US Army Corps of Engineers®

Oakland Harbor Turning Basins Widening

Integrated Feasibility Report and Environmental Assessment

Clean Water Act
Section 404(b)(1) Preliminary Evaluation

APPENDIX A03a:
Oakland Harbor Turning Basins Widening Clean Water Act Section 404(b)(1) Preliminary Evaluation

CHAPTER 1: INTRODUCTION

This appendix evaluates compliance of the recommended plan, Alternative D-2, with the Guidelines established under the Federal Pollution Control Act (Clean Water Act) Amendments of 1972 (Public Law 92-500), as amended by the Clean Water Act of 1977 (Public Law 95-217), legislation collectively referred to as the Clean Water Act. The Clean Water Act sets national goals and policies to eliminate the discharge of water pollutants into navigable waters. Any discharge of dredged or fill material into waters of the U.S. (WOTUS) by the U.S. Army Corps of Engineers (Corps) requires a written evaluation that demonstrates that a proposed action complies with the guidelines published at 40 CFR Part 230. These guidelines, referred to as the Section 404(b)(1) Guidelines or "Guidelines," are the substantive criteria used in evaluating discharges of dredged or fill material under Section 404 of the Clean Water Act.

Fundamental to the Guidelines is the precept that "dredged or fill material should not be discharged into the aquatic ecosystem, unless it can be demonstrated such a discharge would not have an unacceptable adverse impact either individually or in combination with known and/or probable impacts of other activities affecting the ecosystems of concern."

The procedures for documenting compliance with the Guidelines include:

1. Examining practicable alternatives to the proposed discharge that might have fewer adverse environmental impacts, including not discharging into a water of the U.S. or discharging into an alternative aquatic site.
2. Evaluating the potential short- and long-term effects, including cumulative effects, of a proposed discharge of dredged or fill material on the physical, chemical, and biological components of the aquatic environment.
3. Identifying appropriate and practicable measures to mitigate the unavoidable adverse environmental impacts of the proposed discharge.
4. Making and documenting the Findings of Compliance required by §230.12 of the Guidelines.

This Clean Water Act, Section 404(b)(1) evaluation of compliance with the Guidelines is not intended to be a "stand alone" document; it relies heavily on information provided in the Integrated Feasibility Report and Environmental Assessment (IFR/EA) to which it is attached.

CHAPTER 2: BASIC AND OVERALL PROJECT PURPOSE

As defined under 40 CFR Part 230, the basic project purpose comprises the fundamental, essential, or irreducible purpose of the action, and is used to determine whether the project is

water dependent. The basic purpose of this project – deep draft navigation – is water dependent since the project purpose cannot be fulfilled outside of an aquatic environment.

Navigation inefficiencies exist at the Oakland Harbor that arise from the fact that the current fleet of vessels utilizing the Oakland Harbor exceed the maximum dimensions of the constructed turning basins. An initial appraisal report conducted in 2018 pursuant to Section 216 of River and Harbor Act of 1970 determined the problems in Oakland Harbor are caused by length limitations in the inner and outer turning basins as opposed to depth limitations or landside capacity. The existing federal navigation channel was designed for a 6,500 twenty-foot equivalent units (TEU) capacity ship with a 1,139 length overall, 140-foot beam, and 48-foot draft as part of the Oakland Harbor Navigation Improvement (-50-foot) Project completed in 2010. The vessels routinely calling on the Oakland Harbor today are longer and wider than the design vessel from that study completed in 1999. This directly contributes to vessel delay and vessel idling. These inefficiencies are projected to continue in the future as vessel sizes are expected to increase. The purpose of the project is to provide navigation improvements that address this need through modifications to the existing turning basins at Oakland Harbor.

The overall project purpose serves as the basis for the alternatives analysis and more specifically describes the goals for the action. The overall project purpose is to improve these inefficiencies and ensure safe navigation for existing and prospective commerce at Oakland Harbor.

PROJECT LOCATION

The Oakland Harbor study area includes the existing 50-foot federal navigation channel and the immediately surrounding areas (Figure 1). The study area is located on the eastern side of the San Francisco Bay, about 35 miles northwest of San Jose, in the counties of Alameda and San Francisco, California. The federally authorized Oakland Harbor navigation project is located about 8 miles inside the Golden Gate Bridge and consists of an Outer and Inner Harbor. The channel is maintained to a depth of -50 feet Mean Lower Low Water (MLLW). The existing 50-foot federal navigation channel includes the Entrance Channel, Outer Harbor Channel, Inner Harbor Channel, the Outer Harbor Turning Basin, the Inner Harbor Turning Basin, and the Middle Harbor.

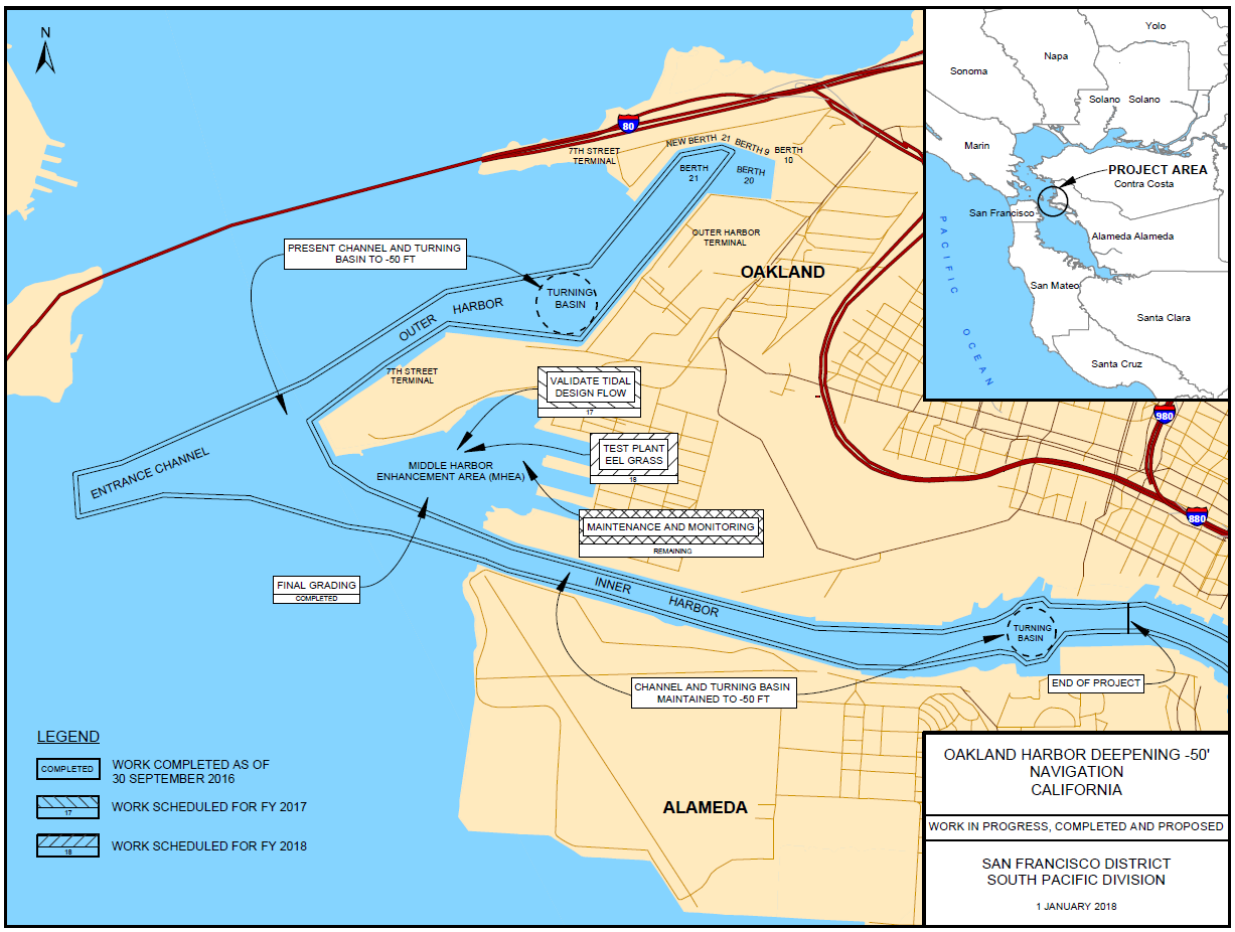

Figure 1: Current Port of Oakland Navigation Features

DELINEATION OF WATERS OF THE U.S.

In accordance with the Corps risk-informed planning process, the team used the maximum amount of existing data. The study area for surface waters includes the proposed Inner Harbor Turning Basin and Outer Harbor Turning Basin expansion areas and adjoining waters, which occur in the Central San Francisco Bay (Central Bay). The turning basin expansion area footprints include open water, tidally-influenced, navigable WOTUS The turning basin expansion area footprints do not include wetlands or non-Bay water features (e.g., streams, drainages), although upland stormwater drainage patterns and infrastructure likely to affect surface waters are in the project areas. Impacts to WOTUS are likely in the Inner Harbor as a retaining structure (sheet pile wall or similar feature) will be required between the Inner Harbor and Schnitzer steel, this structure is expected to be between 300 and 400 feet long.

CHAPTER 3: ALTERNATIVES ANALYSIS

An evaluation of alternatives is required under the Section 404(b)(1) Guidelines for projects that include the discharge of dredged or fill material into WOTUS. Under the Guidelines, practicability of alternatives is taken into consideration and no alternative may

be permitted if there is a less environmentally damaging practicable alternative (40 CFR 230.5(c)).

Section 230.10 of the Guidelines dictates that, except as provided under §404(b)(2),

> *"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 significant adverse environmental considerations."*

Although the NEPA process extensively examines alternatives and discloses all environmental impacts, the 404(b)(1) Analysis focuses on the impacts of alternatives to the aquatic ecosystem. The Guidelines require choosing for implementation the practicable alternative that has the least damage to the aquatic ecosystem, as long as that alternative has no significant adverse environmental impacts to other components of the environment, such as endangered species that occupy upland habitat.

A "practicable alternative" is defined as:

> *"available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."*

The Guidelines also require that:

> *"where the activity associated with a discharge which is proposed for a special aquatic site does not require access or proximity to or siting 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."*

ALTERNATIVE SCREENING CRITERIA

Alternative screening criteria were developed in evaluating alternatives as described below. This screening criteria also considers the Section 404(b)(1) practicability factors. 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 (40 CFR 230.10(a)(2)).

The focused array of alternatives, as described in the IFR/EA, was evaluated by projecting, and comparing the with project and without project conditions. Plan formulation focused on addressing the identified problems and meeting study objectives, including those responsive to national, state, and local concerns. Consideration of state and local objectives in concert with national objectives necessitates the inclusion and assessment of a broad range of benefits and impacts, both qualitative and quantitative. Alternative plans were assessed to determine if they have net benefits in total and by type. The set of plans judged to have net benefits were candidates for further analysis and included in the final array. The action-alternatives carried into the final array were evaluated on the *Principles and Guidelines Criteria* of:

- **Completeness** – Extent to which an alternative provides and accounts for all features, investments, and/or other actions necessary to realize the planned effects, including any necessary actions by others.
- **Effectiveness** – Extent to which a measure or alternative alleviates problem areas and meets planning objectives.
- **Efficiency** – The potential benefits/outcome of the measure are greater than what could be provided by another measure/plan of equal or greater cost.
- **Acceptability** – Viability and appropriateness of an alternative from the perspective of the public and consistency with existing Federal laws, authorities, and public policies.

Additionally, plans were assessed on their beneficial or adverse effects to the four accounts identified in the Principles and Guidelines (1983):

- National Economic Development (NED) – the changes in the economic value of the National output of goods and services.
- Regional Economic Development (RED) – the impact of project spending, either directly or indirectly, on the local economy.
- Environmental Quality (EQ) – the non-monetary beneficial effects on significant natural and cultural resources.
- Other Social Effects (OSE) – the effects that are not covered in the NED, RED, and EQ. This account includes items such as community impacts, health and safety, and displacement.

DESCRIPTION OF ALTERNATIVES

Six alternatives were moved forward into the final array of alternatives, including:

- Alternative A – No Action
- Alternative B – Inner Harbor Only with beneficial placement of eligible material
- Alternative C – Outer Harbor Only with beneficial placement of eligible material
- Alternative D-0 – Inner and Outer Harbor with placement of material at SF-DODS and diesel dredges[1]
- Alternative D-1 – Inner and Outer Harbor with beneficial placement of eligible material and diesel dredges
- Alternative D-2 – Inner and Outer Harbor with beneficial placement of eligible material and the electrification of dredges

A high-level description of each of the final alternatives is provided below and they are described in more detail in the IFR/EA Chapter 4, Plan Formulation.

Alternative A – No Action

The No Action Alternative describes what would happen if no action were taken as part of this project. This alternative assumes that all non-structural measures that are currently implemented will remain in place and remain unchanged, which would require large vessels

[1] D-0 (NED) was carried through the focused array for cost comparison and evaluation purposes, the placement of material at SFDODS was screened out of the alternatives. The ASA(CW) approved the additional cost for beneficial placement in a September 6, 2022 memorandum.

to continue to use harbor pilots and assisted tug operations. Current navigation and shipping inefficiencies would be expected to persist, in addition to the existing conditions of the environmental resources in the study area. This Alternative is used for comparison with action alternatives to assess the benefits and impacts of proposed plans.

Alternative B – Inner Harbor Only with beneficial placement of eligible material

The Expansion of the Inner Harbor Turning Basin Only Alternative consists of widening the existing -50' MLLW Inner Harbor Turning Basin from 1,500 feet to 1,834 feet. It is estimated Alternative B would require the installation of about 2,500 feet of in-water bulkheading, which triggers this 404(b)(1) analysis. Dredging in-water would affect approximately 8.9 acres of subtidal aquatic habitat. Seven acres of subtidal habitat would be actively dredged while the remaining 1.9 acres would serve as a basin buffer. Dredged material that is suitable for beneficial re-use would be used for habitat restoration with the remaining going to landfill.

The Inner Harbor turning basin would result in the need for in-water pile driving and in-water fill for slope stability purposes. This includes approximately 26,100 cubic yards of rock fill and up to 264 batter piles. In addition, an approximately 300 to 400-foot long, in-water retaining structure may be required between the northwestern portion of the Inner Harbor Turning Basin footprint and Schnitzer Steel property which would include installation of steel sheet piles, steel pipe piles, and/or pre-cast, pre-stressed concrete piles by vibratory or impact pile driving methods, likely through the aquatic environment. In addition to in-water work to widen the Inner Harbor Turning Basin, uplands would be impacted in two locations that would involve removal of asphalt and concrete pavement, installation of new bulkhead and batter piles, removal of existing piles, excavation of landside soil between the new bulkhead and existing rock dike, removal of existing rock, and placement of new rock for slope protection in the front of the new bulkhead wall. More specific details on in-water construction activities will be refined during the Pre-construction, Engineering, and Design (PED) phase. However, this alternative would leave the Outer Harbor Basin untouched and subjected to the inefficiencies caused by the inability of larger vessels to turn while berthing there. Due to the fixed nature of landside infrastructure at the Port of Oakland, the port has no meaningful way to direct vessels based on size, thus these larger ships would still need to berth at the Outer Harbor.

Alternative C – Outer Harbor Only with beneficial placement of eligible material

The Expansion of Outer Harbor Turning Basin Only Alternative consists of widening the existing -50' MLLW Outer Harbor Turning Basin from 1,650 to 1,965 feet. Dredging in-water would affect approximately 22.9 acres of subtidal aquatic habitat. Approximately 15.3 acres would be actively dredged while the remaining 7.6 acres would serve as a basin buffer. The impacted submerged area is approximately 1,005,000 square feet. This alternative involves dredging material to widen the basin to a depth of -50 feet MLLW and beneficially re-using dredged material. This alternative involves only dredging to remove material and does not include any placement of dredged material in WOTUS. However, this alternative would leave the Inner Harbor Basin untouched and subjected to the inefficiencies caused by the inability of larger vessels to turn while berthing there. Due to the fixed nature of landside

infrastructure at the Port of Oakland, the port has no meaningful way to direct vessels based on size, thus these larger ships would still need to berth at the Inner Harbor.

Alternative D – Inner and Outer Harbor Turning Basins with beneficial placement of eligible material

Three variations of Alternative D were analyzed in the IFR/EA, but only Alternatives D-1 and D-2 made it into the final array of alternatives. While alternative D-0 (NED) was carried through the focused array for cost comparison and evaluation purposes, the placement of material at SFDODS was screened out of the alternatives in the study because it was established that the incremental cost, $8 per cubic yard, to place material at an upland beneficial use site rather than placement at SFDODS was reasonable based on the environmental benefits to be achieved. The ASA(CW) approved the additional cost for beneficial placement in a September 6, 2022 memorandum. Discussion of Alternative D-0 is included here for informational purposes. Under Alternative D, both the Inner Harbor Turning Basin and Outer Harbor Turning Basin would be widened. The proposed improvements and construction methods for each turning basin would be the same as those described for the individual turning basin expansion alternatives (Alternative B and Alternative C). No impacts to wetlands would occur under each variation of Alternative D.

Alternative D-0, the Base Plan, involves the use of diesel dredge equipment and includes placement of material at the Federal Standard Base Plan. Material from the Outer Harbor, approximately 1,342,000 cubic yards, would be placed at a wetland foundation site as the least cost alternative. The Inner Harbor would result in approximately 370,000 cubic yards placed at a wetland foundation site as the least cost alternative. The remaining, approximately 454,000 cubic yards from the Inner Harbor would be placed at SFDODS as the least cost alternative. Details of this plan are described in Chapter 4 of the IFR/EA.

Alternative D-1 involves the use of dredge equipment powered by diesel fuel and includes placement of eligible material at a beneficial use site for the protection, restoration, or creation of aquatic wetland habitats as either non-cover or cover. The opportunity to use some of the dredged material for placement at a beneficial use site represents an increase in cost for the project but benefits the environment by keeping sediment in system, accelerating wetland accretion, and creating habitat for endangered species. The non-federal sponsor, The Port of Oakland, supports the beneficial placement of dredged material and is willing to share in the incremental cost above the Base Plan. Alternative D-1-would require the installation of about 2,500 feet of bulkheading due to work on the Inner Harbor. During the Feasibility Study, this alternative was identified as the NED and Beneficial Use (BU) plan. More specific details on in-water construction activities will be refined during the Pre-construction, Engineering, and Design (PED) phase.

Alternative D-2 is the same as D-1 except that it employs the use of an electric-powered barge-mounted clamshell/excavator dredge instead of a diesel-powered dredge, and the installation of electrical switchgear near Berth 26. Under this variation, the installation of electric infrastructure is required in the Outer Harbor prior to dredging the Outer Harbor. The power provided at this location would be designed and designated for dredging use only to widen the Outer Harbor Turning Basin. Alternative D-2 would not require any placement

of fill in the WOTUS. During the Feasibility Study, this alternative was selected as the Tentatively Selected Plan, and the recommended plan.

Least Environmentally Damaging Practicable Alternative (LEDPA) under the 404(b)(1) Guidelines

Alternative D-2 is the least environmentally damaging practicable alternative (LEDPA). Although the No Action plan would result in no new impacts to open waters or air quality, there would continue to be marine navigation inefficiencies within Oakland Harbor caused by width limitations in the turning basins, therefore this alternative does not meet the overall project purpose. Under the No Action plan, vessels calling at the Port would continue to face delays in maneuvering. These delays result in increased emissions from idling as well as cargo ships and tugs or other supporting vessels. There is also an increased safety risk to both human and aquatic life under the No Action plan due to the additional maneuvering of vessels.

This effect would be important to the West Oakland community which already has high cumulative air pollution exposure as well as many sensitive receptors and designated disadvantaged communities. Additionally, due to the use of electric dredges, Alternative D-2 would have less noise from construction for nearby sensitive receptors in Alameda and West Oakland as compared to Alternative D-1. As Alterative D-0 does not include as much beneficial use, it would have less benefits than D-1 and D-2. It would also involve impacts of disposal at SFDODS. Therefore, Alternative D-0 would not be the LEDPA.

Alternative D-2 would maximize suitable dredged material for beneficial reuse. Of the estimated 2.4 million cubic yards (mcy) of dredged material, approximately 2.2 mcy would be suitable for beneficial re-use for habitat restoration as cover (0.45 mcy) or non-cover (1.71 mcy) beneficial re-use at either Montezuma Wetlands or Cullinan Ranch restoration sites. The remaining 0.20 mcy would be disposed at Class I and II landfills. Another 342,535 tons of construction debris would be recycled at a quarry in Montezuma, also considered beneficial re-use.

Montezuma Wetlands site is a privately owned, permitted, and operated wetland restoration project site located on about 2,400 ac of moderately subsided, diked baylands at the eastern edge of Suisun Marsh. The location is such that it would provide benefits to native fishes in the low salinity region of the San Francisco Estuary including to the federally proposed as endangered longfin smelt (*Spirinchus thaleichthys*) and the federally threatened delta smelt (*Hypomesus transpacificus*). Dredged material from various projects is transported and used here to raise elevations of the site so it can be opened to tidal action to restore tidal marshlands, and the owner charges for receipt of this material. This site can accept both wetland cover ("non-foundation") and non-cover ("foundation") quality materials. All offloading and pump facilities are currently in place and fully operational, sufficient to accept full-sized barges (~10,000 cy capacity). The site is divided into four phases, of which the first phase has been under construction since late 2003, is now filled and was breached in October 2020. Phase I received 8 mcy of dredged material and is expected to restore 600+ ac of all wetland habitat. Phase II, which is likely to be available to receive material from the proposed project when it is constructed, has an approximate capacity to receive about 4.5 mcy. When complete, phase II will yield about 400 ac of

restored tidal wetland. The Montezuma Wetlands site is about 55 miles from Oakland Harbor. Material would be transported from the port by scow to an offloader at Montezuma Wetlands, which would pump the material from the barge for use on the site (USFWS, 2023).

Cullinan Ranch is a tidal restoration project site on about 1,500 ac located on the north side of San Pablo Bay just west of the Napa River between State Highway 37 and Dutchman Slough. It is within the San Pablo Bay National Wildlife Refuge. It is currently subsided diked bayland, which was acquired with the intent to restore it to tidal marsh. Restoring the site to tidal action would have general tidal ecosystem benefits in a location that would specifically assist the recovery of the federally endangered salt marsh harvest mouse (*Reithrodontomys raviventris*) and California clapper rail (*Rallus longirostris obsoletus*). The restoration project is a permitted action with a capacity to receive at least 3 mcy of dredged material on the easternmost 290 ac of the site, which has been isolated from the rest of the site and subdivided into 5 cells for placement of material when it is available. The current plan is to complete dredged material import before opening this area to tidal action. The original 1 mcy capacity has been increased to 4 mcy to address sea level rise concerns, of which 1 mcy remains at this time. About 0.1 to 0.3 mcy per year has been recently delivered to Cullinan Ranch. Only cover quality sediment is accepted at this site. The travel distance from Oakland Harbor to Cullinan Ranch is about 35 miles. Clamshell dredged material would be barged there to a land-based offloader at Dutchman Slough and then pumped onto the site (USFWS, 2023).

The beneficial re-use of dredged material and construction debris will contribute to meeting habitat restoration goals at both Montezuma Wetland and Cullinan Ranch. The beneficial reuse of suitable sediments would also meet other project standards as it would offset the effects on subtidal benthic habitat and fauna by potentially increasing shallow water habitat for terrestrial and aquatic species in the area.

Alternative D-2 will not significantly adversely impact physical and biological environmental resources; cultural resources; public health and safety; or the quality of the human environment.

Alternative D-2 does not involve the placement of fill in WOTUS for the Outer Harbor Turning Basin Expansion, but the expansion of the Inner Harbor Turning Basin would require the placement of fill material. The fill would be the minimum amount of material necessary to maintain the future structural integrity and seismic safety of the rock dike, bulkhead, and piles being replaced to meet project goals. The fill would not introduce any contaminants into the WOTUS as it would consist of clean construction materials.

Although the No Action Alternative and Alternative C have no direct impacts to the WOTUS, these alternatives do not meet the goals of the project in increasing efficiency and navigational safety. Further, the No Action Alternative and Alternatives B and C do not cumulatively provide the necessary short and long-term benefits associated with widening both the Inner and Outer Harbor Turning Basins. Additionally, the No Action Alternative and Alternatives B and C do not provide the maximum material for beneficial reuse for

habitat restoration. Alternatives B, C, D-0, and D-1 utilize diesel-powered machinery, contributing to emissions, that may impact air quality in the surrounding project area.

While Alternative C may seem attractive for its limited impacts to WOTUS, especially considering the construction impacts to the West Oakland Community, it fails to meet the goals of the project because the Inner Harbor would remain impacted by its limited width. Due to the fixed nature of landside infrastructure at the Port of Oakland, there is no meaningful way to direct ship traffic based on size. Therefore, vessels larger than the design for the Inner Harbor would still need to access the Inner Harbor berths, resulting in continued inefficiency impacts to the Port and the West Oakland community. Ships needing to utilize the Inner Harbor would still be subjected to long wait times, requiring them to anchor rather than being able to utilize shore power. In addition, being unable to effectively turn, would prevent ships from being able to position themselves for plug in to shore power. For these reasons, Alternative C is not practicable for the purposes of LEDPA.

When compared to Alternative D-2, Alternative C also has less benefits because it will restore less acreage of wetlands through the beneficial reuse of aquatic dredged and terrestrial excavated material. Finally, the fill proposed for the Inner Harbor would consist of clean construction materials, minimally designed to ensure the future structural integrity and seismic safety of the rock dike, bulkhead, and piles. Therefore, Alternative C is not the LEDPA because it fails to meet the project goals of Port wide efficiency and has less wetland creation benefits than those of Alternative D.

CHAPTER 4: PROPOSED PROJECT AND ITS POTENTIAL EFFECTS

The potential impacts of the proposed project are discussed below. Placement of dredged material at beneficial use sites is discussed above and covered under existing permits and agreements and therefore the impacts are excluded from the discussion below.

POTENTIAL IMPACTS OF PROPOSED PROJECT

Potential Impacts on Physical and Chemical Characteristics of the Aquatic Ecosystem

Alternative D-2 would result in permanent changes to the substrate through in-water construction activities such as dredging, sheet pile and pile installation, and rock placement. Discharges of dredged or fill material related to this project are limited to areas where batter piles and sheet piles are installed in the aquatic environment, areas identified for rock placement, and potential settlement of suspended sediment generated during construction from erosion, slumping or lateral displacement. Construction-related in-water work activities associated with the Outer Harbor Turning Basin expansion would be conducted at the same time as a portion of the in-water work for the Inner Harbor Turning Basin expansion for 6 months during the 2028 in-water work window (June 1 through November 30) and 2 months of the 2029 in-water work window. Alternative D-2 would result in a proportional increase for potential impacts related to altered physical and chemical characteristics, accidental discharge, suspended sediment/turbidity, and resuspension of constituents of concern in the water column. However, based on the localized nature of project impacts as described in Chapter 6 and the distance (greater than four miles over water) and landforms between the Inner Harbor Turning Basin and Outer Harbor Turning Basin, the impacts on water quality from expanding both turning basins would not combine

to create a more significant level of impact. Alternative D-2 would not exceed any of the thresholds of significance identified for water quality and therefore the overall effects on water quality would be less than significant.

During dredging operations, the interaction of the dredge equipment with aquatic material would resuspend sediment into the water column via the impact and withdrawal of the clamshell bucket from the substrate, washing of material out of the bucket as it moves through the water column, and loss of water as the sediment is loaded onto the barge (Hayes et al. 2011; Nightingale and Simenstad 2001). Removal and installation of piles and sheet piles within the aquatic environment, and other bottom disturbing activities such as rock placement, may temporarily disturb benthic sediments and increase turbidity and suspended sediment levels in the immediate vicinity of the activity. Models from a previous study within San Francisco Bay suggests that after dredged sediment placement, suspended sediment quickly returns to baseline conditions after each placement activity naturally, as tidal currents and waves rework and disperse the sediment throughout the water column (USACE, 2023). Impacts related to suspended sediment levels would be temporary and localized and would impact a relatively small area in relation to surrounding San Francisco waters.

In consideration of the localized and temporary effects of dredging-induced turbidity, ambient turbidity levels, and the implementation of minimization measures to reduce turbidity effects, potential impacts to surface waters from increased turbidity and suspended sediments under this alternative would be less than significant. The project does not include any construction or structures that would obstruct or drastically alter current patterns or water circulation.

The project does not include any construction or structures that would obstruct or drastically alter normal water fluctuations or ground water. Silt curtains and other temporary construction related BMPs intended to limit sediment would not impede normal water fluctuations.

Eroded soils, if generated from upland construction, and construction-related wastes from upland construction have the potential to degrade water quality if they enter runoff and flow into waterways, potentially altering the temperature, salinity, pH, and dissolved oxygen content. Upland construction would be managed to avoid adverse effects to waterbodies through implementation of the avoidance and minimization measures described in Appendix A-7 of the IFR/EA.

Potential Impacts on Biological Characteristics of the Aquatic Ecosystem

The placement of fill associated with the expansion of the Inner Harbor Turning Basins is from bulkheading which involves the removal and installation of sheet piles, batter piles, and the placement of rock in the aquatic environment. The remaining impacts of expanding the Inner Harbor Turning Basin would be from removing material from the banks resulting in an overall increase in open water habitat.

Discharges of dredged or fill material under Alternative D-2 would result in minor to moderate temporary impacts to the biological characteristics of the aquatic ecosystem of the

Inner and Outer Harbor. Impacts to biological characteristics that could result from the project include increased turbidity and suspended sediments from in-water and near-shore and impacts to special status fish, The overall biological characteristics of the aquatic ecosystem would remain largely the same following construction. Potential impacts to biological resources, special status fish, marine mammals, and migratory birds are described in detail in Chapter 6 of the IFR/EA.

Dredging, pile removal and installation, and other in-water construction activities would result in increased turbidity from suspended sediments and the potential effects on fish species. While early life stage individuals tend to be more sensitive to turbidity than adults, Chinook salmon, steelhead and Green Sturgeon do not spawn in the study area so their eggs or larval life stages would not be present. Large adult and juvenile fish (including Chinook Salmon, steelhead, and Green Sturgeon) would be mobile enough to avoid areas of high-turbidity plumes caused by dredging.

Listed fish species may be affected if disturbed sediments are present and suspended into the water column. However, as discussed in Chapter 6, a study on the short-term water quality impacts of dredging and dredged material placement on sensitive fish species in San Francisco Bay concluded that direct short-term effects on sensitive fish by contaminants associated with dredging plumes are minor (Jabusch et al. 2008). Moreover, turbidity plumes would be local, quickly disperse, and would be minimized by measures proposed under this alternative, such as the use of silt curtains (where specific site conditions demonstrate that they would be practicable and effective) and limitations on decant water.

Based on the above analysis, and with implementation of the minimization measures described in Appendix A-7, impacts to federally listed threatened and endangered fish species and their designated critical habitats would be less than significant.

Dredging and shoreline construction activities could temporarily increase turbidity, which may affect California least tern foraging. Increased turbidity may decrease foraging success by decreasing prey abundance or by making it more difficult for least terns to detect prey. Impacts to shallow-water habitat would be limited and would not occur in waters adjacent to known California least tern colonies at the former Alameda Naval Air Station or known foraging and roosting habitat within the Middle Harbor Enhancement Area. Suitable foraging habitat for this species is widely available outside of the proposed construction limits, including along the southern Alameda shoreline and the Bay Farm borrow pits to the south of Alameda. USACE will initiate ESA consultation with USFWS to conduct work outside the LTMS dredging work window. With this, implementation of the turbidity minimization measures described in the preceding sections, and the use of vibratory pile removal and installation to the extent feasible to limit noise, impacts to California least tern would be less than significant.

Sediment suspension from mechanical dredging and in-water pile removal and extraction would generate turbidity plumes that could interfere with the ability of pelagic organisms to receive sunlight, respirate, and find food (Wilber and Clarke 2001); although turbidity generated from pile removal and installation would be considerably less than that from

dredging. Turbidity impacts would be localized, and temporary, and adult and juvenile fish would be mobile enough to avoid turbidity plumes.

Construction-related effects would not substantially limit available habitat or movement of fish and seabirds relative to available open water habitat in Oakland Harbor and the greater San Francisco Bay. Moreover, the expansion of the turning basins would create more open water habitat for fish to move through in the long term.

Organisms immediately adjacent to the turning basin expansion footprint also may be lost because of smothering or burial from sediments resuspended in the water column during dredging (USACE 2019). These effects may also occur due to pile removal and installation, although to a much lesser degree. Following sediment-disturbing activities such as dredging, disturbed areas are usually recolonized quickly by benthic organisms (Newell et al. 1998). Recovery in deep-water channels may be slower, and as a result, there is potential for some loss of habitat for fish species that forage in these deeper areas. This potential for habitat loss is minimized in the project area due to deep-draft vessel use of the navigation channel and turning basin which results in benthos that are in a constant state of disruption.

No Impacts to Special Aquatic Sites

Within the project footprint, there are no sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, or riffle and pool complexes. However, small patches of eelgrass have been observed in both the Inner and Outer Harbors. The nearest patch at the Outer Harbor is approximately 167 meters (548 feet) northeast of the proposed OHTB expansion area. The nearest patch in the Inner Harbor occurs more than 500 meters (1,640 feet) west of the proposed IHTB expansion area, adjacent to the Alameda Island Shoreline (Figure 2) (Merkel and Associates 2021).

Some permanent effect would occur to the shallower subtidal habitat that is dredged and maintained due to the expected regular disturbance of ship traffic and maintenance dredging. However, the completion of the project would result in an increase in shipping efficiency and the reduction of emissions and groundings. It is expected that the new maintenance dredging that would occur closer to the widened basins is unlikely to affect eelgrass north of the Outer Harbor. Although the eelgrass is unlikely to be affected, the U.S. Fish and Wildlife Service recommend the monitoring of the eelgrass post-project to determine if there has been any change. See Appendix A01a – ESA Section 7 Compliance**,** for approximate eelgrass locations.

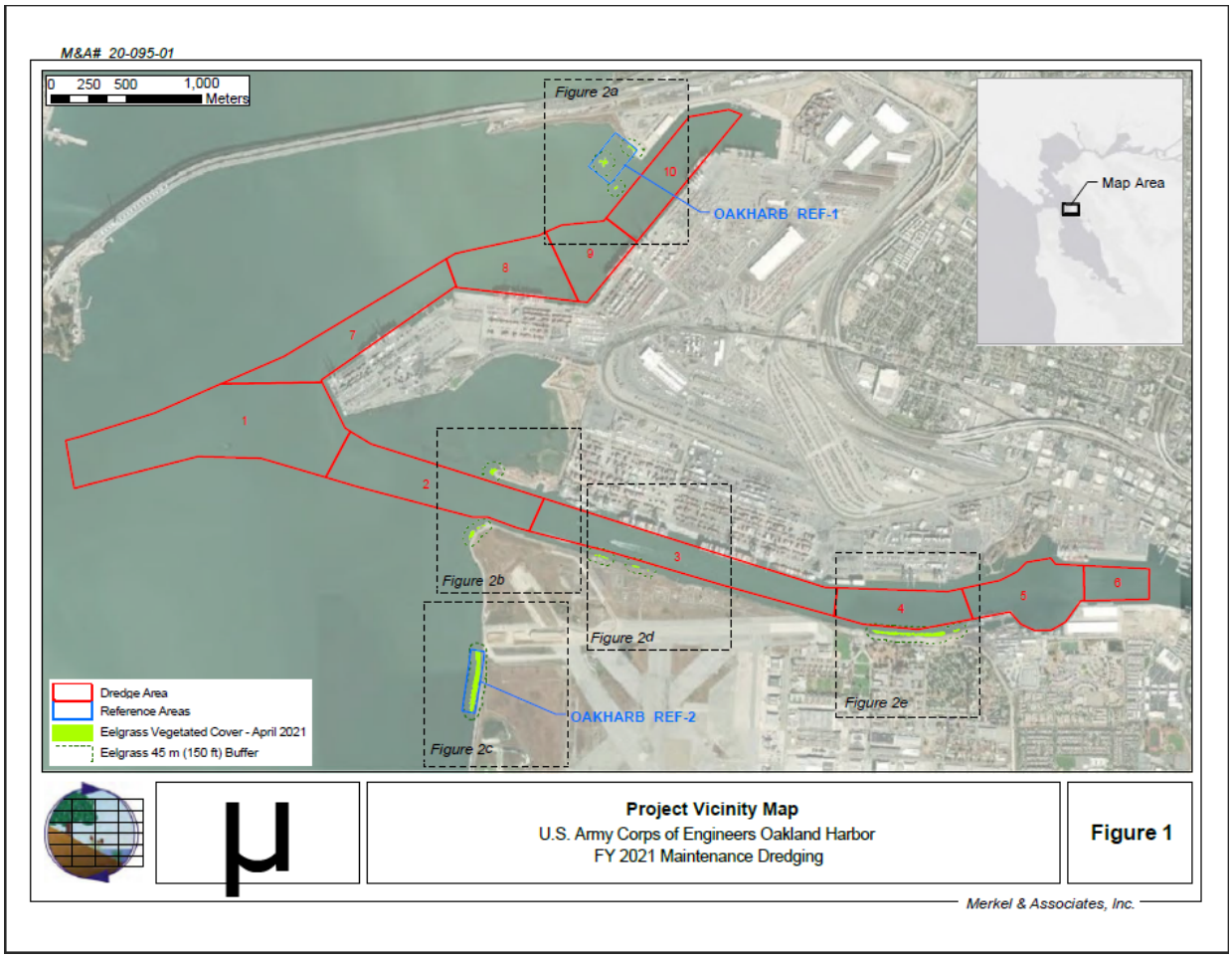

Figure 2: Dredge Vicinity to Eelgrass

Potential Effects on Human Use Characteristics

Discharges of dredged or fill material under Alternative D-2 are not expected to negatively affect municipal private water supplies, which are absent from the project footprint. Project construction would not use groundwater, and shallow groundwater underlying the proposed project sites is not used as a source of drinking water. See Chapter 6 of the IFR/EA for further details.

The discharges of dredged or fill material under Alternative D-2 are not expected to affect recreational and commercial fisheries, water-related recreation, aesthetics, or parks permanently negatively. Recreational fishing is available throughout the Inner Harbor and Outer Harbor waterways from private boats via trolling though boats may not stop or anchor within the federal navigation channel or turning basins to fish. Landside recreational fishing is also available at points along the Inner Harbor and Outer Harbor. Minor temporary effects from degradation to the viewshed may occur for recreational boaters traveling near construction sites. No adverse operational impacts on adjacent parks would result from discharges of dredged or fill material under Alternative D-2 project. See Chapter 6 of the IFR/EA and the LOC from NMFS for compliance with the Magnuson-Stevens Fishery Conservation and Management Act.

Expansion of one or both turning basins would improve operational efficiency and navigational safety for vessels entering and exiting the Port by way of decreasing restrictions imposed on larger container vessels and accommodating the Port's projected future volume of freight containers with less total annual vessel visits. Long-term impacts related to the construction of the action alternatives would be limited to relatively minor, if any, reductions in adjoining land uses, which would be mitigated by financial consideration for project-related loss or impairment to the affected properties and their use. Given the absence of any future operational and long-term project-related socioeconomic impacts, the subsequent socioeconomic analysis is primarily focused on the short-term impacts resulting from construction activities.

Potential Effects of Contaminants – Evaluation and Testing of Fill Material

All dredge material would be placed at existing, separately permitted beneficial reuse sites for wetland restoration or, if necessary, an appropriate upland landfill facility. No dredge fill would be placed in unconfined aquatic disposal sites. Any components (e.g., sheet piles, bulkhead, or rock) to be installed for expansion of the Inner Harbor Turning Basin would be constructed with materials that do not contain elevated levels of contaminants.

Based on existing sampling and analysis from prior projects in the immediate vicinity, most of the aquatic material is not expected to contain elevated constituents of concern concentrations that would preclude beneficial reuse at an upland wetland restoration site as non-cover or potentially cover material. The exception is the basin between Howard Terminal and Schnitzer Steel, where sediment may be contaminated with heavy metals. Sediments that would be dredged as part of implementation of any action alternative would be sampled and tested in the pre-construction and design phase that follows completion of the USACE's study phase, but occurs prior to any construction activities, including dredging. The results would be reviewed by the DMMO to identify appropriate placement site options based on the characteristics of the sediment and criteria for each placement location. All handling and disposal of dredged sediments would occur in accordance with applicable permit conditions. If dredged sediments do not meet the criteria for placement as non-cover at a permitted beneficial re-use site, they would be removed and appropriately re-handled at the Port of Oakland's Berth 10 facility, which is an authorized material rehandling location, before being hauled to a facility permitted for the receipt of such material (e.g., a landfill).

As concluded in the IFR/EA Chapter 6 on Water Quality, Wildlife, and Special Status Species and Protected Habitat, effects of contaminants in dredge material, if they are present, are expected to be less than significant with the proposed minimization measures on these resources.

Shoreline construction, including demolition, excavation, and sheet pile or pile removal and installation, could result in increased sediment loading to San Francisco Bay waters via surface run-off. These activities require the use of various contaminants, such as fuel oils, grease, and other petroleum products, which could be released directly into waters. The excavated landside material, removed piles, and debris from the Alameda site warehouse demolition would require an implementation of a Stormwater Pollution Prevention Plan (SWPPP) and other avoidance measures to prevent the accidental spills of hazardous

materials. This would prevent contaminants from reaching storm drains or being directly discharged into the waters of the Bay. With the implementation of proposed avoidance and minimization measures to protect water quality, the Inner Harbor Turning Basin expansion would not substantially increase contaminant concentrations above baseline conditions.

Actions To Minimize Adverse Effects

Avoidance and minimization measures are described in Appendix A-7 of the IFR/EA.

CHAPTER 5: FACTUAL DETERMINATION (SECTION 230.11)

A review of appropriate information as it pertains to items identified above indicates that there is minimal potential for short- or long-term environmental effects of the proposed discharge as related to (a yes below indicates that effects are minimal or smaller):

Table 1: Caption

	YES	NO
Physical substrate	[X]	
Water circulation, fluctuation, and salinity	[X]	
Suspended particulates/turbidity	[X]	
Contaminant availability	[X]	
Aquatic ecosystem structure, function, and organisms	[X]	
Proposed disposal site	[X]	
Cumulative effects on the aquatic ecosystem	[X]	
Secondary effects on the aquatic ecosystem	[X]	

CHAPTER 6: FINDINGS OF COMPLIANCE OR NON-COMPLIANCE WITH THE RESTRICTIONS ON DISCHARGES

Adaptation of the Section 404(b)(1) Guidelines to this Evaluation

No significant adaptations of the guidelines were made relative to this evaluation.

Availability of a Practicable Alternative Less Damaging to the Environment

Alternative D-2 is the LEDPA. The other alternatives are described and evaluated in Chapter 4, Comparison of the Finally Array of Alternatives of the IFR/EA. Based on the evaluation in that section, none of the alternatives, including the “no action” alternative, were selected as the LEDPA or Recommended Plan. Other alternatives do not fully meet the purpose and need of the project or present a less damaging environmental solution. Alternative D-2 was selected as the Recommended Plan for Oakland Harbor as is it improves both the efficiency and safety of vessel movement. The widening of both the Inner and Outer Harbors are necessary to meet project objectives. Alternative D-2 has the potential to restore approximately 279 acres of wetland through the beneficial reuse of aquatic dredged and terrestrial excavated material, whereas the other alternatives would not maximize the material possible for beneficial reuse and habitat restoration. The beneficial reuse of this material would benefit the environment by

keeping sediment within the ecosystem and create habitat for special status species. The removal of contaminated soils would reduce the risk of future groundwater contamination. The dredging of material within the Inner Harbor expansion basin under Alternative D-2 would increase WOTUS while providing material for beneficial reuse. Alternative D-2 would not impact wetlands, nor would WOTUS be degraded as no fill would be placed at aquatic disposal sites. The avoided emissions by using an electric dredge as opposed to a diesel-powered dredge utilized by the other Alternatives, greatly benefits the surrounding communities and their long-term health because there would be no exposure to prolonged diesel emissions from the project. USACE has evaluated all practicable alternatives as well as avoidance and minimization measures to avoid significant adverse environmental consequences; therefore, Alternative D-2 is the least environmentally damaging practicable alternative.

Alternative D-2 will have localized temporary effects on fish and wildlife resources in and near the open bay water and subtidal benthic habitat of the dredging footprint and some permanent effects as a result of deepening subtidal benthic habitat. The project is necessary to accommodate current and future ship size and traffic, improve shipping efficiency, and reduce the risk of ship groundings which could otherwise damage resources. Placement of material at permitted wetland restoration sites will contribute to their completion and provide habitat for multiple species, including listed species of interest, mitigating for the impacts of the dredging on more abundant benthic habitat that is less important to fish and wildlife of highest concern. USFWS recommends the Corps implement Alternative D-2, deepening both Inner and Outer Harbor Turning Basins as proposed, and consider future use of maintenance-generated dredged material for beneficial re-use (USFWS 2023).

Compliance with Applicable Water Quality and Toxic Effluent Standards

Construction of Alternative D-2 would not cause or contribute to violation of any applicable State water quality standards and would not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

Compliance with Endangered Species Act

The Recommended Plan is fully compliant with the Endangered Species Act of 1973. The U.S. Fish and Wildlife Service provided a final FWCAR on 11 Nov 2023 and recommends that the project be constructed as proposed. The NMFS letter of concurrence with Not Likely to Adversely Affect was received on 24 August 2023.

Compliance with Magnuson Stevens Fishery Conservation and Management Act

The Recommended Plan is fully compliant with the Magnuson Stevens Fishery Conservation and Management Act. The NMFS letter of concurrence with Not Likely to Adversely Affect was received on 24 August 2023 and has no EFH conservation Recommendations.

Compliance with Marine Protection, Research, and Sanctuaries Act

The Recommended Plan will not involve aquatic or ocean disposal. If for some reason in the future that changes, additional NEPA and environmental compliance would be

undertaken, as applicable. All dredged material transport would be compliant with this act with respect to spillage, leakage and BMPs employed.

APPROPRIATE AND PRACTICABLE STEPS TAKEN TO MINIMIZE POTENTIAL IMPACTS TO THE AQUATIC ECOSYSTEM

Appropriate steps to minimize potential adverse effects of the discharge on aquatic systems would be implemented, as described in Appendix A-7 of the IFR/EA. Consequently, Alternative D-2 is compliant with the requirements of the guidelines for the inclusion of appropriate and practicable measures to minimize adverse effects to the aquatic ecosystem.

CHAPTER 7: REFERENCES

Hayes, S.A., M.H. Bond, C.V. Hanson, A.W. Jones, A.J. Ammann, J.A. Harding, A.L. Collins, J. Perez, and R.B. MacFarlane. 2011. "Down, Up, Down, and "Smolting" Twice? Seasonal Movement Patterns by Juvenile Steelhead (*Oncorhynchus mykiss*) in a Coastal Watershed with a Bar Closing Estuary." *Canadian Journal of Fisheries and Aquatic Sciences* 68(8):1341–1350.

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