gas & Electric power lines; the extension of existing water, sewer, and underground telecommunications lines from the existing infrastructure to the proposed ACP; and the installation of a new transformer to meet the increased demand for electricity. An existing portion of Port Chicago Highway parallel to the proposed ACP location would be decommissioned.

When the facility is completed, which would be in 2019 based on the current project schedule, truck and stevedore-related traffic would be shifted from Gate 2 to Gate 5. This would reduce the overall traffic at Gate 2 during MOTCO missions and increase safety and efficiency. The Gate 5 EA estimates that during a mission event averaging approximately 36 days, cargo handling truck traffic would be 258 trucks total (or an average of 7 trucks per day). Eighty personnel would be present each day for contracted terminal operations and as stevedore personnel during a mission, which would affect bus/personally-owned vehicle traffic along Port Chicago Highway and through the ACP. The current and anticipated future utilization of Gate 5 for daily, non-mission-related traffic is estimated to include four trucks and less than five personally-owned vehicles per day.

Homeporting of Maritime Administration (MARAD) Vessels at Pier 4

This project was not evaluated in the EIS. MARAD has expressed interest in homeporting one or two vessels at MOTCO Pier 4. Initial discussions with MOTCO have occurred, but planning remains under development. Under the concept being discussed, any plans to upgrade Pier 4 would be analyzed in the Programmatic EIS for Mission Activities and Facility Reinvestment. There could be a potential need to install a septic collection system as there may be four to five people living aboard the homeported vessels. MARAD would be responsible for any upgrades and compliance with all applicable regulatory requirements, including NEPA. MOTCO will continue to coordinate with MARAD as these plans progress (Personal communication, K. Garber, 2016).

Gate 1 Upgrades

This project has been revised from that presented in the EIS (previously categorized within RPMP projects). As previously noted, some components of upgrades to this gate were evaluated in the 2013 EA for Real Property, Natural Resource, and Cultural Resource Management Programs at MOTCO. In lieu of the Visitor Control Center evaluated in that EA, however, the current concept includes several smaller facilities – instead of a 2,508-SF Visitor Control Center, the current design includes a 940-SF guard house, a 900-SF Visitor Control Center, a 500-SF mail freight facility, two 40-SF guard booths, and two 36-SF overwatch booths. An existing ammunition storage locker would be relocated. The demolition of two structures (Buildings IA-2 and 262) and 118,800 SF of existing pavement are associated with this project. The overall footprint is similar to that analyzed in the EA, but additional NEPA requirements (likely a CX) are currently under evaluation by MOTCO (Personal communication, K. Garber, 2016).

Building 245 Renovation

This project was not evaluated in the EIS. This 2016 project renovates Building 245, the 8,300-SF former Navy transient quarters and police station, to provide an adequate facility to serve as the consolidated security headquarters for MOTCO. The approximately 460 SF, one-story dining facility associated with Building 245 was demolished. The renovated building is designed to house approximately 55 security and firefighter personnel relocated from other facilities at MOTCO.

Dredging EA and Periodic Waterfront Dredging

This action was not evaluated in the EIS. MOTCO is preparing an EA to address the potential impact of dredging for shipping access to all piers at docks at MOTCO. Maintenance dredging was performed on a regular basis at NWSSBD Concord (now MOTCO) until 1986; since 1943, Piers 2, 3, and 4 have been dredged nearly 20 times. Dredging was typically performed using a clamshell method to -32 feet MLLW at Piers 2, 3, and 4; -14 feet MLLW at the Barge Pier and east lighter mooring; and -22 feet MLLW at the west lighter mooring. Since 1943, a total of 1.8

million CY of dredged material have been removed from NWSSBD Concord (Department of the Army 2015). It is expected that within the next 5-10 years, maintenance dredging would be required at one or more of the piers to address shoaling that has occurred since the last dredging event. The quantity of dredging is not yet determined. The EA and permitting will address all CZMA and CWA requirements prior to initiating any dredging actions.

Programmatic EA for Various Installation Maintenance Projects

There are additional unmet maintenance needs further identified at MOTCO to be initiated in the near-term that the Army is evaluating together with some of the Installation Development Plan projects, some of which may have potential environmental effects and thus may require NEPA analysis. These include remodeling of an existing building and maintenance activities within existing building footprints, utilities maintenance/minor upgrades, minor parking lot expansions, rail maintenance, and pier maintenance to include periodic pile wrapping (estimated at approximately 500 piles/year) and pile repair (estimated at approximately 25 piles/year).

Programmatic EIS for Mission Activities and Facility Reinvestment Projects

These projects were not evaluated in the EIS although some reflect planning that has matured since the RPMP was completed. The January 2016 MOTCO Installation Development Plan identified a number of projects, some of which have had some level of planning (and in some cases, are at the design stage). Based on current planning, the potential environmental effects of implementation of the following projects are being considered for this Programmatic EIS:

Demolition

- In order to assist MOTCO in meeting the Department of the Army's Facility Investment Strategy and the Army 2020 Plan, various MOTCO facilities are planned for demolition through 2024. The proposed demolitions can be generally categorized as maintenance, administrative, operational, ammunition storage magazines, and other facilities as well as ancillary structures to be demolished/removed (e.g., boiler room equipment, storage tanks, oil/water separators, foundations, berms, utility components, and associated rail infrastructure).
- The planned redevelopment of the barricaded rail sidings area includes planned demolition of an estimated 35 magazines (estimated at 18,000 SF) as well as 36 barricaded rail siding berms.

Utility Construction and Maintenance

- Utility Upgrades. Additional improvements are needed to electrical, communication, water, and wastewater systems outside of those that occur within the road footprints analyzed in the EA for General Upgrades to Bridges, Roads, and Linear Infrastructure at MOTCO. These include improvements to various lines where the system is leaking, to include piping to the 1-million-gallon storage tank that is located on the MOTCO Tidal

Area hillside and large-scale replacement/upgrade of exterior lighting or substations. Parameters will be established for when electrical lines should be buried and when boring is preferable to trenching.

- Renewable Solar Energy Projects. Standalone solar arrays of 5 megawatts or less are under consideration.

Realignment and Addition of Rail Lines

- Barricaded Rail Siding Area Redevelopment: Following the demolition in this area described above, the area would be redeveloped with realigned/new rail lines.
- Redevelopment of the rail lines associated with the former “R” Buildings.
- Addition of rail lines to support the expansion and reconfiguration of the transfer and holding pad area.

Reconfiguration and Expansion of Holding Pads

- Includes the redevelopment of the area current east of the existing holding pads, which was previously used as a borrow pit to additional holding pads.

New Construction/Major Renovation of Individual Buildings and Structures

- Mordoh/Main Street Bridge. This project, which would construct a new bridge over the rail lines at this location and provide for more efficient mission operations, would replace the mission function of the existing T-2 Bridge.
- Locomotive Shed. A new locomotive shed will allow the installation’s locomotives to be protected from inclement weather and provide a location for fueling that meets current safety and environmental protection standards.
- Access Control Point 2 Upgrades. This project would include lighting and traffic flow upgrades and safety improvements.
- Logistics Warehouse/Storage Building. This project would provide replacement storage facilities located outside the explosive quantity distance arcs.
- Fire Truck Storage. A new storage facility for a fire truck would be constructed in the Inland Area.
- Building 542 AT/FP Improvements. This project would harden the existing structure to meet antiterrorism and force protection requirements so that the facility can be used as a primary gathering facility. Work largely includes interior construction activities, as well as exterior berming, parking, and landscaping changes. Personnel would be relocated as appropriate prior to, during, and after the improvements have been made.

Pier Repair

- Additional Pier Repair. Repairs to piers beyond those that would be within the threshold established for the Programmatic Maintenance EA would be addressed within this EIS. This could include major repair of the Barge Pier/Boat Ramp.

5.2.3 Determination of the Magnitude and Significance of Cumulative Effects on the Selected Resource

5.2.3.1 Water Quality

The cumulative impacts analysis for water quality is similar to that presented in the EIS. However, the geographic study area is more specific to the Pier 2 project and the Pier 3 project is considered under cumulative. The other relevant past, present, and future actions include repair and maintenance of waterfront operational facilities (i.e., Pier 3, Pier 4, and RPMP projects) and the segments of the road repair projects that are in close proximity to Pier 2 (i.e., additional segments of White Road, Anderson Road, and Mordoh Road).

The conclusions of the cumulative effects analysis from the EIS remain valid: natural turbidity levels within the Tidal Area are high and it is anticipated all projects would be separated in time and/or geographical distance. Individually, the projects would result in short-term and localized impacts to water quality and it is expected the environment would recover following conclusion of each project. Moreover, permit requirements would minimize individual project impacts to the fullest extent possible. As a result, no significant adverse cumulative impacts are anticipated from the implementation of Alternative A or B.

5.2.3.2 Air Quality

The cumulative impacts analysis for air quality is similar to that presented in the EIS. However, additional MOTCO construction projects that could potentially occur during the same time period as the Pier 2 demolition and repair project have been identified and are relevant in that they would produce emissions that would be additive to those produced by implementation of the proposed action. The results of the cumulative effects analysis of the EIS, however, remains valid. It is not anticipated that air emissions from other past, present, and future actions, when considered incrementally with Alternative A or B, would exceed any regulatory standards. Therefore, no significant cumulative impacts to air quality are expected from implementation of Alternative B.

5.2.3.3 Greenhouse Gas Emissions and Climate Change

The study area for this aspect is unchanged from the EIS. The conclusions of the cumulative effects analysis for GHG emissions in the EIS remains valid. The proposed action would minimally, but incrementally contribute to global emissions. These emissions, while small, would increase the atmosphere's concentration of GHGs, and, in combination with past and future emissions from all other sources, contribute incrementally to the global warming that produces the adverse effects of climate change. The total direct and indirect impacts would most likely be constrained to small increases in GHG emissions to the atmosphere as a result of demolition and construction activities. Table 5-2 compares the GHG emissions associated with Alternatives A and B.

Table 5-2. GHG Emissions Associated with Alternatives A and B

Year	Alternative A MT/yr CO_2e*	Alternative B MT/yr CO_2e
2017	1,105	219
2018	1,507	1,454
2019	479	463

Note: * MT/yr CO_2e million tons of carbon dioxide equivalent per year.

In conclusion, Alternative B, which involves repair, demolition, and construction activities over the near-term 2017 to 2019 would minimally but incrementally contribute to global emissions.

5.2.3.4 Biological Resources

The cumulative impacts analysis for biological resources as presented in the EIS remains valid. The project's impacts to habitats would involve temporary disturbance of upland, intertidal, shallow water, and deep water habitats, with a long-term net reduction in overwater structures generally considered a beneficial impact to fisheries and aquatic species of concern in the Delta. Therefore, potential cumulative effects on habitats due to Alternatives A and B would be beneficial or negligible because both alternatives would reduce the extent of manmade structures in aquatic habitats at MOTCO.

While some of other past, present, and future projects would result in in-water impacts that are localized and temporary, water quality and in-water sound levels are anticipated to recover to baseline conditions prior to a subsequent potential impact. As a result, no significant adverse cumulative impacts are anticipated to fish or special status aquatic species from the implementation of Alternatives A or B.

Cumulative effects on special status terrestrial species would be minimized by the avoidance of occupied habitats; protective fencing and restoration of potential habitat (i.e., marsh) that would be subject to temporary impacts; requiring setbacks between noise-generating activities and occupied habitats; and (for salt marsh harvest mouse) protective monitoring to minimize the likelihood of harm to individuals. Given the limited extent and low likelihood of potential impacts due to the project, combined cumulative effects to local populations of special status terrestrial species are not expected.

5.2.3.5 Visual Resources

<u>Description of Geographic Study Area</u>

The study area for cumulative effects to visual resources is the Pier 2 vicinity with particular emphasis on the Port Chicago National Memorial site given the viewers from this site and associated expectations.

Relevant Past, Present, and Future Actions

The proposed road repair projects for the additional segments of White Road and Anderson Road would occur within the National Memorial site middleground and some foreground viewsheds. The remainder of the MOTCO projects are not expected to affect these viewsheds.

Cumulative Impact Analysis

The combined impact of the implementation of Alternative A or B along with the adjacent road repair projects would be additive. Alternative B would lessen the current viewshed impacts of the west trestle on views at the National Memorial, but both Alternatives A and B along with the proposed road projects have a potential to diminish the prominence of the National Memorial site from some foreground and middleground views. Both White Road and Anderson Road would be widened and raised by 1-3 feet. Overall, the impact of the road improvements is expected to be minor, but long-term. The Army has reinitiated NHPA Section 106 consultation for the proposed action. Any mitigation may be identified as part of this consultation would be incorporated into the decision document for this SEA.

5.2.3.6 Transportation and Traffic

Description of Geographic Study Area

For any project, traffic increases would be observed on roads used for the transport of construction equipment/materials and workers to and from jobsites. Thus, the study area considered in the cumulative analysis for transportation infrastructure includes roadways on the installation, Access Control Points (Gate 2 or Gate 5), and roadways off the installation, particularly including the City of Concord's designated truck routes en route to the Contra Costa County municipal waste landfills.

Relevant Past, Present, and Future Actions

Almost all construction, demolition, and remediation projects described in Section 5.2.2.1 would utilize existing transportation infrastructure and are thus relevant to the cumulative analysis thereof. A total trip count has not been provided for each project, but potential traffic impacts have been evaluated at varying levels of detail of where NEPA documentation has been completed.

Cumulative Impact Analysis

Work proposed to occur at MOTCO between 2016 and 2021 would increase the volume of traffic in the study area during normal work hours on a cumulative basis. It is anticipated that some projects may overlap, but there are uncertainties on timing as all projects are subject to implementation timelines that can change based on numerous factors. For each project, traffic impacts would be short-term in nature, lasting no more than the duration of the project, and the majority of the projects would confer minor volume increases within the context of average

roadway traffic. Additionally, each individual project would require the construction/demolition contractor to prepare a project-specific haul route or transportation plan. This plan would describe regular and mission-related detours and specific gate use for construction vehicles, deliveries, and workers; specify laydown area use; and establish appropriate traffic control and signage. This continued oversight would assist the installation in the prevention of traffic-related issues as daily traffic interacts with core mission functions and multiple or ongoing construction/ demolition activities. Additionally, factors affecting off-installation traffic are principally due to activities not associated with MOTCO and are being addressed to the full extent possible through federal, state, and local transportation improvement planning initiatives. Thus, impacts to transportation resources are not expected to become cumulatively significant on or off the installation.

5.2.3.7 Cultural Resources

Description of Geographic Study Area

The study area considered in the cumulative analysis for cultural resources is the general area surrounding The Port Chicago Naval Magazine National Memorial, including parking facilities that support visitation to the Memorial.

Relevant Past, Present, and Future Actions

Both the proposed action and the proposed road repair projects would widen and raise White Road near the National Memorial. In addition, Anderson Road, to the east of the National Memorial Site would be widened and raised with the road repair projects. These road repair projects may occur within a similar timeframe, such that visual, atmospheric, and audible impacts anticipated during demolition and construction activities may be perceived at the parking lot for the Port Chicago Naval Magazine National Memorial.

Cumulative Impact Analysis

Although the proposed action and the additional road repair projects would have additive impacts to the Port Chicago Naval Magazine National Memorial, the projects are not likely to interact in a way that would exacerbate the nuisance perceived by visitors. Additionally, impacts would be offset by the long-term reduced impact of the west trestle to middleground and some foreground views from the Memorial. Access to the Memorial for public visitation may be inconvenienced by rerouting when various construction, demolition, or remediation projects are underway; however, it is intended that access to the Memorial would remain available throughout the implementation of all proposed projects and no direct impacts to the Memorial would occur. The Army is conducting NHPA Section 106 consultation regarding the potential impacts of all projects. The Pier 2 design changes incorporated pedestrian amenities for the Memorial (benches and improvements to the White Road pedestrian crossing) that considered both the Pier 2 repair and modernization as well as the additional improvements to White Road

and other roads near the Memorial. In conclusion, significant adverse cumulative impacts to cultural resources are not anticipated.

5.2.3.8 Toxic Substances

Description of Geographic Study Area

All area within the installation boundary is considered in the cumulative analysis for toxic substances, in particular Suisun Bay and the Tidal Area.

Relevant Past, Present, and Future Actions

With regard to the potential to displace toxic substances such as asbestos, lead, mercury, and PCBs/PCB paint, all MOTCO projects that include a demolition element may contribute to the volume of toxic substances removed, transported, and disposed of, especially when the subject facility was constructed prior to 1978.

The removal of creosote treated timber pilings and their disposal as TWW under Alternatives A and B would add to creosote pile removal associated with the demolition of the five lighter berth systems in Suisun Bay, bridge repair projects, as well as the modernization and repair of approximately 16 miles of on-installation railway infrastructure. With regard to the installation of new timber pilings that may be treated with waterborne pesticide, improvements to accommodate waterfront security vessels and potential pier dredging activities may have additive impacts in terms of release of copper to the aquatic environment, though with flushing such impacts are unlikely to accumulate.

Cumulative Impact Analysis

In all projects, regardless of the ultimate volume of toxic material generated for disposal, required abatement and waste management planning and control measures would be implemented in accordance with federal and California law. The removal of toxic substances at MOTCO is always conducted in accordance with applicable federal, state, and local regulations. Therefore, significant adverse cumulative impacts from toxic substances are not anticipated from the removal of asbestos-containing material, lead based paint, mercury, PCBs/PCB paint, or creosote treated timber pilings. Likewise, as copper mobilization in the aquatic environment generally occurs within the first 1-2 days of installation, it is not likely that any new treated timber pilings that may be associated with improvements to accommodate waterfront security vessels would interact with the proposed action in a way that would cause a significant rise in copper levels. Likewise, due to the high current velocities experienced in Suisun Bay, it is not likely that sediments would become contaminated with copper released from the proposed action or that potential future pier dredging activities would cause the resuspension or mobilization of copper in bay sediments. In conclusion, significant adverse cumulative impacts from the removal or use of toxic substances are not anticipated.

5.2.3.9 Environmental Justice

Description of Geographic Study Area

The study area considered in the cumulative analysis for environmental justice includes the two minority and/or low-income communities in proximity to MOTCO: Clyde and Bay Point (see Section 3.10). These communities would be affected by the movement of construction/demolition/remediation traffic on existing roadways and through MOTCO Gate 2 and Gate 5.

Relevant Past, Present, and Future Actions

As analyzed for transportation, almost all of the construction, demolition, and remediation projects described in Section 5.2.2.1 would require the use of Gate 2 or Gate 5 and thus are collectively relevant to environmental justice concerns.

Cumulative Impact Analysis

Due to the short-term nature of most projects and the relatively minor volume increases within the context of average roadway traffic, it is not anticipated that traffic increases related to construction, demolition, or remediation activities would have a long-term or substantial impact on local communities. However, increased construction, demolition, and remediation activities at MOTCO would increase the volume of traffic and noise experienced at and near the gates and thus cause the disproportionate exposure of low income/minority neighborhoods to increased traffic and noise near these locations. These effects would be additionally pronounced if traffic backs up at Gate 2 or at Gate 5; however, this is not anticipated. Further, some of the trucks would be hauling demolition material classified as HW, toxic substances, or TWW. Neither the increased traffic nor the transport of contaminated materials put adjacent communities at increased safety risk; and the Army has committed to avoid trucking of MOTCO IRP Site 31 HW through Bay Point.

As there is no truck access point to MOTCO that is not adjacent to a minority and/or low-income community, there are no options for hauling materials and debris for off-site disposal that do not in some way impact the Clyde or Bay Point communities. Thus, in order to complete the various projects anticipated at MOTCO, BMPs would be established for each project in order to alleviate the potential nuisance to these areas. Each project requires the construction/demolition contractor to prepare a project-specific haul route or transportation plan to manage traffic flow and prevent stacking at the gates to the greatest extent possible, and the Army would provide notification to the community when high levels of truck traffic are anticipated. Transportation plans would likewise dictate alternate off-installation routes that would avoid trucking all materials through residential areas. There would be a limited amount of HW that may be generated from most projects at any given time, and transportation of all such waste would be in compliance with all federal, state, and local regulations including adhering to local regulations on containment, transportation, signage, and routing.

In conclusion, individually each project may result in short-term and localized traffic impacts that may disproportionally affect low-income/minority communities adjacent to the installation. However, BMPs would minimize the magnitude and duration of individual project impacts to the fullest extent possible. As a result, no significant adverse cumulative impacts to Clyde and Bay Point communities are anticipated.

6.0 MITIGATION MEASURES

6.1 INTRODUCTION AND DEFINITION OF MITIGATION MEASURES

Mitigation is a specific NEPA term that refers to additional action taken to avoid, minimize, rectify, reduce/eliminate, or provide compensation for an adverse impact resulting from implementation of an action alternative. In 40 CFR Part 1508.20, mitigation includes the following:

- avoiding the impact altogether by not taking a certain action or parts of an action;
- minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- compensating for the impact by replacing or providing substitute resources or environments.

6.2 BEST MANAGEMENT PRACTICES AND STANDARD OPERATING PROCEDURES

As discussed in Chapter 4, there are management actions such as BMPs and SOPs that the Army implements on an ongoing basis to provide environmental protection. BMPs and SOPs are distinguished from mitigation measures in this EA because they are 1) existing requirements for the proposed action, 2) ongoing, regularly occurring practices, and 3) not specific to the proposed action. Table 6-1 provides a summary of the relevant BMPs and SOPs to the proposed action analyzed in this EA. In order to provide a complete listing of mitigation measures in context of those that are also commitments made in the EIS, this table is largely a repeat of the parallel table in the EIS with any changes made in this SEA presented in redline. The table indicates the BMP and/or SOP that would be applied, what phase of the project the BMP and/or SOP would be applied, and the primary resource areas that would benefit from the BMP and/or SOP. Implementation, monitoring of effectiveness, and revisions and updates of BMPs and SOPs are part of the Army's overall environmental management system cycle of continual improvement.

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
1.	Erosion Control	A range of BMPs would control erosion during construction and operations to eliminate and/or minimize nonpoint source pollution in surface waters due to sediment. Erosion control BMPs include, but are not limited to, the following practices and procedures. **Construction:** • Erosion control through site approval process (whereby the proposed project site is reviewed for its erosion potential). • An Erosion and Sediment Control Plan would be prepared and implemented in construction plans and practices to the maximum extent practicable. • Topsoil removed from the site would be placed in the immediate area and reused for re-compaction purposes (if appropriate). • Soil exposed near water as part of the project would be protected from erosion with erosion control blankets (organic or synthetic fibers held together with net to cover disturbed areas) after exposure and stabilized as soon as practicable (with vegetation matting, hydroseeding, etc.). • Silt-containment (silt fences and other physical barriers that intercept runoff from drainage areas). • Re-vegetate as soon as possible after any ground disturbance or grading. • Minimize construction and grading during inclement weather. • Soil piles and exposed slopes covered during inclement weather. • Stockpiling of excavated materials behind impermeable berms and away from the influence of water bodies and runoff. • Vegetation/mulch stabilization (applying coarse plant residue to cover soil surface. The vegetation/mulch should be free of invasive species viable reproductive parts, such as rhizomes, seeds, and plants). • Level spreader (non-erosive outlet for runoff to disperse flow uniformly across slope). • Sediment basin (barrier that retains sediment from runoff).		X	X	X	X	

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
2.	Stormwater Management Plan (SWMP)[1]	In compliance with the CWA under Section 401, the proposed action will require a SWMP. A SWMP is a document that describes the minimal procedures and practices used to reduce the surface flow and subsequent discharge of pollutants to storm drainage systems. Elements of a SWMP include structural and non-structural practices such as: • Check dams (small temporary stone dam across drainage). • Diversion dike/swale (berm or ditch that channels water to desired location). • Lined waterway (lined outlet for drainage). • Storm drain inlet protection (permeable barrier around inlets reducing sediment let into storm drain). • Stormwater ponds and wetlands. • Infiltration practices (capture/temporarily store water before infiltrating into the soil). • Use of groundwater recharge wells and infiltration basins, where applicable. • Filtering practices (capture/temporarily store water and pass through filter beds of sand, organic matter, soil, or other media).	X	X	X	X	X	
3.	Stormwater Pollution Prevention Plan (SWPPP)[1]	• A SWPPP is a self-implementing plan for compliance with an installation's stormwater permit. • Facilities would be required to comply with the SWPPP during construction and then during day-to-day operations to ensure that stormwater remains free of contaminants. • The SWPPP requires development of pollution prevention measures to reduce and control pollutants in stormwater discharge.		X	X	X	X	

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
4.	Water Quality Monitoring Plan (WQMP)[1]	• Monitoring plans identify ambient or control conditions at a particular site and capture deviations from those conditions resulting from a project or operations of a facility. • A WQMP may range in complexity from visual inspections for sedimentation and protection measure failure to laboratory or field analysis of chemical and biological effects on water quality or organisms (acute/chronic bioassay), dependent on a given water resource.		X	X	X	X	
5.	Leadership in Energy and Environmental Design (LEED) Certification	LEED is a voluntary point system tool that measures the degree of sustainability features incorporated into a development. Some LEED requirements include: • Reduction of electrical energy use in buildings by 10 percent to save power. • Increased water efficiency. • Renewable energy use. • The sustainability/LEED initiatives would help reduce potable water use and should have a positive effect on demand for wastewater treatment.	X	X	X	X	X	
6.	Low Impact Development (LID) Design Technology	Examples of LID design include: • Grassed vegetation maintained on berms. • Native plant landscaping. • Avoidance of pesticides and fertilizers. • Watershed-based management. • A watershed protection management approach could consider: – Participating in the development of a watershed management plan. – Implementing and adopting specific watershed protection strategies. – Designing land use planning techniques that reduce or shift impervious cover and enhance percolation. – Work towards achieving important water resource goals.	X	X	X	X	X	

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
7.	Energy Policy Act (EPACT)	EPACT compliance includes energy use analysis and life-cycle cost analysis using a simulated model and the following energy conservation measures: • Buildings achieve an energy consumption level that is 30 percent below the level achieved by ASHRAE Standard 90.1. • Use low energy consuming products that are either Energy Star-qualified or Federal Energy Management Program-recommended. • Optimize building orientation to reduce cooling loads or energy loads to cool the buildings. • Optimize building insulation. • Seal building envelope for air tightness. • Incorporate “cool roof” building designs. • Use motion detectors to reduce lighting and to setback cooling in unoccupied buildings. • Natural lighting.	X	X	X	X	X	
8.	Water Conservation Plan	Water Conservation Plans include the use of: • Low-flow faucets. • Ultra-low-consumption toilets/urinals with electric flush sensors. • Water-efficient cooling systems. • Rainwater collection and reuse. • Meters installed at all facilities and key locations within the water distribution system that can significantly improve the ability to quickly identify leaks and take corrective action.	X	X		X		

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
9.	Hazardous Materials Management Plan (HMMP)	HMMPs describe implementation procedures for the transportation, storage, use, and disposal of HM. HMMPs would also include waste minimization plans that provide protocols designed to encourage and promote the efficient use of HM, substitute products that are less toxic whenever feasible, minimization of their use, and promote recycling and reuse of HM. HMMPs would contain procedures such as: • HM spill/release control (use of secondary containment and leak detection methods in operations involving liquid hazardous substances). • Construction materials and all construction-related materials should be free of leachable pollutants. • Train personnel (DOD personnel and contractors in proper labeling, container, storage, staging, and transportation requirements for hazardous substances. Also, they are trained in accordance with spill prevention, control, and cleanup methods). • Perform all vehicle maintenance activities at existing DOD maintenance shops. • Ensure that all personnel and contractors store, handle, and dispose of all petroleum, oil, and lubricants per all applicable local and federal laws, regulations, and requirements. • Temporary equipment laydown or construction staging areas would be located in previously disturbed (e.g., paved) areas.		X	X	X	X	

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
10.	Hazardous Waste Management Plan (HWMP)	HWMPs include waste minimization plans that provide protocols designed to encourage the efficient use of HW, substitute products that are less toxic whenever feasible, minimize their use, and promote recycling and reuse of HW. HWMPs include the following recommendations: • Update and implement the existing HWMP to include procedures for the transportation, storage, use, handling, and disposal of HW. • Modify project-specific HW disposal protocol as appropriate. • Ensure personnel and contractor training regarding project- and facility-specific HW plans. • The use of spill/release control (use of secondary containment and leak detection methods in operations involving liquid hazardous substances). • Ensure appropriate housekeeping protocol (improving overall HW housekeeping practices, keeping area swept, wiping up spills, etc.) • Perform all maintenance activities at existing DOD maintenance shops. • Ensure all federal, state, and DOD laws and regulations are being observed via inspections/audits/surveillances and implement corrective actions as necessary. Also ensure that all personnel and contractors manage, store, handle, transport, and dispose of HW in accordance with applicable federal and state regulations. • Temporary equipment laydown or construction staging areas would be located in previously disturbed (e.g., paved) areas. • When new construction occurs on sites where contamination and/or MEC has been identified, ensure that the risk of human/ecological exposure is minimized via the use of site-specific health and safety plans, engineering and administrative controls, and personal protective equipment in accordance with 29 CFR Section 1910.120 (HW operations and emergency response operations). These site-specific health and safety plans must specifically address how these controls would be implemented to ensure the protection of human health and the environment.		X	X	X	X	

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
11.	Spill Prevention Control and Countermeasure (SPCC)[1] Plans and Facility Response Plans (FRPs)	• Update and implement existing SPCC Plan to assess and respond to hazardous substance spills and/or releases. • Update and implement existing FRPs for responding to releases, leaks, or spills of hazardous substances. • Ensure DOD personnel and contractors are trained as to proper labeling, container, storage, staging, and transportation requirements for hazardous substances. Also, ensure they are trained in accordance with spill prevention, control, and cleanup methods. • Ensure petroleum, oils, and lubricants fuel transfers kept away from water bodies and a response/contingency plan is in place in the event of any releases, leaks, or spills. • Ensure proper labeling of all hazardous substance containers to prevent inappropriate storage or use. • Contaminant migration control (e.g., reducing contaminant migration pathways by preventing releases to drains, pipelines, and sewers and the use of absorbent pads and materials to prevent and control spills and releases). • Ensure that contaminants (e.g., oils, greases, lubrication fluids for heavy equipment) are properly stored at work sites and temporary construction staging areas to avoid spills, releases, and leaks. • Ensure that emergency response plans are in place for responding to releases, leaks, or spills of hazardous substances. • Minimize the risk of uncontrolled leaks, spills, and releases through industry and Army accepted methods for spill prevention, containment, control, and abatement. • Minimize the risk of human exposure to contaminated media through the use of a site-specific health and safety plan, engineering and administrative controls, and appropriate personal protective equipment (e.g., indicating where eye-wash stations, fire extinguishers, etc., are located).		X	X	X	X	

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
12.	Munitions and Explosives of Concern (MEC)	• Comply with all applicable MEC protocol, procedures, and guidance. • Reduce the potential exposure to Unexploded Ordnance (UXO) through completion of limited MEC clearance operations by qualified UXO technicians. • Implement all applicable DOD MEC operations guidance to minimize or eliminate potential MEC explosion hazards and other adverse impacts. • Train construction crews on identifying and responding to MEC encountered in the field. UXO personnel would be available to monitor earthmoving activities.		X		X	X	X
13.	Natural Resources Management (Terrestrial Focused)	• Achieve Integrated Natural Resources Management Plan obligations.		X		X	X	

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
14.	Natural Resources Management (Marine Focused)	Minimize contamination of the marine environment from project-related activities through actions such as: • Contractors are required to have and to implement a contingency plan to control and contain toxic spills, including petroleum products. Appropriate materials to contain and clean potential spills would be maintained and readily available at the work site. These materials would include absorbent pads and kitty litter and secondary containment absorbent booms. • All construction project-related materials and equipment placed in the water would be maintained so as not to release pollutants into the bay and/or be used to control pollutants that may be released by the demolition and construction activities. The project manager and heavy equipment operators would perform daily pre-work equipment inspections for cleanliness and leaks. All heavy equipment operations would be postponed or halted should a leak be detected, and would not proceed until the leak is repaired and equipment cleaned. This requirement is written into the construction contract conditions. • Fueling of construction project-related vehicles and equipment would take place at least 100 feet away from the water unless a bermed and lined refueling area is constructed. With respect to construction equipment that cannot be fueled out of the water, spill prevention booms would be employed to contain any potential spills. Any fuel spilled would be cleaned up immediately. • A plan would be developed and implemented to prevent construction debris from entering or remaining in the marine environment during the project.		X		X	X	

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
15.	Transportation Specific	Roadway project construction BMPs include the following recommendations: • A Traffic Control Plan would be prepared and implemented. • Temporary equipment laydown or construction staging areas would be located in previously disturbed (paved, gravel, etc.) areas. • Material from demolition of existing road pavements would be stored in previously disturbed areas whenever possible. • An Erosion and Sediment Control Plan for roadway construction/work would be prepared and implemented in construction plans and practices to the maximum extent practicable. • Prevent leaks or spills of contaminants by ensuring all temporary equipment laydown or construction staging areas are located in previously disturbed (paved, gravel, etc.) areas and constructed with secondary containment for storage of any hazardous or petroleum products.		X	X	X	X	

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
16.	Noise Abatement	BMPs to abate noise from roadway construction include the following: • Ensure that all equipment items have the manufacturers' recommended noise abatement measures, such as mufflers, engine enclosures, and engine vibration isolators, intact and operational. • Inspect all construction equipment at periodic intervals to ensure proper maintenance and presence of noise control devices (e.g., mufflers and shrouding). • Turn off idling equipment when no longer in use. • Implement a construction noise monitoring program to limit potential impacts. • Plan noisier operations during times least sensitive to receptors. • Avoid scheduling construction during nighttime hours (10:00 p.m. to 7:00 a.m.) and on weekends. • Keep noise levels relatively uniform and avoid impulsive noises. • Maintain good public relations with the community to minimize objections to the unavoidable construction impacts. • Provide frequent activity updates of all construction activities.		X			X	
17.	Cultural Resources	• Archaeological monitoring during construction in consultation with SHPO. • For post-review discoveries, an assessment would be made for NRHP eligibility in consultation with SHPO.		X	X			X
18.	Seismic Design	• During project design and construction, hazards associated with earthquakes and fault rupture would be minimized.	X	X	X			

Table 6-1. Summary of Relevant Best Management Practices and/or Standard Operating Procedures

Item	BMP/SOP	Description	Activity		Resource Area			
			Design	Construction	Geology and Soils	Water Resources	Biological Resources	Cultural Resources
19.	Air Quality (Construction Emissions)	• Place a time restriction of five minutes on unnecessary heavy equipment idle time and incorporate unscheduled inspections to verify compliance with the restriction. • Ensure equipment engines are maintained and tuned to perform at California Air Resources Board (CARB) and/or USEPA certification levels, preventing tampering, and conducting unscheduled inspections to ensure these measures are followed. • Lease new equipment, where practicable, that meets the most stringent of applicable Federal or California standards • Commit to the best available emissions control technology where practical and reasonable. Use of Tier 4 engines will be utilized as much as is feasible. For equipment that does not meet Tier 4 standards, CARB and USEPA-verified controls such as particulate traps and oxidation catalysts will be used to reduce emissions of diesel particulate matter and other pollutants. • Use equipment powered with liquid propane gas, batteries, or direct plug-in will be implemented as feasible. • Control fugitive dust, where appropriate, by covering soil piles or installing wind fencing and limiting equipment, and haul truck speeds to 15 miles per hour onsite.						

Note:
[1] Project specific SWMPs, SWPPPs, WQMPs, and SPCC apply separately to the Pier 2 and 3 projects. Each project is funded separately and will have its own timeline for final design and construction with Pier 2 being substantially later than Pier 3. The Pier 3 work has been completed since the EIS was completed. As such, there may be changes in the regulations and guidelines that would be accounted for in the Pier 2 project by having these plans developed separately and during final design and just prior to construction.

6.3 MITIGATION MEASURES INCLUDED IN THIS EA

The BMPs and SOPs included in Chapter 4.0 and summarized in Section 6.2 minimize overall effects associated with the proposed action. The Army has completed consultation with SHPO concerning the proposed action as required by Section 106 of the NHPA, NMFS and USFWS as required by Section 7 of the ESA, and NMFS as required by the Magnuson-Stevens Fishery Conservation and Management Act and has re-initiated those consultations concurrent with this SEA. Table 6-2 identifies the avoidance, minimization, and/or compensation measures identified as part of the EIS consultation process. In addition, Table 6-3 identifies the terms and conditions, as well as reasonable and prudent measures documented in the respective NMFS and USFWS BOs (EIS Appendix D) completed for the EIS. The measures listed in Tables 6-2 and 6-3 are considered nondiscretionary, within DOD control, and would be implemented by the DOD as part of the proposed action. Any changes to these mitigation measures identified during the preparation of this SEA and associated agency consultations and coordination efforts are presented in redline and will also be documented in the decision document for this SEA.

Table 6-2. Avoidance, Minimization, and Compensation Measures

General Avoidance and Minimization Measures
A USFWS- NMFS-approved biologist(s) will serve as the biological monitor(s) and will be onsite during the duration of the project. In order to be approved, the biological monitors will possess a bachelor's degree in biological, ecology, natural resources, or related field or possess an equivalent amount of relevant professional experience. In addition, the biologists will have completed coursework or equivalent related experience specific to herpetology, mammalogy, and fish for the purposes of monitoring for the California red-legged frog, salt marsh harvest mouse, California Ridgway's rail, delta smelt, as well as salmonids, and sturgeon. The approved biologist(s) shall maintain written monitoring records that include: (1) the beginning and ending time of each days' construction monitoring effort; (2) a statement identifying the species, including general wildlife species, when they are observed, and the location of the observation; (3) the condition the species was in when found, and by whom; (4) a description of any actions taken. The biological monitor shall maintain complete records in their possession and shall immediately surrender copies of these records to USFWS upon verbal or written request. Copies of the monitoring records or a final report for the construction monitoring shall be provided to USFWS within ninety (90) days of completion of the construction monitoring.
A USFWS- and NMFS- approved biologist will conduct mandatory contractor/worker awareness training for construction personnel. The awareness training will be provided to all construction personnel to brief them on the need to avoid effects to listed species and their habitat and the potential for any such wildlife species to occur on the site. If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work. A representative will be appointed during the employee education program to be the contact for any employee or contractor who might inadvertently kill or injure a listed species or who finds a dead, injured, or entrapped species. The representative's name and telephone number will be provided to USFWS prior to the initiation of any demolition or construction activity.
Project personnel will be directed to use BMPs where applicable, such as for prevention of soil erosion and sedimentation of aquatic habitats and introduction and spread of invasive plant species. These measures will be identified prior to construction and incorporated into the construction operations.
Vehicular traffic will be confined to existing roads and the proposed access routes.
No pets will be permitted in the project area to avoid harassment, killing, or injuring of wildlife.
Access roads, staging areas, and in-water work areas shall be clearly identified in the field using orange construction fence, signage, buoys, or similar as appropriate. Work shall not be conducted outside designated work areas.
The project site will be maintained trash-free, and food refuse will be contained in secure bins and removed daily during construction.
Nighttime work near tidal marsh habitat will be avoided to the extent feasible. If nighttime work cannot be avoided, lighting will be directed to the work area, minimizing the lighting of tidal marsh habitat.
No vehicles or equipment will be refueled within 100 feet of wetlands or aquatic habitats unless a bermed and lined refueling area is constructed. Any vehicles driven and/or operated within or adjacent to wetlands or aquatic habitats will be checked and maintained daily to prevent leaks of materials.
Use of chemicals, fuels, lubricants, or biocides will be in compliance with all local, state, and federal regulations. This is necessary to minimize the possibility of contamination of habitat or poisoning of wildlife. All uses of such compounds will observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation.
The Army's contractors will be required to produce an Environmental Protection Plan that will address the known or potential environmental issues at the project site. The Environmental Protection Plan will contain, but is not limited to, names and qualifications of individuals who will be responsible for hazardous waste disposal and biological monitoring, authorized work areas, environmental compliance training program, drawings showing material storage areas and construction material containment, and methods to control water runoff.

Table 6-2. Avoidance, Minimization, and Compensation Measures

General Avoidance and Minimization Measures Cont'd.
The Army's contractors will develop a project-specific SWPPP which identifies the type and location of the erosion and sediment controls that will be used on the project site. The plan will include monitoring and reporting requirements to ensure control measures are in compliance with the SWPPP, federal, state, and local laws and regulations.
The Army's construction contractors will develop a project-specific SPCC Plan that will provide the clean-up, containment, and restoration procedures, instructions and reports to be used in the event of an unforeseen spill or a substance regulated by Federal, State and local laws and regulations. The SPCC Plan will list the name of the individual(s) who will report spills or hazardous substance releases, will oversee the clean-up activities, will follow-up with complete documentation and report to the Contracting Officer in addition to the legally required federal, state, and local reporting channels.
The Army's construction contractor will complete a non-hazardous solid waste disposal plan that will identify methods and locations for solid waste disposal and recycling.
The Army's construction contractor will develop an air borne nuisance control plan detailing provisions to assure that dust, debris, materials, trash, etc., do not become air borne.
A project-specific HMMP will be developed by the Army's contractor that identifies the hazardous substances to be used on the job site, the actions to prevent introduction of such materials into air, water, or ground, and detail provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. A hazardous waste management plan will be included in the HMMP to delineate measures required to handle and dispose of any hazardous waste or excess hazardous materials.
The Army's construction contractor will be required to install silt fencing and/or staked hay bales along the perimeter of the construction zone to protect marsh habitat.
The Army's construction contractor will monitor and protect water resources to prevent pollution of surface waters. For construction activities immediately adjacent to impaired surface waters, the contractor must quantify sediment or pollutant loading to that surface water when required by state or federal CWA permits. The contractor shall provide suitable positive means to prevent debris and any pollutant from construction and demolition operations from entering Suisun Bay Channel.
Species Specific Avoidance and Minimization Measures
Soft Bird's-Beak
Prior to construction within or adjacent to tidal marsh habitats, TEF will be installed between the work area and any remaining marsh vegetation adjacent to the project footprint immediately to prevent encroachment by construction vehicles and personnel. The TEF will be a temporary, plastic mesh-type fence (Tensor Polygrid or equivalent) at least 4 feet tall. A USFWS-approved biologist will determine the exact location of the fencing. The fencing will be strung tightly on posts set at maximum intervals of 10 feet and will be checked and maintained as needed until construction is complete.
No grading, clearing, storage of equipment or machinery, or other disturbance or activity will occur within or adjacent to tidal marsh habitats until the TEF has been installed and approved by the USFWS-approved biologist.

Table 6-2. Avoidance, Minimization, and Compensation Measures

California Ridgway's Rail
Activities within or adjacent to tidal marsh habitat will be avoided during the California Ridgway's rail breeding season from February 1st through August 31st each year until protocol surveys are conducted and either 1) California Ridgway's rails are determined not to occur in the action area; or 2) any California Ridgway's rail territories discovered in the surveys will be avoided. The surveys will be conducted according to the most recent survey protocol issued by USFWS (dated December 7, 2009), unless an updated protocol is released prior to survey initiation. The 2009 protocol entails conducting four passive surveys of 2-hour duration at each survey station, with no taped playback being used during any of the four surveys. Surveys will be conducted between January 15th and April 15th; surveys are to be initiated between January 15th and February 1st with at least 2 to 3 weeks between each survey to ensure surveys are conducted throughout the optimal calling period. For each survey, stations will be established 656 feet apart along White Road, which parallels the tidal marshes, adjacent to project activities at Piers 2 and 3. All potential California Ridgway's rail nesting habitat within 700 feet of project work areas will be surveyed.
If breeding California Ridgway's rails are determined to be present, activities will not occur within 700 feet of an identified calling center. If the intervening distance across a major slough channel or across a substantial barrier between the California Ridgway's rail calling center and any activity area is greater than 200 feet, then it may proceed at that location within the breeding season upon USFWS approval.
If protocol surveys detect California Ridgway's rails in the project action area as defined above, activities within or adjacent to California Ridgway's rail habitat (salt marsh wetlands) will not occur within 2 hours before or after extreme high tides (6.5 feet or above, as measured at the Golden Gate Bridge), when the marsh plain is inundated. This measure is appropriate because protective cover for California Ridgway's rails is limited and activities could prevent them from reaching available cover.
A USFWS-approved biologist will be present during all project-related ground disturbances or vegetation removal/cutting, this includes the initial disturbance and any subsequent work necessary for maintenance of clear space. The USFWS-approved biologist will conduct surveys for listed species prior to vegetation removal/cutting activities and also monitor during the work.
To prevent/deter raptors from using project lighting as perches, lighting will either be designed to prevent/deter raptor perching or avian anti-perching devices will be permanently installed on lighting structures.
A pre-construction California Ridgway's rail survey was conducted up to 72-hours before construction of Pier 3 by a qualified biologist who holds a 10(a)1(A) permit and has previous California Ridgway's rail survey experience. No nests were located in areas disturbed by the construction. Therefore, the Army consulted with USFWS to determine what additional protective measures could be implemented to avoid or reduce mortality, injury or harm to California Ridgway's rail. Construction activities in the area of concern may be rescheduled or modified to avoid adverse construction effects to the nesting birds.

Table 6-2. Avoidance, Minimization, and Compensation Measures

Salt Marsh Harvest Mouse
Where marsh vegetation representing potentially suitable habitat for salt marsh harvest mice is present and needs to be removed, work will be conducted using hand-held tools in a manner to enable and encourage wildlife to escape from the construction area. Vegetation shall be removed only with non-mechanized hand tools (i.e., trowel, hoe, rake, and shovel). No motorized equipment, including weed whackers or lawn mowers, shall be used to remove this vegetation. Vegetation will first be trimmed to a canopy height of 6 inches (which appears to be the lowest commonly used by salt marsh harvest mice). Then, a USFWS-approved biologist will conduct pre-construction surveys for presence of salt marsh harvest mice within the areas where the vegetation will be removed to bare ground. If a mouse that could potentially be this species is observed within the pre-construction survey area, USFWS shall be notified. Removal of vegetation to bare ground may begin when no mice are observed and shall start at the edge farthest from highest quality habitat, or the poorest habitat, and work its way towards any higher quality habitat.
A USFWS-approved biologist will be present during all project-related ground disturbances or vegetation removal/cutting, this includes the initial disturbance and any subsequent work necessary for maintenance of clear space. The USFWS-approved biologist will conduct surveys for listed species prior to vegetation removal/cutting activities and also monitor during the work.
To prevent salt marsh harvest mice from moving into the project site during construction, a TEF will be installed between the work area and any remaining marsh vegetation adjacent to the project footprint immediately after the vegetation removal and prior to the start of any other construction activities. The TEF will be made of a heavy plastic sheeting material that does not allow salt marsh harvest mice to pass through or climb, and the bottom should be buried to a depth of 2 inches so that these species cannot crawl under the fence. The TEF height will be at least 12 inches higher than the highest adjacent vegetation with a maximum height of 4 feet. The TEF will be removed after all construction is complete.
No materials or supplies that could potentially entrap salt marsh harvest mice will be stored in salt marsh vegetation. These include pipes, storage containers, landscaping materials, plastic sheeting, or other materials that small animals could use for cover. All equipment will be stored at designated staging areas, which consists of existing lots devoid of vegetation.
A USFWS-approved biologist will monitor all construction activities within potentially suitable habitat. The on-site biologist(s) will possess a working cellular telephone, and this phone number will be provided to USFWS. The USFWS-approved biologist will also be the contact for any employee or contractor who might inadvertently injure a salt marsh harvest mouse, or find an injured or entrapped salt marsh harvest mouse.
The USFWS-approved biologist will look for salt marsh harvest mice immediately prior to and during all construction activities (i.e., immediately prior to ground disturbance). If a salt marsh harvest mouse, or any mouse that the biologist or construction personnel believe may be this species, is encountered, all work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease, and the foreman and USFWS-approved biologist will be immediately notified. The USFWS-approved biologist will monitor it until he/she determines that the animal(s) is not imperiled by predators or other dangers. The USFWS-approved biologist will notify USFWS within one working day following any encounters with a potential salt marsh harvest mouse during construction via electronic mail and telephone.
Prior to the start of daily construction activities, the USFWS-approved biologist will inspect the salt marsh harvest mouse TEF to ensure that it is neither ripped nor has holes and that the base is still buried. Any necessary repairs identified by the USFWS-approved biologist will be made immediately. The fenced area will also be inspected to ensure that no mice are trapped in it. Any mice found along and outside the fence will be closely monitored until they move away from the construction area.
Any contractor, employee, or agency personnel who inadvertently kills or injures a salt marsh harvest mouse will immediately report the incident to the USFWS-approved biologist. The USFWS-approved biologist will contact USFWS to report the dead or injured animal via electronic mail and telephone within one working day.

Table 6-2. Avoidance, Minimization, and Compensation Measures

Delta Smelt, Green Sturgeon, Central California Coast Steelhead DPS, Central Valley Steelhead DPS, Central Valley Spring-run Chinook ESU, and Sacramento River Winter-run Chinook ESU
A USFWS- and NMFS-approved biological monitor will be on-site during construction activities to ensure the Army and all construction personnel are compliant with the avoidance and minimization measures to minimize adverse effects to delta smelt and its critical habitat.
With exception of maintenance dredging, once work begins, it will proceed to completion as efficiently as possible. Dredging will only occur within the approved delta smelt work window (August 1st through November 30th).
Cushion blocks made of wood or a composite material such as Micarta will be used to reduce impact pile driving noise.
If two pile drivers are in operation over the same time period, the Army will require the contractor to ensure that there is communication between the two pile driving operations regarding start/stop of pile driving activity to ensure that simultaneous pile strikes will not occur.
Although general site conditions at MOTCO do not support the deployment of silt curtains, silt curtains may be used where specific site conditions demonstrate that the silt curtains will be practicable and will effectively minimize any potential adverse effects caused by the mobilization of material that may contain toxins.
Although vibratory hammers are typically not used on the types of concrete piles proposed for Pier 2, the Army will investigate the use of a vibratory hammer to drive the concrete piles. To the extent feasible, a vibratory hammer will be used to drive the concrete piles to reduce underwater sound from impact pile driving.
No equipment or vehicles will be stored on the piers when not in use to reduce the potential for any spills or debris entering the water column.
All vehicles and equipment will be properly maintained to reduce the potential for spills of petroleum-based products. Containment booms and sorbent materials will be available during the activity and will be deployed immediately in the event of a spill to limit its spread.
To minimize the potential for impacts from hazardous or regulated materials, all fuel, waste oils, and solvents will be stored well away from the construction zone. Any spill of such materials will be immediately contained in accordance with the SPCC Plan. (A copy of the SPCC Plan will be submitted to USFWS and NMFS for review and approval once developed.)
To minimize disruption of the sediment layer, piles will be carefully removed via the “vibratory hammer” or “direct pull” methods. The vibratory hammer method involves dislodging the pile, and then slowly lifting the pile (in its entirety) from the sediments. The direct pull method involves placing a choker around the pile and slowly pulling upward with a crane or other equipment.
If timber pile breakage occurs (World War II-era piles may be more vulnerable), the stub will be removed utilizing a hydraulic shear and crane or other equipment in attempts to cleanly pull out the stub. If the stub cannot be removed, it will be cut 2 feet below the mudline.
Minimal cutting and boring will occur over the water; if necessary, tarps or other capture devices will be used to reduce the likelihood of materials entering the water.
A floating surface boom will be placed around the work area to ensure that debris that falls in the water will be captured and promptly removed. The upper part of the boom will consist of sorbent material to capture floating hydrocarbons that may be associated with the creosote piles.
All debris and damaged piles will be slowly lifted from the water and placed on the work surface of the barge within a containment basin that is constructed with durable plastic sheeting and designed to contain all sediment, without attempting to clean or remove any adhering sediment. The cut up piling, sediments, construction residue, and plastic sheeting will then be disposed of properly offsite in a manner that does not expose or affect aquatic resources.
Further efforts will be made to reduce project-related effects to listed species by modifying, to the extent possible, construction methodology and implementing design refinements. Coordination with NMFS and USFWS will continue throughout the design and construction phases.

Table 6-2. Avoidance, Minimization, and Compensation Measures

Delta Smelt, Green Sturgeon, Central California Coast Steelhead DPS, Central Valley Steelhead DPS, Central Valley Spring-run Chinook ESU, and Sacramento River Winter-run Chinook ESU Cont'd.
The proposed action will increase the amount of unshaded, shallow water habitat that is suitable for SAV - consisting of pondweed (*Stuckenia* spp.), as well as low-intertidal bulrush (*Schoenoplectus* spp.), and will impact only a small portion of the area occupied by these species at Piers 2 and 3. A pre- and post-construction survey will be conducted for comparison with the 2013 survey data to quantify any changes in the extent of pondweed and bulrush, and to determine, in consultation with USFWS and NMFS whether compensatory mitigation may be warranted. If mitigation is warranted, it will be completed per the August 2014 SAV Mitigation Plan.
During the design phase of this project, further efforts will be made to reduce project-related effects to listed species by modifying, to the extent possible, construction methodology and implementing design refinements. Coordination with NMFS and USFWS will continue throughout the design and construction phases. In addition, as part of consultation, the Army will discuss compensatory mitigation with USFWS and NMFS.
A Hydroacoustic Monitoring Plan will be developed as part of the design process for Pier 2. The Hydroacoustic Monitoring Plan will be developed by the Pier 2 design contractor and the plan will be submitted to NMFS and USFWS for review and approval prior to pile driving activities. It is anticipated the Hydroacoustic Monitoring Plan will include noise measurements from 10 percent of the smaller 18-inch square fender piles and 1 to 2 percent of the larger 24-inch octagonal piles throughout the depth range.
Prior to construction activities at Pier 2, the Army will purchase a total of 3.7 acres of delta smelt or salmonid/delta smelt conservation bank credits at a NMFS- and USFWS-approved conservation bank to compensate for adverse project effects to federally listed species and their habitat, and will provide USFWS with the appropriate bank crediting documents to reflect the purchase.
The Army's construction contractor will comply with the Project 401 Water Quality Certification. A WQMP will be produced by the construction contractor that specifies sample locations, depths, constituents and objectives during in-water construction work. The WQMP will also specify when work will be suspended for water quality exceedances and potential best management practices to comply with turbidity requirements stated in the 401 Certification.
California Red-Legged Frog
The California red-legged frog will be included in the pre-construction environmental awareness training sessions to construction staff.
At the staging areas (E-Lots), in areas with vegetation and/or requiring soil disturbance, a USFWS-approved biologist with California red-legged frog experience will inspect the site to determine if occupied habitat is found. The TEF will be inspected daily by the biological monitor and they will identify if repairs are necessary.
The USFWS-approved biologist will be present and monitor for the presence of listed species during initial ground disturbance and vegetation removal. The biological monitor will also sporadically observe the staging area for California red-legged frog within 24 hours following a rainfall event, if that time period falls under a schedule work day.
If work is to continue during rain events at the E-lots, an USFWS-approved biologist will survey these sites for presence of listed species prior to the day's work activities and periodically during the day.
If a California red-legged frog is found anywhere on the project site, immediate measures should be taken to avoid take and USFWS will be contacted immediately to discuss the potential for avoidance measures.
Vehicle speeds on Main Street and Waterfront Road will be reduced to 15 miles per hour during rain events.

Table 6-2. Avoidance, Minimization, and Compensation Measures

Compensation for Habitat
Habitat within the areas currently occupied by structures will be restored to include establishing desired elevations for tidal marsh communities, and the removal of bordering stands of perennial pepperweed, including excavation of the roots and surface soil and seedbank. Native high marsh species such as alkali heath and gumplant will be reestablished in these areas using locally obtained material. A copy of the habitat restoration plan will be submitted to USFWS, NMFS, and USACE for review and approval prior to habitat restoration.
Any estuarine intertidal wetlands that are impacted within the 100-foot disturbance buffer will be restored to the appropriate native habitat based on elevation (tidally influenced communities) or landscape position.
A pre- and post-construction SAV survey will be conducted to quantify any changes in the extent of pondweed and bulrush, and to determine, in consultation with USFWS and NMFS whether compensatory mitigation may be warranted. If mitigation is warranted, it will be completed per the August 2014 SAV Mitigation Plan.
In-Air Noise
A designated Army representative will provide advance notification to neighbors if construction activities are planned for weekends or holidays.
A designated Army representative will remain in regular communication with nearby schools throughout the duration of the demolition and construction.
A designated Army representative will notify nearby sensitive receptors in advance of commencing the noisiest phases of the planned construction projects, and use standard DOD protocols to log and respond to noise complaints received during implementation of the proposed action.
Cultural Resources
The Pier 2 westernmost gantry crane will be moved and secured at the eastern location of Pier 2 at the request of NPS prior to visitation.
The Army has provided NPS and SHPO with copies of the 35, 65, and 95 percent Pier 2 designs for a 30-calendar day review period.
The Army has prepared a Cultural Resources Treatment and Discovery Plan and submitted it to NPS and SHPO for a 30-calendar day review period.
The Army has incorporated minor pedestrian improvements to the Port Chicago National Memorial (benches and improvements in the White Road pedestrian crossing). The design of these elements was coordinated to meet NPS aesthetic standards.

Table 6-3. ESA-Specific Reasonable and Prudent Measures, and Terms and Conditions

Reasonable and Prudent Measures
USFWS-Specific Reasonable and Prudent Measures
The Army and its contractors shall ensure they minimize project effects to the delta smelt, California Ridgway's rail, salt marsh harvest mouse, and California red-legged frog.
The Army and its contractors shall comply with the USFWS BO.
NMFS-Specific Reasonable and Prudent Measures
Ensure the hydroacoustic monitoring plan is properly implemented and assists in the evaluation of project effects on listed salmonids and green sturgeon.
Prepare and submit plans and reports regarding the construction of the proposed project and the results of the fisheries and hydroacoustic monitoring programs.
Terms and Conditions
USFWS-Specific Terms and Conditions
The Army shall educate and inform contractors involved in the project of the *General and Species Specific Conservation Measures* and *Terms and Conditions* in this BO. The Army shall clearly notify their contractor(s) that compliance with the USFWS BO is a condition of contract(s).
The Army shall provide a copy of the USFWS BO and any subsequent amendments to the project's primary contractor, sub-contractors, and Service-approved biological monitors.
At least 15 days prior to the onset of any construction-related activities, the Army shall submit to USFWS, for approval, the name(s) and credentials of biological monitors it requests to conduct activities specified for this project. Information included in a request for authorization must include, at a minimum: (1) relevant education; (2) relevant training on species identification, survey techniques, handling individuals of different age classes, and handling of different life stages by a permitted biologist or recognized species expert authorized for such activities by USFWS; (3) a summary of field experience conducting requested activities (to include project/research information and actual experience with the species); (4) a summary of BOs and/or informal consultations under which they were authorized to work with the listed species and at what level (such as construction monitoring versus handling), this should also include the names and qualifications of persons under which the work was supervised as well as the amount of work experience on the actual project including detail on whether the species was encountered or not; and (5) a list of Federal Recovery Permits [10(a)1(A)] if any, held or under which individuals are authorized to work with the species (to include permit number, authorized activities, and name of permit holder).
Prior to USFWS's review of their qualifications and approval to work as a USFWS-approved biologist on the project construction site, the biologists must submit a letter to USFWS verifying that they possess a copy of this BO and understand its *Terms and Conditions*. The biologists will keep a copy of this BO in their possession when on-site. In the event the biologist(s) observes actions that have resulted in a take or pose an imminent probability of a take of federally listed species (California Ridgway's rail, salt marsh harvest mouse, and California red-legged frog) such as species in immediate peril, the biologist(s) shall be given the authority to stop and restart work. If the biologists exercise this authority, USFWS shall be notified by telephone and email within one (1) working day. The USFWS contact is Kim S. Turner, Assistant Field Supervisor of the Endangered Species Division, and can be reached at (916) 930-5604 or Kim_S_Turner@fws.gov.

Table 6-3. ESA-Specific Reasonable and Prudent Measures, and Terms and Conditions

USFWS-Specific Terms and Conditions Cont'd.
Annual California Ridgway's rail surveys must be conducted by a qualified biologist who holds a 10(a)1(A) permit and has previous California Ridgway's rail survey experience. The Army shall provide a resume and credentials of the biologist who will be conducting the California Ridgway's rail surveys for USFWS review and approval. The California Ridgway's rail surveys will be conducted between January and mid-April using survey methods approved by USFWS. USFWS will be consulted on proposed schedule changes and any additional work or modifications to the project description will be approved by USFWS. Final California Ridgway's rail survey reports will be submitted to USFWS within ninety (90) days of completing the surveys.
The USFWS-approved biologist(s) overseeing construction monitoring will halt work and immediately contact USFWS in the event that any listed species are visually identified in the action area. The USFWS-approved biologist(s) will suspend all activities in the immediate work zone until listed animal(s) species leave the site on their own volition unless directed otherwise by USFWS.
The USFWS-approved biological monitor(s) who have been approved to monitor the project action area for salt marsh harvest mouse and California red-legged frog, will be the only construction site personnel permitted to handle these listed species if salt marsh harvest mouse and/or California red-legged frog are observed on the construction site and handling of either species is warranted.
Within twenty-four (24) hours prior to the commencement of construction activities, the project construction site shall be inspected by a USFWS-approved biologist. The USFWS-approved biologist(s) shall be onsite during all project activities, construction and operations, which may result in the take of delta smelt, the California Ridgway's rail, salt marsh harvest mouse, and California red-legged frog.
An employee education program on the listed species and critical habitats discussed in this biological opinion shall be completed prior to the date of initial construction activities. The employee education program will be administered by a Service-approved biologist(s). Copies of the training documentation, including the sign-in sheets, shall be submitted to USFWS within ten (10) working days after completion of the training.
If requested before, during, or upon completion of construction activities, the Army shall allow access by USFWS personnel to the project site to review effects to the delta smelt, the California Ridgway's rail, salt marsh harvest mouse, California red-legged frog, other listed species and their habitats and/or conduct a site visit to review the Army and/or their contractor compliance with all *General and Species Specific Conservation Measures*, BMPs, and *Terms and Conditions* in the USFWS BO. Service personnel will comply with all applicable MOTCO security clearance and access requirements and/or restrictions. Initial access requests will be made at least 10 working days in advance to allow for clearance procedures.
The Army shall provide USFWS with final copies of the project's Environmental Protection Plan, HWMP, SWPPP, SWMP, SCCP, and Water Quality Monitoring Plan, and any other construction-related plans consisting of environmental BMPs thirty (30) days prior to the start of construction action(s).
The Army shall submit the Pier 2 Hydroacoustic Monitoring Plan to USFWS and NMFS for review and approval at least 90 days prior to the initiation of pile driving at Pier 2. The monitoring plan must, at minimum, include underwater sound measurements at 10 meters distance from pile driving operation. The Army must make available to USFWS data from the hydroacoustic monitoring program on a real-time basis (i.e., daily monitoring data should be accessible to USFWS upon request). If hydroacoustic monitoring detects elevated sound levels during pile driving above maximum peak of 178 dB, 155 dB SEL, and 166 dB RMS for 10 percent or more of the strikes associated with installation of a pile, the Army must notify USFWS within 24 hours of the exceedance event.
The Army shall provide USFWS with a copy of the project's SFBRWQCB Section 401 Water Quality Certification as soon as it is available. The Army and their contractors shall comply with the SFBRWQCB Section 401 Water Quality Certification requirements.

Table 6-3. ESA-Specific Reasonable and Prudent Measures, and Terms and Conditions

USFWS-Specific Terms and Conditions Cont'd.
If additional BMPs and environmental protective measures are incorporated into the Piers 2 and 3 Specification Sheets (100 percent Submittal) after this BO is issued, but prior to and during Pier 2 and 3 construction actions, the Army shall notify USFWS and NMFS of changes to the Specification Sheets for USFWS' and NMFS' review and approval. The Army shall ensure their contractor(s) receive and follow the updated and revised Specification Sheets.
The Army shall inform USFWS immediately of their finalization of Pier 2 design plans and if there are modifications to the design plans that alter the effects of the proposed action for Pier 2. The Army shall provide USFWS with 100 percent design plans for Pier 2 a minimum of sixty (60) days prior to the commencement of Pier 2 construction actions.
Rodenticides, pesticides, and herbicides will not be utilized by the Army and/or their contractor(s) in the action area without prior review and approval by USFWS.
Dedicated fueling areas will be protected from stormwater run-on and run-off and will be located at least 50 feet from downslope drainage facilities, water courses and aquatic habitat. Fueling must be performed on level-grade areas. When fueling must occur on-site, the contractor will designate an area to be used for fueling purposes. Drip pans or absorbent pans will be used during vehicle and equipment fueling on land.
Plastic monofilament netting will not be used for erosion control or any other purposes.
Movement of heavy equipment to and from the project site shall be restricted to established roadways to minimize habitat disturbance.
Should precipitation events, dangerous currents, high water flow or other adverse weather conditions in the project action area hinder the Army's and/or their contractor(s) ability to conduct the project as described in *Project Description*, the Army will notify USFWS of any modifications to project construction activities and schedule, construction materials and/or equipment used, as soon as possible prior to constructing or enacting any phase of the project. USFWS can be reached at (916) 930-5603.
Staging Areas E-61, E-61/E-85, and E-85 will be utilized by the Army and/or their contractors for staging, storage, lay down and parking areas for construction equipment, materials and/or vehicles. If these established Staging Areas do no provide sufficient staging space, the Army and/or their contractor may seek 'off-site' staging areas not identified in the *Project Description*; however the off-site staging locations shall be subject to the requirements of the natural resource agencies and compliance with the ESA.
The Army and its contractors shall implement the *General and Species Specific Conservation Measures* as described in the *Project Description* of the USFWS BO.
The Army and its contractors shall minimize the potential for harm, harassment, injury, mortality or other forms of take of federally listed plant and wildlife species resulting from project-related activities by implementation of the *General and Species Specific Conservation Measures* as described in the *Project Description* in this biological opinion or as modified by the *Terms and Conditions* of the USFWS BO.
The Army shall comply with the *Reporting Requirements* in the USFWS BO.
NMFS-Specific Terms and Conditions
The Army must allow any NMFS employee(s) or any other person(s) designated by NMFS, to accompany field personnel to visit the project sites during construction activities described in this opinion. Such personnel will comply with all applicable MOTCO security clearance and access requirements and/or restrictions.
The Army must submit the Pier 2 hydroacoustic monitoring plan to NMFS for review and approval at least 90 days prior to the initiation of pile driving at Pier 2. The monitoring plan must, at minimum, include underwater sound measurements at 32.8 feet (10 meters) from pile driving operations.

Table 6-3. ESA-Specific Reasonable and Prudent Measures, and Terms and Conditions

NMFS-Specific Terms and Conditions Cont'd.
The Army must make available to NMFS data from the hydroacoustic monitoring program on a real-time basis (i.e., daily monitoring data should be accessible to NMFS upon request). If hydroacoustic monitoring detects elevated sound levels during pile driving above a maximum peak of 178 dB, 155 dB SEL, and 166 dB RMS for 10 percent or more of the strikes associated with installation of a pile, Army must notify Gary Stern of NMFS (phone 707-575-6060 or email gary.stern@noaa.gov) within 24 hours of the exceedance event.
The Army must provide written annual reports to NMFS by January 15th of each year until construction of the project has been completed, and a final report post construction by January 15th of the year following project completion. The report shall be submitted to NMFS North Central Coast Office, Attention: NCCO Supervisor, 777 Sonoma Avenue, Room 325, Santa Rosa, California, 95404-6528. The report must contain, at a minimum, the following information: • Construction related activities – The dates construction began and was completed; a description of any and all measures taken to minimize effects on ESA-listed fish; and the number of fish killed or injured during the project action. • Hydroacoustic monitoring – Description of the methods used to monitor sound and the dates that hydroacoustic monitoring was conducted. During hydroacoustic monitoring, the report shall include: (1) the locations (depths and distance from point of impact) where monitoring was conducted, (2) the total number of pile strikes per pile, (3) total number of strikes per day, (4) the interval between strikes, (5) the peak/SPL, RMS and SEL per strike, and (6) accumulated SEL per day. • Monitoring Reports – Reports associated with water quality and fish abundance monitoring conducted by the Army, U.S. Geological Survey (USGS), or others associated with this project will be provided to NMFS.

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Chapter 2 Description of Proposed Action and Alternatives

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Ferguson, Emily	Land Use, Coastal Zone Management, Recreation, Visual Resources, Socioeconomics and Environmental Justice	B.A., Public and Urban Affairs	9
Graap Loth, Ellen	Hazardous Materials and Hazardous Waste	B.S., Natural Resources Master of Natural Resources	26
Hamilton, Lesley	Air Quality	B.A., Chemistry	28
Kreider, Amanda	Deputy Project Management	M.S., Fire Ecology B.S., Wildlife Ecology	14
Lowenthal, John	Earth and Water Resources	M.S., Biology B.A., Biology	30
Mundell, Ben	Geographic Information System Analysis	B.A. Geography	12
Paulson, Amy	Deputy Project Management Hazardous Materials and Hazardous Waste and Cumulative Impacts	B.S., Ecology M.S., Conservation Ecology and Sustainable Development	18
Rudolph, Teresa	Cultural Resources	B.A., Anthropology M.A., Anthropology	39

Table 8-1. Key Cardno List of Preparers

Name	Responsibility	Education	Years of Experience
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Wilson, Kimberly	Technical Editing		30
Wirth, Carol	Project Manager	B.S., Ecology and Evolutionary Biology	22

Key contributors from the Sacramento District Pier 2 Modernization and Repair DOR are listed below.

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Juanito Jamias, P.E., Design

Mosaic Associates

Judy Bendix, HRP and Permitting

APPENDIX A
AGENCY CONSULTATION

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The following agencies were consulted in the development of the Supplemental Environmental Assessment for MOTCO Pier 2 Modernization and Repair Design Changes. Copies of official correspondence are included in this appendix.

Federal

National Marine Fisheries Service

National Park Service

U.S. Fish and Wildlife Service

State

Office of Historic Preservation

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
West Coast Region
777 Sonoma Avenue, Room 325
Santa Rosa, California 95404

November 22, 2016 **Refer to NMFS No:** SWR-2013-9819

James R. Wiley, Lieutenant Colonel
United States Army Commander
Military Ocean Terminal Concord
410 Norman Avenue
Concord, California 94520

Re: Endangered Species Act Section 7(a)(2) and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the Redesign of the Modernization and Repairs at MOTCO Piers 2 and 3 Project

Dear Commander Wiley:

Thank you for your letter of November 2, 2016, notifying NOAA's National Marine Fisheries Service (NMFS) of the Department of the Army's (Army) proposed changes to the Modernization and Repairs at MOTCO Piers 2 and 3 Project (Project) in the City of Concord, Contra Costa County, California. The Army has completed a redesign of the Project and submitted the Project's Shoreline Protection Plan (SPP) and Habitat Restoration Plan (HRP) to NMFS for review. The Army has concluded the proposed changes do not rise to a level that triggers reinitiation of consultation pursuant to section 7 of the Endangered Species Act of 1973 (ESA).

NMFS and the Army completed formal consultation regarding the Project in 2014. A biological opinion was issued by NMFS on November 19, 2014, (NMFS Tracking No. SWR-2013-9819) that assessed the effects of the proposed action on threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*), threatened California Central Valley (CV) steelhead (*O. mykiss*), threatened CV spring-run Chinook salmon (*O. tshawytscha*), endangered Sacramento River winter-run Chinook salmon (*O. tshawytscha*), threatened southern distinct population segment of North American green sturgeon (*Acipenser medirostris*), and designated critical habitat. In the biological opinion, NMFS concluded the project was not likely to jeopardize the continued existence of the above listed species and the project was not likely to result in the destruction or adverse modification of designated critical habitat.

Since the issuance of the biological opinion, the Army has not initiated any construction work. However, the project underwent a redesign and the Army has requested NMFS evaluate the proposed changes to determine if reinitiation of consultation is warranted. NMFS has reviewed the revised project description provided with your November 2, 2016, letter to determine whether listed species or designated critical habitat will be affected in a manner or to an extent not previously considered during the section 7 consultation for this project.

2

The Army's redesign of the Project has resulted in the following: (1) demolition and construction activities will span 28 months instead of 32 months; (2) reduction of the footprint of Pier 2 by 30,942 square feet (ft^2); (3) reduction of the number of 24-inch octagonal concrete piles to be installed from 876 to 793; and (4) removal of the knockdown dredging component. The Army also provided to NMFS additional details regarding the Project's SPP and HRP. The SPP consists of two activities – erosion protection of the shoreline west of Pier 2 and repairing rock revetment along White Road. The HRP is a five-year plan that encompasses subtidal, intertidal, brackish marsh, and upland habitats. The HRP also describes the Project's submerged aquatic vegetation (SAV) mitigation plan and provides specific information regarding the use of herbicides in certain situations for vegetation management at the mitigation sites. Three herbicides are proposed for use – telar, imazapyr, and glyphosate. Telar, a broad-leaf specific herbicide, will be used only in areas that are not subject to tidal inundation within 24 hours to eliminate accidental contamination of native vegetation. Imazapyr and glyphosate, both nonselective herbicides, will be used in areas where there is tidal inundation within 24 hours. Both imazapyr and glyphosate are considered relatively non-toxic to fish and do not bioaccumulate in the tissues of aquatic organisms.

Based on our review of the Project redesign, the proposed changes will lessen the potential effects of the action from that analyzed in the November 19, 2014, biological opinion. Specifically, the effects of exposure to elevated underwater sound on listed salmonids and green sturgeon will be reduced because the Army proposes to decrease the total number of piles to be installed. The effects of overwater structure will be reduced by the Army's reduction of the Pier 2 surface area by 30,942 square feet (ft^2). The effects of degraded water quality associated with the proposed bottom sediment knockdown/dredging activity will be eliminated because this project component has been removed. Review of the SPP and HRP indicates these activities do not create effects to NMFS-listed species or designated critical habitat in a manner or to an extent not previously considered. For the above reasons, reinitiation of section 7 consultation is not necessary and NMFS agrees with the Army's findings in the November 2, 2016, letter. Regarding EFH designated under the Magnuson-Stevens Fishery Conservation and Management Act, NMFS evaluated the information provided and determined the proposed changes did not warrant a reinitiation of the EFH consultation.

Thank you for your coordination with NMFS regarding the Modernization and Repairs at MOTCO Piers 2 and 3 Project. Please direct questions regarding this letter to Autumn Cleave, North-Central Coast Office in Santa Rosa, California at (707) 575-6056, or via e-mail at autumn.cleave@noaa.gov.

Sincerely,

for Barry Thom

Barry A. Thom.
Regional Administrator

cc: Guy Romine, Military Ocean Terminal Concord, California
Copy to ARN File #151422SWR2010SR00448
Copy to Chron File

REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
Military Surface Deployment and Distribution Command
834Th Transportation Battalion
410 Norman Avenue
Concord, California 94520-1142

November 30, 2016

Dr. Paul Scolari
Chief of Cultural Resources
National Park Service
440 Civic Center Plaza, Suite 300
Richmond, CA 94804

Dear Dr. Scolari:

The Department of the Army (Army) sent a letter to your office on June 9, 2016 requesting agreement on a determination for the Modernization and Repair of Pier 2 at Military Ocean Terminal Concord, Concord, California. Based on the results of the identification efforts, the Army determined that the Project will have no adverse effect to historic properties. As no response has been received from you, the Army has assumed that the National Park Service has no objection with the above determination pursuant to 36 Code of Federal Regulations Part 800.5(c)(1). We value and appreciate our ongoing collaboration on stewardship responsibilities for the Port Chicago National Memorial.

If you have any additional questions about this project, please contact Mr. Guy Romine at (971) 645-3645 or by email at guy.k.romine.civ@mail.mil. Written communication may be mailed to the attention of Mr. Romine at the address on this letterhead.

Sincerely,

James R Wiley
Lieutenant Colonel, US Army
Commander
Military Ocean Terminal Concord

cc:
Kimberly Garber, Surface Deployment and Distribution Command, North Charleston, South Carolina
Pamela Whitman, U.S. Army Materiel Command, Redstone Arsenal, Alabama
Julianne Polanco, State Historic Preservation Officer
Tom Leatherman, General Superintendent, National Park Service

DEPARTMENT OF THE ARMY
Military Surface Deployment and Distribution Command
834Th Transportation Battalion
410 Norman Avenue
Concord, California 94520-1142

REPLY TO
ATTENTION OF

November 30, 2016

Kim S. Turner
Assistant Field Supervisor
San Francisco Bay-Delta Fish & Wildlife Office
650 Capitol Mall, Suite 8-300
Sacramento, CA 95814

Dear Ms. Turner:

The Department of the Army (Army), with the assistance of your agency and National Marine Fisheries Service (summarized in Enclosure 1), has concluded that reinitiation of formal consultation pursuant to 50 Code of Federal Regulations Part 402.16 regarding the project to replace/upgrade Pier 2 at Military Ocean Terminal Concord (MOTCO), California, is not necessary.

We understand that the review of the Habitat Restoration Plan and Shoreline Protection Plan provided on November 2, 2016 is challenging given the priority focus of your agency on the California Water Fix consultation. Notwithstanding, the Army needs to finalize the contracting package for the project and therefore, respectfully requests your review by January 6, 2017. If no comments are received, the Army will assume approval, and the plans will be incorporated into the forthcoming Clean Water Act Section 404 permit application.

We want to express our appreciation to your agency for your assistance in working through this matter. We look forward to continued coordination as we continue to adhere to the reasonable and prudent measures, terms and conditions, and conservation recommendations of Biological Opinion 08FBD-2014-F-0002-5 dated February 4, 2015 pursuant to Section 7 of the Endangered Species Act. Please feel free to contact Mr. Guy Romine at (971) 645-3645 or by email at guy.k.romine.civ@mail.mil on any matters of concern.

Sincerely,

James R Wiley
Lieutenant Colonel, US Army
Commander
Military Ocean Terminal Concord

cc:
Kimberly Garber, Surface Deployment and Distribution Command, North Charleston, South Carolina

1

Pamela Whitman, U.S. Army Materiel Command, Redstone Arsenal, Alabama
Gary Stern, National Marine Fisheries Service, Santa Rosa, California
Ryan Olah, U.S. Fish and Wildlife Service, Sacramento, California
Jim Starr, California Department of Fish and Wildlife, Stockton, California
Jaime Michaels, Bay Conservation and Development Commission, San Francisco, California

Enclosures
1. Summary of Agency Coordination for Project to Replace/Upgrade Pier 2 at MOTCO

2

ENCLOSURE 3: SUMMARY OF AGENCY COORDINATION FOR PROJECT TO REPLACE/UPGRADE PIER 2 AT MOTCO

Date	Communication	Responsible Agency / Author	Information Provided / Intent	Request, Outcome, or Decision
February 4, 2015	Document	USFWS	Biological Opinion (BO) 08FBD-2014-F-0002-5	Endangered Species Act (ESA) Determinations
January 29, 2016	Letter	Army	Army identified changes to the Pier 2 layout that would result in more efficient pier operations and a reduction in construction costs.	Army sought early coordination.
June 3, 2016	Letter	Army	Army evaluated potential changes in the effects from the Pier 2 Redesign to the BO.	Conclusion was that the effects of the revised design are expected to have lesser impact on the species addressed in the BO.

Date	Communication	Responsible Agency / Author	Information Provided / Intent	Request, Outcome, or Decision
August 10, 2016	Conference Call	Army/ USFWS/ NFMS	To further exchange information regarding the revised design and analysis.	Further information required to determine if re-initiation is necessary. USFWS requested Army clarify use of cushion block during pile driving and project timeframe. Army to provide additional effects analysis for salt marsh harvest mouse and California Ridgway's Rail, and clear statement of project changes in relation to description in BO.
October 6, 2016	Letter	Army	Army provided requested information from August 10, 2016 meeting, including statements that the Army will use cushion block during pile driving and, although two rigs will be operable at the same time, simultaneous pile driving will not occur. Army provided revised project timeframe and project map. Additionally, letter included reconsideration of some design elements to further ensure that the potential effects of the redesign would have lesser effect to the species than addressed in the USFWS BO. Specifically, no additional impacts to California Ridgway's rail or salt marsh harvest mouse are anticipated.	

Date	Communication	Responsible Agency / Author	Information Provided / Intent	Request, Outcome, or Decision
October 11, 2016	Conference Call	Army/ USFWS/ NFMS	Discuss October 6, 2016 letter. Review available information to determine whether effects described in BO included Habitat Restoration Plan (HRP); specifically, describe how the HRP was covered in the BO or whether it is to be consulted on separately.	No need to reinitiate consultation for proposed action. Consultation completion reliant on delivery of HRP and Shoreline Protection Plan (SPP) delivered to Services. Submittal should include letter [this letter] clarifying no change in effects determinations or effects described in BO. Services have no further concern with proposed project schedule.
November 2, 2016	Letter / Document	Army	HRP and SPP, and accompanying information clarifying no change in effects as described in BO.	NMFS preparing a formal letter; USFWS reiterates in an email dated 18 November noting that if the Army has determined that the project is within the bounds of the Biological Opinion then there is no need for reinitiation.
November 30, 2016	Letter	Army	This concluding letter.	Conclusion that reinitiation of formal consultation is not required. Requesting comments on the HRP and SPP with 30 days of receipt of this letter.

REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
Military Surface Deployment and Distribution Command
834Th Transportation Battalion
410 Norman Avenue
Concord, California 94520-1142

November 30, 2016

Ms. Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

Dear Ms. Polanco,

The Department of the Army (Army) sent a letter to your office on June 9, 2016 requesting concurrence on a determination for the Modernization and Repair of Pier 2 at Military Ocean Terminal Concord, Concord, California. Based on the results of the identification efforts, the Army determined that the Project will have no adverse effect to historic properties. As no formal response has been received from you, the Army assumes concurrence in accordance with 36 Code of Federal Regulations Part 800.3(c)(4). We value and appreciate our ongoing collaboration on stewardship responsibilities for cultural resources at our installation.

If you have any additional questions about this Project, please contact Mr. Guy Romine at (971) 645-3645 or by email at guy.k.romine.civ@mail.mil. Written communication may be mailed to the attention of Mr. Romine at the address on this letterhead.

Sincerely,

James R Wiley
Lieutenant Colonel, US Army
Commander
Military Ocean Terminal Concord

cc:
Kimberly Garber, Surface Deployment and Distribution Command, North Charleston, South Carolina
Pamela Whitman, U.S. Army Materiel Command, Redstone Arsenal, Alabama
Paul Scolari, Chief of Cultural Resources, National Park Service
Tom Leatherman, General Superintendent, National Park Service

APPENDIX B
404(b)(1) ALTERNATIVES ANALYSIS (LEAST ENVIRONMENTALLY DAMAGING PRACTICABLE ALTERNATIVE)

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Draft
Clean Water Act Section 404(b)(1) Alternatives Analysis

Modernization and Repair of Pier 2 Military Ocean Terminal Concord Project

Prepared for:
GEI-GF Joint Venture
and
Mosaic Associates, LLC

Prepared by:
Geier & Geier Consulting, Inc.
January 2017

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1. INTRODUCTION

Military Ocean Terminal Concord (MOTCO) is an Army Military Surface Deployment and Distribution Command (SDDC) munitions and general cargo transshipment facility located Concord, California (Figures 1and 2). This Department of Defense (DOD) installation is home to the SDDC's 834th Transportation Battalion (TRANS BN). MOTCO is in the East San Francisco Bay region, approximately 10 nautical miles inland past the Carquinez Strait that connects Suisun Bay to San Pablo Bay. San Francisco is 30 miles to the southwest, Oakland is 20 miles to the southwest, Sacramento is 65 miles to the northeast, and the City of Concord is located approximately 5 miles south.

The installation is composed of an approximately 115-acre administrative complex and an approximately 6,526-acre Tidal Area. For the purposes of this Alternatives Analysis, the administrative complex is referred to as the Inland Area. The Inland Area and the Tidal Area are connected by a road running parallel and west of Port Chicago Highway. The Tidal Area includes three piers, staging and transfer facilities, as well as 2,045 acres in offshore islands. Two public rail lines, Union Pacific Railroad (UPRR) and Burlington Northern Santa Fe (BNSF), traverse the Tidal Area and interconnect with MOTCO rail lines.

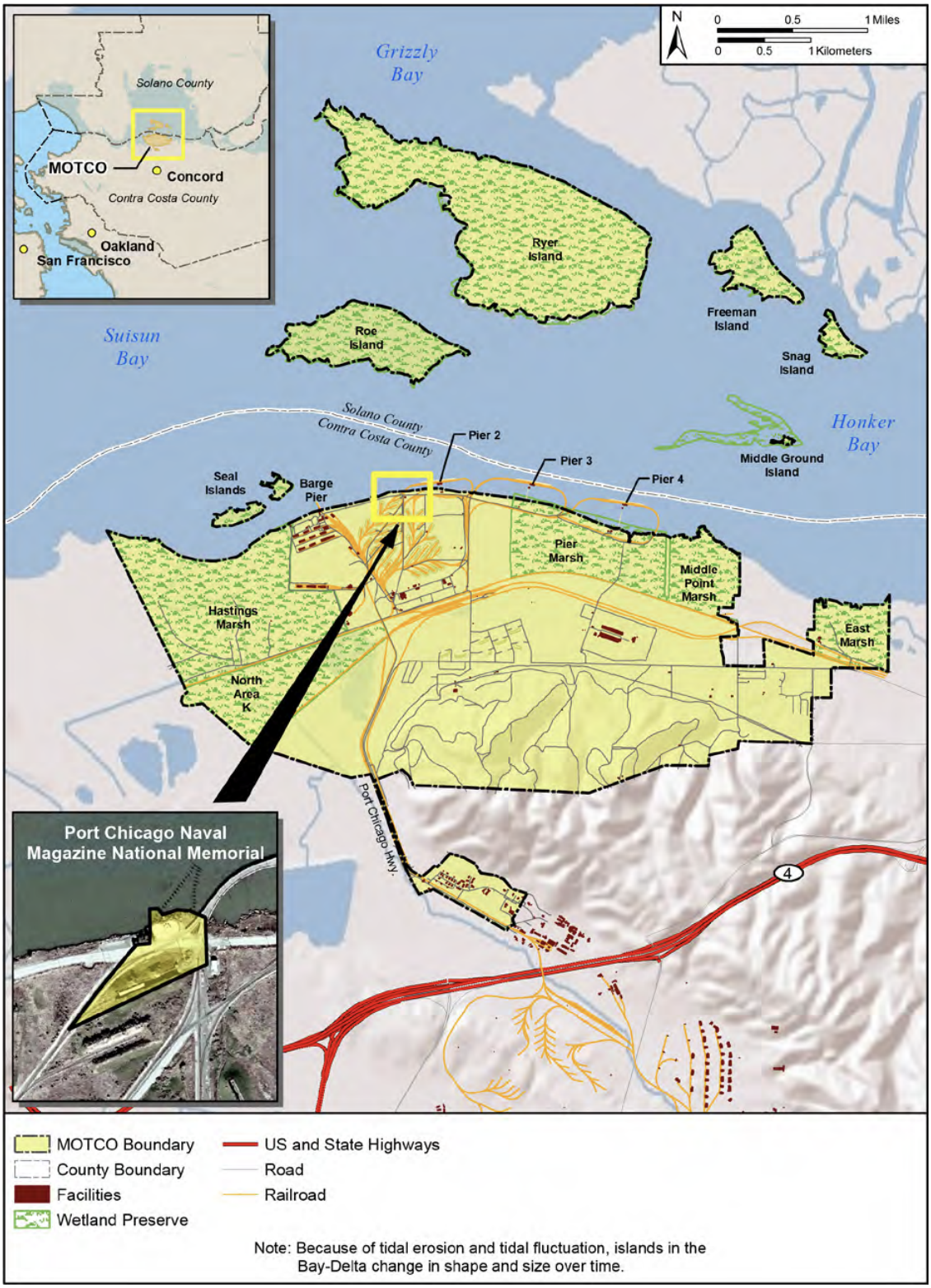
MOTCO installation property was formerly owned by the Department of the Navy as part of Naval Weapons Station Seal Beach Detachment (NWSSBD) Concord (Figures 1-3). On October 1, 2008, MOTCO properties were transferred from the Navy to the Army per 2005 Defense Base Closure and Realignment Commission recommendations. The Army's presence at MOTCO dates back to October 1, 1997, when the Army's 1302nd Major Port Command was relocated from the Oakland Army Base to MOTCO and became the 834th TRANS BN. The City of Concord has been recognized as the Local Reuse Authority for the approximately 5,028 acres of former NWSSBD Concord lands that were determined surplus. MOTCO is one of five designated ports in California and is the larger of two ammunition ports on the West Coast.

The Department of the Army proposes to modernize and repair Pier 2 to meet current and future mission requirements at MOTCO. The intent of the proposed action is to provide the installation with safe, functional, and efficient facilities. The Department of the Army (Army) signed a Record of Decision (ROD) for the February 2015 Final Environmental Impact Statement (EIS) for the Modernization and Repair of Piers 2 and 3 at Military Ocean Terminal Concord (MOTCO), California on April 14, 2015. In the ROD, the Army selected Alternative 1 for implementation. Alternative 1 included demolition of a considerable portion of Pier 2 and replacement of the main platform and trestles and reorienting the west end of the pier. The EIS and ROD are hereby incorporated by reference per 40 Code of Federal Regulations (CFR) Part 1502.21 and consistent with 32 CFR Part 651.12(a)(3).

As the design of the modernization and repair progressed, the Army identified changes in the proposed Pier 2 layout (primarily consolidating two trestles into one) that would result in more

SOURCE: DEPARTMENT OF THE ARMY (2015)

MODERNIZATION AND REPAIR OF PIER 2 – MOTCO



SOURCE: DEPARTMENT OF THE ARMY (2015)

MODERNIZATION AND REPAIR OF PIER 2 – MOTCO

efficient pier operations and a reduction in construction costs. Supplemental National Environmental Policy Act (NEPA) documentation is required when the Army makes substantial changes in the proposed action that are relevant to environmental concerns such as the changes in the proposed Pier 2 repair and modernization design. The following alternatives were analyzed in detail subsequent to preparation of the EIS and selection of a Preferred Alternative by the Army:

- **Alternative A.** Under the No Action alternative, the Army would implement the design for Pier 2 exactly as evaluated in the EIS as Alternative 1 and adopted in the resulting ROD, which reduced the Pier 2 footprint from the existing structure (including piers and trestles) by approximately 17,442 square feet (SF).

- **Alternative B.** Under this action alternative, the Army would adopt the recommended design changes for Pier 2. As compared to Alternative A, these include consolidating the west and forklift trestle layout to a single trestle and reducing the Pier 2 footprint (including piers and trestles) by an additional approximately 15,963 SF, for a total Pier 2 footprint reduction of 33,405 SF. Alternative B is the Proposed Project.

Figure 3 shows the location and extent of construction proposed for Alternatives A and B. A more detailed description of these two alternatives is presented in Section 3.2 herein. A Final Supplemental Environmental Assessment (SEA) was prepared to assess the differences in the potential environmental and social impacts associated with the design changes for Pier 2 as compared with those analyzed for Alternative 1 in the EIS (Department of the Army 2017).

1.1 Proposed Federal and State Actions

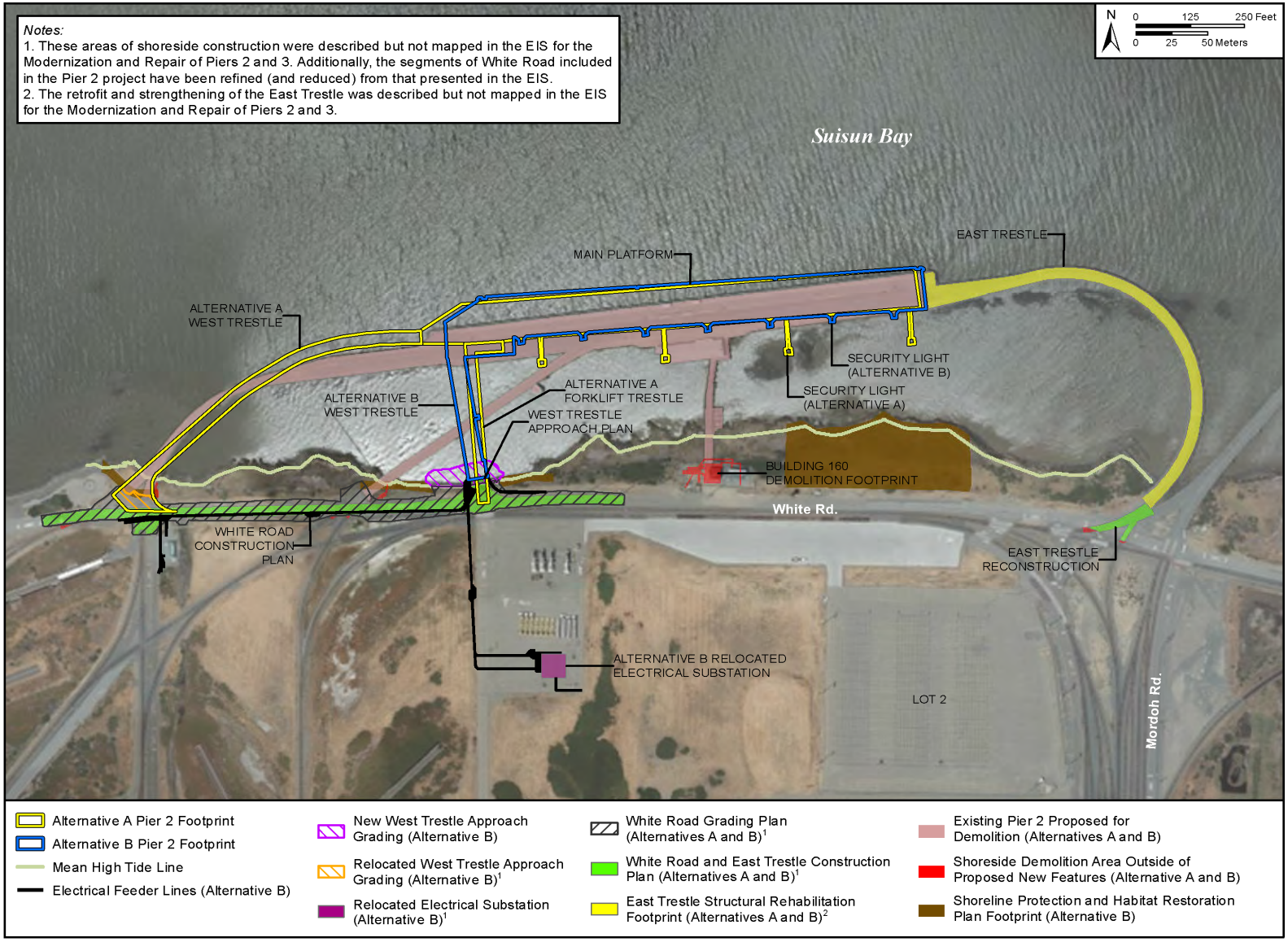
The proposed federal and state actions for which this analysis is being prepared are the issuance of a permit under the Clean Water Act Section 404 and Section 10 of the Rivers and Harbor Act by the Corps, and a Clean Water Act Section 401 water quality certification by the RWQCB. This Alternatives Analysis is prepared in support of applications for permits from the agencies noted above, and does not authorize the discharge of dredged or fill material without their approval.

In accordance with CEQ NEPA regulations (40 CFR Section 1502.25) and 32 CFR Part 651, the Army prepared an EIS concurrently with and integrated with environmental impact analyses and related surveys and studies required by the National Historic Preservation Act (NHPA) of 1966 (16 USC 470 *et seq*.), the Endangered Species Act of 1973 (ESA, 16 USC 1531 *et seq*.), the Clean Water Act (CWA, 33 USC 1251 *et seq*.), the Coastal Zone Management Act (CZMA, 16 USC 1451 *et seq*.), the Clean Air Act (CAA, 42 USC 7401 *et seq*.), other applicable environmental review laws (and their implementing regulations), and Executive Orders (EOs).

Subsequent to the completed and signed ROD for the Final EIS, a Final Supplemental Environmental Assessment (SEA) was prepared to assess the differences in the potential environmental and social impacts associated with the design changes for Pier 2 as compared with those analyzed for Alternative 1 in the EIS (Department of the Army 2017). The SEA identified

ALTERNATIVES A AND B DEMOLITION AND CONSTRUCTION FOOTPRINTS

FIGURE 3



SOURCE: DEPARTMENT OF THE ARMY (2015)

MODERNIZATION AND REPAIR OF PIER 2 – MOTCO

the following permit and agency coordination requirements as required for the proposed action and agency consultations were completed concurrent with development of the SEA.

- Endangered Species Act (ESA) of 1973, Section 7 consultation with NMFS and USFWS regarding potential impacts to threatened and endangered species and designated critical habitat. Both NMFS and USFWS have concurred with the Army's conclusions that revised design for the project to replace/upgrade Pier 2 does not change the determinations of the Biological Opinions (BOs) issued by these agencies and that re-initiation of formal consultation pursuant to 50 CFR Part 402.16 is not necessary (see Appendix A of the SEA). These BOs (NMFS BO SWR-2013-9819 dated November 19, 2014 and USFWS BO 08FBD-2014-F-0002-5 dated February 4, 2015) are available in Appendix D of the EIS.

- Magnuson-Stevens Fishery Conservation and Management Act consultation with NMFS regarding potential impacts to Essential Fish Habitat (EFH). NMFS concurred with the Army's assessment that reinitiation of EFH consultation was not warranted (see Appendix A of the SEA). NMFS' EFH Response is included in the NMFS BO available in Appendix D of the EIS.

- Combined Section 10 (Rivers and Harbors Act)/Section 404 (Clean Water Act [CWA]) permitting the USACE San Francisco District to perform in-water construction and for the discharge of fill in jurisdictional wetlands.

- In conjunction with the Section 10/404 permit, obtaining a CWA Section 401 Water Quality Certification from the SFBRWQCB.

- Coastal Zone Management Act (CZMA) Coastal Consistency Determination concurrence from the San Francisco BCDC per the terms of the ongoing adherence to the Letter of Conditional Concurrence obtained concurrent with the EIS.

- National Historic Preservation Act (NHPA) Section 106 consultation with the SHPO, NPS, and federally recognized Tribes regarding potential impacts to historic properties. Concurrence with regard to no adverse effect to historic properties is provided in Appendix A.

- Demonstration that project-related construction emissions are below any applicable General Conformity Rule *de minimis* levels in accordance with the Clean Air Act and California Clean Air Act. A Record of Non-Applicability (RONA) has been prepared (Appendix B).

Although the EIS and SEA were not joint NEPA/CEQA documents, both include CEQA specific analysis to facilitate and expedite permit issuance from state agencies. The intent is for state agencies issuing permits to be able to use the EIS and SEA to meet CEQA requirements.

1.2 Relationship to the Clean Water Act

The Corps, EPA and RWQCB regulate disposal of dredged material in San Francisco Bay pursuant to the Clean Water Act (CWA). Section 404(b)(1) of the CWA establishes procedures for the evaluation of permits for the discharge of dredged or fill material into waters of the United States. The 1980 EPA Guidelines (40 CFR Part 230) were promulgated specifically pursuant to Section 404(b)(1) of the Act. This 404(b) (1) Guideline governs, in part, the issuance of permits by the Corps. The Corps 1986 Regulations state, at 33CFR 320.4(a)(1), "For activities involving 404 discharges, a permit will be denied if the discharge that would be authorized by such permit would not comply with the Environmental Protection Agency's 404(b)(1) Guidelines". The Regional Water Quality Control Board under the authority of the Porter-Cologne Water Quality Control Act may issue discharge requirements for the disposal of dredged materials.

Subpart B of the 404(b)(1) Guidelines (40 CFR 230.10). Compliance with the Guidelines, establishes the alternatives analysis requirements that must be met. In particular, 40 CFR 230.10(a) states in relevant part that:

> *"No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.*
>
> a. For the purpose of this requirement, practicable alternatives include, but are not limited to:
>
> (i) Activities which do not involve a discharge of dredged or fill material into the waters of the United States or ocean waters;
>
> (ii) Discharges of dredged or fill material at other locations in waters of the United States or ocean waters.
>
> b. An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes…"

In addition, Section 40CFR 230.10(a)(4) of the Guidelines specifically provides for incorporating NEPA-related evaluations to help streamline alternatives analyses for covered activities:

> *"For actions subject to NEPA, where the Corps of Engineers is the permitting agency, the analysis of alternatives required for NEPA environmental documents, including supplemental Corps NEPA documents, will in most cases provide the information for the evaluation of alternatives under these Guidelines."*

This alternatives analysis was prepared in accordance with the 404(b) (1) Guidelines provisions, as follows.

a. Basic Project Purpose: The basic purpose of this proposed action is to modernize and repair MOTCO Pier 2 so the Army can maintain its ability to meet documented DOD mission requirements in support of normal and contingency operations.

b. Overall Project Purpose: The purpose and need for the revised design of MOTCO Pier 2 is higher quality, improved operational efficiency, and lower life-cycle cost, which would ultimately save taxpayer dollars.

c. Section 404 Jurisdiction: The 404 Guidelines at 40 CFR 230.1(d) indicate that "the degradation or destruction of special aquatic sites, such as filling operations in wetlands, is considered to be among the most severe environmental impacts covered by these Guidelines. The guiding principle should be that degradation or destruction of special sites may represent an irreversible loss of valuable aquatic resources. San Francisco Bay, its tributary rivers and streams and adjacent wetlands, and the ocean out to the three-mile limit are "waters of the United States" within Section 404 jurisdiction. The Guidelines at 40 CFR 230.10(a)(3) establish a presumption that alternatives exist which are both practicable and less damaging, if a discharge whose basic purpose is not "water dependent" is proposed for a "special aquatic site".

1.3 Level of Analysis

The 404 Guidelines do not contemplate that the same intensity of analysis will be required for all types of projects, but instead envision a correlation between the scope of the evaluation and the potential extent of adverse impacts on the aquatic environment. Similar guidance with respect to the appropriate level of analysis is also provided in the Corps' Regulatory Guidance Letter No. 93-2 (August 23, 1993). The Guidelines and Regulatory Guidance Letter 93-2 afford flexibility to adjust the stringency of the alternative review for projects or classes of projects that would have only minor impacts. Minor impacts are associated with activities that generally would have little potential to degrade the aquatic resources of limited natural function; they are small in size and cause little direct impact; they have little potential for secondary or cumulative impacts; and/or they cause only temporary impacts.

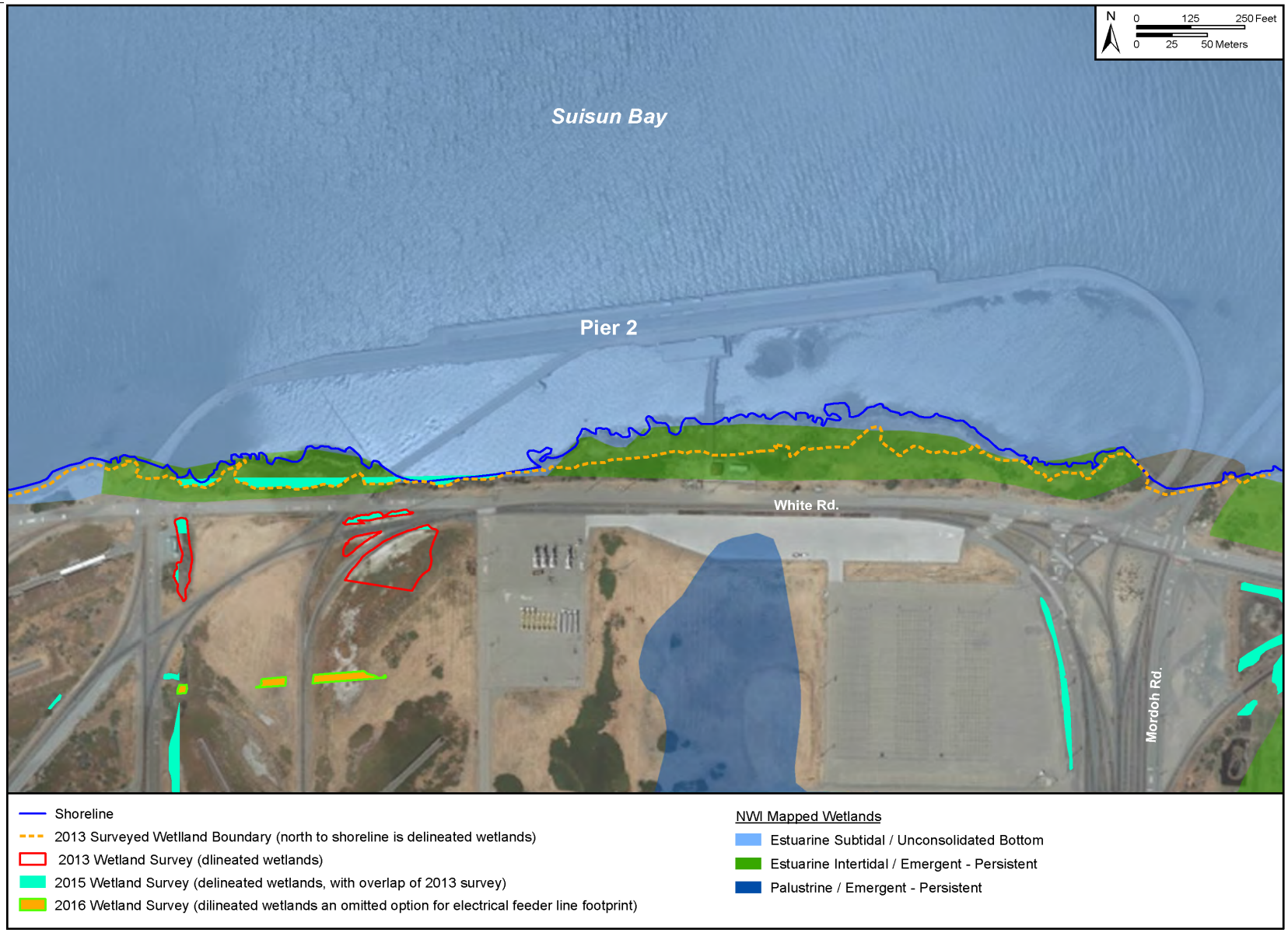
2. PROJECT PURPOSE

2.1 Basic Project Purpose

The basic purpose of the proposed action is to modernize and repair Pier 2 so the Army can maintain its ability to meet documented DOD mission requirements in support of normal and contingency operations.

2.2 Water Dependency

The Section 404(b)(1) Guidelines state that where the activity associated with a discharge which is proposed for a special aquatic site (as defined in subpart E) does not require access or proximity to or sighting within the special aquatic site in question to fulfill its basic purpose (i.e., is not "water dependent"), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise (40 CFR 230.10 (a)(3)) In addition, where a discharge is proposed for a special aquatic site, all



SOURCE: DEPARTMENT OF THE ARMY (2015)

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practicable alternatives to the proposed discharge, which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.

The Guidelines define water dependency in terms of an activity requiring access or proximity to or siting within a special aquatic site to fulfill its basic project purpose. Special aquatic sites (as defined in 40 CFR 230.40- 230.45) are: (1) sanctuaries and refuges; (2) wetlands; (3) mud flats; (4) vegetated shallows; (5) coral reefs; and (6) riffle and pool complexes. Figure 4 shows the locations of potential and delineated wetlands near Pier 2.

USACE Regulatory Guidance Letter 92-02 indicates that if an activity is determined to be water dependent, the rebuttable presumptions stated in 40 CFR 230.10 (a)(3) do not apply. However, the proposed discharge, whether or not it is associated with a water dependent activity, must represent the least environmentally damaging practicable alternative in order to comply with the alternatives analysis requirement of the Guidelines.

The proposed project is water dependent because it involves the demolition, reconstruction, and repair of a pier used for the operation of the Military Ocean Terminal Concord, a U.S. Army munitions and general cargo transshipment facility located in north central Contra Costa County, California.. The project includes in-water/over-water facility improvements, such as pile removal/replacement, pier demolition and reconstruction, trestle removal and reconstruction, and supporting infrastructure improvements.

2.3 Overall Project Purpose

Pier 2 is past its structural and design life expectancy and lacks modern operational efficiencies. Based on Net Explosive Weight (NEW) handling capability, Pier 2 is the optimum pier for mission capability, but it cannot be used in its current condition. The proposed action is therefore needed to modernize and repair pier infrastructure at MOTCO to ensure that this vital West Coast port can continue to meet its designated mission. Without these actions, the DOD's ability to perform its current and future contingency operations in the Pacific theater would be impacted.

3. PROPOSED ACTION AND ALTERNATIVES

3.1 Overview

MOTCO is designated as a trans-shipment port for West Coast ammunition and general cargo movements. The mission executed at MOTCO includes the loading and unloading of ammunition from vessels. This level of operations is expected to remain constant through the foreseeable future. The installation is configured to allow for a high level of flexibility in movement and staging of cargo when conducting loading and unloading operations.

To fulfill its mission, MOTCO utilizes three wharves (known as Piers 2, 3, and 4) (Figure ES-2). Together, these piers have 11.2 million (M) pounds (lbs) of NEW handling capability. The piers are mostly timber structures that were built between 1944 and 1945 to support ammunition movements to the Pacific theater during World War II (1939–1945; WWII). Each of the piers was constructed with a main deck plus raised platform along the waterside length of the pier. This dual-level pier design and the rail track layout at the piers were originally designed for a non-containerized handling operation. Since MOTCO primarily accommodates containerized cargo (system of transport using containers), the current configuration is suboptimal in terms of usable space for forklifts and container handling equipment to move about; this decreases the efficiency of the baseline cargo handling operations. Timber waterfront structures typically have a design life on average of 25 to 30 years and a practical service life of 50 years or more with routine maintenance, repairs, and upgrades. Portions of each pier have been replaced with concrete, but most of Pier 2's original timber structure remains and is almost 70 years old, well beyond the design life and practical service life of a typical waterfront timber structure.

Pier 2 is the westernmost of the three main piers and has a total NEW capability of 5.5M lbs. At Pier 2, cargo is loaded and unloaded using ship's gear. The productivity of each vessel varies, but ships gear is typically less efficient than ship-to-shore gantry cranes (specialized pier cranes for handling intermodal containers). Extensive study has documented deterioration due to a combination of marine borer damage, fungal decay, and overloading. Pier 2 is in poor condition, is currently inoperable, and requires major rehabilitation and modernization in order to function to current containerization standards. In addition, the existing Pier 2 exit has a sharp turn and vehicles must travel at slower speeds than typically needed to ensure safe operations.

3.2 Project Characteristics

The proposed action (Alternative B) is to modernize and repair Pier 2 to meet current and future mission requirements at MOTCO. The intent of the proposed action is to provide the installation with safe, functional, and efficient facilities. The proposed action has three distinct components:

1. Demolition of existing Pier 2 except the East Trestle and reconstruction of structural elements and utilities.
2. Upgrade shore-side roads and electrical infrastructure in the immediate vicinity of Pier 2.
3. Habitat restoration along the shoreline as required by the EIS, SEA and to meet USACE and Regional Water Quality Control Board regulatory requirements.

The proposed action includes three project elements that would affect waters of the U.S. and these are discussed below. All three elements listed above have wetland/waters of US impacts. Shoreline protection proposed north of White Road will require fill of waters of the U.S., and proposed habitat restoration will require earthwork (excavation) in wetlands. Habitats near Pier 2 are shown in Figure 5.

SOURCE: DEPARTMENT OF THE ARMY (2015)

3.3 Project Components in Waters of U.S.

The project components that potentially affect the waters of the U.S. and are subject to the provisions of Section 404 of the CWA include: a) demolition of old pier structure and removal of creosote-treated timber piles; b) modernization and repair the pier main platform as well as removal of three trestles and construction of a single trestle serving the pier; c) upgrades to White Road and electrical infrastructure south of White Road; and d) habitat restoration. A description of each of these project elements is provided below. Construction methods, materials, equipment, timeline, project phase in which construction will occur and impacts on open water and shoreline habitat, as well as fish and wildlife are described.

The Pier 2 configuration under Alternative B includes a consolidated pier layout with a single trestle. Under the Alternative B configuration, the total Pier 2 footprint would be reduced by 33,405 SF, 15,963 SF more than Alternative A. Alternative B is based on the 100 percent design for Pier 2 and includes assumptions regarding how construction and demolition activities would be sequenced and conducted.

Footprint. The proposed area of demolition of Pier 2 waterside under Alternative B does not differ from Alternative A (see Figure 3). The landside demolition would primarily be within the footprint of the proposed construction so is not further detailed here. The one exception is the demolition of Building 160 and associated pavement and utilities at the landside of the existing Pier 2 pedestrian trestle. This demolition footprint is the same under Alternative A and Alternative B; however, additional detail regarding this footprint has become available since the EIS was completed.

Creosote-Treated Timber Piles to be Removed/Cut. As with Alternative A, it is anticipated that the existing creosote-treated timber piles within the footprint of the new pier and for a distance of 10 feet outside of the new pier footprint will be extracted. Piles that are outside the footprint of the new pier would be cut off 2 feet below the mud line and the portion below the mud line would be left in place. Table 1 provides the estimate of the creosote-treated timber piles to be removed under both alternatives. These estimates are based on as-built drawings of the piers. More accurate estimates would not be available until after the construction contractor has conducted a pre-construction survey. Table 1 shows timber pile removal estimates for Alternatives A and B.

Table 1. Creosote Timber Pile Removal Estimates under Alternatives A and B

	Alternatives A and B
Extractions	2,000
Cuts	2,514
Total	**4,514**

Demolition Timeline and Operations. Under Alternative B, the demolition would most likely begin at the western end of the main platform and proceed east before returning to demolish the west trestle. Debris may be trucked off over the west trestle, which may result in reduced

barging of demolition debris. (Under Alternative A, the demolition would begin at the west trestle abutment and proceed east).

The estimated Pier 2 demolition schedule is approximately 7 months (or approximately 152 working days/30 weeks), the same as Alternative A. Under Alternative B it is anticipated the west trestle would be used for 6 months while demolition is taking place; under this concept, the west trestle can be used for access in lieu of some or all barging. Table 2 compares the estimated demolition activity at the peak of demolition operations under both alternatives.

As with Alternative A, it is expected the workers would park at the parking lot near Gate 1 and be shuttled to the work site. Should Gate 1 become unavailable for this use at any time during project implementation, another centralized worker parking site would be established at another appropriate and existing site approved for supporting MOTCO's construction staging and parking needs.

Alternative B provides additional flexibility for the potential use of Gate 5 for demolition-related truck traffic. Gate 5 is located in the eastern portion of the Tidal Area at the intersection of Port Chicago Highway and Nichols Road. Whereas under Alternative A, Gate 2 (located at Port Chicago Highway and Taylor Boulevard) would primarily be used, Alternative B clarifies that Gate 5 would occasionally for be used for oversized materials and equipment throughout the project. Additionally, Gate 5 is planned for upgrades and would be a primary truck gate for MOTCO once completed. Once the upgrades are completed, truck traffic would also potentially be routed through Gate 5. Based on the current planned construction, an upgraded Gate 5 should be available for use in 2019 (during the later stages of the Pier 2 project based on the current project execution schedule).

3.3.1 Modernization and Repair of Pier 2

Main Platform. Under Alternative B, the main platform of the repaired and modernized pier would be 95,000 SF (the same as under Alternative A). Access to the main platform is provided by the existing east trestle, and the new west trestle. With the proposed design changes, maintenance dredging is no longer associated with the Pier 2 project.

West Trestle. Under Alternative B, the west trestle would be reconstructed at roughly the same location as the Alternative A forklift trestle and no dedicated forklift trestle would be included. This results in a reduction of the total over water Pier 2 footprint of 15,963 SF as compared to Alternative A. The existing west trestle would potentially be temporarily repaired to accommodate construction vehicles such as a mobile crane (pile driver). The new west trestle would be a pile supported concrete structure with a nominal deck elevation of +13.5 feet mean lower low water (MLLW) (includes an allowance for projected sea level rise). The approach to the new west trestle from White Road would provide a safe turning radius for operational vehicles and would be ramped to transition between the White Road grade and the new trestle grade and alignment. The abutment includes a rock revetment and fill below the mean high water line. Due to the soft soils onsite, surcharge fill would be required to pre-compress/preload the soft soils to avoid settlement of embankment fill that would be included in the west trestle approach construction. Surcharge fill at the west trestle abutment would be at a height proportional to the height of fill plus an average additional 2

feet for a period of not less than 22 weeks. The surcharge fill would be sloped from an elevation of +11 feet MLLW to +20 feet MLLW. The elevation of the abutment would be at +12.3 feet MLLW.

Pile Driving. Under Alternative B, there would be 793 24-inch octagonal pre-stressed concrete piles installed for Pier 2 modernization and repair. The proposed concrete piling work for these piles is described further in Table 3 and as follows:

- Once a sufficient open water area has been created (7 months after initial demolition work starts), the main platform pile driver would start operation from west proceeding east 'working from the top. The deck casting would follow closely.

- The schedule estimates that about 300 main platform piles would be driven before work is ready to begin on the west trestle pile driving. The mobile crane would then begin trestle pile driving.

- The pile driving on the main platform would continue during the west trestle construction since it is assumed that the contractor would have a floating pile driver available to use – particularly for the piles in the deeper water. The Army is committed to implementing management practices to ensure piles will not be driven simultaneously. The construction schedule and equipment spreads are planned so that only one pile driving operation occurs at any time (e.g. there will be no simultaneous pile driving operation occurring).

The smaller, 16-inch square concrete fender piles (about 134 piles and about 26 days) along the face of the main platform would be driven after all the other pile driving is complete. An estimated 54 of these piles would be salvaged/reused piles from Pier 2 and an estimated 80 would be new piles. These numbers are estimates since it is not possible to precisely estimate breakage during pile salvage operations.

Trestle Approaches. Under Alternative B, the current west trestle approach would be converted to a standard intersection (White Road/Anderson Road) and a new west trestle approach would be constructed at the Alternative B location. The new, relocated west trestle approach under Alternative B would cover a similar area as the Alternative A west trestle approach (see Figure 3).

Under Alternative B, the east trestle approach would be reconstructed to make a smooth transition from the trestle to White Road since the railroad tracks would be demolished.

East Trestle Rehabilitation. The east trestle rehabilitation includes removal of rail and removal and replacement of pavement surface, demolition of the decking at the western end of this trestle adjacent to the main platform, strengthening of the remainder of the deck frame, and miscellaneous concrete structure repairs.

Lighting. Under Alternative B, the pile-supported lighting platforms would be eliminated. Eight 45-foot-tall light poles for the high mast lighting for the main platform would be

mounted at the landside of the deck. Each of the poles would have between 8 and 11 light fixtures. The trestles would be lit using street-type light fixtures mounted on 25-foot poles.

Fender Camels. Under Alternative B, the fender pile/camel system has been further refined to better accommodate barge berthing without the need for temporary camels. The rubber fenders and the steel wales would be replaced, and the timber camels would not be used in the new fender system for typical ship berthing.

White Road Repairs. Repairs to White Road included in Alternative B would be made between Anderson Road and approximately 300 feet east of Pruitt Road. Improvements would include raising approximately 1,350 feet of existing road (see Figure 3) from approximately 8 to 10 feet to 10 to 12 feet to restore the elevation of White Road. The width of the paved surface would be 24 feet (includes 11-foot lanes, with one additional foot between the lane line and edge of pavement, and two additional feet of aggregate shoulder). Access for individuals with disabilities would be provided from the existing parking lot to the new west trestle. Existing railroad lines crossing White Road would be removed at the west, middle, and east trestle approaches, and terminated adjacent to the south side of White Road, where railroad wheel stops would be installed.

Since the EIS was prepared, the Army's planning on installation-wide repairs to roads and bridges progressed to the point where an EA and associated agency consultations have been prepared to assess the potential environmental impacts of these projects. As the Pier 2 design progressed concurrently, the decision was made to include only those elements of the White Road repairs that are included as part of the Pier 2 repair and modernization project in the SEA. Additional analysis of the road and bridge repairs, including segments of White Road that connect with these improvements is provided in Chapter 5, Cumulative Effects.

Electrical Substation. Under Alternative B, new electrical lines would be installed to connect the substation with existing electrical lines in a conduit installed within approximately 1,130 linear feet of existing roadbeds (see Figure 3). Approximately 1,936 SF of concrete pad would be constructed as the foundation for the new electrical substation.. (Under Alternative A, the proposed location of the electrical substation would be at the northeast corner of the existing Pier 2 parking lot.

Inland Area Substation Upgrades. The existing Army-owned transformer in the 2500 kilovolt-amperes Inland Area substation would require an upgrade in order to have a complete and usable upgraded Pier 2. The footprint of the existing substation would be expanded to have a complete and usable electrical system to support the cranes for the upgraded Pier 2. No new transmission lines would be required, new cabling would be run through existing conduits. The potentially impacted area has been extensively disturbed from prior construction projects.

Habitat Restoration and Shoreline Protection. The Army has prepared a Draft Habitat Restoration Plan (HRP) and Shoreline Protection Plan (SPP) for Alternative B. Like the HRP for Alternative A, the HRP details the EIS commitments to restore impacts to wetlands located within the existing Pier 2 footprint and the wetlands located within the 100-foot

buffer of the new Pier 2 footprint at the conclusion of the project. As with Alternative A, restoration methods will include establishing desired elevations for tidal marsh communities and the removal of bordering stands of invasive perennial pepperweed, including excavation of the roots, surface soil, and seedbank (within 1 inch of the surface). Native marsh species would be reestablished in these areas using locally obtained material. Alternative B incorporates additional restoration for the wetlands impacted by the west trestle abutment and shoreline protection practices that are overall similar to Alternative A, but include additional impacts and restoration. The HRP provides additional specifics that would apply for both alternatives and addresses the additional unavoidable shoreline and wetland impacts associated with the west trestle abutment under Alternative B. The HRP provides for no net loss of wetlands and a greater than 2:1 wetlands mitigation ratio (approximately 0.57 acre) for the estimated 0.264-acre area of unavoidable impact to intertidal and palustrine wetlands associated with implementation of Alternative B (USACE Sacramento 2017 *in prep*).

The objectives of the HRP are to:

- Restore 0.71 acre of subtidal and 0.08 acre of shoreline and tidal brackish marsh habitat within areas currently occupied by Pier 2 structures.
- Reduce the cover of invasive non-native plants in the tidal brackish marsh and upland buffer (upland buffer is the area between White Road and the wetland boundary to the north) to not more than 5 percent within 5 years of HRP implementation.
- Establish 1.32 acres of self-sustaining, native tidal marsh wetland vegetation in areas that are disturbed during construction. This includes 0.67 acre of re-establishment in wetlands impacted during construction, 0.57 acre of wetlands restored in existing uplands, and 0.08 acre of re-establishment of wetlands in areas previously shaded by trestle structures.

As with Alternative A, the SPP addresses erosion of the shoreline west of Pier 2, including removal of any non-functional material (i.e., the material does not serve as a structural component to prevent shoreline erosion) and repair of the shoreline rock revetment along White Road. Additionally, the SPP for Alternative B addresses the interface of the existing shoreline rock revetment with the west trestle abutment and reflects a design that also considered aesthetic compatibility of the shoreline protection west of Pier 2 with the Port Chicago National Memorial (see Figure 3). The Draft HRP has been provided to NMFS, USFWS, and USACE and the final HRP will incorporate comments provided by these agencies (USACE Sacramento 2017 *in prep*).

Construction Timeline and Operations**.** The estimated timeline for project activities is 27 months, beginning in the third quarter of 2017. This estimate does not include interruptions to the schedule that could occur due to conflicts with mission activities, severe weather, materials or equipment issues, etc. The potential impacts that such interruptions may have on the execution schedule are not reasonably foreseeable. Therefore, the analysis herein is based on the 27-month schedule as the best available estimate.

The demolition portion of the project would overlap with construction and would be completed in approximately 7 months. It is anticipated that both the in-water construction and landside construction would be completed in 24 months, though staggered with the start

of landside construction activities following the start of waterside construction activities by approximately 2 months. This estimated construction schedule was based on a 10-hour day, 5-day workweek, but work could be extended to 7 days per week as needed. The conceptual schedule for the implementation of the Habitat Restoration Plan has most of the work occurring in fall 2018 concurrent with Pier 2 construction activities. This is followed by a 5-year period of maintenance and monitoring and a 10-year period of long-term management.

As with the demolition activity, it is expected the workers would park at the parking lot near Gate 1 or other centralized location on MOTCO and be shuttled to the work site. Additionally, Gate 5 could potentially be used for some construction-related truck traffic. Tables 2 and 3 provide a summary of facilities improvements under Alternatives A and B.

Table 2. Comparison of Major Construction/Demolition Under Alternatives A and B

Modernized and Repaired Pier 2 Total Footprint		
New Footprint (Platform and Trestle)	138,688 SF[3]	122,725 SF
East Trestle Rehabilitation Footprint	36,500 SF	36,500 SF
Total Pier 2 Footprint	175,188 SF	159,225 SF
Reduction from Existing 211,350 SF Pier 2 Footprint[2]	-17,442 SF[3]	-33,405 SF

Notes:

[1] The estimated timeline was based on 10-hour days, 5 days a week, but allowing work during weekends to make up time only.

[2] For this table, waterside footprints were calculated as below the mean high tide line (+4.4 feet MLLW contour) and landside footprints were calculated as above the mean high tide line.

[3] These calculations include factual corrections to the EIS, which reported the existing Pier 2 footprint (piers and trestle, including the East Trestle) as 211,065 SF, demolition of the pier structure as 159,900 SF, transitions to the west and forklift trestle and construction around Building 100 as 11,500 SF, Pier 2 reduction of 27,222 SF, and west trestle reduction of 989 SF. The EIS did not present quantities for total construction, total demolition, or provide specific demolition and construction quantities for the west trestle, forklift trestle, or pedestrian walkway.

Table 3. Comparison of Alternatives (Additional Quantities)

Project Element	Alternative A	Alternative B
Waterside Construction[1]		
Main Platform Size	95,000 SF	95,000 SF
Transitions and Trestles	43,688 SF	27,725 SF
Trestle Approach and Shoreline Protection Fill	2,170 CY over 2,865 SF	3,010 CY over 9,100 SF
Pile Installation	1,001 piles installed (876 24-inch and 125 16-inch)	927 piles installed (793 24-inch and 134 16-inch)
Crane	1,924 LF	1,924 LF
Operations Building/Break Room	1,800 SF[1]	1,800 SF
Lighting	Four 80-foot steel poles on individual pile-supported platforms offset from the main platform with 10 lights each	Eight 45-foot-tall light poles with 8 to 11 lights each attached to main platform and street light fixtures on 25 foot pole attached to trestles
Waterside Habitat Restoration		
Clearing – Grading	95,000 SF	Same as Alternative A
Waterside Demolition[1]		
Piles Extracted and Cut	4,514 total piles = 2,000 extracted and 2,514 cut[2]	Same as Alternative A

Piers and Trestles	156,130[2] SF	Same as Alternative A
Waterside Rehabilitation[1]		
East Trestle	Rehabilitate 36,500 SF[2]	Same as Alternative A
Landslide Demolition/Reconstruction		
East Trestle Approach	Remove rail and reconstruct 5,300 SF[2]	Remove rail and reconstruct 3,930 SF
White Road Repairs including West Trestle Approach, Grading, and Adjacent Utilities	71,320 SF and approximately 7,420 CY of fill[3]	45,720 SF and approximately 6,365 CY of fill
Landslide Construction		
Diesel Generators	Two 1,500 kilowatt	Same as Alternative A
Electrical Substation including Associated Utilities	2,580 SF concrete pad at northwest corner of the existing Pier 2 employee parking lot	1,936 SF concrete pad at south end of the existing Pier 2 employee parking lot and 1,130 LF of trenching along existing roadways for electrical line
Landslide Demolition		
Building 160, and Associated Pavement and Utilities	620 SF	Same as Alternative A
Landside Habitat Restoration		
Restore impacts to wetlands located within the existing Pier 2 footprint and the wetlands located within the 100-foot buffer of the new Pier 2 footprint	Re-establishment of wetlands disturbed during construction and 0.041 acres of wetlands where trestle structures are removed. Assuming equal mitigation ratio under both alternatives, the estimated 0.03 acre of unavoidable impact to wetlands would be mitigated over 0.07 acre. HRP to detail desired elevations for tidal marsh communities, and the removal of bordering stands of invasive perennial pepperweed, including excavation of the roots and surface soil and seedbank (within 1 inch of the surface).	Re-establishment of 0.67 acres of temporary disturbance and 0.08 acres of wetlands where trestle structures are removed. The estimated 0.26-acre area of unavoidable impact to wetlands is mitigated over 0.57 acres (a greater than 2:1 ratio). In aggregate, 4.95 acres of combined wetland re-establishment, restoration and enhancement, as well as 3.33 acres of buffer enhancement.

Notes: LF=linear feet, CY=cubic yard, SF=square feet

1 For this table, waterside footprints were calculated as below the mean high tide line (+4.4 feet MLLW contour) and landside footprints were calculated as above the mean high tide line.

2 Includes the following factual corrections to the EIS: EIS estimated Pier 2 demolition at 159,000 SF, 2,155 piles to be removed by extraction and 2,359 to be removed by cutting, reported the operations building/break room as a 1,500 SF building (no change to the footprint analyzed), and the quantity estimates for the east trestle rehabilitation and the east trestle approach repairs were not included in the EIS.[3] Includes only that portion of the White Road repairs that are included in the current Pier 2 repair and modernization project. EIS Alternative 1 and Alternative A includes White Road repairs from Johnson Road to 3,000 feet east of Mordoh Road, but the road segments not included in the Pier 2 repair and modernization project are now being addressed in an EA addressing installation-wide road and bridge repair projects and are further analyzed in Chapter 5, Cumulative Effects.

3.3.2 Discharge of Fill Materials into Wetlands

There has been no change from the general description and definition of wetlands and related regulations from that described in the EIS. However, additional jurisdictional wetland delineations have been completed on MOTCO since the EIS was finalized.

In support of the analysis for the separate EA for Repair of Bridges, Roads, and Utilities at MOTCO, a field jurisdictional wetland delineation was completed in March 2015 to assess the extent of wetlands within the affected environment for that EA. Specifically, a jurisdictional wetland delineation was conducted 50 feet on either side of the bridges and roads in areas where National Wetlands Inventory data or direct observations indicated the potential for wetlands. The results identified a total of approximately 40 acres of total wetland habitat within the surveyed area. Of this, 37.45 acres was found to be estuarine, 2.25 acres palustrine, and 0.15-acre riverine wetland habitat. In addition, a wetlands delineation was completed for a portion of the tidal area that was considered for routing the electrical feeder line to the substation that would be relocated under Alternative B. This routing has since been eliminated in favor of routing the lines along roadways.
The SEA (Section 4.2.2.3) indicates that the project's net potential direct permanent impacts to wetlands under Alternative B would be similar but slightly increased as compared to those under Alternative A, primarily due to the wetlands that are at the west trestle abutment and the wetlands affected by implementation of the HRP. Alternative B would result in an estimated 0.264-acre area of unavoidable, direct adverse impact to wetlands from construction. Though ultimately benefiting and increasing wetlands, the HRP implementation has direct impacts to wetlands. Specifically, the proposed positive impacts from the establishment of 1.32 acres of self-sustaining, native tidal marsh wetlands in the 100-foot buffer area involves adverse impacts associated with excavation and fill removal, and perennial pepperweed removal within 0.67 acre of intertidal brackish marsh wetlands. This allows for the restoration of the adjacent upland 0.57-acre area at the upper edge of the marsh plain to tidal marsh wetlands. In addition, there would be restoration of 0.08 acre wetland areas currently occupied by trestle structures. Per CWA regulations, the 0.67 acre and 0.08 acre of existing wetlands that are restored in place do not contribute to a "net gain" in wetlands. Therefore, the net gain of wetlands under Alternative B would be 0.31 acre of estuarine intertidal wetlands compared with net gain of 0.039 acre of wetlands under Alternative A.

Table 4 provides a summary of potential direct permanent wetland impacts for Alternatives A and B. The potential temporary impacts to wetlands within a 100-foot potential disturbance buffer as summarized in the SEA for Alternatives A and B are presented in Table 5. Potential short-term wetland impacts under Alternative A would be 3.02 acres compared with 3.07 acres for Alternative B. The slightly larger area of potential short-term impacts on wetlands under Alternative B compared with Alternative A is due to construction disturbance and implementation of the HRP.

3.4 Consideration of Alternatives to Proposed Project

Alternatives to the Proposed Project were considered in the EIS, the SEA, and for this analysis, conducted pursuant to the Section 404(b)(1) Guidelines. After the Department of the Army (Army) selected the Preferred Alternative for implementation, the Army identified design changes in the proposed Pier 2 layout (primarily the consolidation to a single trestle) that would result in more efficient pier operations and a reduction in construction costs. The Final Supplemental Environmental Assessment (SEA) was prepared to assess the differences in the potential environmental and social impacts associated with the design changes for Pier

Table 4. Potential Direct Permanent Wetland Impacts Under Alternatives A and B

Wetland Type	Alternative A			Alternative B		
	Construction	Restoration[1]	Net[2]	Construction	Restoration[3]	Net[4]
Estuarine Intertidal Wetlands (acres)	-0.013	0.113	0.010	-0.244	1.32	1.076
Palustrine Wetlands (acres)	-0.020	0.000	-0.020	-0.020	0.00	-0.020
Total	**-0.033**	**0.113**	**0.008**	**-0.264**	**1.32**	**1.056**

Notes:
[1] Includes re-establishment of 0.041 acre of wetlands in areas previously shaded by trestle structures and 0.072 acre of wetland restoration for the 0.033 acre of wetlands impacted during construction, assuming the same 2.19 mitigation ratio for estuarine intertidal wetlands under both alternatives.
[2] The net presented here includes all wetlands impacts. The net gain of wetlands is based on CWA regulatory definitions; the net gain is 0.039 acre and does not include the 0.041 acre of restoration in place.
[3] Includes wetlands restoration as specified in the HRP: 0.67 acres of re-establishment in wetlands impacted during construction, 0.57 acres of wetlands restored in existing uplands, and 0.08 acres of re-establishment of wetlands in areas previously shaded by trestle structures.
[4] The net presented here includes all wetland impacts. The net gain of wetlands is based on CWA regulatory definitions; the net gain is 0.306 acres and does not include the 067 acres + 0.08 acres of restoration in place (USACE Sacramento 2017 *in prep*).

Table 5. Potential Short-Term Wetland Impacts Under Alternatives A and B[1]

Wetland Type	Alternative A	Alternative B
Estuarine Intertidal Wetlands (acres)	2.71	2.70
Palustrine Wetlands (acres)	0.31	0.37
Total	3.02	3.07

Note:
[1] Defined as wetlands within the 100-foot buffer area beyond the area of direct impact. The 100-foot buffer was refined from that in the EIS to account for new information/revised design and is generally a more conservative estimate of the area of potential short-term, indirect impact.

2 as compared with those analyzed for Alternative 1 in the EIS. Finally, additional alternatives for shoreline protection were considered and are described in Section 3.6.

3.4.1 No Action Alternative

Under Alternative A, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD (see Figure 3). CEQ regulations require analysis of a No Action Alternative in an EA to provide a benchmark, enabling decision makers to compare the magnitude of the potential environmental effects caused by the proposed action and other alternative actions. An analysis of the No Action Alternative is required even if the agency is under a court order or legislative mandate to act.

Some of the calculations of areas of potential effect presented in the SEA under Alternative A have been refined from those presented in the EIS. The calculations were updated based on refined mapping and engineering data available as a result of the planning and design of Pier 2. Whereas the EIS analysis was largely based was on constructability and preliminary concept design information, Alternative A as described in the SEA draws from the 100 percent design of Pier 2, but without the shoreline protection or the Habitat Restoration Plan included in Alternative B of the SEA. These updated calculations are administrative, factual corrections that have no bearing on the conclusions of the EIS and ROD. Under Alternative A, the total Pier 2 footprint would be reduced by 17,442 SF. Additional specifics are presented in Tables 2-1, 2-5 and 2-6 of the SEA, which compare specific aspects of the two alternatives.

3.4.2 SEA Alternatives Considered but Eliminated from Further Evaluation

The Army considered additional recommended changes that emerged during the design process for Pier 2, but for various reasons eliminated them from further consideration. Some of these design changes would have had the potential for substantial changes in the proposed action as analyzed in the EIS. The proposed Pier 2 design changes that were considered, but eliminated from further detailed evaluation are summarized as follows:

- Reducing the pier length or surface area and/or shorten crane rails for a cost savings – this was deemed an unacceptable risk for pier performance.

- Reducing heating/cooling units for the pier side building – this was proposed as a potential cost savings but after further evaluation it was determined that this would be an unjustified change, as it would add cost and time to the project.

- Use cast-in-place piles rather than driving piles – this was deemed an unjustified additional cost and time.

- Designing the pier for primary use by a different vessel class (Large, Medium-Speed Roll-on/Roll-off design vessel in lieu of a Cape class) – this was deemed an unjustified additional cost and time.

- Replace east trestle concurrent with other modernization and repair – this was deemed unnecessary and unjustified in terms of operational need and additional cost at this time.

3.5 Alternatives Considered in the EIS

The Department of the Army (Army) signed a Record of Decision (ROD) for the February 2015 Final Environmental Impact Statement (EIS) for the Modernization and Repair of Piers 2 and 3 at Military Ocean Terminal Concord (MOTCO), California on April 14, 2015. In the ROD, the Army selected Alternative 1 for implementation. Alternative 1 included demolition of a considerable portion of Pier 2 and replacement of the main platform and trestles and

reorienting the west end of the pier. The EIS and ROD are hereby incorporated by reference per 40 Code of Federal Regulations (CFR) Part 1502.21 and consistent with 32 CFR Part 651.12(a)(3).

In accordance with CEQ regulations (40 CFR Section 1502.14) and 32 CFR Part 651, a reasonable range of alternatives for implementing the proposed action were considered during the preparation of the EIS for the Project and in the preparation of the SEA subsequent to the completion of the EIS.

The CEQ guidance favors the evaluation of a reasonable number of alternatives, covering the full spectrum of potential outcomes. The EIS addressed the following alternatives:

- **Alternative 1**: Fully implement repairs to Pier 2 with Pier 2 re-oriented to align the west end with the existing shipping channel to create a more modernized configuration.

- **Alternative 2**: Fully implement repairs to Pier 2, leaving the Pier 2 footprint in its present location. Alternative 2 would use the same structural system as Alternative 1.

- **Alternative 3**: Fully implement repairs to Pier 2, reorienting Pier 2 to create a more modernized configuration but with a larger deck surface and heavier load-carrying capacity than that proposed under Alternative 1.

- **No Action Alternative**: Make no repairs to Pier 2.

3.5.1 EIS Alternatives

The purpose and need for the proposed action is to modernize and repair Pier 2 at MOTCO so the Army can maintain its ability to meet DOD requirements in support of normal and contingency operations. For the purposes of the EIS, as the major component of the proposed action is the modernization of Pier 2, the reasonable range of alternatives is based on differing configurations for that modernization.

3.5.1.1 Alternative 1

Alternative 1 accomplishes all of the basic requirements for modernizing Pier 2. The proposed pier head construction (totaling 95,000 SF) would have a single level, 1,000-foot long by 95- foot-wide working area for container handling and break-bulk loading and offloading. The site design for Alternative 1 would have container crane rails at 80-foot spacing and would rotate the new pier head around the east end of Pier 2 so that the west end is relocated approximately 48 feet further offshore and into deeper water. The new pier would extend into deeper water sufficient to support the draft of vessels using the new pier. The berth length is shorter than the existing berth since this pier will be used for container missions instead of non-containerized cargo.

Under Alternative 1, the modernized Pier 2 would require driving 876 new 24-inch octagonal pre-stressed concrete piles; 125 reused square concrete piles; 14,338 CY of concrete; and 2,150 tons of reinforcing steel. The concrete piles would be driven by a Delmag Pile Hammer D62-22 or equivalent. There would be a net decrease in the overall pier facility footprint by approximately 27,222 SF and a reduction of the west trestle by 989 SF. Rotating the pier would result in an overall reduction in the overwater footprint that covers shallower water habitat areas (depth of less than 12 feet) while the footprint covering deeper water habitat areas would increase slightly.

Approximately 750 CY of dredged material adjacent to Pier 2 would be redistributed using a bed-leveler device. Bed-leveler devices consist of a large customized plow or a box beam suspended from a work barge that can be pushed or towed by a tug. It is anticipated that this maintenance dredging would be conducted at the end of the project and take approximately one week.

3.5.1.2 Alternative 2

This alternative also accomplishes all of the basic requirements of modernizing Pier 2. The scope of construction and demolition would be as described in Section 2.2.1 except that the orientation of the reconstructed pier would be along the same axis as the existing pier. This would result in a 2,734 SF reduction of the west trestle. Alternative 2 would provide a net decrease in overall pier facility footprint of about 27,081 SF. The overall reduction in overwater footprint would be slightly less than with Alternative 1.

Under Alternative 2, the modernized Pier 2 would require driving 868 new 24-inch octagonal pre-stressed concrete piles; 125 reused square concrete piles; 14,213 CY of concrete; and 2,132 tons of reinforcing steel. The concrete piles would be driven by a Delmag Pile Hammer D62-22 or equivalent.

Approximately 3,800 CY of dredged material would be removed adjacent to Pier 2 by mechanical dredge and placed in a barge for disposal at the Montezuma Wetlands Complex as beneficial reuse of dredged material. If an optional backup disposal method is required, the Montezuma Hills site is located nearby. It is anticipated that dredging would be conducted at the end of the project and take approximately one week.

3.5.1.3 Alternative 3

Alternative 3 would incorporate all the features of Alternative 1 but would retain and add to some of the capabilities of the existing piers that are reduced or eliminated under Alternatives 1 and 2. The proposed pier head construction in Alternative 3 (totaling 157,200 SF) would have a larger overwater footprint than that proposed under Alternatives 1 and 2. Alternative 3 would have a 1,200-foot long by 131-foot wide working area. Container handling and break-bulk loading/off-loading missions would take place on a single level deck, and as with Alternative 1, Alternative 3 would rotate the new pier head around the east end of the pier so that the west end would be pushed approximately 85 feet further offshore. This alternative would increase the vertical loading capacity of the deck and trestles from the original design

capacity of 600 pounds per square foot (PSF) to 1,000 PSF. The larger deck size and heavier loading capability would require approximately 1,200 concrete piles.

While the existing east trestle is adequate for continued use based on preliminary conceptual design under all action alternatives, the retrofit or strengthening of the existing east trestle under Alternative 3 is proposed to meet the increased loading requirement. The 30-foot wide east trestle approach was constructed in 1967 and is supported by 18- or 20-inch square pre-stressed concrete piles at 24 feet on center bent spacing. Strengthening would be completed through the use of a fiber wrap material to increase the bending moment capacity of the precast double tee deck slab. The fiber wrap material supplements the existing reinforcing bars at the beams thereby increasing its bending moment strength. The fiber wrap is comprised of a composite fiber and epoxy that would be installed under the beam portion of the precast double tee. The width of the fiber strip would be within the width of the existing beam flange. The installation of this fiber wrap would require preparation of the beam's soffit surface and application of epoxy to provide adhesive action for the fiber wrap.

At the east trestle, the road and approach abutment would be widened to accommodate the realignment of the rail tracks to improve safety and handling of rail cars under Alternative 3. Under Alternative 3, the modernized Pier 2 would require driving 1,064 new 24-inch octagonal pre-stressed concrete piles; 150 reused square concrete piles; 21,948 CY of concrete; and 3,292 tons of reinforcing steel. The concrete piles would be driven by a Delmag Pile Hammer D62-22 or equivalent. Shore-side construction and improvements associated with infrastructure would be as described in Section 2.2.1.2. Under Alternative 3, there would be a net increase in the overall pier facility footprint of about 35,354 SF and a 7,006 SF increase in size of the west trestle.

Approximately 1,450 CY of dredged material adjacent to Pier 2 would be redistributed using a bed-leveler device. Bed-leveler devices consist of a large customized plow or a box beam suspended from a work barge that can be pushed or towed by a tug. It is anticipated that this maintenance dredging would be conducted at the end of the project and take approximately one week.

3.5.1.4 EIS Alternatives Considered but Eliminated from Further Evaluation

Modernization of Pier 3 and Repair of Pier 4. An alternative was developed that focused on fully modernizing Pier 3 and repairing Pier 4. However, a March 2013 special inspection report for Pier 3 found heavy to very heavy marine borer damage on nearly 50 percent of 173 timber piles along the Main Approach and Platform areas. In addition, some areas of minor rot and isolated areas of moderate to heavy rot were found. Therefore, the degraded condition of Pier 3 indicated that it was beyond routine maintenance and would require significant repairs or replacement (KCI Technologies 2013). Since Pier 4 was built at approximately the same time and with similar methods and materials as Pier 3, it is anticipated a similar level of marine borer infestation and timber pile deterioration is occurring at Pier 4. At a minimum, the existing creosote treated timber piles would need to be replaced with concrete pre-stressed piles or encapsulated and protected from further damage. However, due to its proximity to private industrial operations adjacent to the eastern boundary, Pier 4 has limited

NEW handling capability. In order to shift the focus of ammunition movements at MOTCO to Piers 3 and 4, the DOD would be required to purchase the parcel of land adjacent to its eastern boundary, which is currently owned by General Chemical. This would allow for the expansion of Explosive Safety Quantity Distance (ESQD) arcs eastward and permit increased ammunition handling capability at Pier 4 without danger to the public.

The timing and phasing of this alternative make it a non-viable option. As stated previously, Pier 3 has a short remaining functional life span. Acquisition of the General Chemical parcel, which would likely include condemnation proceedings, would have to take place prior to committing to repairs at Pier 4 and the work at Pier 4 would need to be complete with Pier 4 fully functional prior to work beginning at Pier 3 to avoid a significant reduction in mission capability. Given the current economic climate it is not reasonable to assume that funding for the land purchase and repairs to both piers can be secured within the remaining operational life of Pier 3.

Conducting Ammunition Movements through an Alternate Port. Ammunition movements currently conducted at MOTCO could be temporarily redirected to alternate ports in Washington on the West Coast or North Carolina on the East Coast, but neither of these ports meets the mission capacity or logistic responsiveness necessary to support contingency operations in the Pacific theater. Naval Magazine (NAVMAG) Indian Island in Hadlock, Washington functions as the ordnance management center for Navy fleet and shore stations in the Pacific Northwest Region. It has one ammunition pier large enough to accommodate a Nimitz class aircraft carrier (1,040 feet long, 91,487 to 96,358 tons), and two explosives anchorages. It can provide technical support for both non-containerized and containerized ordnance transshipment; however, NAVMAG Indian Island does not have the NEW handling capability that MOTCO has and cannot meet the Army's current mission requirement in addition to the Navy's mission to provide logistics, technical and material support for ordnance and ordnance-related equipment and processes, and logistics management for the joint services of the Pacific command. Military Ocean Terminal Sunny Point (MOTSU) in Southport, North Carolina could potentially meet the requirements for MOTCO's mission in addition to their existing workload. However, the additional resources and transit time needed to move ammunition from the Atlantic Coast to the Pacific theater of operations negates this alternative from being a viable option.

3.5.1.5 Preferred Alternative

The EIS analyzed three action alternatives and the No Action Alternative. Based on a thorough review of the alternatives, the Army determined Alternative 1 to be its Preferred Alternative. Alternative 1 accomplishes all of the basic requirements for modernizing Pier 2 and re-orients the pier to provide more efficient access for the types of vessels that use the pier. No changes in the number of loading and unloading missions executed at MOTCO would occur under the proposed action; therefore, there would continue to be approximately five missions at MOTCO per year with each mission event totaling approximately 36 days of port operations activity.

Factors that influenced selection of Alternative 1 as the Preferred Alternative included an impact analysis presented in the EIS and the operational flexibility afforded by rotating the new pier so the west end is approximately 48 feet further into deeper waters. Alternative 1 would result in a 989 SF reduction of the west trestle and a net decrease in the overall pier facility footprint of about 27,222 SF, which would result in an overall reduction in the overwater footprint that covers shallow water habitats. In conclusion, Alternative 1 was selected as the Preferred Alternative because it meets the purpose and need of the proposed action, and balances environmental impacts with operational flexibility.

3.6 Shoreline Protection Alternatives Considered Pursuant to Section 404(b)(1) Guidelines

Sections of the shoreline and existing rock revetment adjacent to Pier 2 are actively eroding, threatening the shoreline east of the Port Chicago National Memorial, and adjacent to the new west trestle. The EIS anticipated repairs to the shoreline rock revetment, but shoreline protection design and an assessment of the effects of shoreline protection were not completed until the SEA was prepared. To modernize and repair Pier 2 necessitates in-water and shoreline construction that cannot avoid impacts to waters of the U.S., including special aquatic sites (wetlands, mud flats, and vegetated shallows – all of which are present within the project footprint). Accordingly, throughout the design process, the Army has sought to avoid and minimize these impacts.

The new west trestle is located in the area of the shoreline with the least intertidal brackish marsh wetland habitat; alternative locations for the new west trestle would have required a greater area of wetland fill than that proposed by the project. The location, orientation, and configuration of the new west trestle minimizes the fill of waters of the U.S. and the aforementioned special aquatic sites to the extent practicable. Furthermore, the use of a single trestle rather than the three currently in existence reduces the overall trestle footprint required to meet the objectives of the project.

Alternative approaches to shoreline protection considered during the design process included the use of a seawall and the use of vegetative buffers in place of or to reduce the area of rock shoreline protection in wetlands. A seawall would have entailed the construction of a vertical structure along eroding sections of the shoreline. While a seawall would have avoided some of the wetland fill included in the proposed project, it would have some notable disadvantages related to cost, safety and hydraulic effects. A seawall would be substantially more expensive in terms of materials and installation than rock revetment. Under Alternative B, the proposed 3:1 slope of the rock shoreline protection on both sides of the new west trestle abutment creates a greater horizontal separation between White Road and Suisun Bay, which would be less hazardous to motorists than a vertical plunge over a seawall in the event that a vehicle inadvertently veered off of White Road. Finally, while a seawall would provide localized shoreline protection, it would not dissipate wave energy, which would be reflected and potentially increase erosion on sections of the shoreline adjacent to the seawall.

The proposed project includes the protection of the Port Chicago National Memorial from further erosion by wave action, which would ultimately impact the integrity of the Memorial and limit its accessibility to the public. The rock revetment proposed to repair and protect the eroding shoreline on the east side of the Memorial is the minimum necessary, and matches the existing rock revetment that is on the north and west side of the shoreline. The alternative of a seawall on the east side of the Memorial would be inconsistent with the appearance of the shoreline and would alter and potentially impair views from the Memorial to the remnants of Pier 1, the site of the explosion during World War II. By matching the existing rock revetment, the proposed shoreline protection will protect the Memorial in a manner befitting its historic significance.

Vegetative buffers to protect the shoreline were also considered during design. Retreat from the eroding shoreline is not feasible due to the presence of White Road and significant infrastructure needed to meet the Army's mission at MOTCO. Furthermore, retreat would not correct the continued erosion of the west side of the shoreline at Pier 2. The only means of creating a vegetated buffer at Pier 2 would be to expand the marsh plain to the north by discharging fill in Suisun Bay and re-creating an expanded intertidal brackish marsh. This would substantially increase the area of intertidal brackish marsh wetland fill beyond the 0.244 acres of intertidal wetland fill proposed by the project.

The proposed shoreline protection minimizes the area of rock revetment that will be discharged in waters of the U.S. An earlier shoreline protection concept considered but subsequently rejected would have required the discharge of 0.38 acres of revetment in wetlands to protect White Road and landside infrastructure.

Alternatives to the discharge of 0.02 acres of fill in freshwater emergent wetlands south of White Road were not practicable. To serve the reconstructed Pier 2, the elevation of the subsided portions of White Road must be restored, which results in the fill of a small area of highly disturbed wetland. In order to avoid the wetland fill, White Road would need to be shifted to the north, which would result in substantial increases in cost well out of proportion to the limited ecological value of the existing wetland to be filled.

Alternatives to the 0.264 acres of wetland fill for the project that were considered were infeasible or not practicable and potentially resulted in additional adverse effects, including the potential increase in the area of wetland fill. The Army concluded that there are no practicable alternatives to the fill required for the proposed project, and that the project constitutes the LEDPA, as required under the Clean Water Act Section 404(b)(1) Guidelines.

4. Proposed Action: Environmental Effects

The purpose of the Section 404(b)(1) Guidelines is to restore and maintain the chemical, physical, and biological integrity of the waters of the U.S. through the control of discharges of dredged or fill material. Except as provided under CWA Section 404(b)(2), no discharge of dredged or fill material will be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, as long as

the alternative does not have other significant adverse environmental consequences. In accordance with the Section 404(b)(1) Guidelines, the potential short-term or long-term effects of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment must be determined.

The potential for environmental impacts as a result of construction and operation of the proposed Project have been analyzed in the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017). The following discussion summarizes the SEA analysis for each of the factors or criteria that must be considered, as set forth in Subparts C through H of the Section 404(b)(1) Guidelines. It should be noted that because the proposed Project and alternatives are relatively similar in impacts to the aquatic ecosystem/environment and would result in similar effects, the analysis for Subparts C through H below focuses mainly on the proposed Project (i.e. Alternative B from the SEA). A discussion of other minor differences in effects to the aquatic ecosystem and other differences for each alternative is provided in Chapter 5 of the SEA.

4.1 SUBPART C: POTENTIAL IMPACTS ON PHYSICAL AND CHEMICAL CHARACTERISTICS OF THE AQUATIC ECOSYSTEM

Under the No Action Alternative, the Army would implement the design for Pier 2 exactly as evaluated in the EIS for the Modernization and Repair of Piers 2 and 3, MOTCO, California, and adopted in the resulting ROD. CEQ regulations require analysis of a No Action Alternative to provide a benchmark, enabling decision makers to compare the magnitude of the potential environmental effects caused by the proposed action and other alternative actions. The following discussion addresses issues required for evaluation under CWA 404(b)(1) Guidelines.

4.1.1 Substrate

No significant impacts to soils or sediments would occur as a result of the implementation of Alternative B. As compared to Alternative A, the following main differences in impacts to soils/sediments under Alternative B would be localized to the following areas:

- Former west trestle, forklift trestle, and pedestrian trestle: in these localized areas, there would no longer be a pile-supported structure affecting the flow and settlement of sediments where piles are removed and, unlike Alternative A, no new piles are installed. Given the flow rate and sedimentation rates in the area, this impact is expected to be localized and temporary as the sediment disturbed by the pile removals would recover over a short period of time. The pattern of localized shoreline erosion that currently occurs to the west of the existing west trestle may be reduced as a result of removal of the existing west trestle, which should result in more evenly distributed sediment transport throughout the shoreline area.

- New west trestle approach and shoreline protection: an estimated 3,010 CY of permanent fill over an area of 9,100 SF would be added below the mean high tide line for the new west trestle approach and shoreline protection under Alternative B

compared with 2,170 CY over 2,865 SF under Alternative A. In addition, under Alternative B, temporary surcharge fill would provide for localized compaction of soils, and once the surcharge is complete, the materials would be removed from the site and used elsewhere on MOTCO in accordance with the installation's Standard Operating Procedures (SOPs) for stockpiling and use of excess fill material.

- White Road repairs: the segments of White Road repairs included in Alternative B would be improved to a 24-foot wide roadbed as opposed to a 20-foot wide roadbed as described in the EIS. There would be a minor, localized increase of permanent and temporary (construction-related) disturbance in these areas. The potentially impacted area is largely previously disturbed and any additional impacts would be minimized with adherence to BMPs for sedimentation and stormwater control.

Please see the analysis of the potential for direct, indirect, and cumulative impacts to earth resources by the proposed Project and No Action Alternative provided in Section 4.1, "Earth Resources," of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017) and Chapter 5 Cumulative Impacts.

4.1.2 Suspended Particulates/Turbidity

Given the reduced number of piles to be installed under Alternative B, potential impacts to water quality would be less than those predicted for Alternative A. The reduced construction footprint for the new pile-supported structure would result in less in-water use of equipment with the potential to cause increased temporary turbidity in shallow areas, such as tugboats, barge mounted cranes, construction crew support vessels, and pile driving equipment. There would also be reduced impacts from pile driving activity, which can also result in localized increased turbidity from the pressure of the blows to the piles to drive the piles down into the bay bottom.

The demolition of the old pier structures and construction of the new pier structures would require permitting under both Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the CWA. A Section 401 Water Quality Certification from the SFBRWQCB would also be needed and include assurances that BMPs would be used to minimize potential impacts to water quality. This permitting process would ensure that state water quality standards would not be affected by implementation of these demolition or construction activities. To minimize the impacts from temporary elevated turbidity, control floating debris, and to ensure that floating creosote-related contamination is constrained to the construction site, in-water floating booms would be in place during the duration of the demolition and construction to surround both piers.

The remaining temporary impacts associated with stormwater runoff, short-term localized impacts to water quality from increased turbidity from pile removal and cleaning, and new pile construction would be the same as under Alternative A. In conclusion, although the magnitude of potential impacts to water quality under Alternative B would be slightly less than under Alternative A, Alternative B would also result in moderate, temporary impacts to water quality. The temporary increase in turbidity associated with Alternative B would be

similar to Alternative A, and would result in only a minor adverse impact to aquatic vegetation.

The conclusions of the cumulative effects analysis from the EIS remain valid: natural turbidity levels within the Tidal Area are high and it is anticipated all projects would be separated in time and/or geographical distance. Individually, the projects would result in short-term and localized impacts to water quality and it is expected the environment would recover following conclusion of each project. Moreover, permit requirements would minimize individual project impacts to the fullest extent possible. As a result, no significant adverse cumulative impacts are anticipated from the implementation of Alternative A or B.

Please see the analysis of the potential for direct and indirect, and cumulative impacts to water resources by the proposed Project and No Action Alternative provided in Section 4.2, "Water Resources," and Section 5.2.3.1, "Cumulative Analysis, Water Resources" of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017).

4.1.3 Water

Surface Water. The demolition and re-construction of Pier 2 under Alternative B would result in localized changes in surface water movements that would not adversely affect the hydrology of the surface waters. As compared with Alternative A, there would be a decrease in the pile supported structures with the new west trestle providing a consolidation of the existing west trestle, forklift, and pedestrian trestles. The net reduction in the volume of structures below the mean high water line would be at least 3,059 SF / 47.8 CY) than the existing Pier 2 pilings. In these highly localized areas, the more open structure of the pilings would lead to improved circulation under the piers. Alternative B would also result in a 15,963 SF reduction in the footprint from Alternative A. As detailed in Table 4-4 of the SEA, the beneficial gain in subtidal aquatic habitat under Alternative B would be more than double that of Alternative A (a gain of 0.71 acre under Alternative B as compared to 0.35 acre under Alternative A).

Water Quality. Given the reduced number of piles to be installed under Alternative B, potential impacts to water quality would be less than those predicted for Alternative A and are as presented above under Section 4.1.2. In conclusion, although the magnitude of potential impacts to water quality under Alternative B would be slightly less than under Alternative A, Alternative B would also result in moderate, temporary impacts to water quality.

Floodplains. Under Alternative B, the new west trestle and portions of the White Road repairs would be within the 100-year floodplain. The total area of new project footprint within the floodplain is estimated at 1.05 acres as compared with 0.95 acres under Alternative A. As with Alternative A, the Army evaluated the action pursuant to EO 11988, *Floodplain Management*, and determined that there are no practicable alternatives to these necessary infrastructure elements due to the location of Pier 2 and supporting infrastructure and the magnitude of cost and decreased safety of alternative means of construction.

Although this construction would result in 6,365 CY of new landside fill, some of which would be within the 100-year floodplain, this loss in volume would result in a negligible increase in surface water elevation because Suisun Bay is an open system that can absorb storm surge over a very large area.

Please see the analysis of the potential for direct, indirect, and cumulative impacts to water resources by the proposed Project and No Action Alternative provided in Section 4.2, "Water Resources," and Section 5.2.3.1, "Cumulative Analysis, Water Resources" of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017).

4.1.4 Current Patterns and Water Circulation

The demolition and re-construction of Pier 2 under Alternative B would not adversely affect the hydrology of the surface waters surrounding the existing structures. There would be a net decrease in the overall pier facility footprint of approximately 33,405 SF although the west trestle would be extended approximately 48 feet north of the existing location. The in-water changes to the pier support system would be the replacement of existing creosote treated timber piles with pre-stressed concrete piles. The effect on the surface water movements of the new pre-stressed concrete piles would be similar to the existing timber piles. Because 4,514 creosote treated timber piles would be removed and replaced with approximately 1,001 concrete piles, current movements would be increasingly free-flowing as fewer piles would decrease trapping or reduction of the current movements around the piers.

Sediments in the entrance channels accessing the MOTCO piers are predominantly sandy due to strong tidal currents which tend to keep the fines (silt and clay) in suspension. However, underneath and inshore of the piers, the sediments are increasingly organic and consist primarily of fines which settle out of suspension where currents and turbulence are reduced by the piers.

The analysis of the potential for direct, indirect, and cumulative impacts to soil and water resources by the proposed No Action Alternative (EIS Alternative 1) is provided in Section 4.2, "Earth Resources" and 4.3, "Water Resources," of the *EIS for Modernization and Repair of Piers 2 and 3 at Military Ocean Terminal Concord* (Department of the Army, February 2015 [Final]).

4.1.5 Normal Water Fluctuations

Suisun Bay represents a brackish tidal environment with variable salinities, ranging from oligohaline (0.5–5 parts per thousand [ppt]) to mesohaline (5–18 ppt) and polyhaline (18–30 ppt) (USACE 2011). Tides in Suisun Bay as elsewhere along the West Coast are mixed semidiurnal, with two high and low tides of unequal amplitude occurring approximately every 24.8 hours, and tidal amplitude increasing or diminishing concurrent with lunar cycles. The vertical distance between the highest high tides and lowest low tides is approximately 8 feet at MOTCO. Except during periods of heavy outflows from the Delta, the dominant currents of Suisun Bay are those associated with the rising or falling tides.

Alternatives A and B are not expected to have an impact on tidal fluctuations, salinity patterns, sedimentation rates, water temperature or dissolved oxygen balance.

Please see the analysis of the potential for direct, indirect, and cumulative impacts to soil and water resources by the proposed No Action Alternative (EIS Alternative 1) is provided in Section 4.2, "Earth Resources" and 4.3, "Water Resources," of the *EIS for Modernization and Repair of Piers 2 and 3 at Military Ocean Terminal Concord* (Department of the Army, February 2015 [Final]).

4.1.6 Salinity Gradients

Alternatives A and B are not expected to have an impact on salinity gradients.

Please see Appendix C, *Submerged Aquatic Vegetation Survey Report* (December 2015), of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017) for a discussion of the salinity characteristics of Suisun Bay in the project area.

4.2 Subpart D: Potential Impacts on Biological Characteristics of the Aquatic Ecosystem

4.2.1 Threatened and Endangered Species

Essentially the same conclusions that were reached for the preferred alternative (Alternative 1) in the EIS would apply to Alternative B discussed in the SEA. The Army will continue to adhere to the Biological Opinion (BOs) issued by NMFS on November 19, 2014 and USFWS on February 4, 2015 (EIS Appendix D). The USFWS and NMFS concurred with the Army's determination that revised design for the project to replace/upgrade Pier 2 does not change the determinations of the BOs and that re-initiation of formal consultation pursuant to 50 CFR Part 402.16 is not necessary (see SEA Appendix A).

Please see the analysis of the potential for direct, indirect, and cumulative impacts to biological resources by the proposed Project and No Action Alternative provided in Section 4.4, "Biological Resources," and Section 5.2.3.4, "Cumulative Analysis, Biological Resources" of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017). The analysis of the potential for direct, indirect, and cumulative impacts to biological resources by the proposed No Action Alternative (EIS Alternative 1) is provided in Section 4.5, "Biological Resources," and Section 5.2.7.4, "Cumulative Analysis, Biological Resources" of the *EIS for Modernization and Repair of Piers 2 and 3 at Military Ocean Terminal Concord* (Department of the Army, February 2015 [Final]).

4.2.1.1 Federally Listed Plant Species

The habitat and known locations for the federally endangered soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*) has not changed from that described within the EIS. However, the Tidal Area marshes were re-assessed in May 2015 (HT Harvey and Associates 2015). For on-site reference locations, the areas along the Barge Pier, Pier 4, and other marsh areas along White Road were assessed. In addition, 2010, 2013, and recent aerial images were compared to identify whether disturbances or habitat changes occurred at the locations where rare plants had been reported in prior years. It was determined habitat conditions had not changed significantly since the 2010 surveys.

Alternatives A and B are not likely to adversely affect the soft bird's-beak. No work will occur within 0.5 miles of the nearest populations of this species, and establishment of a temporary exclusion fence (TEF) between work areas and adjacent marsh habitat will reduce or eliminate the potential for direct loss of individuals or occupied habitat to occur. Alternative B would result in a very small loss of salt marsh (i.e., 0.046 acres as compared to 0.060 acres under Alternative A) that could be occupied by this species. However, the marsh to be impacted is of low quality for this species, and marsh restoration would compensate for loss of unoccupied marsh habitat. Negligible impacts to soft bird's beak from implementation of Alternative B would occur.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the soft bird's beak. This conclusion was based on the relatively small size of suitable habitat being affected, the conservation measures being implemented, and the design of the project to minimize the project footprint within the marsh. As part of the proposed action, the Army will implement the same avoidance, minimization, and compensation measures as were identified in EIS Table 6.3-1, as well as the reasonable and prudent measures and terms and conditions identified in EIS Table 6.3-2. Refer to Section 6.3 of the EIS for additional information.

4.2.1.2 Other State Special Status or California Native Plant Society Plant Species

Delta Mudwort. Delta mudwort is not known to occur in the project area; therefore, no impacts to this species would occur from implementation of Alternative B.

Mason's Lilaeopsis. The Piers 2 and 3 areas were re-assessed in May 2013 and it was determined habitat conditions had not changed significantly since the 2010 survey and thousands of Mason's lilaeopsis still occur along the shoreline of Piers 2 and 3 (Cardno TEC et al. 2013). Therefore, some areas occupied by Mason's lilaeopsis may be directly or incidentally (within the 100-foot buffer zone) impacted by the construction of shoreline components of Pier 2. However, the net increase of intertidal habitat associated with Alternative B would potentially offset these impacts, to the extent that the re-created intertidal habitat is suitable for this species. As part of the proposed action, existing locations of Mason's lilaeopsis would be protected, where possible, through the use of construction silt fencing; Mason's lilaeopsis plants and the substrate that supports them would be salvaged

from areas that would otherwise be impacted; and habitat would be re-created using the salvaged plants and substrate where structures are removed from low-intertidal habitat (USACE Sacramento 2017 *in prep*). Successful reestablishment of Mason's lilaeopsis in an area equivalent to what is impacted would avoid a significant impact to this species.

Delta Tule Pea. The Piers 2 and 3 areas were re-assessed in May 2013. Although it was determined habitat conditions had not changed significantly since the 2010 survey, only one Delta tule pea was present by the eastern approach to Pier 3 (Cardno TEC et al. 2013). Based on the limited occurrence of Delta tule pea in the project area and the removal of the structure nearest to the only known occurrence at Pier 2, no impact to Delta tule pea is anticipated from Alternative B.

Suisun Marsh Aster. The Piers 2 and 3 areas were re-assessed in May 2013. Although it was determined habitat conditions had not changed significantly since the 2010 survey, the 20 to 30 Suisun Marsh aster plants near the west approach to Pier 3 that were documented in 2010 were absent. However, the timing of the May 2013 survey may have been too early to detect this species (Department of the Army TEC et al. 2013). Any Suisun Marsh aster plants near the west approach to Pier 2 would be flagged or fenced to avoid impacts by construction activities. Therefore, implementation of Alternative B would have no direct or indirect impacts to Suisun Marsh aster.

The habitat and known locations within MOTCO for the Delta mudwort, Mason's lilaeopsis, Delta tule pea, and the Suisun Marsh aster have not changed from that described in the EIS.

4.2.1.3 Federally Listed Fish Species

NMFS issued a BO on November 19, 2014 (EIS Appendix D) stating the proposed action (EIS Alternative 1; SEA Alternative A) is not likely to jeopardize the continued existence of the Central California Coast Steelhead, Central Valley Steelhead, Central Valley spring-run Chinook salmon, and Sacramento River winter-run Chinook salmon, or destroy or adversely modify Sacramento River winter-run Chinook designated critical habitat. The anticipated effects to these species and/or critical habitat will be in the form of temporary partial loss of foraging habitat in the area of behavioral effect for Pier 2 during the 12-month period of pile driving. As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in the EIS and updated in Chapter 6 of the SEA.

For the Proposed Action (Alternative B) as described in this Alternatives Analysis, the Army has reviewed the revised design and associated potential impacts on EFH and has concluded that the effects analysis in the BO is not changed by the redesign. However, the long-term beneficial impacts would be greater with the redesign (Alternative B) based on the reduced waterside footprint of Pier 2 under the redesign.

The Army does not believe that the Pier 2 redesign, including the potential for concurrent use of two pile drivers for an approximately 15-day period, affects the previous BO conclusions for Central Valley steelhead, Central California Coast steelhead, Sacramento River Winter-

run Chinook, Central Valley Spring-run Chinook, or North American green sturgeon. These conclusions were that the Pier 2 project is likely to adversely affect but not likely to jeopardize the continued existence of these species or destroy or adversely modify Sacramento winter-run Chinook or green sturgeon designated critical habitat. With respect to EFH, these conclusions were that the Pier 2 project would have an adverse effect to Pacific Groundfish, Pacific Coast Salmon, and Coastal pelagic EFH. The Army remains committed to continued adherence to the reasonable and prudent measures, terms and conditions, and conservation recommendations of the BO and EFH Conservation Recommendations of the EFH Response. As a result of the review of the changes as evaluated per 50 CFR 402.16 and 50 CFR 600.920 (I), the Army believes these measures adequately mitigate for any adverse impacts and no additional mitigation is proposed. The NMFS has concurred with the Army's conclusion that the revised design for the project does not change the determination of the BO and that re-initiation of formal consultation is not necessary.

Central California Coast Steelhead Distinct Population Segment (DPS), Central Valley Steelhead DPS, Central Valley Spring-run Chinook ESU, and Sacramento River Winter-run Chinook ESU. Individuals of the Central Coast steelhead and Central Valley steelhead DPSs may experience localized, temporary, and relatively minor effects resulting from project-related noise and turbidity. Such effects would be manifested as individuals alter their movements and activities in response, with minor, if any, effect on energetics and survival. Injurious effects are not anticipated. Long-term effects on habitat would be beneficial, resulting from the removal of sources of contaminants and a net reduction in the area of overwater structures.

Green Sturgeon Southern DPS. Individuals of the green sturgeon DPS may experience localized, temporary, and relatively minor effects resulting from project-related noise and turbidity and from prey removal and displacement. Such effects would be manifested by changes in behavior as individuals alter their movements and activities in response. Injurious effects are not anticipated. Long-term effects on habitat would be beneficial, resulting from the removal of sources of contaminants and a net reduction in the area of overwater structures. Impacts would be short-term and minor and would not result in significant impacts.

Delta Smelt. Individual delta smelt may experience localized, temporary, and relatively minor effects resulting from project-related noise and turbidity. Such effects would be manifested by changes in behavior as individuals alter their movements and activities in response. Injurious effects are not anticipated. Long-term effects on habitat would be beneficial, resulting from the removal of sources of contaminants and a net reduction in the area of overwater structures. The project related effects would be short-term and minor and would not result in significant impacts.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action (EIS Alternative 1) is not likely to jeopardize the continued existence of the delta smelt, or adversely modify delta smelt designated critical habitat. The USFWS has determined that re-initiation of formal consultation is not required for the changes in construction quantities addressed in the SEA. This conclusion was based on the following:

- the *General and Species Specific Conservation Measures* and construction BMPs proposed by the Army to help minimize adverse project effects to delta smelt and its critical habitat;

- the implementation of water quality and turbidity monitoring by the Army's contractor(s);

- compliance with SFBRWQCB permit thresholds for water quality parameters that minimize adverse effects to delta smelt, its prey and critical habitat primary constituent element #2;

- the Army's adherence to the August 1st to November 30th work-window for dredging activities that helps minimize adverse dredging effects to delta smelt and its prey; the proposed use of a bed-leveler as the preferred dredging method that reduces delta smelt entrainment risk due to a low entrainment zone;

- the removal of 4,514 World War II-era creosote piles at Pier 2 will benefit delta smelt critical habitat primary constituent element #2, delta smelt and its prey, by eliminating the ongoing release of decaying creosote timber and polycyclic aromatic hydrocarbons into Suisun Bay Channel at Pier 2; and

- the completed, modernized Pier 2 will result in a smaller, pile footprint leading to a net gain of approximately 0.781[1] acre of channel substrate and aquatic habitat in Suisun Bay channel because of 3,513 fewer piles.

As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in EIS and repeated in the SEA with updates in Table 6-1, as well as the reasonable and prudent measures and terms and conditions identified in Table 6-2. Refer to Section 6.3 of the EIS for additional information.

4.2.1.4 Other Special Status Fish Species

Central Valley Fall, Late-fall Chinook Salmon Evolutionarily Significant Unit (ESU). Impacts to the Central Valley fall, late-fall Chinook salmon ESU would be the same as those described for the federally listed Chinook species above. Temporary increases in turbidity and sound may result in avoidance of the area. However, these impacts would be short-term and minor and would not result in significant impacts to the Central Valley fall, late fall Chinook salmon ESU with implementation of Alternative B.

Sacramento Splittail. Juvenile Sacramento splittail are likely to be present within Suisun Bay in late spring and early summer. Impacts to this species would be similar to those described above for federally listed species by way of turbidity and elevated noise within the project

[1] This quantity is quoted from the BO. While the SEA reports that the net gain in subtidal habitat will be 0.71 acre, the USFWS has determined that re-initiation of consultation is not required.

area. However, impacts would be temporary and minor. Therefore, no significant impacts to Sacramento splittail would result with implementation of Alternative B.

4.2.1.5 Federally Listed Wildlife Species

The Army has evaluated the potential changes in the effects as compared to the U.S. Fish and Wildlife Service (USFWS) Biological Opinion (BO) dated February 4, 2015 (08FBD-2014-F-0002-5).

The Army does not believe that the Pier 2 redesign, including the concurrent use of two pile drivers for an approximately 15-period, would affect the Army's previous may affect determinations nor the conclusions that the USFWS reached in the BO. The USFWS has concurred with the Army's conclusion that the revised design for the project does not change the determination of the BO and that re-initiation of formal consultation is not necessary. These conclusions are restated as follows:

- delta smelt (*Hypomesus tranpacificus)* and its critical habitat: not likely to jeopardize the continued existence of delta smelt or adversely modify delta smelt designated critical habitat.

- soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*): not likely to jeopardize the continued existence of soft bird's-beak.

- California Ridgway's rail (*Rallus obsoletus*): not likely to jeopardize the continued existence of California Ridgway's rail.

- salt marsh harvest mouse (*Reithrodontomys raviventris*): not likely to jeopardize the continued existence of salt marsh harvest mouse.

- California red-legged frog (*Rana draytonii*): not likely to jeopardize the continued existence of California red-legged frog.

Overall, the effects of the revised design is expected to have less impact on the species addressed in the BO. The Army remains committed to continued adherence to the reasonable and prudent measures, terms and conditions, and conservation recommendations of the BO and EFH Conservation Recommendations of the EFH Response. As a result of the review of the changes as evaluated herein per 50 CFR 402.16, the Army believes these measures adequately mitigate for any adverse impacts and no additional mitigation is proposed.

California Ridgway's Rail. The project site is located within the range of the California Ridgway's rail, near areas where the species has been recorded in the past, and thus was initially concluded that the project may affect and would be likely to adversely affect the California Ridgway's rail, and the Army has formally consulted with USFWS on that basis. However, the non-detection of the species in the marshes near Piers 2 and 3 in recent years, including the protocol surveys conducted during early 2014 and January-March 2015,

indicates that the species rarely, if ever, occurs in the project action area. Furthermore, the project action area is deficient in the features of tidal marsh habitat typically used by California Ridgway's rails. In particular, the marshes near the piers lack extensive channel networks with tidally exposed mud banks and channel bottoms that California Ridgway's rails could use for foraging, as well as bordering stands of Pacific cordgrass, pickleweed, and marsh gumplant that California Ridgway's rails would be most likely to nest in. Therefore, no loss of individuals or occupied habitat is expected.

Pre-construction surveys will be conducted as a precautionary measure and, in the unlikely event that California Ridgway's rails are found, avoidance areas will be established within 700 feet of rail calling centers during the breeding season, in order to minimize any disturbance impacts. Relatively small, temporarily impacted areas of tidal marsh in the narrow zone seaward of White Road would be restored, and in any case there are no indications that California Ridgway's rails use these areas. Therefore, implementation of Alternative B would result in no significant impact to the California Ridgway's rail.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the California Ridgway's rail. This conclusion was based on the relatively small size of suitable habitat being affected, the low quality of available habitat, the conservation measures being implemented, and the design of the project to minimize the project footprint within the marsh. As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in the EIS and updated in Chapter 6 of the SEA.

California Least Tern. Although the species may occasionally disperse past MOTCO, least terns do not nest on or very near the MOTCO site. Moreover, disturbance to individuals is not expected because this species is not known to forage in the immediate vicinity of MOTCO. No individuals are expected to experience loss of foraging opportunities as a result of the in-water work. Impacts under Alternative B would be the same as described under EIS Alternative 1. Therefore, implementation of Alternative B would result in minor adverse impacts to the California least tern. The Army made a preliminary determination that implementation of EIS Alternative 1 may affect, but is not likely to adversely affect, the California least tern. USFWS concurred with the Army's determination (EIS Appendix D).

Salt Marsh Harvest Mouse. The project site is located within the range of the salt marsh harvest mouse, near areas where the species has been recorded in the past, and thus it is concluded that the project may affect the salt marsh harvest mouse. Salt marsh harvest mice are unlikely to occur in or adjacent to the mainly freshwater marsh habitats near Piers 2 and 3 due to a lack of salt marsh habitat. However, this species cannot be determined to be absent without conducting an extensive trapping study and thus it is determined that the project may result in minor to moderate adverse impacts with the implementation of Alternative B. To avoid injury or mortality of harvest mice, marsh vegetation that would be permanently or temporarily impacted would be removed by hand under supervision of a biological monitor. Disturbance to individuals that are adjacent to work areas is unlikely given the low probability of occurrence of the species in the vicinity.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the salt marsh harvest mouse. This conclusion was based on the relatively small size of suitable habitat being affected, the conservation measures being implemented, and the design of the project to minimize the project footprint within the marsh. As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in the EIS and updated in Chapter 6 of the SEA.

California Red-legged Frog. Past surveys for the California red-legged frog in the Tidal Area of MOTCO, including surveys by USFWS in 2013–2014, 2015, and 2016 have not detected this species, but have identified several aquatic features that could support breeding. As discussed in Section 3.4.4.3, the Army believes that the likelihood of the California red-legged frog's occurrence in the action area is so low as to be discountable and that the species would not be affected by the implementation of the proposed action. However, given the presence of suitable upland habitat, the proximity of suitable aquatic breeding habitat, and the lack of recent conclusive survey data, USFWS has determined that the species may occur within the action area. Therefore, the Army will implement precautionary mitigation measures so that, in the unlikely event of long-distance dispersal to the staging areas (i.e., E-Lots), implementation of the proposed action would be less than significant.

USFWS issued a BO on February 4, 2015 (EIS Appendix D) stating the proposed action is not likely to jeopardize the continued existence of the California red-legged frog. This conclusion was based on the relatively small size of suitable habitat being affected and the conservation measures being implemented. As part of the proposed action, the Army will implement the avoidance, minimization, and compensation measures identified in the EIS and updated in Chapter 6 of the SEA.

4.2.1.6 State-Listed Threatened and Endangered Species

California Black Rail. The occurrence of California black rails is limited to the inboard Pier 3 marsh area. Given no direct disturbance and limited activity on the shoreline of this area, negligible impacts to California black rails would occur from the implementation of Alternative B.

4.2.1.7 Other State Special Status Wildlife Species

Northwestern Pond Turtle. Since Alternative B would have no direct or indirect impact on tidal creeks that could be inhabited by this species, no impacts are anticipated to the northwestern pond turtle.

Bird Species of Concern. Several bird species of concern may occur in the marshes inshore of Piers 2 and 3. With the implementation of measures described above for migratory birds, the disturbance of these species would be largely avoided. No long-term adverse effects to habitat are anticipated. As a result, minor adverse impacts would occur to bird species of concern from the implementation of Alternative B.

Marine Mammals. Marine mammals are considered very unlikely to occur within potential zones of influence for acoustic harassment. In particular, for impact pile driving, MNFS uses a threshold of 160 dB re 1 μPa for behavioral disturbance, and this distance would only be exceeded within a distance of 242.8 feet. Given the operation of equipment and human activity, it is very unlikely sea lions or harbor seals would approach the construction area this closely. Therefore, negligible to minor adverse impacts to marine mammals would occur from the implementation of Alternative B.

4.2.2 Fish, Crustaceans, Mollusks, and Other Aquatic Organisms in the Food Web

Fish. As noted above, the reduced area of over- and in-water structure associated with Alternative B would have a larger beneficial impact on fish and EFH. Impacts of pile driving on fish and EFH would be the same as described for Alternative A in the EIS, except for relatively minor differences associated with the potential for contemporaneous use of two pile drivers (one at the west trestle and one at the main platform). However, to avoid additive SPLs experienced by species in the vicinity of the work area, the Army is committed to implementing management practices to ensure piles will not be driven simultaneously. Specifically, the contractor will be required to ensure that there is communication between the two operations that will allow one rig to commence pile driving activities while the second is positioning and staging the next pile installation during the approximately 15-day period that two rigs may be in the water at the same time (see Figure 4-1 of the SEA for the area of potential injury and behavioral effects to fish from pile driving).

This analysis was based on the following parameters:

- The west trestle and landside margin of the main platform are on the mud flat at an elevation of approximately +13.5 feet MLLW, which may reduce sound transmission into the water and alleviate concerns about the impacts to fish. To investigate this possibility, the Caltrans (2015) compendium of acoustic measurements from pile driving, which provides many examples of piles being driven on land or in very shallow water adjacent to deep water, was reviewed. Hydroacoustic measurements from land-based or very shallow (1 to 2 m depth) pile driving show no clear pattern of reduced (or increased) SPLs measured in the adjacent water body relative to SPLs observed from the same sizes and types of piles driven in deeper water. Therefore, it is not appropriate to assume that received SPLs in the adjacent water would be reduced when pile driving occurs on the mud flat.
- The second pile driver is assumed to be of the same type as the first, with the same sound source characteristics. Simultaneous strikes would not occur, but a fish in the water could be exposed to sound from both pile drivers, and thus might experience a greater cumulative SEL than if only one pile driver were operating.
- If it were to occur, such a contemporaneous operation is estimated to extend over approximately 15 days, but in actuality would involve about 1 to 5 days when both drivers are operating. Actual driving time for each 1 pile is about 10 minutes; most of a day's activity consists of setting up and repositioning the pile driver.

- Consistent with the NMFS Pile Driving Calculator, when the received SEL from an individual pile strike is below a certain level, then the accumulated energy from multiple strikes would not contribute to injury, regardless of how many pile strikes occur. This SEL is referred to as "effective quiet," and is assumed, for the purposes of this spreadsheet, to be 150 dB (re: 1 μPa2*sec). Effective quiet establishes a limit on the maximum distance from the pile where injury to fishes is expected – the distance at which the single-strike SEL attenuates to 150 dB. Beyond this distance, no physical injury is expected, regardless of the number of pile strikes.
- A worst-case analysis assumes the pile drivers are equally loud. Based on the assumed single-strike SEL for the 24-inch piles of 162 dB re 1 μPa2-sec at 10 m, the effective quiet distance – the distance at which the single-strike SEL becomes less than 150 dB re 1 μPa2*sec - is 63 m. As a result, there would be no additive effect unless a fish is less than 63 m from both pile drivers while they are both operating, a circumstance which is unlikely to occur for any appreciable length of time given that fish would be swimming or drifting through the project area. Furthermore, because of the logarithmic decay of sound intensity over distance, the fish's received SEL will be dominated by sound from the nearest pile driver. As a result, the zones of potential injury and behavioral effects based on a single pile driver as shown in Figure 4-1 are unlikely to change with the addition of a second pile driver.

In conclusion, the addition of a second pile driver during construction would make virtually no difference in the extents of zones of potential injury or behavioral effects to fish.

Essential Fish Habitat
Short-term impacts to EFH would be essentially the same for Alternative B as for Alternative A. Long-term beneficial impacts which would be greater for Alternative B than Alternative A include the removal of overwater and in-water structures, and the removal of creosote-treated timber piles.

Invertebrates. The impacts of Alternative B would be essentially similar to those of Alternative A although the footprints of construction and demolition would be different. Specifically, benthic invertebrates would experience localized mortality and displacement due to demolition, construction, and repair activities. Any impacts to benthic invertebrates would be discountable due to the small area of disturbance and the fact that the free-living larval stages of benthic invertebrates are a very minor constituent of the zooplankton that fish use as food. It is anticipated the affected areas would be recolonized within a short time, on the order of one to two years, following work completion. In addition, the net decrease in pier coverage of the Bay under Alternative B would incrementally increase circulation and sunlight penetration while reducing the amount of hard substrate that invertebrates could attach to. Therefore, implementation of Alternative B would have a minor adverse impact on invertebrates.

Please see the analysis of the potential for direct, indirect, and cumulative impacts to biological resources by the proposed Project and No Action Alternative provided in Section 4.4, "Biological Resources," and Section 5.2.3.4, "Cumulative Analysis, Biological Resources" of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017).

4.2.3 Other Wildlife

Reptiles and Amphibians. As with Alternative A, there would be no impacts to reptiles and amphibians under Alternative B.

Birds. Impacts to birds would be the same under Alternative B as for Alternative A, and would include the same avoidance and minimization measures.

Mammals. Impacts to mammals would be the same for Alternative B as for Alternative A.

Please see the analysis of the potential for direct, indirect, and cumulative impacts to biological resources by the proposed Project and No Action Alternative provided in Section 4.4, "Biological Resources," and Section 5.2.3.4, "Cumulative Analysis, Biological Resources" of the *DSEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017).

4.3 Subpart E: Potential Impacts on Special Aquatic Sites

4.3.1 Sanctuaries and Refuges

The Point Edith Wildlife Area is located approximately 1.8 miles west of MOTCO, north of Waterfront Road. This 761-acre marsh area is a tidal area that consists of numerous sloughs and small ponds that flood at high tide. Animal species include snakes, voles, frogs, song birds, ducks, mice, muskrats, raccoons, and more. The property was designated a wildlife area by the Fish and Game Commission in 1985 and is leased from the State Land Commission. It was originally diked off from tidal action, but a dike broke in the early 1990s, leaving the area subject to tides.

Point Edith Wildlife Area is designated as a Type C area, which means it is open seven days a week and no permits, passes or reservations are required. However, a California hunting license and appropriate duck stamps are required. Hunting will open Saturday, Oct.18. Hunting opportunities are available daily during the open season for waterfowl, coots and moorhens.

4.3.2 Wetlands

As with Alternative A, the Army has determined, consistent with EO 11990, *Protection of Wetlands*, that there is no practicable alternative to locating Pier 2 outside wetlands habitat due to its existing location. The net potential direct permanent impacts to wetlands under

Alternative B would be similar but slightly increased as compared to those under Alternative A, primarily due to implementation of the Habitat Restoration Plan and shoreline protection. Table 4 summarizes the potential direct permanent wetland impacts under Alternatives A and B.

As in the EIS, potential temporary impacts to wetlands with the implementation of the proposed action were evaluated using a 100-foot potential disturbance buffer added around Pier 2 and an approximately 50-foot buffer around the White Road repairs to account for the maneuvering of equipment and worker access during demolition and construction activities. Table 5 summarizes the potential short-term (i.e., construction-related) wetland impacts under Alternatives A and B.

Under Section 404 of the CWA, the USACE and EPA have established a policy of no net loss of wetland functions and values, and require impacts to be fully mitigated – by avoidance, minimization, and/or compensation - in conjunction with the issuance of Section 404 permits.

The State of California also has a policy of no net loss of wetlands, and similar mitigation is required as a condition for the state's issuance of the CWA Section 401 Water Quality Certifications for Section 404 permits. However, since the state may assert jurisdiction over some water bodies not subject to Section 404 / USACE permit jurisdiction, the 401 certification may require additional mitigation.

Please see the analysis of the potential for direct, indirect, and cumulative impacts to wetlands by the proposed Project and alternatives provided in Section 4.2, "Water Resources," and Section 5.2.3.5, "Cumulative Analysis, Water Resources" of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017).

4.3.3 Mudflats

Mudflats are present below mudbanks along the shoreline within the project area. By reducing the area of piles in existing mudflats, Alternative B would have a beneficial impact on mudflats and would be slightly superior to the effect of Alternative A on mudflats.

4.3.4 Vegetated Shallows

Alternative B would increase the amount of unshaded bay surface by 33,405 SF compared to 17,442 SF under Alternative A. Assuming a 100-foot disturbance buffer around demolition and construction areas, temporary impacts to aquatic habitat and SAV could be larger for Alternative B, but the increased availability of unshaded surface should lead to a long-term increase in SAV under Alternative B. The temporary increase in turbidity associated with Alternative B would be similar to Alternative A, and would result in only a minor adverse impact.

4.3.5 Coral Reefs

The proposed Project would consist of activities within Suisun Bay and no coral reefs are present in this area. Neither the proposed Project nor any of the alternatives would result in a discharge of dredged or fill material into the ocean where coral reefs are located.

4.3.6 Riffle and Pool Complexes

The proposed Project would consist of activities within Suisun Bay and no riffle and pool complexes are present in this area. Neither the proposed Project nor any of the alternatives would result in a discharge of dredged or fill material into streams supporting riffle and pool complexes.

4.4 Subpart F: Potential Effects on Human Use Characteristics

4.4.1 Municipal and Private Water Supplies

Water resources as defined in the EIS are sources of water available for use by humans, flora, or fauna, including surface and groundwater, nearshore waters, and wetlands. Surface water resources are important for economic, ecological, recreational, and human health reasons. Groundwater may be used for potable water, agricultural irrigation, and industrial applications. Groundwater is classified as any source of water beneath the ground surface and is the primary source of potable water used for human consumption.

Water supplies used at MOTCO are supplied by private utilities in the area that pump these supplies into storage reservoirs at MOTCO. The installation does not operate or maintain groundwater wells for potable or industrial use. As with Alternative A, negligible impacts are anticipated from implementation of Alternative B.

The proposed demolition and construction activities associated with both the Project and the No Action alternative would follow *USEPA Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects* under Section 438 of the Energy Independence and Security Act (USEPA 2009). Obtaining the required NPDES permit, including development of a project specific SWPPP and use of BMPs for all construction disturbances in excess of an acre, would minimize potential impacts to surface water resources. The BMPs include measures to reduce stormwater runoff and the transport of sediments from the construction sites into receiving bodies of water. These BMPs, such as vegetated swales for stormwater treatment, address management measures that reduce the potential for surface water contaminants to enter into surface or groundwater supplies.

Please see the analysis of the potential for direct, indirect, and cumulative impacts to visual resources by the proposed Project and alternatives provided in Section 4.2, "Water Resources," of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017).

4.4.2 Recreational and Commercial Fisheries

According to the USEPA, in 2010 the surface water quality in Suisun Bay was considered impaired for its designated use of commercial and sports fishing and for estuarine habitat (USEPA 2010). The cause of the impairment is the presence of contaminants such as chlordane, dichlorodiphenyl trichloroethane (DDT), dieldrin, dioxin-like polychlorinated biphenyls (PCBs), furan compounds, mercury, selenium, and PCBs. The probable sources contributing to the impairment designation due to chlordane, DDT, dieldrin, mercury, and dioxin-like PCBs are non-point source contributions to the surface waters (USEPA 2010). Industrial point source discharges are considered the probable source for some of the mercury and selenium present in these surface waters (USEPA 2010). Atmospheric deposition is listed as the source for dioxin, furan compounds, and mercury (USEPA 2010).

Nearshore waters can be directly affected by human activity and are important for human recreation and commerce. The project's impacts to habitats would involve temporary disturbance of upland, intertidal, shallow water, and deep-water habitats, with a long-term net reduction in overwater structures generally considered a beneficial impact to fisheries and aquatic species of concern in the Delta. Therefore, potential effects on habitats due to Alternatives A and B would be beneficial or negligible because both alternatives would reduce the extent of manmade structures in aquatic habitats at MOTCO.

Please see the analysis of the potential for direct, indirect, and cumulative impacts to biological resources by the proposed Project and alternatives provided in Section 4.4, "Biological Resources," and Section 5.2.3.4, "Cumulative Analysis, Biological Resources" of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017).

4.4.3 Water-related Recreation

The safety zone into Suisun Bay that encompasses the shipping channel is normally left open with recreational boater traffic being diverted during military onload and offload operations. MOTCO security boats or the U.S. Coast Guard enforce the safety zone. Due to the fact that much of the Pier 2 demolition and construction would take place in the water, the frequency of times when recreational boaters would be diverted could increase. Due to the 1944 Port Chicago Disaster, there may be UXO/MEC located in the vicinity of Pier 2. During the 12 weeks of MEC clearance operations (6 weeks at Pier 2), project-related ESQD arcs would extend over land and water, resulting in the following restrictions:

- Water: all non-essential personnel located in Suisun Bay would be restricted to no less than 3,500 feet from Pier 2 during project-related MEC clearance operations. In general, MEC clearance operations are anticipated to occur during normal working hours Monday through Friday for a period of six weeks at Pier 2. Therefore, it is anticipated access to Suisun Bay by recreational boats during the weekends would not be impacted by the access restrictions. Furthermore, the width of the bay adjacent to MOTCO is sufficient to allow boaters to go around the ESQD arc.

- Land: all non-essential personnel located on land would be restricted to no less than 413 feet from Pier 2 during project-related MEC clearance operations (Figures 4-9 and 4-10 in EIS). As a result, it is anticipated the Pier 2 demolition and construction activities would result in restrictions being placed on access to the Port Chicago Naval Magazine National Memorial Monday through Friday. However, the Army will work with the NPS to ensure the Port Chicago Naval Magazine National Memorial is accessible when Pier 2 MEC clearance operations are greater than 413 feet from the Port Chicago Naval Magazine National Memorial to the greatest extent practicable. In addition, to the extent practicable, the Army will work with NPS to attempt to avoid scheduling the most disruptive types of project activities during those times when conditions of relative quiet and reverence are important for the interpretive, ceremonial, or commemorative events planned at the memorial site.

The Army will coordinate with NPS during MEC clearance operations to ensure maximum access is available to Port Chicago Naval Magazine Memorial visitors. The potential access restrictions for the Port Chicago Naval Magazine National Memorial and the navigable waters of Suisun Bay near MOTCO would be temporary, not lasting longer than or beyond the MEC clearance operations for the Pier 2 demolition and construction. Therefore, while there might be a temporary disruption in access to recreational resources, there would be a long-term beneficial impact associated with more efficient pier operations as missions would last for a shorter period of time. As such, there would be minor short-term adverse impacts and beneficial long-term impacts to recreational resources as a result of the implementation of Alternative B.

Under Alternative B, impacts to recreational resources would be similar to those described under Alternative A. Under both alternatives, construction and demolition activities are estimated to occur over a 27-month period with demolition completed in 7 months. .

Please see the analysis of the potential for direct, indirect, and cumulative impacts to recreational resources by the proposed Project and alternatives provided in Section 4.8, "Recreational Resources," of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017).

4.4.4 Aesthetics

As with Alternative A, minor impacts to visual resources are anticipated; however the overall footprint of the Pier 2 design under Alternative B would be smaller than proposed under Alternative A. Implementation of Alternative B would not substantially degrade or result in a negative impression of the viewshed. As compared with Alternative A, the most substantive difference in the potential impacts to visual resources under Alternative B are due to the smaller Pier 2 footprint (an additional -17,982 SF for a total -33,405 SF under Alternative B) and reconstruction of the west trestle further to the east of the existing west trestle. The result would be that Pier 2 would become a less prominent feature within some foreground as well as middleground views from the Port Chicago Naval Magazine National Memorial. The remaining Pier 1 structure would become more dominant in the overall viewshed, which would be a positive impact in terms of the interpretive value of the historic event.

Additionally, the widening and raising of the segment of White Road that bisects the current National Memorial site would potentially impact foreground views at the National Memorial site. Although the height that this road would be raised in this location is slight (less than one foot in most of this portion of the road), the wider and slightly raised road would potentially diminish the prominence of the Memorial features from some viewpoints. Additionally, during the period of construction, there could be additional visual impacts related to the possible use of the existing west trestle for stockpiling of materials, which would be in middleground views and some foreground views from the National Memorial. The potential visual impacts were included in the consultation that was completed pursuant to the NHPA Section 106 consultation for design changes (i.e. Alternative B) of this project (see Section 4.11 of the SEA).

Please see the analysis of the potential for direct, indirect, and cumulative impacts to visual resources by the proposed Project and alternatives provided in Section 4.7, "Visual Resources," and Section 5.2.3.5, "Cumulative Analysis, Visual Resources" of the *SEA for Pier 2 Modernization and Repair Design Changes at MOTCO* (Department of the Army, January 2017).

4.5 Subpart G: Evaluation and Testing

4.5.1 General Evaluation of Dredged or Fill Material

There has been no change in the soils/sediments, surface soils, submerged sediment quality, maintenance dredging history, seismic conditions, or mineral resources on MOTCO from what was described in the EIS.

4.6 Subpart H: Actions Taken to Minimize Adverse Effects

There are management actions such as BMPs and SOPs that the Army implements on an ongoing basis to provide environmental protection. BMPs and SOPs are distinguished from mitigation measures in the SEA because they are 1) existing requirements for the proposed action, 2) ongoing, regularly occurring practices, and 3) not specific to the proposed action. Table 6-1 of the SEA provides a summary of the relevant BMPs and SOPs to the proposed action analyzed in the SEA. In order to provide a complete listing of mitigation measures in context of those that are also commitments made in the EIS, this table is largely a repeat of the parallel table in the EIS with any changes made in this SEA presented in redline. The table indicates the BMP and/or SOP that would be applied, what phase of the project the BMP and/or SOP would be applied, and the primary resource areas that would benefit from the BMP and/or SOP. Implementation, monitoring of effectiveness, and revisions and updates of BMPs and SOPs are part of the Army's overall environmental management system cycle of continual improvement.

Mitigation Measures Included in the SEA. The Army has completed consultation with SHPO concerning the proposed action as required by Section 106 of the NHPA, NMFS and USFWS as required by Section 7 of the ESA, and NMFS as required by the Magnuson-Stevens Fishery Conservation and Management Act. . Table 6-2 of the SEA identifies the avoidance,

minimization, and/or compensation measures identified as part of the EIS consultation process. In addition, Table 6-3 identifies the terms and conditions, as well as reasonable and prudent measures documented in the respective NMFS and USFWS BOs (EIS Appendix D) completed for the EIS. The measures listed in Tables 6-2 and 6-3 of the SEA are considered nondiscretionary, within DOD control, and would be implemented by the DOD as part of the proposed action. Any changes to these mitigation measures identified during SEA preparation are presented in redline and will also be documented in the decision document for the SEA.

5. ALTERNATIVES ANALYSIS

Alternatives to the proposed project include the No Action Alternative and Shoreline Protection Alternatives required for the protection of various resources potentially affected by the project and the No Action Alternative . The No Action Alternative, Alternative A, was the Preferred Alternative evaluated in the EIS for improvements to Piers 2 and 3 at MOTCO. Improvements to Pier 3 were subsequently implemented as analyzed in the EIS, but the design for the modernization and repair of Pier 2 was changed and was the subject of the SEA.

The Shoreline Protection Alternatives presented in Section 3.6 address the need to repair and replace sections of the shoreline and existing rock revetment adjacent to Pier 2 that are actively eroding, threatening the shoreline east of the Port Chicago National Memorial, and would be adjacent to the new west trestle. The EIS anticipated repairs to the shoreline rock revetment, but shoreline protection design and an assessment of the effects of shoreline protection were not completed until the SEA was prepared.

5.1 No Action Alternative

For the purposes of this Alternatives Analysis, the EIS and SEA prepared for proposed action found no, negligible, or minor direct/indirect adverse impacts to the following resource areas: topography; soils/sediments; surface water; groundwater; wetlands; floodplains; land use and coastal zone management; transportation and utilities infrastructure; visual resources; recreational resources; noise; socioeconomics and environmental justice; cultural resources; and hazardous materials, hazardous waste, toxic substances, and contaminated sites. Since the direct and/or indirect impacts to these resource areas are localized and temporary, and the respective resources are anticipated to recover within a short period of time (described in Chapters 4 of the EIS and SEA), another action would need to occur in the same localized area at the same time for cumulative impacts to be possible. As is discussed in Chapters 5 of both the EIS and SEA, based on the geographic and temporal scope of the cumulative impacts analysis, there is no potential for significant cumulative impacts to these resource areas. Therefore, these resource areas were not assessed in the cumulative impacts analysis.

Table 3 provides a more detailed comparison of the quantities of various aspects of this construction. This table parallels Table 2.5-1 in the EIS.

5.2 Shoreline Protection Alternatives Considered Pursuant to Section 404(b)(1) Guidelines

To modernize and repair Pier 2 necessitates in-water and shoreline construction that cannot avoid impacts to waters of the U.S., including special aquatic sites (wetlands, mud flats, and vegetated shallows – all of which are present within the project footprint). Accordingly, throughout the design process, the Army has sought to avoid and minimize these impacts.

Alternative approaches to shoreline protection considered during the design process included: 1) the use of a seawall; 2) rock shoreline protection; and 3) the use of vegetative buffers in place of or to reduce the area of rock shoreline protection in wetlands.

- Installation of a seawall would have entailed the construction of a vertical wall along eroding sections of the shoreline. While a seawall would have avoided some of the wetland fill included in the proposed project, it would have some notable disadvantages related to cost, safety and hydraulic effects. A seawall would be substantially more expensive in terms of materials and installation than rock revetment. Finally, while a seawall would provide localized shoreline protection, it would not dissipate wave energy, which would be reflected and potentially increase erosion on sections of the shoreline adjacent to the seawall. The alternative of a seawall on the east side of the Memorial would be inconsistent with the appearance of the shoreline and would alter and potentially impair views from the Memorial to the remnants of Pier 1, the site of the explosion during World War II.

- Vegetative buffers to protect the shoreline were also considered during design. Retreat from the eroding shoreline is not feasible due to the presence of White Road and significant infrastructure needed to meet the Army's mission at MOTCO. Furthermore, retreat would not correct the continued erosion of the west side of the shoreline at Pier 2. The only means of creating a vegetated buffer at Pier 2 would be to expand the marsh plain to the north by discharging fill in Suisun Bay and re-creating an expanded intertidal brackish marsh. This would substantially increase the area of intertidal brackish marsh wetland fill beyond the 0.244 acres of intertidal wetland fill proposed by the project.

- An earlier shoreline protection concept considered but subsequently rejected would have required the discharge of 0.38 acres of revetment in wetlands to protect White Road and landside infrastructure. This would increase the area of intertidal brackish marsh wetland fill beyond the 0.244 acres of intertidal wetland fill proposed by the project.

Alternative B proposes a 3:1 slope of the rock shoreline protection on both sides of the new west trestle abutment, creating a greater horizontal separation between White Road and Suisun Bay, which would be less hazardous to motorists than a vertical plunge over a seawall in the event that a vehicle inadvertently veered off of White Road. The proposed shoreline protection minimizes the area of rock revetment that will be discharged in waters of the U.S.

The proposed project includes the protection of the Port Chicago National Memorial from further erosion by wave action, which would ultimately impact the integrity of the Memorial and limit its accessibility to the public. The rock revetment proposed to repair and protect the eroding shoreline on the east side of the Memorial is the minimum necessary, and extends existing rock revetment on the north and west side of the shoreline. By matching the existing rock revetment, the proposed shoreline protection will protect the Memorial in a manner befitting its historic significance.

Alternatives proposing the discharge of 0.02 acres of fill in freshwater emergent wetlands south of White Road were not practicable. To serve the reconstructed Pier 2, the elevation of the subsided portions of White Road must be restored, which results in the fill of a small area of highly disturbed wetland. In order to avoid the wetland fill, White Road would need to be shifted to the north, which would result in substantial increases in cost well out of proportion to the limited ecological value of the existing wetland to be filled.

Alternatives to the 0.264 acres of wetland fill that were considered for the project were infeasible or not practicable, potentially resulting in additional adverse effects, including the potential increase in the area of wetland fill. The Army concluded that there are no practicable alternatives to the fill required for the proposed project, and that the project constitutes the LEDPA, as required under the Clean Water Act Section 404(b)(1) Guidelines.

6. CONCLUSIONS

Based on the foregoing alternatives analyses, the preliminary determination is that the proposed Project (Alternative B) and Alternative A would meet the overall project purpose: the repair and modernization of Pier 2 to ensure MOTCO continues to meet its designated mission. The purpose and need for the revised design of Pier 2 assessed in the SEA is higher quality, improved operational efficiency, and lower life-cycle cost, which would ultimately save taxpayer dollars. The relative environmental effects of both Alternatives A and B are compared throughout the discussion of environmental consequences presented in Chapter 4 of the SEA, and summarized in this alternatives analysis.

For the purposes of determining the **Least Environmentally Damaging Practicable Alternative (LEDPA)**, the potential environmental effects related to each relevant topical issue in the SEA were reviewed for both alternatives in order to ascertain the LEDPA.

Generally, due to the similarity of the alternatives, a majority of the environmental effects for both alternatives were equivalent in nature and extent.

Differences between Alternative A (EIS preferred alternative) and Alternative B (Proposed Project and Design Changes Alternative from SEA) include:

- Under Alternative B, the total overwater structure of Pier 2 would be smaller than Alternative A due to the removal of the existing west trestle and forklift trestle (Table 4-4). This would result in an overall beneficial impact to aquatic habitats similar to

that evaluated for Alternative A. However, with the smaller overall footprint of the pier structure under Alternative B, there would be overall greater benefits to aquatic habitats, including SAV and mudflats both of which are considered special aquatic sites under CWA guidelines. The beneficial gain in subtidal aquatic habitat under Alternative B would be more than double that of Alternative A (a gain of 0.71 acre under Alternative B as compared to 0.35 acre under Alternative A). Although Alternative B results in greater adverse impacts to intertidal wetlands and uplands as compared to Alternative A primarily as a result of the construction of the west trestle approach abutment (and some restoration actions), the implementation of the HRP would result in positive impacts for all habitat types over the long-term. The overall beneficial 0.57-acre gain in intertidal wetlands would be through restoration of existing adjacent uplands to wetlands resulting in the overall positive impact of a net gain of 0.31 acre in wetlands. In comparison, the net gain in wetlands under Alternative A would be 0.039 acre. The HRP also provides for the enhancement of intertidal wetlands and uplands in the intertidal brackish marsh within the 100-foot buffer including control of exotic species (USACE Sacramento 2016 *in prep.*).

- Habitat restoration proposed under Alternative B would result in a net gain of 0.31 acres of intertidal wetlands. Habitat restoration under Alternative B would include 0.57 acres of intertidal wetland restoration in existing uplands adjacent to the marsh plain, 0.67 acres of wetland re-establishment in existing wetlands that support invasive exotics, 0.08 acres of wetland restoration in areas currently occupied by trestle structures, and control of invasive exotic plants in 4.95 acres of wetlands and 3.33 acres of uplands north of White Road following Pier 2 construction. Habitat restoration under Alternative A would result in a net gain of 0.039 acre of intertidal wetlands. Alternative A habitat restoration would consist of re-establishment of wetlands disturbed during construction and 0.41 acres of wetlands where trestle structures are removed. Assuming an equal mitigation ratio of 2.19 under both alternatives, the estimated 0.03 acre of unavoidable impact to wetlands would be mitigated over 0.07 acre. Alternative B would result in a greater net gain in intertidal wetlands than Alternative A.

- Under Alternative B, the total overwater structure of Pier 2 would be smaller than Alternative A due to the removal of the existing west trestle and forklift trestle. This would result in an overall beneficial impact to aquatic habitats similar to that evaluated for Alternative A. However, with the smaller overall footprint of the pier structure under Alternative B, there would be overall greater benefits to aquatic habitats, including SAV and mudflats both of which are considered special aquatic sites under CWA guidelines. The beneficial gain in subtidal aquatic habitat under Alternative B would be more than double that of Alternative A (a gain of 0.71 acre under Alternative B as compared to 0.35 acre under Alternative A).

- Due to the construction of the west trestle approach abutment, shoreline protection and some restoration actions, Alternative B would result in a greater adverse impact to intertidal wetlands (0.244 acre of permanent fill) than Alternative A (0.013 acre of permanent fill). This would be offset by the implementation of the HRP under

Alternative B, which would result in greater positive impacts for wetland and upland habitat types over the long term than Alternative A.

- The total area of new project footprint within the floodplain under Alternative B is estimated at 1.05 acres as compared with 0.95 acres under Alternative A. While the impact under Alternative B is slightly higher than under Alternative A, the floodplain impact under both alternatives would result in a negligible increase in surface water elevation because Suisun Bay is an open system that can absorb a storm surge over a very large area. In addition, the HRP includes excavation and fill removal to restore the marsh plain within the 1.32-acre wetlands restoration area, which is also within the 100-year floodplain.

- Alternative B would increase the amount of unshaded bay surface by 33,405 SF compared to 17,442 SF under Alternative A. The increased availability of unshaded surface is expected to lead to a long-term increase in Submerged Aquatic Vegetation (SAV) under Alternative B.

- For essential fish habitat, long-term beneficial impacts, which would be greater for Alternative B than Alternative A, include the removal of overwater and in-water structures, and the removal of creosote-treated timber piles.

- In addition, the net decrease in pier coverage of the Bay under Alternative B would incrementally increase circulation and sunlight penetration while reducing the amount of hard substrate for invertebrate attachment.

- Given the reduced number of piles to be installed under Alternative B, potential impacts to water quality would be less than those predicted for Alternative A. The reduced construction footprint for the new pile-supported structure would result in less in-water use of equipment with the potential to cause increased temporary turbidity in shallow areas, such as tugboats, barge mounted cranes, and construction crew support vessels.

- There would be reduced impacts from pile driving activity from Alternative B relative to Alternative A, which can also result in localized increased turbidity from the pressure of the blows to the piles to drive the piles down into the bay bottom.

- Due to reduced construction activities associated with Alternative B, there may be a slight corresponding decrease in the amount of Hazardous Material required as compared to Alternative A.

For all other environmental resources identified in the SEA, the potential effects for both Alternative A and Alternative B were determined to be substantially similar.

Overall, Alternative B has a lower magnitude of impacts than Alternative A on earth resources, water resources, biological resources, land use/coastal zone management, cultural resources, and visual resources due to the smaller Pier 2 footprint (an additional -17,982 SF

for a total -33,405 SF under Alternative B). The impacts to the Port Chicago National Memorial are less under Alternative B as the west trestle, which currently and under Alternative A is adjacent to the site, is relocated to the east approximately 750 feet under Alternative B. Transportation/utilities infrastructure and air quality impacts are similar under both alternatives.

Under Alternative B, there are slightly greater impacts to wetlands and within the 100-year floodplain due to the new, single west trestle abutment, but this is offset by the greater overall beneficial impacts on wetland and upland habitats over the long term resulting from implementation of the HRP. Alternative B would result in a greater net gain in the area of intertidal wetlands than Alternative A, and overall would result in restoration and enhancement actions over a larger area of intertidal wetlands and uplands than would be accomplished under Alternative A.

The Army has carefully considered alternative designs for the proposed action, with the goal of ensuring the operational adequacy of the new pier while minimizing the size of the new structure and the extent of new construction and fill in the waters of Suisun Bay. Alternative B, the new preferred alternative, would have lesser impacts to aquatic resources than the EIS-preferred alternative, Alternative A and would result in greater net gains in the area of intertidal wetlands and the ecological function of wetlands and uplands. Therefore, the Army has determined that Alternative B is the Least Environmentally Damaging Practicable Alternative in accordance with Section 404(b)(1) of the Clean Water Act. Similarly, the Army has found that there are no practicable alternatives to the proposed implementation of the project elements sited in the 100-year floodplain and the Army has taken all practicable measures to minimize harm to the floodplain.

Consequently, for the above reasons, the Pier 2 Modernization and Repair Design Changes at MOTCO Alternative (Alternative B) is considered to be the Least Environmentally Damaging Practicable Alternative (LEDPA) when compared to the No Action Alternative.

7. REFERENCES

Department of the Army, 2016. Archaeological Testing and Road Inventory in Support of the Environmental Assessment for General Repair of Bridges, Roads, and Utilities at Military Ocean Terminal Concord, CA.

Department of the Army, 2017. Final Supplemental Environmental Assessment for Pier 2 Modernization and Repair Design Changes at Military Ocean Terminal Concord, California. January.

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USFWS, 2014. Endangered Species Act Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response. November.

APPENDIX C
FINAL SUBMERGED AQUATIC VEGETATION SURVEY REPORT FOR THE MODERNIZATION AND REPAIR OF PIER 2 AT MILITARY OCEAN TERMINAL CONCORD, CA

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Final

SUBMERGED AQUATIC VEGETATION SURVEY REPORT FOR THE MODERNIZATION AND REPAIR OF PIER 2 AT MILITARY OCEAN TERMINAL CONCORD, CA

DECEMBER 2015

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SUBMERGED AQUATIC VEGETATION RESOURCE EVALUATION

Introduction

The U.S. Army's planned reconstruction of Piers 2 and 3 at Military Ocean Terminal Concord (MOTCO), located in Suisun Bay in Concord, California, was determined to have the potential to impact subtidal substrate and submerged aquatic vegetation (SAV). Tierra Data Inc. (TDI) was contracted by Cardno to perform a pre-construction assessment of SAV species within the proposed project area (Figure 1).

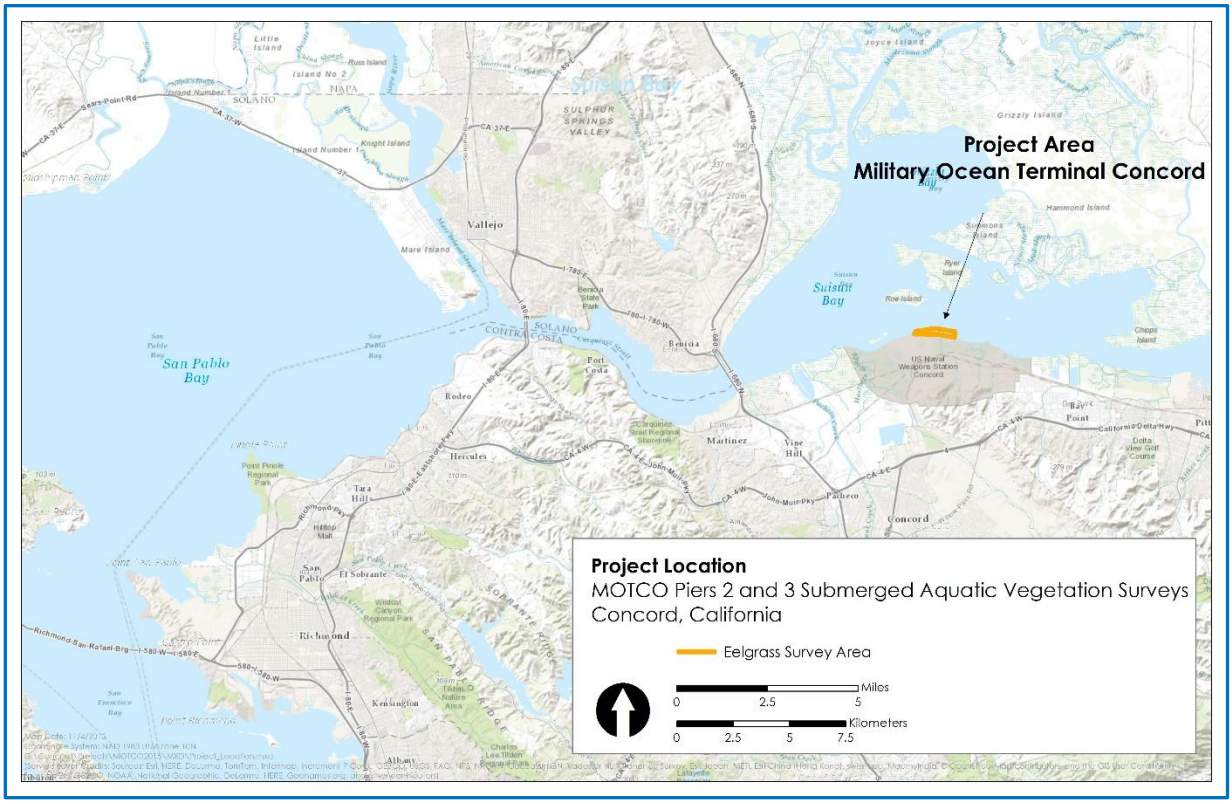

Figure 1. Military Ocean Terminal Concord (MOTCO) Piers 2 and 3 Project Location in Suisun Bay.

Historical Perspective

San Francisco Bay is a diverse and expansive estuarine system that ranges from marine habitat to freshwater wetlands and supports a broad range of native and non-native aquatic flora and fauna. Suisun Bay, located in the West Delta, is an estuarine system that experiences fluctuating salinity concentrations both annually and seasonally based on upstream freshwater flow and tidal inundation. The SAV serves a key role in maintaining functional aquatic ecosystems by sculpting hydrological regime, sedimentation, nutrient cycling, and serving as habitat for associated fauna. The SAV features rooted flowering plants that grow primarily below the water surface in subtidal areas (Moyle et al. 2011). Linear-leaved pondweeds, such as sago pondweed (*Stuckenia pectinata*) and fineleaf pondweed (*S. filiformis*), occur in sloughs and bays and are extensive around islands and other shallow, subtidal areas in Honker Bay, Suisun Cutoff, and Suisun Bay

(California State Coastal Conservancy 2010). The most well-studied SAV in San Francisco Bay is eelgrass (*Zostera marina*) which is most prevalent west of the Carquinez Straight and is typically representative of the marine portion of the estuarine habitat. The ecological characteristics of SAV, including species diversity and extent are mostly regulated by physical disturbance, depth, substrate type, salinity and light transmissivity in Suisun Bay and the Delta. SAV in Suisun Bay is comprised of a variety of species including sago pondweed, fineleaf pondweed, wigeongrass (*Ruppia maritima*) and eelgrass (Moyle et al. 2011). Several special status fish species identified in the Multi-Species Conservation Strategy, including Delta smelt (*Hypomesus transpacificus*) and Chinook salmon (*Oncorhynchus tshawytscha*), may benefit from the presence of native SAV. Sago pondweed provides a food source for waterfowl, suppresses phytoplankton blooms by taking up phosphorus, and dampens wave action, which provides erosion control of shorelines (Casey 2010). Recent studies have documented that sago pondweed supports amphipods and isopods in estuarine waters as well as midge and crane fly larvae in the more freshwater habitat thus providing valuable food items for native fish and avian species.

Sago pondweed is a submersed macrophyte of nearly cosmopolitan distribution (Kantrud 1990). The plant is a much-branched herbaceous plant that grows from creeping rhizomes and reaches 3 feet in length. It is generally completely submerged, except for the reproductive stalk that shows above the water and flowers between June and September (Casey 2010). The plant grows in nearly all bottom substrates, can tolerate high salinity, pH, and alkaline water and is found submerged in semi-permanent or permanently flooded areas where the water is less than 8 feet deep (Casey 2010). Sago pondweed typically dies back when water salinity exceeds 15 parts per thousand (ppt; Kantrud 1990), but reappears with the return of oligohaline conditions. In 2011, the National Oceanic and Atmospheric Administration (NOAA) funded a survey of SAV in the low salinity region of the San Francisco Estuary from Suisun Bay in the west Delta, conducted by Dr. Katharyn Boyer's lab at Roberg Tiburon Center for Environmental Studies, San Francisco State University. The study mapped distribution of two species of native pondweeds: *S. pectinata* and *S. filiformis* (Figure 2).

Eelgrass is the most widespread seagrass in San Francisco Bay (Bay) and provides valued ecological services (Kitting 1993). Eelgrass covers less than 1,200 hectares (ha) or approximately 1% of submerged land in the Bay (Merkel and Associates 2005). Eelgrass communities fluctuate on both an annual and seasonal basis and are most commonly discussed in terms of potential extent by examining historical mapping, bathymetry, and suitable habitat. Eelgrass resources in the Bay are regionally significant and make important ecological contributions as a food source, structural habitat, and primary production. The eelgrass resources in the Bay are discontinuously distributed throughout mostly the central and southern regions of the Bay, and increased in spatial extent between 1987 and between 2003 and 2009 based on repeated Bay-wide surveys (Figure 3).

The extent of eelgrass resources in the Bay has historically encompassed portions of shallow areas less than -3 meters (m) Mean Lower Low Water (MLLW), with 98.8% of all mapped

eelgrass in the bay found between -1.77 m and 0.4 m MLLW (Merkel and Associates 2005). Eelgrass communities nearest to the project footprint are documented to exist approximately 20 kilometers west at Glen Cove in Benicia, California within the Carquinez Straight (Figure 3). The eelgrass resources documented to occur at Glen Cove are relatively small as compared to other Bay eelgrass communities and represent the furthest east or upriver of all recorded eelgrass resources.

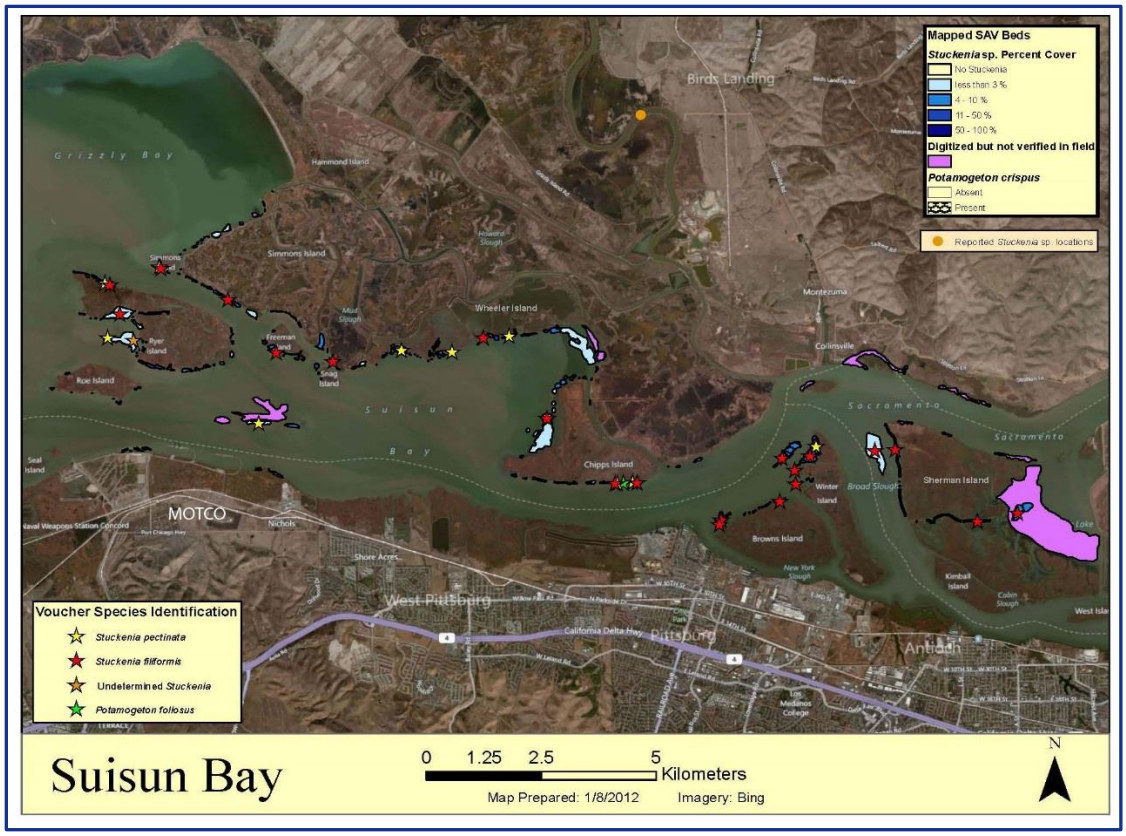

Figure 2. Distribution of Pondweeds in Suisun Bay and the West Delta (NOAA 2011).

Figure 3. Location of Documented Eelgrass Communities Relative to MOTCO Based on 2009 Bay-Wide Surveys.

SAV Resource Evaluation Methodology

The reconstruction project at MOTCO Piers 2 and 3 proposes the retrofitting of the pier structures, walkways, and pilings. The project area incorporates a small portion of the deep dredge channel adjacent to the piers and shallow (< 2 meters [m]) portions of mostly wetland habitat within the interior portions of the piers and the adjacent shoreline (see Figure 1). The MOTCO Piers 2 and 3 SAV survey investigation included most of the areas contained within the project area boundary likely to support SAV resources based on bathymetry and suitable habitat. Survey results from May 2013, aerial imagery, and existing resource layers documenting the location and extent of SAV within the Bay were examined to highlight potential target locations, suitable habitat conditions, and historical spatial extent of the various SAV species.

Surveys were conducted to document the spatial extent and health of SAV species utilizing single beam sonar and visual observations on October 13, 2015. TDI surveyed the project area using single beam sonar integrated with real time ArcPad navigation and digital global position system (DGPS) mapping using a 15-foot Boston Whaler equipped to accommodate shallow water conditions. Sonar surveys were performed where access and navigation around piers and obstructions were possible (Figure 4). TDI scientists visually surveyed and photographed all of the areas contained within the project during various tidal states to document SAV species.

Single beam sonar surveys were performed to document the spatial extent of both emergent and non-emergent SAV and capture bathometric information specific to the project area.

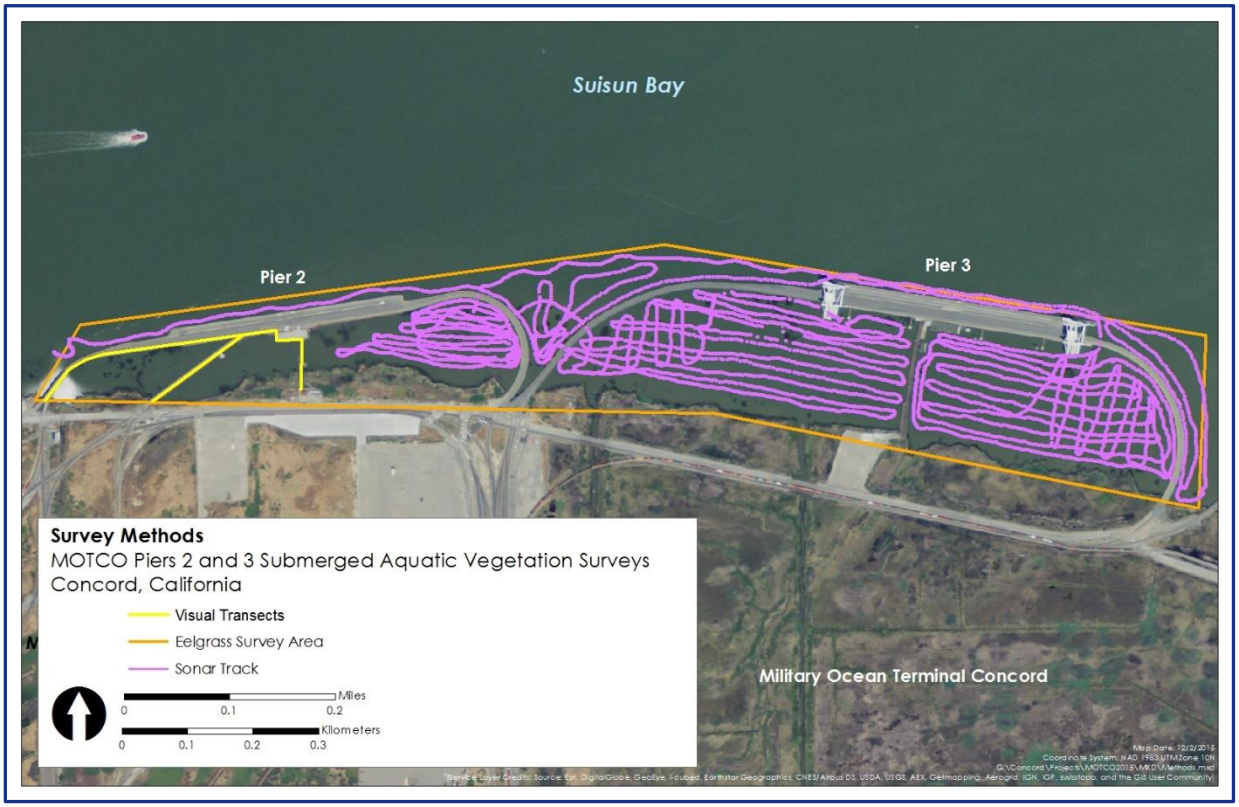

Figure 4. Single Beam Sonar Survey Track lines and Visual Observations within the Project Area.

Visual Observations

Visual observations of the project area were conducted during the sonar surveys and from the piers at low tide on October 13, 2015 between 0800 and 1000 hours. Surveys concentrated on shallow areas along the shoreline and interior of the pier structures sufficient to document and delineate SAV. Attention was given to those areas inaccessible by boat, containing visual obstructions (old wood pier pilings and decking), and most likely to support SAV resources, as well as shorelines with concentrated debris or plant wrack. Further attention was focused on documenting the health and extent of the wetland habitat and its dominant vegetative constituents.

SAV Survey Results

Areas surveyed within the project area contained emergent (reaching the water surface) and non-emergent (sub-surface) sago pondweed (Figure 5). Sago pondweed encompassed a total of 47,606.9 square meters (m^2; 46,312.5 m^2 emergent, and 1,294.5 m^2 sub-emergent) and occurred inside, and around, both pier structures in waters no greater than -2 m MLLW. Emergent cover was moderate to sparse compared to previous surveys (Photo 1). One observation of fineleaf pondweed was made near the central portion of Pier 2 just in shore of the Pier (Figure 5 and

Photo 2). Eelgrass was documented in 12 interior locations of the MOTCO piers. Seven small (< 1-2 m^2) patches of eelgrass were observed in the western portion of Pier 2 (Photo 3) and five small patches in the far eastern portion of Pier 2 (Figure 5). In all cases the eelgrass was located in less than -2 m MLLW water depths, and plants appeared healthy and recently reproductive. Previously documented emergent wetlands consisting of California Bulrush are also shown in Figure 5.

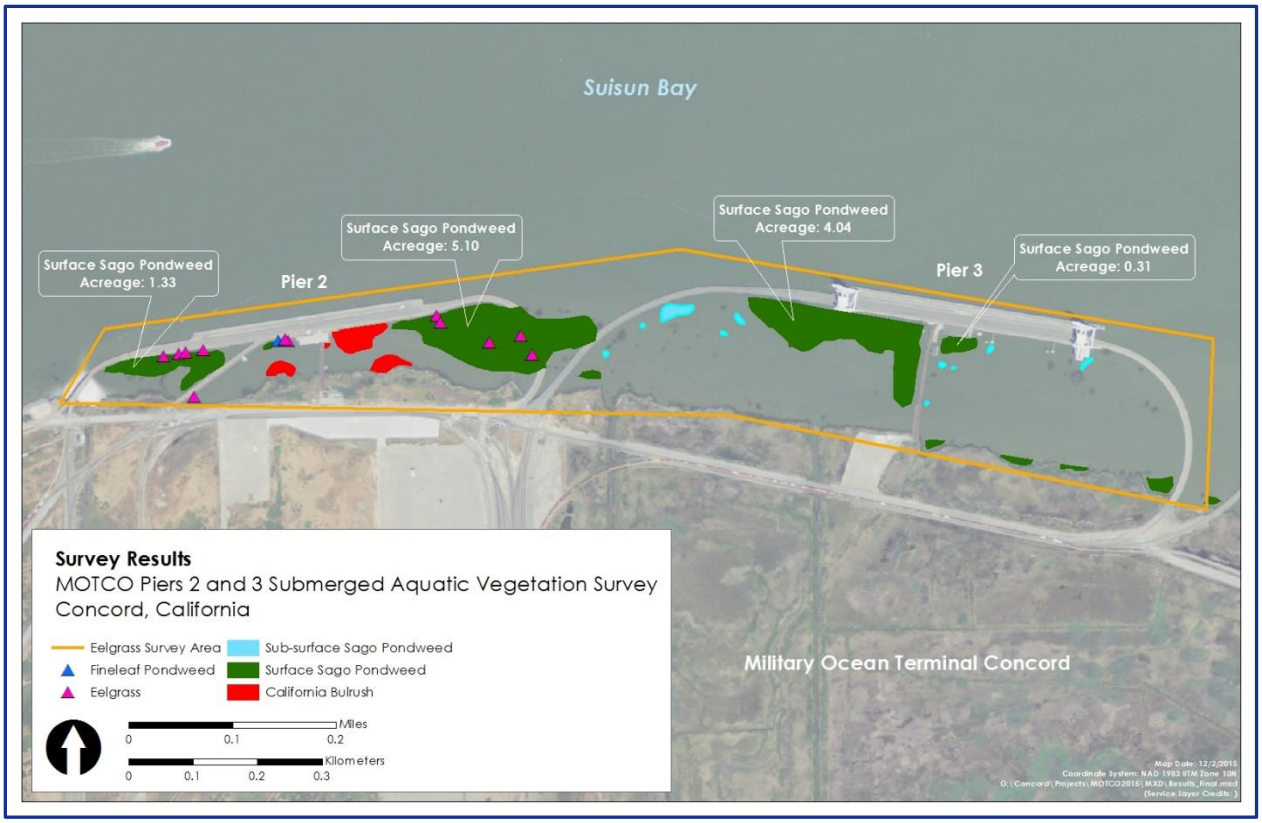

Figure 5. Extent of SAV Resources Documented within the Project Area.

Photo 1. Moderate Cover of Sago Pondweed (*S. pectinata*) Interior of Pier 2.

Photo 2. Fineleaf Pondweed (*S. filiformis*) Interior and Adjacent to Pier 2.

Photo 3. Small (1-2 m^2) Eelgrass (*Z. marina*) Community Interior of Pier 2.

Based on field observations and habitat constraints reported by Zimmerman (1995), suitable habitat to support eelgrass within the project area was considered to be less than -2 m depth MLLW. Visual walking surveys conducted from the piers on October 13, 2015 at low tide (1.08 feet at 0854 Port Chicago, Suisun Bay) documented sago pondweed, eelgrass, and fineleaf pondweed growing mostly adjacent to the pier structures in depositional areas. Observations of the benthic habitat noted mostly semi-exposed mud flats absent of notable fauna. Water depth in areas observed during visual surveys ranged from exposed substrate to approximately -2 m in depth. Conditions on the day of the survey offered light wind, clear skies, and vertical water visibility of about 0.6 to 1.0 m.

Salinity measurements obtained from the U.S. Geological Survey remote station (http://waterdata.usgs.gov/ca/nwis/uv?site_no=11455780) from May 2013 through October 2015 at approximately 10 feet MLLW at the Benicia Bridge, documented specific conductance (measured in milliSiemens/centimenter [mS/cm]) averages of between 10,000 and 38,000 mS/cm, or salinities of between 5.6 and 24.0 ppt. Some significant freshwater events were recorded at the station but salinities appear to have rebounded to stated averages after three to five days (Figure 6).

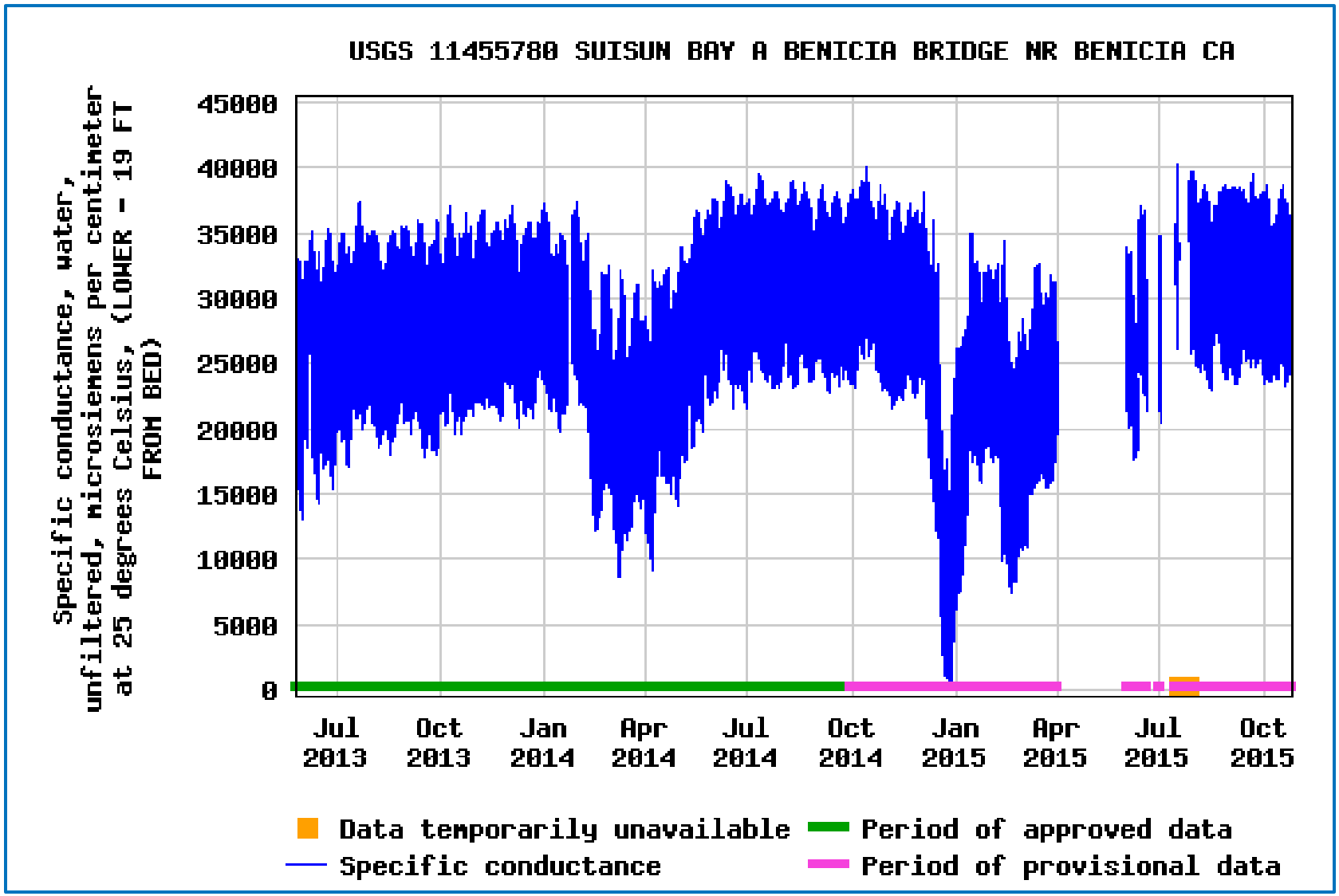

Figure 6. Specific Conductivity of Suisun Bay at the Benicia Bridge -10 ft MLLW (USGS 2015).

Single-beam sonar surveys conducted within the project area recorded various non vegetative submerged objects and non-emergent pondweed growing in depths less than -1.5 m MLLW (Figure 7). Visual observations of the project area during sonar surveys and associated biological communities documented a highly turbid environment seasonally dominated by freshwater input from the Sacramento Delta.

Pondweed reached the surface in most cases and a review of recorded sonograms displayed consistency in the strength and shape of returns. Sonograms of the project area recorded SAV in mostly soft mud/silt substrate, based on signal strength of return, supporting pondweed in shallow turbid waters less than -2.0 m in depth (Figure 7). Observed emergent SAV communities were recorded as separate taxa and were generally geospatially consistent with the May 2013 survey and aerial imagery (Figure 8). Non-emergent SAV observed in sonograms was classified as sago pondweed in all cases as return morphology and strength were consistent with emergent sago pondweed imagery and sago pondweed was the dominant SAV constituent. Sago pondweed spatial extent recorded from the October 2015 survey decreased by 51.5% since May 2013 (Figure 8). The spatial extent of sago pondweed dropped from 92,383.5 m^2 to 47,606.9 m^2.

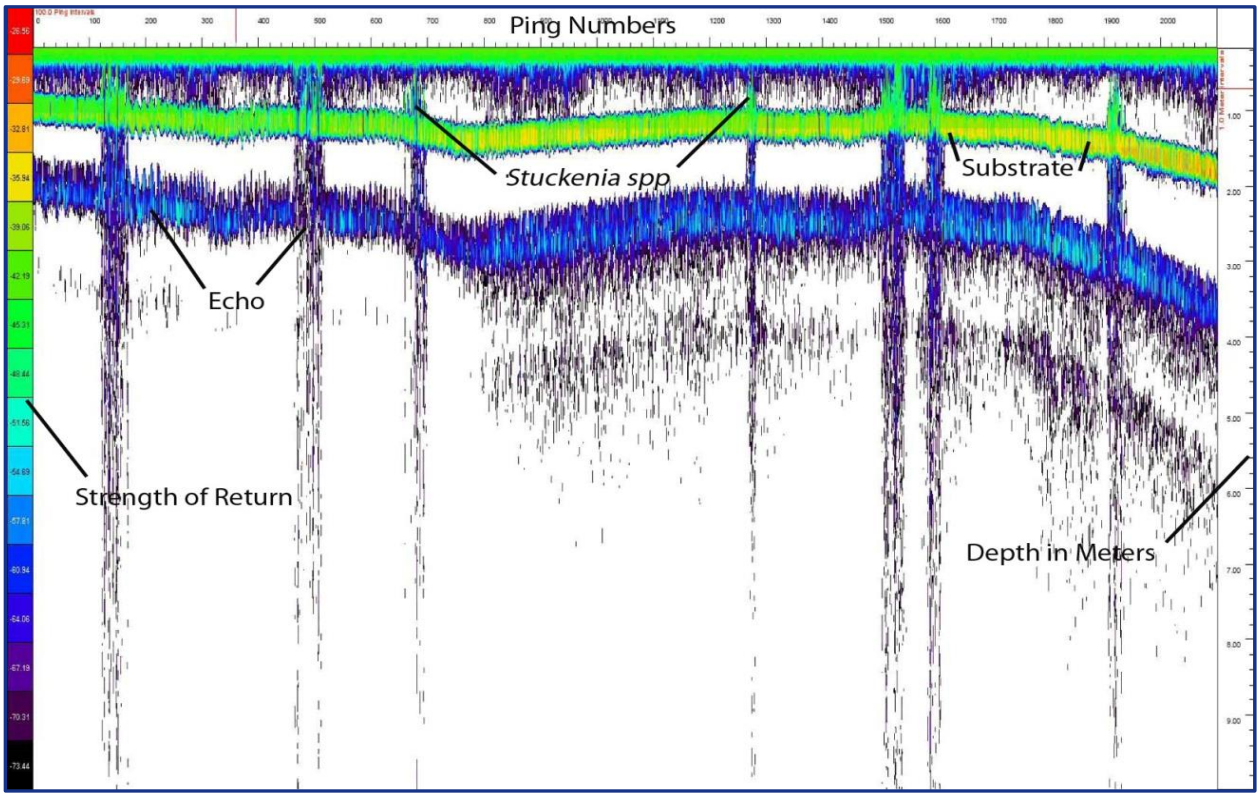

Figure 7. Sonogram from single beam sonar displaying SAV, bathymetry, and substrate.

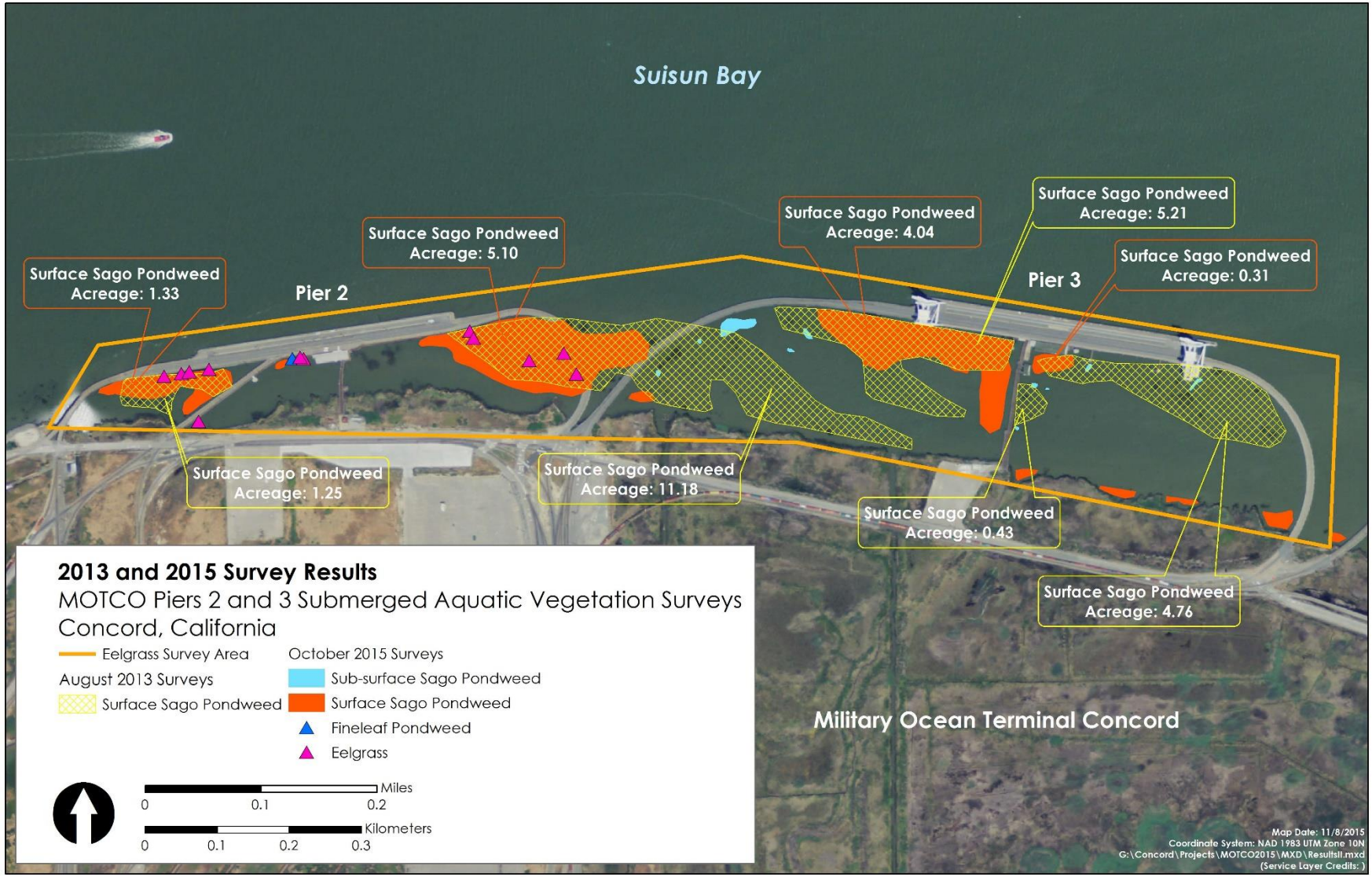

Figure 8. Spatial Extent of Sago Pondweed Habitat Based on 2013 and 2015 Surveys.

Discussion

The documented presence of a variety of SAV species, including eelgrass, within the MOTCO project area presents contrasting results when compared to the May 2013 survey event. Sago pondweed and California bulrush displayed significantly reduced geospatial extent and density in 2015, when compared to 2013 conditions. Eelgrass was observed in several locations and consisted of small, somewhat isolated beds, inferring recent recruitment and suitable growing conditions. Examining salinity measurements recorded at the Benicia Bridge just west of the MOTCO project area, typical freshwater input during winter months did not observably reduce salinities for prolonged time periods (months) since the May 2013 SAV survey. Habitat conditions observed and documented within the project area in terms of salinity, substrate, and light availability appear to be near or beyond the growth limitations for eelgrass (Murphy et al. 2011). Reduced freshwater flow from California's extended drought has allowed tidal exchange to protrude inland (east) beyond typical areas providing suitable conditions for eelgrass recruitment and growth, apparently causing less tolerant sago pondweed and California bulrush to die back. While no long-term information is available for the localized area at MOTCO, existing data sets collected by U.S. Fish and Wildlife Service (National Wetland Inventory) and National Marine Fisheries Service/NOAA fisheries have documented the expansion and contraction of SAV species within San Francisco Bay, and specifically Suisun Bay, and the west Delta. Suisun Bay oscillates in salinity annually and seasonally and the magnitude and persistence for salinity conditions certainly regulates growth, recruitment, and health of the SAV communities. Increased salinity conditions over the last two years in conjunction with suitable substrate conditions interior of the MOTCO piers in areas shielded from scour but supplied with consistent water flow from the nearby deep water channel almost certainly contributed to eelgrass communities becoming established at MOTCO.

Legally, the Sacramento-San Joaquin Delta is defined by Section 12220 of the California State Water Code as the area near the confluence of the Sacramento and San Joaquin Rivers. MOTCO is located approximately 5 miles west of the delta. While eelgrass has continued to expand its spatial extent in the Bay, the physical water properties (salinity and turbidity) east of the Carquinez Straight typically present a noticeable inflection point in which the Bay as a water body shifts from a tidally-influenced estuary to an estuarine system predominantly influenced by freshwater flow. Changes in the hydrological regime from drought conditions places physiological constraints on some native and non-native SAV species, while also presenting opportunities for expansion and recruitment to others. One of the dominant vegetative communities documented within the intertidal/subtidal waters of the project area at MOTCO in 2013 was the California Bulrush Alliance, which dominates marshes with fluctuating water levels and freshwater inputs in the Bay (Sawyer et al. 2009). Bulrush will tolerate only slight salinity (0 to 5 ppt), but will tolerate periodic short pulses of more saline water (Casey 2010). In contrast, eelgrass is a true seagrass, requiring minimum salinities of 10 ppt or greater (Murphy et al. 2011). The fact that Bay waters adjacent to MOTCO have become more saline in recent years has facilitated the transition of the habitat to become more estuarine in nature, and thus suitable for eelgrass growth.

The most abundant SAV observed within the project area from both visual and sonar surveys was sago pondweed, located in sub-tidal areas mostly between -1.0 to - 2.0 m MLLW. Sago pondweed was moderately dense to sparse in terms of percent cover compared to the same areas mapped in 2013. The presence of eelgrass and fineleaf pondweed were new observations for the project area and the eelgrass observations represent the furthest east (upstream) that eelgrass has ever been documented to occur. The composite extent of all SAV species documented to occur in the project area represents a conservative estimate of pondweed resources and potential area of impact from construction activities. Generally pondweed is difficult to positively identify, as the genus is known to be highly variable in morphology depending on habitat conditions (Boyer pers. com.). Additionally, the eelgrass observed within the project areas was greater than 1 centimeter wide suggesting that the species was *Zostera pacifica* but collaboration with Dr. Boyer (pers. com.) confirmed that the species was *Z. marina*. Sago pondweed is documented to occur within close proximity and, like many pondweeds, is generally completely submersed, except for the reproductive stalk which is just visible above the water. Survey work funded by NOAA fisheries, and conducted by Dr. Boyer's lab at San Francisco State University, provides an expanding data set to evaluate SAV habitat and its relationship to salinity in Suisun Bay.

Marked changes in the SAV community at MOTCO, apparently driven by increasing salinity, were observed between the 2013 and 2015 surveys. The natural variability in composition and cover of the SAV community presents a challenge to determining the effects of construction activities on SAV. To disentangle natural variation from construction effects, measuring SAV changes before and after construction in "control" sites that are outside of the construction area is advised.

Conclusion

Based on this site specific survey, the 2013 survey, and the review of existing research and physical data sets referenced here within, conditions for the recruitment, growth, or persistence of SAV within the project area at MOTCO is regulated primarily by salinity and depth. Any concerns regarding disturbance or impacts to SAV potentially caused by construction activities at MOTCO should be focused on pondweed and eelgrass communities adjacent to pier structures, as the likelihood of impacts to existing SAV communities greater than 5 m from pile driving or removal activities with the exception of direct impacts from dredging, would likely be negligible. Considering the forecast for heavy rains and river flows in the winter of 2015/2016, significant changes to SAV habitat extent and species composition are likely to occur as well as the hydrological regime of Suisan Bay for the near term. Reference to control sites outside of the construction area will be necessary to separate the effects of construction from natural variation.

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APPENDIX D
RECORD OF NON-APPLICABILITY FOR CLEAN AIR ACT CONFORMITY, MILITARY OCEAN TERMINAL CONCORD, CA

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RECORD OF NON-APPLICABILITY
FOR CLEAN AIR ACT CONFORMITY
Military Ocean Terminal Concord, CA

The proposed action falls under the Record of Non-Applicability (RONA) category and is documented with this RONA.

Project/Action Name: Military Ocean Terminal Concord (MOTCO) Pier 2 Modernization and Repair Design Changes.

Project/Action Point of Contact: LTC James R. Wiley
Commanding Officer
834th Transportation Battalion

Begin Date: 2017

End Date: 2019

General Conformity under the Clean Air Act (CAA), Section 176 has been evaluated for the project described above according to the requirements of 40 CFR Part 93, Subpart B. The General Conformity Rule applies to federal actions occurring in regions designated as being in nonattainment for the National Ambient Air Quality Standards (NAAQS) or attainment areas subject to maintenance plans (maintenance areas). Threshold (*de minimis)* rates of emissions have been established for federal actions with the potential to have significant air quality impacts. If a project/action located in an area designated as non-attainment or maintenance exceeds these *de minimis* levels, a general conformity determination is required. Contra Costa County is designated as a marginal ozone (8-hour) (O_3) non-attainment area, a nonattainment area for the 24-hour particulate matter less than or equal to 2.5 microns aerodynamic diameter ($PM_{2.5}$) standard, and a maintenance area for carbon monoxide (CO). Because ozone and $PM_{2.5}$ form or can form from other emissions, the analysis focuses on O_3 precursors, volatile organic compounds (VOCs) and nitrogen oxides (NO_x), as well as sulfur dioxide (SO_2) as a precursor for $PM_{2.5}$. The region is in attainment for other criteria pollutants.

A General Conformity applicability analysis of this project/action was performed to assess the air emissions associated with the proposed action to determine if maximum annual direct and indirect emissions from this project/action would exceed *de minimis thresholds.* Total emissions resulting from construction activities have been estimated using available project data, general air quality assumptions, and California Air Resources Board (CARB) and the United States Environmental Protection Agency (USEPA) emission factors. There are no operational air emissions. Based on the air quality analysis for the proposed action, the maximum estimated emissions would be below conformity *de minimis* levels (Table 1).

Table 1. Proposed Action (Alternative 2) Emissions Compared to General Conformity Rule *de Minimis Thresholds*

Year	Tons/Year			
	VOCs	NO_x	SO_2	$PM_{2.5}$
2017	0.27	2.68	0.04	1.09
2018	2.26	20.79	0.35	3.44
2019	0.51	5.59	0.14	1.17
de minimis thresholds	100	100	100	100
Potential Exceedance	No	No	No	No

Attached to this RONA is a summary of the calculations, and data including the estimated construction emissions due to implementation of the Proposed Action.

CONCLUSION

The project area is a nonattainment area for the $PM_{2.5}$ and the 8-hour O_3 NAAQS. Sulfur dioxide is a precursor to the formation of $PM_{2.5}$ and VOCs and NO_x are precursors to the formation of O_3. Emissions associated with construction activities for the proposed action were calculated based on standardized methodologies. Emissions were then compared with *de minimis* thresholds for the Bay Area Air Quality Management District.

The U.S. Army concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the proposed action. The emissions data supporting that conclusion is shown in Table 1, which is a summary of the calculations, methodology, and data attached to this RONA. Therefore, the U.S. Army concludes that formal Conformity Determination procedures are not required, resulting in this RONA.

RONA APPROVAL

To the best of my knowledge, the information presented in this RONA is correct and accurate, and I concur in the finding that the proposed action does not require a formal CAA Conformity Determination.

LTC James R. Wiley
Commanding Officer
834th Transportation Battalion

1 FEB 17
Date

TAB A. Annual Summary of Emissions for Piers 2 and 3

Table 1. Alternative A Emissions Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr	CO_2e MT/yr
2017	2.04	7.59	17.30	0.31	27.63	3.59	1,105
2018	2.48	10.08	22.30	0.40	28.91	3.86	1,507
2019	0.57	3.10	5.77	0.18	10.11	1.18	479

Table 2. Alternative B Emissions Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr	CO_2e MT/yr
2017	0.27	1.32	2.68	0.04	10.01	1.09	219
2018	2.26	9.31	20.79	0.35	25.47	3.44	1,454
2019	0.51	2.88	5.59	0.14	10.09	1.17	463

TAB B. Alternative A - Pier 2 Demolition 2017-2018

7 months

Table 1. Mobilization

On-road Equipment	Hours of Operation	Engine HP	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Pickup Truck	50	180	45	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11
Delivery Truck	85	380	45	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Pickup Truck	1.42	12.96	1.25	0.02	0.21	0.14	0.13	2,490
Delivery Truck	5.04	23.13	58.39	0.15	5.34	4.59	0.29	16,106
Tons/year:	**0.00**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**8**

Table 2. Pile and Superstructure Removal

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO_2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Excavator	2,800	232	0.38	1.32	6.11E-05	4.40	1.16E-04	14.00	3.24E-04	0.0048	0.77	5.60E-05	0.41	0.08	10,206
Crane	1,300	800	0.42	0.68	2.37E-05	2.70	5.35E-05	8.17	1.36E-04	0.0049	0.38	2.02E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Excavator	971.11	2,879.53	8,978.27	2.64	649.50	597.54	5.31	1.06	130,993
Crane	837.23	3,011.80	8,914.26	4.68	521.40	479.68	9.36	1.87	230,641
Tons/year:	**0.90**	**2.95**	**8.95**	**0.00**	**0.59**	**0.54**			
CO_2e Metric tons/year:									**363**

On-road Equipment	Hours of Operation	Engine HP	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Dump Truck	2,157	450	25	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Dump Truck	86.86	380.04	1,017.98	2.13	94.32	82.17	4.05	227,106
Tons/year:	**0.04**	**0.19**	**0.51**	**0.00**	**0.05**	**0.04**		
CO_2e Metric tons/year:								**103**

Table 3. Barge Pier Activity

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO_2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Loader	700	197	0.37	0.10	2.50E-05	2.70	7.14E-05	2.45	3.20E-05	0.0049	0.14	1.00E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Loader	17.49	320.45	282.53	0.55	18.20	16.74	1.09	0.22	26,832
Tons/year:	**0.01**	**0.16**	**0.14**	**0.00**	**0.01**	**0.01**			
CO_2e Metric tons/year:									**27**

On-road Equipment	Hours of Operation	Engine HP	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Dump Truck	539	450	25	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Onsite Semi- Truck	700	380	15	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Dump Truck	21.71	95.01	254.50	0.53	23.58	20.54	1.01	56,776
Onsite Semi- Truck	16.91	73.98	198.17	0.41	18.36	16.00	0.79	44,212
Tons/year:	**0.02**	**0.08**	**0.23**	**0.00**	**0.02**	**0.02**		
CO_2e Metric tons/year:								**46**

Table 4. Stockpile Area Activity

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO_2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Excavator	1,450	232	0.38	1.32	6.11E-05	4.40	1.16E-04	14.00	3.24E-04	0.0048	0.77	5.60E-05	0.41	0.08	10,206
Skid Steer Loader	725	170	0.37	0.10	2.50E-05	2.70	7.14E-05	2.45	3.20E-05	0.0049	0.14	1.00E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Excavator	502.90	1,491.19	4,649.46	1.37	336.35	309.44	2.75	0.55	67,836
Skid Steer Loader	15.64	286.41	252.51	0.49	16.27	14.97	0.97	0.19	23,982
Tons/year:	**0.26**	**0.89**	**2.45**	**0.00**	**0.18**	**0.16**			
CO_2e Metric tons/year:									**92**

Table 5. Watercraft - Demolition Activities

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	Fc g	PM10 g/hp-hr	PM10-ZH g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Tug - propulsion	1,400	500	0.50	0.68	0.44	3.73	0.25	5.10	0.21	6.44E+07	0.15	0.67	0.41	0.08	10,206
Launch Boat	2,800	50	0.45	1.80	0.51	3.73	0.41	5.32	0.06	1.16E+07	0.15	0.44	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Tug - propulsion	634.64	3,220.79	4,103.70	425.94	122.14	112.37	8.29	1.66	204,272
Launch Boat	310.72	619.21	720.50	76.67	20.16	18.55	1.49	0.30	36,769
Tons/year:	**0.47**	**1.92**	**2.41**	**0.25**	**0.07**	**0.07**			
CO_2e Metric tons/year:									**242**

Table 6. On-Site Vehicles

On-road Equipment	Hours of Operation	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH4 lb/mile	CO_2 lb/mile
Pickup Truck	620	45	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Pickup Truck	17.65	160.65	15.53	0.30	2.62	1.71	1.57	30,879.07
Tons/year:	**0.01**	**0.08**	**0.01**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**14**

Table 7. Fugitive Dust

Year	PM 10 tons/acre/mo	acres	days of disturbance	PM 10 Total	PM 2.5/PM 10 Ratio	PM 2.5 Total
2018	0.11	1	152	16.7	0.1	1.7

Table 8. Construction Worker POVs

Vehicles	# trips	# days	mi/day	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH4 lb/mile	CO_2 lb/mile
Carpool Van	16	152	2	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11

	ROG lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 lb	CO_2 lb
	3.08	28.01	2.71	0.05	0.46	0.30	0.27	5,383.36
Tons/year:	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**2**

Table 9. Annual Demolition Emissions Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr	CO_2e MT/yr
2017	0.07	0.15	0.20	0.01	0.02	0.02	21
2018	1.81	6.30	14.72	0.26	17.63	2.51	898

TAB C. Alternative B - Pier 2 Demolition 2017-2018
7 months

Table 1. Mobilization

On-road Equipment	Hours of Operation	Engine HP	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Pickup Truck	50	180	45	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11
Delivery Truck	85	380	45	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Pickup Truck	1.42	12.96	1.25	0.02	0.21	0.14	0.13	2,490
Delivery Truck	5.04	23.13	58.39	0.15	5.34	4.59	0.29	16,106
Tons/year:	**0.00**	**0.02**	**0.03**	**0.00**	**0.00**	**0.00**		
CO_2e Metric tons/year:								**8**

Table 2. Pile and Superstructure Removal

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO_2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Excavator	2,464	232	0.38	1.32	6.11E-05	4.40	1.16E-04	14.00	3.24E-04	0.0048	0.77	5.60E-05	0.41	0.08	10,206
Crane	1,144	800	0.42	0.68	2.37E-05	2.70	5.35E-05	8.17	1.36E-04	0.0049	0.38	2.02E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Excavator	854.58	2,533.99	7,900.88	2.32	571.56	525.83	4.68	0.94	115,274
Crane	736.76	2,650.39	7,844.55	4.11	458.83	422.12	8.23	1.65	202,964
Tons/year:	**0.80**	**2.59**	**7.87**	**0.00**	**0.52**	**0.47**			
CO_2e Metric tons/year:									**319**

On-road Equipment	Hours of Operation	Engine HP	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Dump Truck	2,740	450	25	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Dump Truck	110.31	482.65	1,292.83	2.71	119.78	104.35	5.14	288,425
Tons/year:	**0.06**	**0.24**	**0.65**	**0.00**	**0.06**	**0.05**		
CO_2e Metric tons/year:								**131**

Table 3. Barge Pier Activity

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO_2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Loader	616	197	0.37	0.10	2.50E-05	2.70	7.14E-05	2.45	3.20E-05	0.0049	0.14	1.00E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Loader	15.39	282.00	248.62	0.48	16.02	14.74	0.96	0.19	23,612
Tons/year:	**0.01**	**0.14**	**0.12**	**0.00**	**0.01**	**0.01**			
CO_2e Metric tons/year:									**24**

On-road Equipment	Hours of Operation	Engine HP	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH_4 lb/mile	CO_2 lb/mile
Dump Truck	685	450	25	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Onsite Semi- Truck	616	380	15	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Dump Truck	27.58	120.66	323.21	0.68	29.95	26.09	1.29	72,106
Onsite Semi- Truck	14.88	65.11	174.39	0.37	16.16	14.08	0.69	38,906
Tons/year:	**0.02**	**0.09**	**0.25**	**0.00**	**0.02**	**0.02**		
CO_2e Metric tons/year:								**50**

Table 4. Stockpile Area Activity

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO_2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Excavator	1,276	232	0.38	1.32	6.11E-05	4.40	1.16E-04	14.00	3.24E-04	0.0048	0.77	5.60E-05	0.41	0.08	10,206
Skid Steer Loader	638	170	0.37	0.10	2.50E-05	2.70	7.14E-05	2.45	3.20E-05	0.0049	0.14	1.00E-05	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Excavator	442.55	1,312.24	4,091.53	1.20	295.99	272.31	2.42	0.48	59,695
Skid Steer Loader	13.76	252.04	222.21	0.43	14.31	13.17	0.86	0.17	21,104
Tons/year:	**0.23**	**0.78**	**2.16**	**0.00**	**0.16**	**0.14**			
CO_2e Metric tons/year:									**81**

Table 5. Watercraft - Demolition Activities

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	Fc g	PM10 g/hp-hr	PM10-ZH g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Tug - propulsion	1,400	500	0.50	0.68	0.44	3.73	0.25	5.10	0.21	6.44E+07	0.15	0.67	0.41	0.08	10,206
Launch Boat	2,800	50	0.45	1.80	0.51	3.73	0.41	5.32	0.06	1.16E+07	0.15	0.44	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Tug - propulsion	634.64	3,220.79	4,103.70	425.94	122.14	112.37	8.29	1.66	204,272
Launch Boat	310.72	619.21	720.50	76.67	20.16	18.55	1.49	0.30	36,769
Tons/year:	**0.47**	**1.92**	**2.41**	**0.25**	**0.07**	**0.07**			
CO_2e Metric tons/year:									**242**

Table 6. On-Site Vehicles

On-road Equipment	Hours of Operation	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH4 lb/mile	CO_2 lb/mile
Pickup Truck	546	45	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11
Off-road Equipment	**ROG** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM** lb	**PM2.5** lb	**CH_4** lb	**CO_2** lb		
Pickup Truck	15.53	141.37	13.67	0.26	2.31	1.51	1.38	27,173.58		
Tons/year:	**0.01**	**0.07**	**0.01**	**0.00**	**0.00**	**0.00**				
CO_2e Metric tons/year:								**12**		

Table 7. Fugitive Dust

Duration	PM 10 tons/acre/mo	acres	days of disturbance	PM 10 Total	PM 2.5/PM 10 Ratio	PM 2.5 Total
2018	0.11	1	152	13.4	0.1	1.3

Table 8. Construction Worker POVs

Vehicles	# trips	# days	mi/day	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH4 lb/mile	CO_2 lb/mile
Carpool Van	16	152	2	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11
	ROG lb	**CO** lb	**NOx** lb	**SO2** lb	**PM10** lb	**PM2.5** lb	**CH_4** lb	**CO_2** lb			
	3.08	28.01	2.71	0.05	0.46	0.30	0.27	5,383.36			
Tons/year:	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**					
CO_2e Metric tons/year:								**2**			

Table 9. Annual Demolition Emissions Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr	CO_2e MT/yr
2017	0.07	0.15	0.20	0.01	0.02	0.02	21
2018	1.67	5.87	13.50	0.26	14.21	2.10	870

TAB D. Alternative A - Pier 2 Construction 2017- 2019

Table 1. Watercraft Pile Delivery, Alternative A

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	Fc g	PM10 g/hp-hr	PM10-ZH g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Tug - propulsion	351	375	0.50	0.68	0.44	3.73	0.25	5.10	0.21	1.21E+07	0.15	0.67	0.41	0.08	10,206
	351	375	0.50	0.68	0.44	3.73	0.25	5.10	0.21	1.21E+07	0.15	0.67	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Tug - propulsion	119.23	605.11	770.98	80.02	22.95	21.11	1.56	0.31	38,378
	119.23	605.11	770.98	80.02	22.95	21.11	1.56	0.31	38,378
Tons/year:	**0.12**	**0.61**	**0.77**	**0.08**	**0.02**	**0.02**			
CO_2e Metric tons/year:									**77**

Table 2. Watercraft Used in Construction, Alternative A

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	Fc g	PM10 g/hp-hr	PM10-ZH g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Tug - propulsion	835	375	0.50	0.68	0.44	3.73	0.25	5.10	0.21	2.88E+07	0.15	0.67	0.41	0.08	10,206
	835	375	0.50	0.68	0.44	3.73	0.25	5.10	0.21	2.88E+07	0.15	0.67	0.41	0.08	10,206
Work Boat	1,285	250	0.45	0.68	0.28	3.73	0.16	5.10	0.14	2.66E+07	0.15	0.44	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Tug - propulsion	284.02	1,441.38	1,836.51	190.62	54.66	50.29	3.71	0.74	91,417
	284.02	1,441.38	1,836.51	190.62	54.66	50.29	3.71	0.74	91,417
Work Boat	248.89	1,289.68	1,655.35	175.95	47.16	43.39	3.42	0.68	84,385
Tons/year:	**0.41**	**2.09**	**2.66**	**0.28**	**0.08**	**0.07**			
CO_2e Metric tons/year:									**268**

Table 3. Construction Equipment, Alternative A

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Pile Driver	1,989	1320	0.42	0.32	1.12E-05	2.70	5.35E-05	6.25	1.04E-04	0	0.15	7.96E-06	0.41	0.08	10,206
Pile Hammer	1,989	180	0.42	0.32	1.48E-05	0.92	2.43E-05	6.25	1.45E-04	0	0.15	7.96E-06	0.41	0.08	10,206
Concrete Pump	441	50	0.42	1.45	1.85E-04	4.10	4.20E-04	5.55	1.03E-04	0	0.60	4.65E-05	0.41	0.08	10,206
Barge Crane	2,570	130	0.29	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0	0.38	2.76E-05	0.41	0.08	10,206
RT Crane	635.04	240	0.29	0.32	1.48E-05	2.70	7.14E-05	6.25	1.45E-04	0	0.15	7.96E-06	0.41	0.08	10,206
Excavator	136.08	290	0.38	0.10	2.50E-05	0.92	1.82E-05	2.45	3.18E-05	0	0.11	5.55E-06	0.41	0.08	10,206
Dozer	347.76	307	0.40	0.68	2.37E-05	2.70	5.35E-05	8.17	1.36E-04	0	0.38	2.02E-05	0.41	0.08	10,206
Paver	340.2	187	0.42	0.12	2.40E-05	0.92	2.43E-05	4.38	6.33E-05	0	0.11	5.79E-06	0.41	0.08	10,206
Grader	325	145	0.41	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0	0.38	2.76E-05	0.41	0.08	10,206
Roller	665	154	0.38	0.16	2.57E-05	2.70	7.14E-05	4.44	6.46E-05	0	0.16	1.18E-05	0.41	0.08	10,206
Welder	635	58	0.42	0.99	4.58E-05	3.49	9.23E-05	6.9	1.60E-04	0	0.69	5.02E-05	0.41	0.08	10,206
Gen Set	635	13	0.42	1.45	1.85E-04	4.10	4.20E-04	5.55	1.03E-04	0	0.60	4.65E-05	0.41	0.08	10,206
Forklift	529.2	103	0.20	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0	0.29	2.12E-05	0.41	0.08	10,206
Loader	113	262	0.37	0.14	2.22E-05	4.20	8.32E-04	4.51	6.32E-05	0	0.11	6.03E-06	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Pile Driver	951.65	7,362.46	16,719.9	11.71	490.18	450.97	23.36	4.67	575,875
Pile Hammer	137.76	355.56	2,371.0	1.60	66.84	61.50	3.19	0.64	78,528
Concrete Pump	54.56	140.19	126.1	0.11	18.47	16.99	0.22	0.04	5,377
Barge Crane	201.26	702.11	1,753.7	1.03	130.54	120.10	2.06	0.41	50,832
RT Crane	43.18	320.24	724.6	0.47	21.08	19.40	0.94	0.19	23,185
Excavator	8.73	34.51	88.3	0.16	4.86	4.47	0.32	0.06	7,958
Dozer	89.73	310.95	912.0	0.45	57.91	53.28	0.90	0.18	22,284
Paver	13.56	60.25	272.5	0.28	7.99	7.35	0.57	0.11	13,954
Grader	30.49	118.31	301.2	0.21	17.55	16.14	0.41	0.08	10,172
Roller	22.27	253.02	398.2	0.41	17.56	16.16	0.82	0.16	20,297
Welder	43.85	138.79	269.3	0.18	34.73	31.95	0.36	0.07	8,981
Gen Set	21.06	54.12	48.7	0.04	7.13	6.56	0.08	0.02	2,076
Forklift	8.90	81.93	132.2	0.12	8.55	7.87	0.23	0.05	5,785
Loader	9.81	342.36	127.2	0.12	4.40	4.05	0.23	0.05	5,781
Tons/year:	**0.82**	**5.14**	**12.12**	**0.01**	**0.44**	**0.41**			
CO_2e Metric tons/year:									**834**

Table 4. On Road Vehicles, Alternative A

On-road Equipment	Hours of Operation	Total Miles Traveled	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH4 lb/mile	CO_2 lb/mile
Dump Truck	1,369	4,061	25	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Concrete Truck	2,636	20,500	25	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211
Pickup Truck	2,282	57,060	25	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11
Water Truck	540	5,400	10	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211
Asphalt Truck	286	6,360	25	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211
Semi- Truck	300	6,660	25	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211
Carpool Van	NA	12,768	NA	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Dump Truck	6.54	28.62	76.65	0.16	7.10	6.19	0.30	17,101
Concrete Truck	27.00	123.97	312.92	0.81	28.61	24.62	1.54	86,319
Pickup Truck	36.09	328.55	31.76	0.61	5.36	3.50	3.21	63,153
Water Truck	7.11	32.65	82.43	0.21	7.54	6.48	0.41	22,737
Asphalt Truck	8.38	38.46	97.08	0.25	8.88	7.64	0.48	26,780
Semi- Truck	8.77	40.27	101.66	0.26	9.30	8.00	0.50	28,043
Carpool Van	8.08	73.52	7.11	0.14	1.20	0.78	0.72	14,131
Tons/year:	**0.05**	**0.33**	**0.35**	**0.00**	**0.03**	**0.03**		
CO_2e Metric tons/year:								**117**

Table 5. Fugitive Dust, Alternatives A

Year	PM 10 tons/acre/ mo	acres	days of disturbance	PM 10 Total	PM 2.5/PM 10 Ratio	PM 2.5 Total
2017	0.11	2	45	9.9	0.1	1.0
2018	0.11	2	50	11.0	0.1	1.1
2019	0.11	2	45	9.9	0.1	1.0

Table 6. Alternative A Annual Construction Emissions Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr	CO_2e MT/yr
2017	0.23	1.28	2.57	0.05	9.99	1.08	207
2018	0.67	3.78	7.57	0.14	11.28	1.35	610
2019	0.57	3.10	5.77	0.18	10.11	1.18	479

TAB D. Alternative B - Pier 2 Construction 2017 - 2019

Table 1. Watercraft Pile Delivery, Alternative B

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	Fc g	PM10 g/hp-hr	PM10-ZH g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Tug - propulsion	354	375	0.50	0.68	0.44	3.73	0.25	5.10	0.21	1.22E+07	0.15	0.67	0.41	0.08	10,206
	354	375	0.50	0.68	0.44	3.73	0.25	5.10	0.21	1.22E+07	0.15	0.67	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Tug - propulsion	120.19	609.95	777.15	80.66	23.13	21.28	1.57	0.31	38,685
	120.19	609.95	777.15	80.66	23.13	21.28	1.57	0.31	38,685
Tons/year:	**0.12**	**0.61**	**0.78**	**0.08**	**0.02**	**0.02**			
CO_2e Metric tons/year:									**78**

Table 2. Watercraft Used in Construction, Alternative B

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	Fc g	PM10 g/hp-hr	PM10-ZH g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Tug - propulsion	517	375	0.50	0.68	0.44	3.73	0.25	5.10	0.21	1.78E+07	0.15	0.67	0.41	0.08	10,206
	517	375	0.50	0.68	0.44	3.73	0.25	5.10	0.21	1.78E+07	0.15	0.67	0.41	0.08	10,206
Work Boat	796	250	0.45	0.68	0.28	3.73	0.16	5.10	0.14	1.65E+07	0.15	0.44	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Tug - propulsion	175.82	892.28	1,136.89	118.00	33.84	31.13	2.30	0.46	56,591
	175.82	892.28	1,136.89	118.00	33.84	31.13	2.30	0.46	56,591
Work Boat	154.07	798.37	1,024.74	108.92	29.19	26.86	2.12	0.42	52,238
Tons/year:	**0.25**	**1.29**	**1.65**	**0.17**	**0.05**	**0.04**			
CO_2e Metric tons/year:									**166**

Table 3. Construction Equipment, Alternative B

Off-road Equipment	Hours of Operation	Engine HP	Load Factor	HC-ZH g/hp-hr	HC-DR g/hp-hr^2	CO-ZH g/hp-hr	CO-DR g/hp-hr^2	NOx-ZH g/hp-hr	NOx-DR g/hp-hr^2	SO2 g/hp-hr	PM_{10}-ZH g/hp-hr	PM_{10}-DR g/hp-hr^2	CH_4 g/gal fuel	N_2O g/gal fuel	CO_2 g/gal fuel
Pile Driver	2,228	1320	0.42	0.32	1.12E-05	2.70	5.35E-05	6.25	1.04E-04	0	0.15	7.96E-06	0.41	0.08	10,206
Pile Hammer	2,228	180	0.42	0.32	1.48E-05	0.92	2.43E-05	6.25	1.45E-04	0	0.15	7.96E-06	0.41	0.08	10,206
Concrete Pump	346	50	0.42	1.45	1.85E-04	4.10	4.20E-04	5.55	1.03E-04	0	0.60	4.65E-05	0.41	0.08	10,206
Barge Crane	1,591	130	0.29	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0	0.38	2.76E-05	0.41	0.08	10,206
RT Crane	453.6	240	0.29	0.32	1.48E-05	2.70	7.14E-05	6.25	1.45E-04	0	0.15	7.96E-06	0.41	0.08	10,206
Excavator	108	290	0.38	0.10	2.50E-05	0.92	1.82E-05	2.45	3.18E-05	0	0.11	5.55E-06	0.41	0.08	10,206
Dozer	276	307	0.40	0.68	2.37E-05	2.70	5.35E-05	8.17	1.36E-04	0	0.38	2.02E-05	0.41	0.08	10,206
Paver	234	187	0.42	0.12	2.40E-05	0.92	2.43E-05	4.38	6.33E-05	0	0.11	5.79E-06	0.41	0.08	10,206
Grader	224	145	0.41	0.68	3.15E-05	2.70	7.14E-05	6.9	1.60E-04	0	0.38	2.76E-05	0.41	0.08	10,206
Roller	458	154	0.38	0.16	2.57E-05	2.70	7.14E-05	4.44	6.46E-05	0	0.16	1.18E-05	0.41	0.08	10,206
Welder	437	58	0.42	0.99	4.58E-05	3.49	9.23E-05	6.9	1.60E-04	0	0.69	5.02E-05	0.41	0.08	10,206
Gen Set	437	13	0.42	1.45	1.85E-04	4.10	4.20E-04	5.55	1.03E-04	0	0.60	4.65E-05	0.41	0.08	10,206
Forklift	364	103	0.20	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0	0.29	2.12E-05	0.41	0.08	10,206
Loader	78	262	0.37	0.14	2.22E-05	4.20	8.32E-04	4.51	6.32E-05	0	0.11	6.03E-06	0.41	0.08	10,206

Off-road Equipment	HC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CH_4 kg	N_2O kg	CO_2 kg
Pile Driver	1,065.85	8,245.95	18,726.2	13.11	549.00	505.08	26.16	5.23	644,980
Pile Hammer	154.29	398.23	2,655.5	1.79	74.86	68.87	3.57	0.71	87,952
Concrete Pump	42.78	109.91	98.9	0.08	14.48	13.32	0.17	0.03	4,215
Barge Crane	124.59	434.64	1,085.6	0.64	80.81	74.35	1.28	0.26	31,468
RT Crane	30.84	228.74	517.5	0.34	15.06	13.85	0.67	0.13	16,561
Excavator	6.93	27.39	70.1	0.13	3.85	3.55	0.26	0.05	6,316
Dozer	71.21	246.78	723.8	0.36	45.96	42.28	0.72	0.14	17,686
Paver	9.33	41.44	187.4	0.20	5.50	5.06	0.39	0.08	9,598
Grader	20.97	81.38	207.2	0.14	12.07	11.10	0.28	0.06	6,997
Roller	15.32	174.04	273.9	0.28	12.08	11.11	0.57	0.11	13,961
Welder	30.16	95.46	185.2	0.13	23.89	21.98	0.25	0.05	6,178
Gen Set	14.49	37.23	33.5	0.03	4.90	4.51	0.06	0.01	1,428
Forklift	6.12	56.35	90.9	0.08	5.88	5.41	0.16	0.03	3,979
Loader	6.75	235.49	87.5	0.08	3.03	2.79	0.16	0.03	3,976
Tons/year:	**0.80**	**5.21**	**12.47**	**0.01**	**0.43**	**0.39**			
CO_2e Metric tons/year:									**858**

Table 4. On Road Vehicles, Alternative B

On-road Equipment	Hours of Operation	Total Miles Traveled	Speed (mph)	ROG lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CH4 lb/mile	CO_2 lb/mile
Dump Truck	1,369	10,429	25	1.61E-03	7.05E-03	1.89E-02	3.95E-05	1.75E-03	1.52E-03	7.51E-05	4.211
Concrete Truck	2,636	18,043	25	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211
Pickup Truck	2,257	56,426	25	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11
Water Truck	534	5,340	10	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211
Asphalt Truck	255	16,140	25	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211
Semi- Truck	300	6,228	25	1.32E-03	6.05E-03	1.53E-02	3.93E-05	1.40E-03	1.20E-03	7.51E-05	4.211
Carpool Van	NA	13,248	NA	0.001	0.006	0.001	1.07E-05	9.39E-05	6.13E-05	5.62E-05	1.11

Off-road Equipment	ROG lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CH_4 lb	CO_2 lb
Dump Truck	16.79	73.48	196.83	0.41	18.24	15.89	0.78	43,911
Concrete Truck	23.76	109.11	275.41	0.71	25.18	21.67	1.35	75,973
Pickup Truck	35.69	324.90	31.41	0.60	5.30	3.46	3.17	62,451
Water Truck	7.03	32.29	81.51	0.21	7.45	6.41	0.40	22,485
Asphalt Truck	21.26	97.60	246.36	0.63	22.53	19.38	1.21	67,960
Semi- Truck	8.20	37.66	95.07	0.25	8.69	7.48	0.47	26,224
Carpool Van	8.38	76.28	7.37	0.14	1.24	0.81	0.74	14,663
Tons/year:	**0.06**	**0.38**	**0.47**	**0.00**	**0.04**	**0.04**		
CO_2e Metric tons/year:								**142**

Table 5. Fugitive Dust, Alternative B

Year	PM 10 tons/acre/ mo	acres	days of disturbance	PM 10 Total	PM 2.5/PM 10 Ratio	PM 2.5 Total
2017	0.11	2	45	9.9	0.1	1.0
2018	0.11	2	50	11.0	0.1	1.1
2019	0.11	2	45	9.9	0.1	1.0

Table 6. Alternative B Annual Construction Emissions Summary

YEAR	VOC T/yr	CO T/yr	NOx T/yr	SO2 T/yr	PM10 T/yr	PM2.5 T/yr	CO_2e MT/yr
2017	0.20	1.17	2.48	0.03	9.99	1.07	198
2018	0.59	3.44	7.29	0.09	11.26	1.34	583
2019	0.51	2.88	5.59	0.14	10.09	1.17	463

TAB F. Pier 2 Construction/Demolition Assumptions

From Moffat & Nichol email dated June 28, 2013 and Table 7 of MOTCO Pier 2 Final Constructability Memo (June 25, 2013):

Material	Source Location	One way distance (mi)	Total Round Trip Time (hrs)	Alt 1 Total # of trips	Alt 1 Computed Total time (hrs)	Alt 1 Total mi traveled	Alt A Total # of trips	Alt A Computed Total time (hrs)	Alt A Total mi traveled	Alt B Total # of trips	Alt B Computed Total time (hrs)	Alt B Total mi traveled
Concrete	Martinez	7	1.8	1,627	2,929	22,778	1,464	2636	20,500	1,289	2,320	18,043
Rebar	Oakland	30	2.7	120	324	7,200	108	292	6,480	100.8	272	6,048
Rail	Oakland	30	2.7	3	8	180	3	8	180	3	8	180
Rip Rap	Richmond	30	2.7	16	43	960	16	43	960	16	43	960
Fill - aggregate, base	Martinez	7	1.8	238	428	3,332	723	1301	10,119	663	1,193	9,281
Hauling	Concord	12	2	15	30	360	13	25	302	8	16	187
Asphalt	Richmond	30	2.7	69	186	4,140	106	286	6,360	269	726	16,140
Tug & barge - pile delivery	Richmond/Antioch	50	16.7	21	351	2,100	18.9	316	1,890	21	354	2,117

Equipment Usage	Alt 1 Hours
Pile Driver	2210
Hammer	2210
Concrete Pump	490
Barge Crane	3400
RT Crane	840
Excavator	180
Loader	150
Dozer	460
AC Paver	450
Grader	430
Rollers	880
Welder	840
Gen Set	840
Forklift	700
Pickup Truck	2536
Water Truck	600
Work Tug	1105
Work Boat	1700

TAB G. Data Used in Calculations

Construction Equipment

Equipment	Cumul. Hrs	Ave Age	Model Yr	HP	HC-ZH	HC-DR	CO-ZH	CO-DR	NOx-ZH	NOx-DR	PM_{10}-ZH	PM_{10}-DR
Pile Driver	6767	14	2002	1320	0.32	0.0000112	2.7	0.0000535	6.25	0.000104	0.15	0.00000796
Pile Hammer	6767	14	2002	180	0.32	0.0000148	0.92	0.0000243	6.25	0.000145	0.15	0.00000796
Concrete Pump	6767	14	2002	50	1.45	0.000185	4.1	0.00042	5.55	0.000103	0.6	0.0000465
Barge Crane	8517	18	1998	130	0.68	0.0000315	2.7	0.0000714	6.9	0.00016	0.38	0.0000276
RT Crane	8517	18	1998	240	0.32	0.0000148	2.7	0.0000714	6.25	0.000145	0.15	0.00000796
Excavator	6513	9	2007	290	0.1	0.000025	0.92	0.0000182	2.45	0.0000318	0.11	0.00000555
Dozer	12000	22	1994	307	0.68	0.0000237	2.7	0.0000535	8.17	0.000136	0.38	0.0000202
Paver	4700	11	2005	187	0.12	0.000024	0.92	0.0000243	4.38	0.0000633	0.11	0.00000579
Grader	1200	18	1998	145	0.68	0.0000315	2.7	0.0000714	6.9	0.00016	0.38	0.0000276
Roller	4000	11	2005	154	0.16	0.0000257	2.7	0.0000714	4.44	0.0000646	0.16	0.0000118
Welder	6767	14	2002	58	0.99	0.0000458	3.49	0.0000923	6.9	0.00016	0.69	0.0000502
Generator	6767	14	2002	13	1.45	0.000185	4.1	0.00042	5.55	0.000103	0.6	0.0000465
Forklift	3024	12	2005	103	0.28	0.0000292	3.14	0.0000833	5.22	0.000084	0.29	0.0000212
Loader	12000	14	2002	262	0.14	0.0000222	4.2	0.000832	4.51	0.0000632	0.11	0.00000603
dredge	1200	8	2008	2500	0.12	2.36E-05	0.92	0.000018	4.29	0.000058	0.11	0.0000058
[1]Excavator	7456	11	2005	232	1.32	6.11E-05	4.4	0.000116	14.00	0.000324	0.77	0.0000560
skid steer loader	2246	5	2011	197	0.1	2.50E-05	2.7	0.000071	2.45	0.000032	0.14	0.0000100
Barge Crane	7992	18	1998	800	0.68	2.37E-05	2.7	0.000054	8.17	0.000136	0.38	0.0000202

Notes:

Cumulative Hours -based on ave age by equipment type, Table 2 of Attachment A of App D

CO Efs from App D of App D, rest from CARB Construction Equipment Database Input Tables

For construction equipment:

soxdsl 0.0015 weight percent of sulfur in diesel (CARB ULS Diesel)

soxcnv 0.02247 fraction of fuel sulfur converted to PM

From Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression Ignition, USEPA July 2010.

Watercraft

ave tug life=	21	yrs
assume tugs used are at half of lifespan	10	yrs
	2006	model year
ave workboat life=	17	yrs
assume workboats used are at half of lifespan	9	yrs
	2007	model year

	Ave. engine life	Load	Model Year (half life)
dredger	16	0.51	2008
dredge boat propulsion	17	0.45	2007

from California Barge and Dredge Emissions database

Use data from workboat engine for scow engine

Fuel Correction Factors for Watercraft from App B

HP	Model Yr	NOx	PM
25-50	1999-2010	0.948	0.8
176+	1999-2010	0.948	0.8

Equipment	Ave Life	1/2 Life	Model Yr	HP	HC-ZH	HC-DR	CO-ZH	CO-DR	NOx-ZH	NOx-DR	PM_{10}-ZH	PM_{10}-DR
Tug	21	10	2006	500	0.68	0.44	3.73	0.25	5.10	0.21	0.15	0.67
Tug	21	10	2006	375 X 2	0.68	0.44	3.73	0.25	5.10	0.21	0.15	0.67
Tug	21	10	2007	1000 X 2	0.17	0.44	0.92	0.25	4.51	0.21	0.11	0.67
Workboat	17	9	2007	50	1.80	0.51	3.73	0.41	5.32	0.06	0.3	0.31
[1]Workboat	17	9	2007	250	0.68	0.28	3.73	0.16	5.10	0.14	0.15	0.44

[1]Workboat data used for scow with same HP.

Emission factors from Appendix B, Emissions Estimation Methodology for Commercial Harbor Craft Operating in California

On-Road Vehicles

onsite transport to storage area	1.4	miles one way (worst case scenario used)
semi truck fuel efficiency assumed	6.5	mpg
combined pickup trucks/van fuel efficiency assumed	17	mpg

BSFC (g/hp-hr) for >100 HP	166.4675	From Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression Ignition, USEPA July 2010.
BSFC (g/hp-hr) for <100 HP	185.0647	From Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling - Compression Ignition, USEPA July 2010.

BSFC gal/hp-hr	0.052825	
BSFC gal/hp-hr	0.058726	6.942 lb/gal density of diesel fuel

Greenhouse Gases

density of diesel	0.85	g/cc
gal:cc conversion	3785	cc/gal

TAB H. References

General

MOTCO Pier 2 Modernization Constructability Memo,Moffat & Nichol, June 26, 2013
June 27 email from Moffat & Nichol (Fidell, T) re: Clarification of Tables 6,7,8 and Additional Guidance for Air Quality Analyst
Diesel Fuels Technical Review, Chevron Corporation, 2007
Documentation of California's Greenhouse Gas Emission Inventory - Index, Category: Energy, Fuel Combustion Activities, Transport, March 2013
Not Specified Transportation - Distillate
Cars, On Road: Light-duty Vehicles - Gasoline
Heavy-duty Trucks and Buses, On Road: Heavy-duty Vehicles: Heavy-duty Trucks, Buses & Motorhomes - Gasoline
Water-borne Navigation, Domestic Water-borne Navigation, Intrastate: Harborcraft - Distillate
VOC conversion of diesel hydrocarbons based on "Table for Conversion Factors for Hydrocarbon Exhaust Emission Results", from Conversion Factors for Hydrocarbon Emission Components, USEPA, July 2010.

Watercraft Data

Appendix B: Emissions Estimation Methodology for Commercial Harbor Craft Operating in California, from Technical Support Document for Rulemaking to Consider the Adoption of
Proposed Regulations to Reduce emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline, CARB, September 2007

California Commercial Harbor Craft Emissions Inventory Database, CARB [http://www.arb.ca.gov/msei/categories.htm]

California Barge and Dredge Emissions Inventory Database, CARB [http://www.arb.ca.gov/msei/categories.htm]

Construction Equipment Data

California In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling 2011 Inventory Model, CARB [http://www.arb.ca.gov/msei/categories.htm]

Appendix D: OSM and Summary of Off-Road Emissions Inventory Update, from Staff Report: Initial Statement of Reasons for Proposed Rulemaking,
Proposed Amendments to the Regulation for In-Use Off-Road Diesel-fueled Fleets and the Off-Road Large Spark-Ignition Fleet Requirements, CARB, October 2010.

Appendix E: Emissions Inventory Methodology and Results, from Technical Support Document: Proposed Regulation for In-Use Off-Road Diesel Vehicles, CARB April 2007

SO2 emissions calculated from Equation 7 of Exhaust and Crankcase Emission factors for Nonroad Engine Modeling - Compression-Ignition, USEPA July 2010

On-Road Vehicles

Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Passenger Vehicles & Delivery Trucks, SCAQMD
Highest (Most Conservative) EMFAC2007 (version 2.3) Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks, SCAQMD

Fugitive Dust

WRAP Fugitive Dust Handbook, Western Governors' Association, September 2006
Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, Western Regional Air Partnership, October 2005

Greenhouse Gases

Documentation of California's Greenhouse Gas Emission Inventory - Index, Category: Energy, Fuel Combustion Activities, Transport, March 2013

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