

**FINDING OF NO SIGNIFICANT IMPACT (FONSI)
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
OAKLAND HARBOR NAVIGATION IMPROVEMENT (-50 Foot) PROJECT,
HAMILTON WETLAND RESTORATION PROJECT AND
BEL MARIN KEYS UNIT V EXPANSION OF THE HAMILTON WETLAND
RESTORATION PROJECT**

May 2006

1. Action. The proposed action is an updated review of the Oakland Harbor Navigation Improvement (Oakland -50') Project, the Hamilton Wetland Restoration Project (HWRP), and the Bel Marin Keys Unit V Expansion of the HWRP for compliance with General Conformity requirements of Section 176(c) of the Clean Air Act, as amended, and 40 CFR Part 93, Subpart B. The selected plan involves sharing of air emissions associated transportation of dredged sediments between the Oakland -50' project and those projects that are actively seeking dredged sediment for beneficial reuse such as HWRP and the Bel Marin Keys Unit V Expansion. Each project would be allocated 50% of the sediment transportation emissions. This sharing does not apply to Operation and Maintenance dredging projects as they are exempt from the General Conformity requirements. Both projects will remain compliant with Section 176(c) of the Clean Air Act.

2. References. U.S. Army Corps of Engineers and California Coastal Conservancy. 2003. *Bel Marin Keys Unit V Expansion of the Hamilton Wetland Restoration Project Final Supplemental Environmental Impact Report/Environmental Impact Statement*. Prepared by Jones & Stokes, Oakland, CA.

U.S. Army Corps of Engineers, San Francisco District and California Coastal Conservancy. 1998. *Hamilton Army Airfield Wetland Restoration, Volume II: Final Environmental Impact Report/Environmental Impact Statement*. Prepared by Jones & Stokes, Sacramento, CA.

U.S. Army Corps of Engineers, San Francisco District and the Port of Oakland. 1998. *Oakland Harbor Navigation Improvement(-50 Foot)Project Volume II: Final Environmental Impact Statement/Environmental Impact Report*.

3. Factors Considered. Factors considered for this FONSI were impacts on air and water quality, fish and wildlife, endangered/threatened species and marine mammals, and Commercial/Recreational Fisheries.

4. Conclusion. Based on the information obtained in the preparation of the Supplemental Environmental Assessment, it is concluded that the proposed action will not have a

significant impact on the quality of the human environment. Therefore, the preparation of an environmental impact statement is not required.

23 May 2006
Date

for Mike Dillabough
Philip T. Feir
Lieutenant Colonel, U.S. Army
Commanding

**Supplemental Environmental Assessment to
Oakland Harbor Navigation Improvement (-50 Foot)
Project, Volume II:
Final EIS/EIR**

**Hamilton Wetland Restoration Plan, Volume II:
Final EIR/EIS**

**Bel Marin Keys Unit V Expansion of Hamilton Wetland
Restoration Project:
Final Supplemental EIS/EIR**

May 2006

**Prepared By:
U.S. Army Corps of Engineers, San Francisco District**



**US Army Corps
of Engineers** ®
San Francisco District

I. INTRODUCTION

The Oakland Harbor Navigation Improvement (-50ft) Project is currently being constructed by the Corps of Engineers, San Francisco District and the Port of Oakland. The project is deepening the navigation channels in the Inner and Outer Harbors from -42 ft to -50 ft MLLW. One of several sites for placement of the resulting dredged material is the Hamilton Wetland Restoration Project (HWRP). The HWRP is a 980-acre wetland restoration site in Novato, California, which is creating tidal and seasonal wetlands via the beneficial reuse of suitably clean dredged material from the Port of Oakland and other dredging projects in the San Francisco Bay Area (Figures 1-3).

This Environmental Assessment is being prepared to disclose an updated review of the Oakland Harbor Navigation (-50ft) and Hamilton Wetland Restoration projects with respect to compliance with General Conformity requirements of Section 176(c) of the Federal Clean Air Act, as amended and 40 CFR Part 93, Subpart B.

II. PROPOSED ACTION:

The proposed action is an updated review of the Oakland Harbor Navigation Improvement (Oakland -50') Project and the Hamilton Wetlands Restoration Project for compliance with General Conformity requirements of Section 176(c) of the Federal Clean Air Act, as amended, and 40 CFR Part 93, Subpart B.

A. AUTHORIZATION:

Both the HWRP and the Oakland Harbor Navigation improvement (Oakland -50ft) Project were authorized as by Congress independently as part of the Water Resources Development Act (WRDA) of 1999.

B. BACKGROUND:

A Feasibility Study and EIS/EIR was prepared for the deepening project under Section 203 of WRDA of 1986. The Oakland Harbor Navigation Improvement Project Final Environmental Impact Statement/Environmental Impact Report was released to the public in May of 1998.

The Oakland Harbor Navigation Improvement (-50ft) Project Information Report: Corrections and Updates to the Final EIS/EIR was prepared in March of 1999. This document corrected air quality and noise impacts information on construction, updated discussions of ballast water discharge and cultural resource issues, and presented additional sediment characterization data, leading to the creation of two new alternatives (F10 and F11). The Record of Decision (ROD) for the project was issued on October 8, 1999, and identified alternative F10 as the selected plan.

The Port prepared the Oakland Harbor Navigation Improvement (-50ft) Project:

Addendum to the Final Environmental Impact Report in July of 2000 which disclosed design refinements that had been developed since the certification of the EIS/EIR.

The Corps, San Francisco District and the California State Coastal Conservancy (SCC), in partnership with the San Francisco Bay Conservation and Development Commission prepared the Hamilton Wetland Restoration Plan EIR/EIS which was released to the public in December 1998. The ROD for the Hamilton project was issued on August 2, 2000.

The 1600-acre Bel Marin Keys Unit V () property lies immediately north of the HWRP site, and has been acquired by the SCC with the intent of restoring wetland habitat in a manner similar to the HWRP. The Corps and the SCC are in the process of obtaining congressional authorization to expand the HWRP to include the parcel. This authorization has not yet been granted. The Final Supplemental EIR/EIS for the Bel Marin Keys Unit V Expansion of the Hamilton Wetland Restoration Project was released to the public in April 2003. The ROD for the project was issued on December 16, 2005.

C. LOCATION:

The Port of Oakland is located on the east side of central San Francisco Bay in the City of Oakland, Alameda County, California. The HWRP is located adjacent to San Pablo Bay in unincorporated Marin County and Novato, California. Detailed project locations are described in the Final EIR/EIS for each project.

D. PROJECT DESCRIPTION:

Oakland Harbor Navigation Improvement (-50 Foot) Project:

The Oakland Harbor Navigation Improvement project is an undertaking of the U.S. Army Corps of Engineers and the Port of Oakland. It consists of the dredging and disposal of 12.8 to 14.5 million cubic yards (mcy) of channel bottom sediments to deepen and widen the channels and turning basins in the Oakland Harbor from -42 to -50 feet MLLW (plus 2-ft allowable overdredge depth) . Refer to the Oakland Harbor Navigation Improvement (Oakland -50ft Foot) Project, Volume II: Final EIS/EIR for a detailed project description.

The project description in the -50 ft project EIS/EIR stated that “The proposed dredging and disposal of sediments likely would begin in December 1999 and is anticipated to be completed by December 2003”. Federal funding for the project was not appropriated as expected. As a result, the original schedule has not been possible to meet. The following summarizes the dredging and construction activity that has occurred thus far:

- Phase 1A (Inner Harbor turning basin). Dredging commenced in April 2002 and was completed in August 2003. Approximately 200,000 cubic yards (cy) of material was placed in the Middle Harbor Enhancement Area (MHEA), and 200,000 cy of material

was placed in the Berth 10 rehandling facility and transferred to appropriate disposal locations. This work also included pier removal and the construction of a seawall on the Alameda side of the channel.

- Phase 2 (Construction of the MHEA containment structure). Work began in May 2004 and was completed in November 2005.
- Phase 3A (Entrance and Inner Harbor channel dredging). Clamshell dredging began in December 2003 and was completed in June 2004. Approximately 510,000 cy of this material was placed at the Montezuma Wetland Project (MWP) for wetland restoration.
- Phase 3B/C (Inner and Outer Harbor channel dredging). Both channels were dredged to -46ft. Dredging began in December 2004 and was completed in November 2005. Approximately 1 million cy was dredged and barged to the MWP. Approximately three million cy of material was dredged hydraulically and pumped to the MHEA.

Work in progress or to be completed in the future includes the following:

- Phase 1B (Inner Harbor turning basin). Dredging began in October 2005 and is ongoing. Approximately 50,000cy will go to Berth 10 for rehandling and upland disposal, and 200,000 cy will be dredged by clamshell and barged to the San Francisco Deep Ocean Disposal Site (SF-DODS).
- Phase 3D (entrance channel). The entrance channel will be deepened from -46ft to -50ft. One million cy of material will be clamshelled and barged to the MWP. Dredging started in January 2006 and is scheduled to be complete in October 2006.
- Phase 3E (Inner and Outer Harbor channel dredging). Dredging the harbors from -46ft to -50ft is expected to commence in June 2006 and be complete by the summer of 2008. Approximately 2,086,000 cy will be dredged by clamshell and barged to the HWRP. An additional 716,000 yards of dredged material per foot of overdepth dredging could also be dredged and placed at Hamilton. Approximately 1,131,000 cy will be hydraulically dredged and placed in the MHEA. An additional 352,000 cy of dredged material per foot of overdepth dredging could also be dredged from the harbor and placed in the MHEA. Approximately 264,000 cy will be dredged in the Outer Harbor and disposed at SF-DODS. An additional 63,000 cy of dredged material per foot of overdepth dredging could also be dredged from the Outer Harbor and disposed of at SF-DODS

Hamilton Wetland Restoration Project with Bel Marin Keys Expansion Unit V:

The Hamilton Wetland Restoration Project, with the Bel Marin Keys Expansion Unit V, is an undertaking of the U.S. Army Corps of Engineers and the California State Coastal Conservancy, in collaboration with the San Francisco Bay Conservation and Development Commission, which will restore tidal salt marsh and other wetland habitat. Refer to the Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel

Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR for detailed project descriptions. The Bel Marin Keys portion of the project has not yet been authorized for construction. Site preparation at the HWRP began in 2002.

- **Building Demolition and Pipeline Construction**
In December 2002 the Corps constructed a dredged material pipeline across the outboard marsh along an existing unpaved road. The pipeline extends 250 ft beyond both edges of the salt marsh into San Pablo Bay and the airfield. The work was conducted in the winter to avoid construction related impacts to the California clapper rail. Work was completed by January 2003. In the spring of 2004 the Corps demolished the existing buildings and facilities on the airfield and Navy Ball Field Parcels. Three buildings remain on site: two pump houses, which will be used to dewater the site during dredged material placement, and building 82, which serves as the BASE REALIGNMENT AND CLOSURE (BRAC) office. Work on both of these actions was completed as specified in the informal consultation with the Service.
- **Relocation of Contaminated Soils**
In 2004/2005 The Corps relocated soils with low level DDT and PAH concentrations from areas in the site where scour could potentially occur to the panhandle area of the site, where it will be covered by at least three feet of suitable cover. This action was performed in accordance with the Soil Management Plan issued by the California Department of Toxic Substance Control.
- **Levee Construction and Remaining Site Preparation**
The Corps has begun to construct levees around the perimeter of the site. The Bulge and Pacheco Pond levees (the southern and western perimeter of the panhandle respectively) were constructed in the latter part of 2004. The N-1 levee segment and containment berm (the northern perimeter of the panhandle) were constructed in the fall of 2005. The remaining prep work, the construction of the N-2 and Southern levees and intertidal berms, is expected to be complete in 2007.

Description of the Dredged Material:

A detailed description of the material to be dredged by the Port of Oakland is presented in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR.

Equipment:

The equipment to be used for each project is detailed in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

ALTERNATIVES:

Alternatives to the proposed action as described above include the following two "no project" sub-alternatives.

1. **No-Action Alternatives:** The No- Action alternatives, those not sharing emission, would result in changes in completion of the HWRP and extension of the Oakland Harbor Navigation Improvement Project as described in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR. Within the considerations of these EISs/EIRs, the following No-Action sub-alternatives may occur:

- a. **Use of Alternative Disposal Locations:** Under this sub-alternative, the Port would maintain its dredging schedule, diverting sediments from beneficial reuse for wetland restoration at Hamilton and increasing disposal of dredged sediments at the San Francisco Deep Ocean Disposal Site (SF-DODS). With this sub-alternative, 1.6 million cubic yards or more would be diverted from wetland restoration to SF-DODS. As a result, the HWRP would likely experience a delay in receipt of adequate quantities of suitable sand for establishment of the seasonal wetlands. Although dredged material will be available from routine operation and maintenance (O&M) activities in the bay to construct the seasonal wetlands, this material is in short supply. In addition, O&M material with the sand content required for the creation of a viable seasonal wetland is rare, and may not be available for HWRP. This would hinder the completion of the seasonal wetland portion of the project. The HWRP has committed to breach the bayfront levee within eight years of the commencement of dredged material placement, restoring tidal action to most of the site. Loss of dredged sediments from the Port of Oakland would cause this breach to occur before the desired dredged material fill elevations were achieved. This would result in significant delays in the evolution of tidal marsh on the site since there would be more reliance on natural sedimentation to complete the filling the tidal marsh area of the HWRP. The seasonal wetlands would not be constructed. The tidal marsh portion of this site is regionally significant, as it will provide critical habitat for the endangered salt-marsh harvest mouse and California clapper rail. Delay in the development of this habitat represents an impediment to the recovery of these species.

Under this alternative, the Port would adhere to the dredging project schedule and maintain compliance with air quality regulations while HWRP schedule is substantially impacted. This alternative would have the least economic impacts to the Port of Oakland and regional economy and is the most likely no-action alternative that would be pursued.

- b. **Prolong Dredging Schedule:** The proposed dredging schedule to deepen the Port of Oakland from -46 ft. MLLW to -50 ft. MLLW would be prolonged. The early phase of the deepening project, deepened the navigation channels

from -42 ft MLLW to -46 ft MLLW, and was completed in 2005, therefore would not be changed by this no-action sub-alternative. The dredging schedule for the final phase would be extended from 3 year to 4 years, with the majority of dredging activities to be completed in years 2 and 3. Under this sub-alternative, the Port would maintain compliance with air quality regulations while extending dredging impacts to the aquatic environment. The Prolonged Dredging Schedule would result in substantial loss of revenue to the Port of Oakland and subsequently to the regional economy. This additional one-year extension would translate into a multi-year loss of revenue as prospective carriers would make their multi-year contracts with other ports. This financial impact would make this sub-alternative and unlikely scenario. Furthermore, prolonged dredging schedule at the Port of Oakland would have negative implications for the HWRP. As a result of this sub-alternative, HWRP would experience a delay in receipt of adequate dredged material and the overall schedule of this restoration project would be impacted

For General Conformity purposes, this alternative would maintain the Corps' current policy that 100% of the air emissions associated with dredging and dredged material transportation, whether for disposal or beneficial reuse, is allocated to the dredging project.

2. Proposed Action: The Oakland Harbor Improvement Project and the Hamilton Wetlands Restoration Project are independent projects. However, HWRP is a receiver site for portions of Oakland dredged sediments and actively seeks sediments from other projects to fulfill its purpose. The proposed action, an updated review of the General Conformity Analysis for each project, involves sharing of air emissions associated with the transportation of dredged sediment between dredging projects and those projects that are actively seeking dredged sediment for beneficial reuse would be shared among projects receiving dredged material from Oakland. This sharing would not apply to Operation and Maintenance (O&M) dredging projects as they are exempt from the General Conformity requirements. Under this proposal, indirect emissions of sediment transportation would be shared between the non-O&M source sites and receiver sites such as HWRP or Montezuma Wetlands Restoration Project. Each project would be allocated 50% of the sediment's transportation emissions. Under this alternative the Oakland project would proceed with its current schedule, HWRP would receive this large quality of suitable material for restoration in a timely manner. Both projects would remain compliant with Section 176(c) or the Federal Clean Air Act.

III. AFFECTED ENVIRONMENT

The air quality, surface water resources, geology groundwater, biological resources, cultural resources, socioeconomics, transportation, noise, human health and risk, hazardous material and contaminated wastes, public services, land use, and aesthetics of the affected

environments at Oakland Harbor and all disposal sites associated with the navigation improvement project are discussed in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR.

The geology, soils, seismicity, surface-water hydrology and tidal hydraulics, water quality, public health, biological resources, land use, public utilities, hazardous substances and waste, transportation, air quality, noise, cultural resources and aesthetics of the affected environments at HWRP are discussed in the Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

IV. ENVIRONMENTAL IMPACTS

This section describes the effects of the proposed emission sharing as described in the Updated Review of General Conformity Analyses for Oakland 50' and HWRP and (See Appendices A and B) and the two no-action alternatives to the Oakland 50', HWRP and BMK Projects.

A. GENERAL MARINE AND COASTAL ENVIRONMENT:

Under the proposed action, the HWRP would receive dredged sediments from the Oakland 50' Project and would proceed with creation of this large regionally significant tidal marsh and seasonal wetlands.

The Oakland Harbor's dredging would be complete in 3 years and the temporary impacts of dredging to the marine environment would be reduced.

Use of alternate disposal site for the Oakland dredged material would have substantial negative impacts to HWRP as establishment of the coastal habitat would be delayed indefinitely due to shortage of suitable sandy material. The prolonged dredging schedule would result in some delays in creation and establishment of the HWRP, however, due to its economic impacts, the most likely no-action alternative would be placement of dredged sediments in SF DODS rather than extending the dredging schedule so that dredged sediments may be put to beneficial use for coastal wetland restoration.

B. BIOLOGICAL RESOURCES:

Beneficial and detrimental impacts to biological resources and mitigation measures are described in detail in the Oakland 50' Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

The alternative to use alternate disposal locations (e.g. SF DODS) would result in substantial delays in creation and establishment of the HWRP. This is a substantial negative impact to enhancement of the biological resources in the region. Under the

prolonged schedule no-action sub-alternative, the construction of the Oakland 50' project would extend to at least 4 years rather than 3. The overall effects of the no-action alternatives to the HWRP would be considerably impacted as construction and establishment of highly desirable endangered species habitat would be delayed. The HWRP has regional importance as it will restore scarce wetland habitat.

The proposed action would result in completion of the Oakland 50' project within three years. This would inevitably produce indirect effects on benthic or bottom dwelling species, as re-colonization could occur in a shorter time period under the proposed action than under the no-action alternatives.

C. THREATENED AND ENDANGERED SPECIES:

The HWRP will provide a regionally significant resource that serves as habitat for the endangered salt-marsh harvest mouse and California clapper rail. The postponement and delays to establishment of habitat for these species is a considerable loss of opportunity to their continued existence. There are no additional impacts to threatened and endangered species at the Port of Oakland associated with the proposed action. Impacts to threatened and endangered species and mitigation measures are discussed in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

D. WATER QUALITY:

The no-action alternative's extension of the current schedule from 3 to 4 years results in extension of the temporary impacts to water quality as a result of dredging. Other impacts to water quality at the HWRP associated with the proposed action would result from indefinite delays in creation of this project and the overall benefit of wetlands to water quality. Impacts to water quality and mitigation measures are discussed in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

E. AIR QUALITY:

The proposed action would facilitate wetland restoration at HWRP while contributing no additional impacts to air quality at the Port of Oakland or HWRP. Impacts to air quality and mitigation measures are discussed in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR, and would remain the same with the proposed action.

The air quality impacts from the proposed action of equally allocating emissions associated with the transportation of dredged sediments from the Port of Oakland to

HWRP were analyzed in the Updated General Conformity in Appendices A and B. Emissions from the remaining stages of dredging, construction, and dredged sediment off-loading and placement were evaluated as applicable to Oakland Navigation Improvement Project and HWRP. Since completion of the original General Conformity Applicability evaluations for each project, the Bay Area Air Quality Management District (BAAQMD) has been classified as a non-attainment area for the national 8-hour ozone standard and a maintenance area for the national 8-hour carbon monoxide standard. Nitrogen oxides (NO_x) are ozone precursors and, as such, were evaluated in the General Conformity Applicability Analyses as the pollutant most likely to trigger the need for a conformity determination. The General Conformity Applicability Analyses show that HWRP and the remainder of the Oakland Navigation Improvement Project can be completed below *de minimus* thresholds with the proposed action.

The No Action sub-alternative of prolonging the dredge schedule would result in extending the period of time over which emissions will be released while the total emissions from the combined projects would be the same as those projected under the proposed action.

The No Action sub-alternative of using alternate disposal locations would result in a large portion (1.6 mcy or more) of the dredged sediments being diverted from wetland restoration to disposal at SF-DODS. For the purposes of a General Conformity Applicability Analysis, emissions are only estimated to the jurisdictional boundary of the BAAQMD. Although the actual distance to SF-DODS is much farther than HWRP, emissions are only estimated to the BAAQMD jurisdictional boundary, ~12.5 nautical miles from the Port of Oakland. Therefore, the emissions associated with the transportation of dredge material to SF-DODS were not fully accounted for in the General Conformity Analysis because they would be emitted outside of the BAAQMD (table 1). It is important to note the true emissions produced under the alternate disposal locations sub-alternative, would substantially exceed those that would be accounted for in the General Conformity Applicability Analysis, by approximately 12.2 tons NO_x per 100,000 cy dredge sediment disposed of at SF-DODS. The excess emissions would be released outside of the BAAQMD jurisdiction but would be transported into the San Francisco Bay Area by regional weather patterns. Therefore, it can be concluded that, despite the project emissions being in technical compliance with Section 176(c) of the Federal Clean Air Act, the actual project emissions, including those produced outside of the BAAQMD jurisdiction, would be in non-compliance and have a detrimental impact on regional air quality.

Table 1. Projected annual NOx emissions from the transportation of dredged material under the proposed action and the no-action, alternate disposal locations sub-alternative

| | | Annual NOx Emissions (tons) | |
|------------------|-----------------------------------------------------|--------------------------------|-------------------------------------|
| | | Proposed Action | No-action: Alternate Disposal |
| 2006 | Oakland Deepening - General Conformity ¹ | 98.6 | 99.4 |
| | Hamilton Reuse - General Conformity ² | 7.3 | 0 |
| | Out-of- Air Basin Disposal ³ | 70 | 206.5 |
| | Total | 175.9 | 305.9 |
| 2007 | Oakland Deepening - General Conformity | 43.8 | 99.7 |
| | Hamilton Reuse - General Conformity | 43.8 | 0 |
| | Out-of-Basin Disposal | 0 | 54.8 |
| | Total | 87.6 | 154.5 |
| 2008 | Oakland Deepening - General Conformity | 4.6 | 9.8 |
| | Hamilton Reuse - General Conformity | 4.6 | 0 |
| | Out-of-Basin Disposal | 0 | 0 |
| | Total | 9.2 | 9.8 |
| 2006-2008 | Oakland Deepening - General Conformity | 147 | 208.9 |
| | Hamilton Reuse - General Conformity | 55.7 | 0 |
| | Out-of-Basin Disposal | 70 | 261.3 |
| | Grand Total | 272.7 | 470.2 |

¹ Consists of emissions from transporting material to disposal or reuse sites. Oakland is allocated 50% of the transport emissions to HWRP and Montezuma in the proposed action scenario and 100% of the transport emissions in the no-action: alternate disposal scenario. For transport from Oakland to the San Francisco Deep Ocean Disposal Site, all emissions inside the air quality control region are assigned to Oakland. Total project emissions are presented in Appendix A.

² HWRP is allocated 50% of emissions from dredged material transportation in the proposed action scenario and no transportation emissions in the no-action scenario. HWRP will use an electric off-loader during 2006-2008. Total does not include other on-site emissions for construction & maintenance, estimated at < 16 tons per calendar year.

³ Consists of emissions generated outside the air quality control region during ~116- nautical mile, round trip from Oakland to the San Francisco Deep Ocean Disposal Site. (See 40 CFR 853(b))

F. NOISE

There are no additional impacts to the noise environment at the Port of Oakland or HWRP associated with the proposed action. Impacts to noise environment and mitigation measures are discussed in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

G. LAND USE AND RECREATION:

There are no additional impacts to land use and recreation at the Port of Oakland or HWRP associated with the proposed action. Impacts to land use and recreation and mitigation measures are discussed in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

H. AESTHETICS:

There are no additional impacts to aesthetics at the Port of Oakland or HWRP associated with the proposed action. Impacts to aesthetics and mitigation measures are discussed in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

I. CULTURAL RESOURCES:

There are no additional impacts to cultural resources at the Port of Oakland or HWRP associated with the proposed action. Impacts to cultural resources and mitigation measures are discussed in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

J. CUMULATIVE IMPACTS:

Cumulative impacts are defined as impacts to the environment which result in the incremental impact of the action when added to other past, present, and foreseeable future actions regardless of the action agency.

Cumulative impacts of the proposed action are consistent with those described in the Oakland Harbor Navigation Improvement (-50 Foot) Project, Volume II: Final EIS/EIR, Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS, and Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR.

Indefinite delays to construction of the HWRP are anticipated to have considerable negative cumulative impacts to the regional coastal wetlands and federally listed endangered species as the HWRP.

V. COORDINATION

The proposed sharing of the transportation emissions as presented in the Updated Review of the Conformity Analyses for Oakland 50' project and HWRP is being coordinated with the BAAQMD and the U.S. Environmental Protection Agency.

VI. ENVIRONMENTAL COMMITMENTS

All environmental commitments in the previous NEPA documents and those associated or resulting from environmental compliance/permitting for these projects remain in effect. Additional commitments as related to the proposed action are as follows:

- 1) All emissions are continuously monitored by the contractor and reported to the Corps and the Port of Oakland. All work shall stop prior such that project emissions do not exceed de minimis thresholds (100 tons VOC, NOx, or CO).
- 2) Work at Oakland is with electrically powered dredges.
- 3) Electric off-loader at Hamilton must be operational and used by 1 Jan 2007.

VII. COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

A. CLEAN WATER ACT :

SECTION 404: The proposed project, with the above environmental commitments and special conditions, complies with Section 404(b)(1) Guidelines promulgated by the Administrator, Environmental Protection Agency, under authority of Section 404(b)(1) of the Clean Water Act (33 USC 1344) (Appendix D).

SECTION 401: The proposed project, complies with the requirements of the California Regional Water Quality Control Board (CRWQCB). Water quality certification, pursuant to 33 USC 1341 has been obtained for both the HWRP and Oakland Navigation Improvement (-50ft) Project. The San Francisco RWQCB adopted the water quality certification and waste discharge requirements for the Oakland -50' Project as Order No. 00-110 on October 18, 2000, and for the HWRP as Order No. R2-2005-0034 on July 20, 2005.

B. COASTAL ZONE MANAGEMENT ACT OF 1972:

The San Francisco Bay Conservation and Development Commission (BCDC) is the agency responsible for ensuring projects in the San Francisco Bay Region are compliant

with the Coastal Zone Management Act of 1972 (CZMA), the McAteer Petris Act, and the San Francisco Bay Plan. The proposed project activities have been reviewed by the Corps and are determined to be consistent with this legislation to the maximum extent practicable. BCDC issues federal consistency determinations under the Coastal Zone Management Act for areas within its jurisdiction. The Corps, San Francisco District applied for consistency determination for the HWRP on June 24, 2005. BCDC concurred with the Corps' findings and issued the Letter of Agreement for Consistency Determination CN 7-05 on September 7, 2005.

Consistency for the Oakland -50 ft project was established in two stages. The Letter of Agreement for CN 10-98 was issued in October of 1998. BCDC requested additional information to determine the consistency of the Middle Harbor Enhancement Area as a disposal site. The Letter of Agreement for CN 14-00 was issued By BCDC on January 19, 2001, after these issues had been resolved.

C. ENDANGERED SPECIES ACT OF 1972, SECTION 7(c):

The Corps submitted a Biological Assessment (BA) for the Oakland -50 ft project to the U.S. Fish and Wildlife Service (Service) and requested formal Section 7 consultation under the Endangered Species Act (ESA). The Service provided a draft Biological Opinion (BO) to the Corps on June 23, 1998. Discussions among the Corps, the Port of Oakland, BCDC, other agencies, and interested public over issues raised in the opinion continued through 1998 and early 1999. The final BO was issued by the Service on June 29, 1999.

The National Marine Fisheries Service (NMFS) was also provided with the BO and they informally concurred with the not likely to adversely affect determination of the BO.

The Corps made attempts in 1998 and in 2002 to initiate formal Section 7 consultation with the Service on the HWRP. These attempts were denied due to uncertainties related to the then ongoing remediation of on-site contaminants by the Army's BRAC. Once the related issues had been resolved, and the property transferred to the Conservancy, consultation on the restoration proceeded. The Corps submitted a BA and requested formal consultation with the Service on February 22, 2005. The Service issued its BO on July 20, 2005.

The Corps also consulted on the HWRP informally with NMFS under the ESA. NMFS concurred with the not likely to adversely affect determination of the BA submitted by the Corps on August 18, 1998. NMFS was also provided with the Corps' February 22, 2005 BA, since it contained a more detailed and updated account of the project. NMFS concurred on August 9, 2005 with the Corps' determination that anadromous salmonids are not likely to be adversely affected by the project as proposed.

NATIONAL HISTORIC PRESERVATION ACT:

A Memorandum of Agreement (MOA) was established in 2001 between the Corps and the State Historic Preservation Officer (SHPO). The memorandum established appropriate protocol for historic properties in the area of potential effects. This MOA concluded the consultation process in accordance with Section 106 of the State Historic Preservation Act.

D. MAGNUSON-STEVENSON FISHERY MANAGEMENT AND CONSERVATION ACT, AS AMENDED:

The Corps submitted an Essential Fish Habitat (EFH) assessment to NMFS on July 28, 2005 and requested consultation under the Magnuson-Stevens Fishery Conservation and Management Act. After some coordination, NMFS issued a letter concurring with the Corp's assessment. The letter stated that "Given the avoidance and minimization measures included in the proposed project, NMFS concludes adverse effects from construction of the Hamilton Airfield Restoration Project will be less than substantial and adequately compensated by the beneficial long-term effects of the project".

The Oakland -50 ft Project was coordinated with NMFS prior to the existence of EFH consultation requirements. Coordination on the effects of the project to fish habitat was limited to the Section 7 consultation.

E. CLEAN AIR ACT:

Incorporated by reference herein are the Updated General Conformity Applicability Analysis for the Oakland Harbor Navigation Improvement (-50 ft) Project, dated May 2006 (Appendix A) and the Updated General Conformity Applicability Analysis for the Hamilton Wetland Restoration Project and Bel Marin Keys Unit V Expansion, dated May 2006 (Appendix B) for compliance with the requirements of 40 CFR 93, Subpart B, and Section 176(c) of the Clean Air Act, as amended.

F. OTHER APPLICABLE ENVIRONMENTAL LAWS AND REGULATIONS:

The proposed project has been reviewed and determined to be in compliance with the following applicable laws and regulations:

1. National Environmental Policy Act
2. Fish and Wildlife Coordination Act
3. Marine Protection, Research and Sanctuaries Act

VIII. CONCLUSION

The proposed sharing of transportation emissions among the Oakland 50' Project and HWRP and other dredged material beneficial reuse sites, as presented in Updated General Conformity Applicability Analyses in Appendices A and B, would minimize impacts to

regional air quality while allowing the HWRP and to be restored to wetland habitat. The Oakland 50' Project would proceed on current schedule and impacts to regional economy would be reduced.

IX. LIST OF PREPARERS/REVIEWERS

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X. REFERENCES

The following documents and references within are incorporated herein:

The Oakland Harbor Navigation Improvement (-50ft) Project Information Report: Corrections and Updates to the Final EIS/EIR was prepared in March of 1999.

The Oakland Harbor Navigation Improvement Final Environmental Impact Statement/Environmental Impact Report was released to the public in May of 1998.

Hamilton Wetland Restoration Plan, Volume II: Final EIR/EIS,

Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR, April 2003.

Figure 2. Oakland Harbor

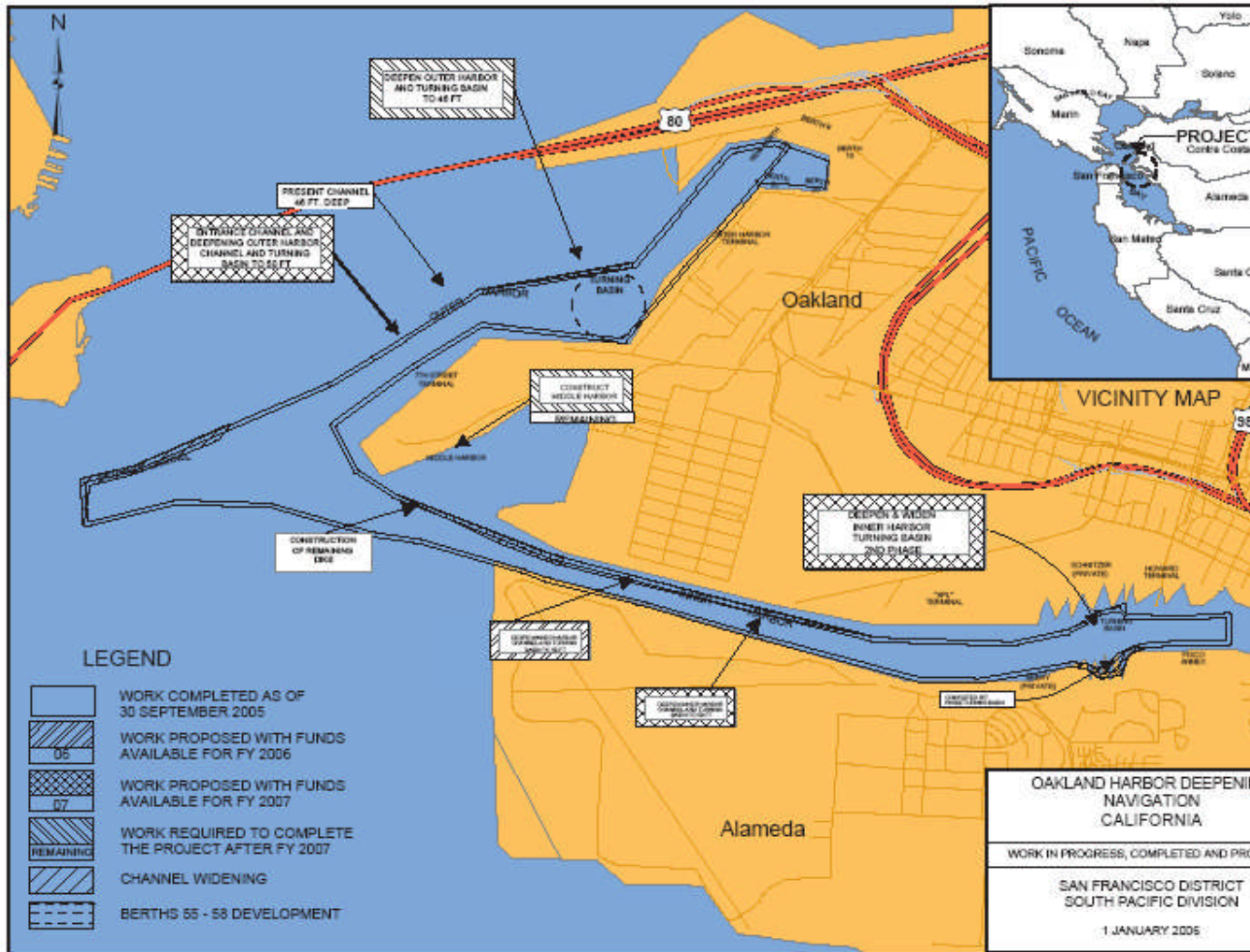
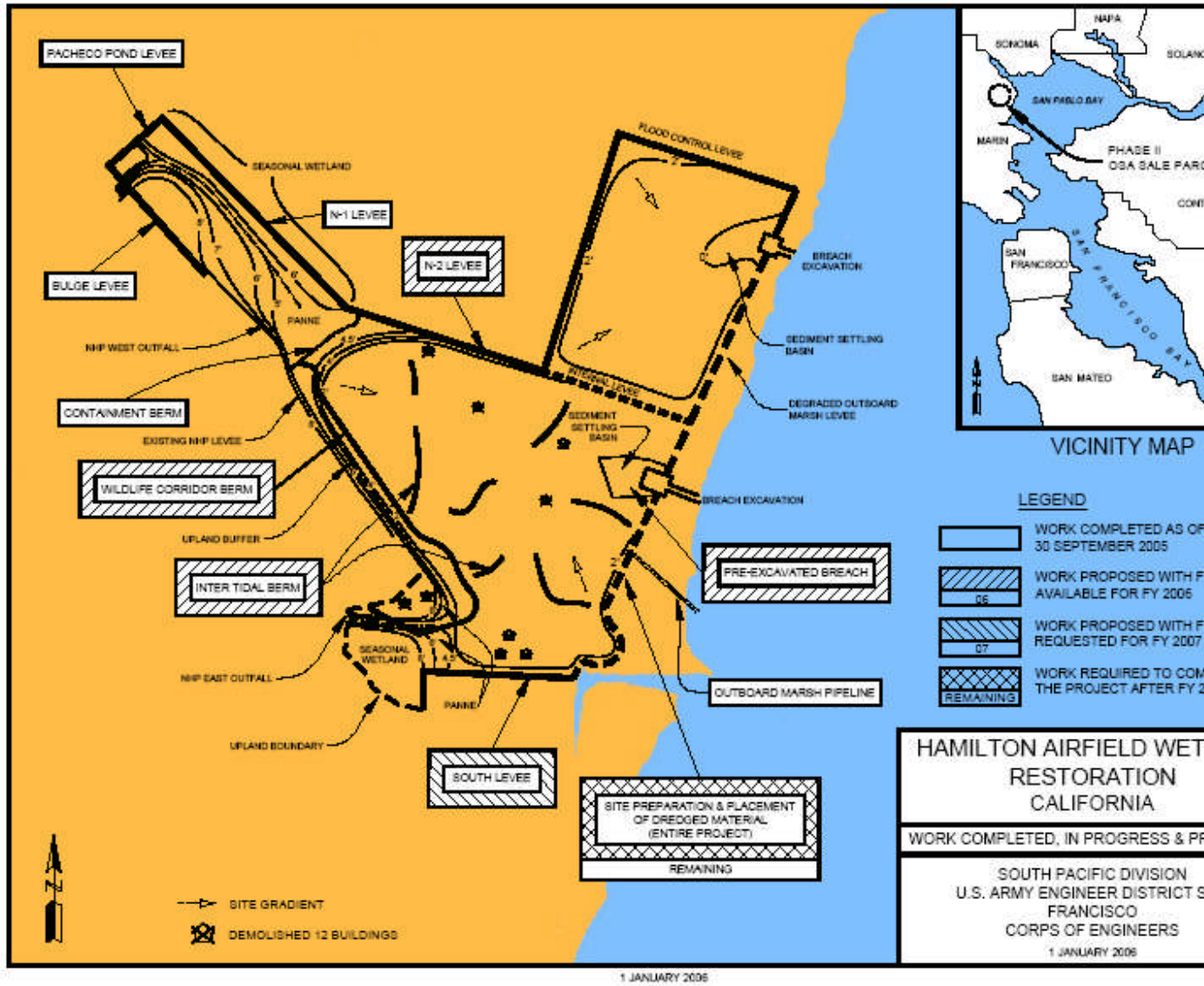


Figure 3. Hamilton Wetland Restoration Project



Appendix A

Oakland Harbor Navigation Improvement (-50 Foot) Project Updated General Conformity Applicability Analysis

Oakland Harbor Navigation Improvement (-50 Foot) Project Updated General Conformity Applicability Analysis May 2006

I. INTRODUCTION

The information and analysis in this document supports the U.S. Army Corps of Engineers (Corps), San Francisco District's updated review of the Oakland Harbor Improvement Project (50' Project) for compliance with General Conformity requirements. The Corps finds that a Conformity Determination is not required and that the project continues to comply with 40 CFR 93, Subpart B, and Section 176(c) of the Federal Clean Air Act (FCAA), as amended.

The 50' Project includes dredging approximately 12.8 million cubic yards (cy) of material in the Oakland Harbor and associated channels to deepen the channels from 42 to 50 feet. The project also involves deepening certain berths at the Port of Oakland as well as the beneficial reuse of dredged materials at the Port of Oakland. The 50' Project corresponds with Alternative F10 in the Final EIR/EIS.¹ The 50' Project was scheduled to begin in 2000 and be completed in 2004. Due to a series of minor changes to the project, adjustments to annual funding levels, and consequent delays to construction schedules, the 50' Project is now scheduled for completion in 2008. Disposal and/or reuse of the dredged material will continue to occur at a variety of sites.

The Corps determined that an updated conformity applicability analysis was appropriate to ensure continued compliance with Section 176(c) of the Clean Air Act. Due to the dependence of the Hamilton Wetland Restoration Project (HWRP) and other regional wetland restoration projects on the 50' Project for dredged material, it is proposed that emissions produced from the transportation dredged material to beneficial reuse sites is equally shared between the 50' Project and the Restoration Projects. Furthermore, the project will extend four years beyond its original scheduled completion date, there have been a number of minor changes to the project and to disposal options that warrant additional analysis, and updated technical information is available on emissions that might affect the need for a conformity determination. More information is provided on these factors in subsequent sections.

¹ Information Report Corrections and Updates to the Final EIS/EIR, USACE and the Port of Oakland, 1999

II. REGULATORY BACKGROUND

The FCAA requires states to establish and update a State Implementation Plan (SIP) to ensure that areas that are not in attainment of the National Ambient Air Quality Standards (NAAQS) have a viable plan in place to attain standards. Once standards are attained, the SIPs must provide for continued attainment or “maintenance” of the same standards. States submit SIP updates to EPA for approval. As noted above, Section 176(c) of the FCAA requires federal projects or actions to “conform” to the most recently approved SIP for each pollutant that has an attainment or maintenance plan. The 50' Project is located in the Bay Area Air Quality Management District, (BAAQMD) which is classified as a Marginal Nonattainment Area for the national 8-hour ozone standard, and a Maintenance Area for the national 8-hour carbon monoxide (CO) standard.

EPA promulgated General Conformity regulations on November 30, 1993. The rules are codified at 40 CFR Part 51, Subpart W and 40 CFR Part 93, Subpart B. The latter applies to federal agencies unless states adopt a rule identical to, or more stringent than, 40 CFR Part 51, Subpart W.

Section 93.153 (c)(1) of the General Conformity Regulations provide that projects do not need to demonstrate conformity if the combination of annual direct and indirect project emissions are less than threshold levels of nonattainment or maintenance pollutants. Applicable threshold levels, which are listed in Section 93.153(b)(1) and (2), vary depending on the attainment status and classification of the area in which the project is located. Project emissions below these thresholds are sometimes referred to as “de minimis”. Notwithstanding these thresholds, projects with direct and indirect emissions that are greater than 10% of the regional emissions of nonattainment or maintenance pollutants are considered regionally significant and must demonstrate attainment (Section 93.153(i)).

General Conformity regulations at Section 193.158 provide that the conformity status of a project automatically lapses after 5 years, “unless the Federal action has been completed or a continuous program has been commenced to implement that Federal action within a reasonable time.” While the 50' Project may qualify for an extension of the 1999 conformity analysis based on this language, the following factors indicate that an update is appropriate.

1. The scheduled completion date for the project has been extended from 2004 to 2008. Moreover, available funding and other factors indicate a significant increase in dredging activity in 2006.
2. Three addenda have been made to the original EIS. These addenda described a variety of project changes and refinements including adjustments in the volume of material to be dredged and changes to disposal sites and options. Emissions changes were analyzed in each case, but the last update to the conformity analysis occurred in July of 2000 in conjunction with the first addendum.

3. There is new and better technical information available on some emissions sources, and updated and more accurate emissions estimation techniques. For example, trip lengths, travel time, scow loading, tug engine horsepower ratings and engine load factors can be refined based on actual experience. In addition, there is updated information available on tug emission rates.
4. The relationship between the 50' Project and other independent projects reusing dredged material warrants review. Owing to policy changes that put more emphasis on beneficial reuse versus aquatic disposal, the Montezuma Wetlands Restoration Project (Montezuma) and the Hamilton Wetlands Restoration Project (HWRP) have become important sites for the beneficial reuse of dredged materials from the 50' Project, particularly in the 2006-2008 period. Both the Montezuma and HWRP projects were individually evaluated and permitted. They each require more fill materials than can be provided by the 50' Project, and will continue to receive materials after the 50' Project is completed.

While these projects are independent projects for General Conformity purposes, they are also connected to the 50' Project by the emissions that result from transporting dredged materials from the Port to their offloading facilities. This situation was not fully considered in the original conformity analysis conducted for the 50' Project, or the analyses conducted for the Montezuma or Hamilton projects.

III. APPLICABILITY ANALYSIS

Background Information

Because the BAAQMD is an ozone nonattainment area and a CO maintenance area, this applicability analysis must address three pollutants, the ozone precursors volatile organic compounds (VOC) and nitrogen oxides (NO_x), and carbon monoxide (CO). Based on the attainment status and classifications of the BAAQMD, the applicable threshold above which a conformity determination is required is 100 tons per year for each pollutant.

Air emissions from the 50' Project occur predominantly from the transport of dredged materials to reuse or disposal sites. One or more electric-powered dredges will continue to be used to deepen the channels and berths. The equipment that supports the dredges (tenders and boats) produces some emissions within the Port area, but the tugs that push barges to and from the various disposal areas produce most project emissions. The tugs employ diesel engines in the 2,000-4,000 horsepower range. Diesel engines emit VOC and CO at inherently low rates, but have considerable NO_x emissions. As a result, the limiting pollutant, that is the pollutant most likely to trigger the need for a conformity determination, is NO_x.

Table 1 shows forecasts of the quantity of dredged material, by disposal site, from 2006-2008, years that were not addressed by the original 1999 conformity analysis.

Table 1
Planned Volume of Material Disposal by Site, (CY) 2006 through 2008

| Year | Montezuma | HWRP | DODS | MHEA | Winter Island | Berth 10 | Annual Totals |
|----------------|-----------|-----------|---------|-----------|---------------|----------|---------------|
| 2006 | 1,325,000 | 300,000 | 570,000 | 1,600,000 | 120,000 | 23,000 | 3,938,000 |
| 2007 | 0 | 1,900,000 | 0 | 0 | 0 | 0 | 1,900,000 |
| 2008 | 0 | 200,000 | 0 | 0 | 0 | 0 | 200,000 |
| Project Totals | 1,325,000 | 2,400,000 | 570,000 | 1,600,000 | 120,000 | 23,000 | 6,038,000 |

Proper Allocation of Materials Transport Emissions

Except for maintenance dredging which is exempt from General Conformity by rule², it has been standard practice when evaluating dredging projects to consider tug emissions from materials transport as “direct” project emissions. This practice is appropriate because materials disposal is an integral part of a dredging project. By allocating materials transport emissions solely to the project generating the materials however, the standard practice has not fully considered the role of projects that seek dredged materials for reuse. This analysis re-examines the allocation of materials transport emissions.

The 50' Project has utilized a number of sites for disposal of dredged materials. As noted earlier, some sites, namely the Montezuma and the HWRP sites, are actually independent projects. The Montezuma Wetlands Restoration Project is subject to USACE permitting under Section 404 of the Clean Water Act. The Hamilton Wetlands Restoration Project is subject to, environmental review and conformity analysis with the Corps as the Federal sponsor. To date, no emissions from materials transport were considered when evaluating these projects. To date conformity analyses for these two projects have considered the emissions from upland activities such as dike and road construction, dredge material unloading, and the movement of dredge materials within the site. But the analyses have not considered tug emissions from materials transport because those emissions were assigned solely to the 50' Project.

Unlike some disposal sites used by the 50' Project, for example the Deep Ocean Disposal Site (DODS), the Montezuma and HWRP projects are not just passive repositories of material. They are independently permitted and funded wetlands restoration projects that would not be viable unless they receive material from a variety of sources. They require and actively seek materials, from the 50' Project and other sources, which must be transported by some means. For the special case of these independent reuse projects, it is appropriate to consider materials transport emissions as reasonably foreseeable indirect emissions, as defined in Section 93.152 of the General Conformity Rule.

In addition, Federal and regional policies contained in the San Francisco Bay Long Term

² EPA regulations at 40 CFR 93.153(b)(2)(ix)

Management Strategy (LTMS) give a priority to reuse over aquatic disposal.³ Such policies deflect the 50' Project's disposal options in favor of the two projects, effectively linking them to the 50' Project. Because emissions from the transport of materials between the 50' Project and Montezuma on the one hand, and the 50' Project and HWRP on the other, can be considered the responsibility of both projects, they are most appropriately considered as shared emissions. It is not equitable to allocate them solely to one project. In conclusion we believe the most appropriate approach is to equitably distribute shared materials transport emissions between the 50' Project and the two independent reuse projects.

Since the reallocation of materials transport emissions has the potential to affect the conformity status of HWRP and Montezuma, the Corps will update the conformity applicability analysis of these projects to the extent necessary to document compliance with General Conformity requirements. The HWRP conformity applicability analysis is being updated concurrently with this action, while Montezuma's status will be evaluated in a separate action.

Project Emissions

Tables 2, 3 and 4 summarize annual emissions from the 50' Project for 2006 through 2008 for the three nonattainment pollutants. The totals reflect a 50/50 sharing of transport emissions between the 50' Project and the Montezuma and HWRP projects respectively. More detailed information on the calculation of emissions is provided in Attachment A.

Table 2
Port of Oakland 50' Project Emissions in 2006
tons per year

| Pollutant | Montezuma | HWRP | DODS | MHEA | Winter Island | Berth 10 | Total |
|-----------------|-----------|------|------|------|---------------|----------|-------|
| NO _x | 56.0 | 7.3 | 20.3 | 5.1 | 9.7 | 0.3 | 98.6 |
| VOC | 2.7 | 0.3 | 0.7 | 0.1 | 0.5 | 0.0 | 4.3 |
| CO | 6.4 | 0.6 | 1.9 | 0.9 | 1.2 | 0.1 | 11.1 |

Table 3
Port of Oakland 50' Project Emissions in 2007
tons per year

| Pollutant | Montezuma | HWRP | DODS | MHEA | Winter Island | Berth 10 | Total |
|-----------------|-----------|------|------|------|---------------|----------|-------|
| NO _x | 0.0 | 43.8 | 0.0 | 0.0 | 0.0 | 0.0 | 43.8 |
| VOC | 0.0 | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 | 1.6 |
| CO | 0.0 | 4.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.0 |

³ See <http://www.epa.gov/region9/water/ltms/ltms.html>

Table 4
Port of Oakland 50' Project Emissions in 2008
 tons per year

| Pollutant | Montezuma | HWRP | DODS | MHEA | Winter Island | Berth 10 | Total |
|------------------|------------------|-------------|-------------|-------------|----------------------|-----------------|--------------|
| NOx | 0.0 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | 4.6 |
| VOC | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 |
| CO | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 |

As shown above, based on a reasonable worst-case scenario, the peak year for emissions is 2006 when project emissions closely approach the 100-ton per year threshold for NOx. In all other situations, annual emissions will be well below applicable thresholds.

To ensure compliance with the General Conformity threshold for annual NOx emissions, the Corps will continue to require contractors to operate within negotiated contractual emissions limits. Contractors will continue to submit data on volumes dredged, barge loading, fuel consumption, hours of operation, and the equipment used. These reports will allow the Corps to actively track emissions on a regular basis. Contractors will retain the flexibility to select the equipment they use as long as they meet contractual emissions requirements. For example, they may use larger scows than assumed, or tow two smaller scows with a combined higher volume, to reduce the number of trips to a site. They may also select tugs with lower emission rates than those assumed in the analysis. If for any reason annual emissions in 2006 are on a track to exceed the NOx threshold, the Corps will know it in advance and take correct action to ensure the threshold is not exceeded.

In addition to the allocation of shared emissions described above, the tables reflect a number of changes from the 1999 conformity analysis. These changes are consistent with Section 93.159(b) of the conformity rule, which directs that the analysis be based on the latest and most accurate emission estimation techniques available. Tug engine sizes, barge or scow sizes and capacities, trip lengths, travel times, tug load factors have been reviewed and modified as appropriate to reflect actual operating experience. In addition, updated tug emission factors have been used to reflect more recent data on marine engine emissions. Detailed calculations, assumptions and technical documentation are provided in Attachment A to this analysis.

IV. REGIONAL SIGNIFICANCE REVIEW

Table 5 compares project emissions under the high emissions scenario in 2006, the peak emissions year, with the regional emissions inventory for the BAAQMD.

Table 5
Comparing Project With Regional Emissions of Nonattainment Pollutants
 Tons per year

| Pollutant | Annual Regional Emissions ^(a) | 10% of Regional Emissions | Maximum Project Emissions |
|------------------|-------------------------------------------------|----------------------------------|----------------------------------|
| NO _x | 191,600 | 19,160 | 98.6 |
| VOC | 168,265 | 16,826 | 4.3 |
| CO | 956,300 | 95,630 | 11.1 |

a) Sources: for NO_x and VOC, 2005 emissions from BAAQMD “Attainment Plan for 1-hour Ozone Standard”, October 24, 2001, Table 4. For CO Table III from BAAQMD emissions inventory at http://www.baaqmd.gov/pln/emission_inventory.htm

V. CONCLUSIONS

Tables 2 through 4 show that annual emissions from the 50' Project are de minimis under a reasonable worst case emissions scenario; that is they are less than the applicable 100-ton per year thresholds for VOC, NO_x and CO for each remaining year of the project. In addition, Table 5 shows that emissions are less than 10% of the regional emissions inventory for these pollutants. As a result, a formal conformity determination is not required and the 50' Project will comply with Section 176(c) of the Federal Clean Air Act. The Corps will continue to track emissions from the 50' Project to assure that project emissions remain below applicable thresholds.

**Oakland Harbor Navigation Improvement
(-50 Foot) Project
Updated General Conformity Applicability Analysis:
Technical Attachment**

May 2006

I. Emissions Generating Activities

The -50' Deepening Project will continue to use shore-powered electric dredge technology to remove materials from the berths and adjacent channel areas of the Port of Oakland. As the rate of dredging increases in 2006, as many as three units may be needed, two clamshell dredges and one hydraulic dredge. All will be electric-powered. Diesel-powered dredge tenders and crew boats will provide support for the electric dredges and produce some emissions. In addition there are some emissions associated with the transport and upland disposal of small quantities of materials to the Port's re-handling facility at Berth 10. The Port uses its Berth 10 facility to dry and re-handle dredged material that has been determined to be not suitable for unconfined aquatic disposal, based on its physical, chemical, or biological characteristics. Finally, the reuse of dredged material in the Middle Harbor Enhancement Area (MHEA) will continue in 2006, but emissions are low because no barges or scows are involved in the process. The dredge material is distributed within the MHEA by the same electric-powered hydraulic dredge that removes it from adjacent areas, so the only emissions from MHEA reuse come from supporting tenders and small boats. Overall, project-related emissions within the Port area remain relatively low and more than 80% of overall project emissions are produced by the diesel tugs that push or tow scows or barges from the Port of Oakland to various disposal/reuse areas.

As the 50' Project has evolved, there has been increased policy emphasis on the beneficial reuse of dredged materials versus aquatic disposal. In the 2006-2008 period, the USACE plans to reuse about 90% of the material removed by the 50' Project. Project managers intend to complete the MHEA in 2006, deliver more material to the Montezuma Wetlands Restoration Project and Winter Island in the Delta, initiate deliveries to the Hamilton Wetlands Restoration Project, and use the Deep Ocean Disposal Site (DODS) for the limited quantity of material that will not be reused. Assuming the MHEA is completed in

2006, the Project plans to deliver all eligible material to the Hamilton site in 2007 and 2008.

The planned delivery of fairly high volumes of material to Montezuma and Hamilton, which are both located inside the San Francisco Bay Area ozone nonattainment area, materially affects project emissions estimates during the 2006-2008 period. The Montezuma site is approximately 46 miles from the Port of Oakland, while the Hamilton site is approximately 18 miles away. The DODS is located approximately 50 miles outside the Golden Gate, but for General Conformity purposes emissions to the DODS are counted only to the air quality control region boundary, which is about 12.5 miles from the Port of Oakland. The greater the distance to the disposal area, the greater the emissions per unit of material transported for disposal.

Tug Engine Emissions Estimates

The tugs used to transport material to the various reuse/disposal areas typically have two main propulsion engines with combined ratings from 2000 to 4000 horsepower. In addition, tugs typically have one or more small auxiliary engines to provide electric power to the bridge and crew areas. Individual tug engine emission rates vary with a number of factors, including engine size (horsepower rating), operating mode (engine load), engine model year (age), and design (whether an engine is a 2 or 4 stroke design). Some tug operators have taken advantage of funding from California's "Carl Moyer" program to voluntarily re-power or retrofit their tug engines. As the USACE has imposed overall emissions limits as contract conditions, contractors working on the 50' Project have tended to use lower emitting tugs. For example, the contractor who is transporting material to the Montezuma and Winter Island sites in 2006 is using tugs with propulsion engines that have been retrofitted to reduce NOx emissions.

The basic formula used in this analysis for estimating annual tug emissions to a particular disposal site is:

$$Tug_{emiss} = EF \times Engine_{Bhp} \times Time_{hours} \times LF_{wt} \times Trips \times 1/(453.6/2000)$$

Where:

Tug_{emiss} is tug emissions in tons per year

And

EF is the propulsion and/or auxiliary engine emission factor in grams per brake horsepower-hour,

$Engine_{Bhp}$ is the combined brake horsepower rating of a tug's propulsion and/or auxiliary engines,

$Time$ is the tug operating time per round trip in hours

$Trips$ is the annual number of round trips per tug

LF_{wt} is the time weighted load factor, based on different engine operating modes during a round trip, stated as a ratio of 1, and

$1/(453.6/2000)$ is the conversion of annual grams to annual tons

Tug emission factors have been updated from previous analyses. Prior conformity applicability determinations used tug engine emission factors that were based on data and information that is now approximately 20 years old. A review of current literature revealed the existence of more current emission factors for marine engines from a variety of sources, many based on actual engine test results. In 2003, EPA published a Regulatory Impact Analysis (RIA) in support of a rulemaking on marine engines.⁴ The report analyzed emission factors for various classes of marine engines, including Class 1 and 2 engines. The review of emission factors from the RIA and other related studies, including those done by ENVIRON⁵, ENTEC were summarized in 2005 for EPA in a report entitled, "Best Practices in Preparing Port Emission Inventories"⁶ and are used in this analysis. Table A-1 compares the updated EPA-based default emission factors used in this analysis to those used in past conformity analyses and related environmental documents. For NO_x, the updated emissions factor is about 20% lower than the emissions factor used in past evaluations.

Table A-1
TUG PROPULSION ENGINE EMISSION FACTORS
Emission rates in g/bhp-hr

| Pollutant | Updated Factors (a) | Past Factors |
|------------------|----------------------------|---------------------|
| NO _x | 9.84 | 12.54 |
| VOC | 0.37 | 1.31 |
| CO | 0.82 | 2.10 |

(a) Emissions converted from g/KW-hr to g/bhp-hr; where bhp-hr = g/KW-hr/1.341

The analysis makes an exception to the use of default emission factors for the tugs that will transport material to Montezuma and Winter Island in 2006. This contract is underway and tugs actually being used have been retrofitted to an average engine emissions rate of 7.05 g/bhp-hr.⁷

Distance, Operational Time, Load Factors, Trips and Other Factors Affecting Emissions

Table A-2 summarizes the other key data, factors and assumptions that affect the calculation of material disposal project emissions. Much of the information in Table A-2,

4 Final Regulatory Support Document: Control of Emissions from New Marine Compression-Ignition Engines at or Above 30 Liters per Cylinder, EPA420-R-03-004, January 2003

5 Revised Draft Final Report, Commercial Marine Emission Inventory Development, EPA Contract, Work Assignment 1-11, Prepared for: U.S. Environmental Protection Agency, Office of Transportation and Air Quality, 2000 Traverwood Drive, Ann Arbor, MI 48105, E.H. Pechan & Associates, Inc., Prepared by: ENVIRON International Corporation, 101 Rowland Way, Suite 220, Novato, CA 94945, April 2002

6 "Best Practices in Preparing Port Emission Inventories," Prepared by ICF Consulting for EPA, June 23, 2005, Table 2-18.

7 Personal communication between Bill Sylte, Air Quality Consultant and Susanne von Rosenberg, GAIA, May 1, 2006

including trip times, average scow loads, and tug engine load factors, is derived from actual project experience and has, and will continue to be used by the USACE to track project emissions. For example, trip times and weighted propulsion engine load factors specific to each disposal situation have been gathered from contractors. The emissions estimates also consider the distance to the disposal site, the annual volume of material transported to a disposal or reuse site, the number of trips required to move the estimated volume material, and the hours of engine operation at each engine load factor. Additional information on the origin of table entries is supplied in table "Notes".

**TABLE A-2
KEY DATA AND VARIABLES AFFECTING EMISSIONS ESTIMATES**

| Variable | Montezuma | Hamilton | SFDODS (Note 1) | MHEA Reuse (Note 7) | Berth 10 (tug to berth) | Winter Island | Truck to Landfill (Note 2) |
|---------------------------------------|-----------|----------|-----------------|---------------------|-------------------------|---------------|----------------------------|
| One-way Nautical Miles | 45.8 | 18.5 | 12.5 | | 3.8 | 45.8 | 17 |
| Travel Time (Note 3) | | | | | | | |
| Loading | 6.8 | 6.8 | 6.8 | | 2.7 | 6.8 | |
| Loaded Travel | 6.7 | 2.7 | 1.8 | | 0.8 | 6.7 | |
| Unloading | 1.5 | 1.5 | 0.5 | | 2.7 | 1.5 | |
| Unloaded Travel | 5.0 | 2.0 | 1.4 | | 0.8 | 5.0 | |
| Total Travel Time | 20.03 | 13.1 | 10.5 | | 6.9 | 20.03 | |
| Load Factors | | | | | | | |
| Loading (Note 4) | - | - | - | - | - | - | - |
| Loaded Travel | 0.83 | 0.83 | 0.83 | | 0.83 | 0.83 | |
| Unloading (Note 4) | - | - | - | - | - | - | - |
| Unloaded Travel | 0.83 | 0.83 | 0.83 | | 0.83 | 0.83 | |
| Weighted Load Factor | 0.49 | 0.30 | 0.25 | | 0.18 | 0.49 | |
| Auxiliary engine load factor (Note 5) | 0.43 | 0.43 | 0.43 | | 0.43 | 0.43 | |
| Average Load per trip in cy (Note 6) | 3,060 | 3,060 | 2,720 | | 3,060 | 3,060 | 20 |

Notes:

- 1 - Distance to air quality control region boundary only. Emissions generated outside the boundary do not count for purposes of General Conformity.
- 2 - Average load from Revision to Final EIS/R, September 1999, p. 25. West Contra Costa Landfill is ~17 miles from Hamilton.
- 3 - Travel times to Hamilton, SFDODS, and Winter Island calculated based on average haul speed to Montezuma; travel time to MHEA and Berth 10 based on 5 knot moving speed.
- 4 - Load factor set to zero per discussion at IPR; Port of Oakland (Len Cardoza) indicates that tugs shut down while scow is being loaded and unloaded.
- 5 - Unless otherwise indicated, horsepower ratings, load and emission factors from "Best Practices in Preparing Port Emissions Inventories", Prepared for EPA by ICF Kaiser for EPA, June 23, 2005, Table 2-15 through 2-18.
- 6 - Average net volume for scows based on reported actual bin counts, GAIA, 2006. Adjusted bin count by 85% to allow for bulking.
- 7 - Since electric dredge is used, emissions include only the boats needed to move the dredge barge and pipes.

Emissions from Other Activities and Sources

As noted, diesel tenders and boats provide support services to electric dredges as they operate. In addition, small auxiliary engines are installed on dredges to operate winches and similar equipment. This analysis assumed default engine size and emissions and load factors from the literature to estimate emissions rates from this equipment. Source activity,

or hours of operation, was estimated from engine operations data that was reported to the USACE in 2006 by its contractor.⁸

II. Summaries of Project Emissions

The sharing policy applies only to emissions from transporting materials between the 50' Project dredging areas and the two independent reuse projects, Montezuma and Hamilton. It does not apply to the emissions from transporting materials to other sites, or to non-transportation emissions from dredging support activities. Table A-3 shows the results of dividing transport NOx emissions equally (50/50) between the 50' Project and the Montezuma and Hamilton projects.

Table A-3
SHARING PROJECT NOx EMISSIONS AT MONTEZUMA AND HAMILTON

| Year | Montezuma | | Hamilton | |
|------|-----------|-------------------|----------|-------------------|
| | Combined | 50' Project Share | Combined | 50' Project Share |
| 2006 | 106.82 | 55.96 | 13.82 | 7.29 |
| 2007 | 0.00 | 0.00 | 87.55 | 43.78 |
| 2008 | 0.00 | 0.00 | 9.22 | 4.61 |

While most project emissions are due to materials transport, other activities make an important contribution to overall project emissions. Table A-4 provides an example, a breakout of NOx emissions from 2006 through 2008 by equipment type.

⁸ Personal communication between Bill Sylte, Air Quality Consultant and Susanne von Rosenberg, GAIA, May 2, 2006.

Appendix A: Oakland 50' Project: Conformity Applicability Analysis - Technical Attachment ,

Table A-4
PROJECT NO_x EMISSIONS BY EQUIPMENT AND YEAR

| | | 2006 | | 2007 | | 2008 | |
|--------------------------|-------------------|------------------------|------------------------------|------------------------|------------------------------|------------------------|------------------------------|
| Tug No. | Engine horsepower | Total Emissions (tons) | 50' Project Emissions (tons) | Total Emissions (tons) | 50' Project Emissions (tons) | Total Emissions (tons) | 50' Project Emissions (tons) |
| Tug 1-Main engines | 3,000 | 137.97 | 82.52 | 79.62 | 39.81 | 8.38 | 4.19 |
| Tug 2-Main engines | 1,800 | 0.18 | 0.18 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tug-Auxiliary engine | 110 | 5.06 | 3.12 | 3.16 | 1.58 | 0.33 | 0.17 |
| Dredge auxiliary engines | 214 | 1.15 | 1.15 | 0.43 | 0.21 | 0.05 | 0.02 |
| Tender main engine | 450 | 9.66 | 9.66 | 3.61 | 1.81 | 0.38 | 0.19 |
| Crew, survey boats | 284 | 1.96 | 1.96 | 0.73 | 0.37 | 0.08 | 0.04 |
| Haul Trucks | 300 | 0.04 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 |
| EMISSIONS TOTALS | | 156.0 | 98.6 | 87.6 | 43.8 | 9.2 | 4.6 |

Finally, Tables A-5 through A-7 summarize annual emissions from the 50' Project for the three nonattainment pollutants, for the years 2006, 2007 and 2008. For each year, reasonable worst-case emissions estimates remain below the 100-ton per year threshold.

Table A-5

PORT OF OAKLAND 50' PROJECT EMISSIONS IN 2006

tons per year

| Pollutant | Montezuma | Hamilton | DODS | MHEA | Winter Island | Berth 10 | Total |
|------------------|------------------|-----------------|-------------|-------------|----------------------|-----------------|--------------|
| NO _x | 56.0 | 7.3 | 20.3 | 5.1 | 9.7 | 0.3 | 98.6 |
| VOC | 2.7 | 0.3 | 0.7 | 0.1 | 0.5 | 0.0 | 4.3 |
| CO | 6.4 | 0.6 | 1.9 | 0.9 | 1.2 | 0.1 | 11.1 |

Table A-6

PORT OF OAKLAND 50' PROJECT EMISSIONS IN 2007

tons per year

| Pollutant | Montezuma | Hamilton | DODS | MHEA | Winter Island | Berth 10 | Total |
|------------------|------------------|-----------------|-------------|-------------|----------------------|-----------------|--------------|
| NO _x | 0.0 | 43.8 | 0.0 | 0.0 | 0.0 | 0.0 | 43.8 |
| VOC | 0.0 | 1.6 | 0.0 | 0.0 | 0.0 | 0.0 | 1.6 |
| CO | 0.0 | 4.0 | 0.0 | 0.0 | 0.0 | 0.0 | 4.0 |

Table A-7

PORT OF OAKLAND 50' PROJECT EMISSIONS IN 2008

tons per year

| Pollutant | Montezuma | Hamilton | DODS | MHEA | Winter Island | Berth 10 | Total |
|------------------|------------------|-----------------|-------------|-------------|----------------------|-----------------|--------------|
| NO _x | 0.0 | 4.6 | 0.0 | 0.0 | 0.0 | 0.0 | 4.6 |
| VOC | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 |
| CO | 0.0 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 |

Appendix B

Hamilton Wetland Restoration Project with the Bel Marin Keys Unit V Expansion Updated General Conformity Applicability Analysis

Hamilton Wetland Restoration Project with the Bel Marin Keys Unit V Expansion Updated General Conformity Applicability Analysis May 2006

I. Introduction

The information and analysis in this document support the U.S. Army Corps of Engineers (Corps), San Francisco District's updated review of the Hamilton Wetland Restoration Project (HWRP), including Bel Marin Keys Expansion Unit V (BMKV), for compliance with General Conformity requirements. This analysis examines three aspects of construction that contribute to the project's total emissions, including:

- on-shore construction equipment associated with earthmoving activity;
- off-loading of dredged material onto the site; and
- shared emissions related to the transportation of dredged material from the Oakland Harbor Navigation Improvement (-50ft.) Project at the Port of Oakland.

The Corps finds that a Conformity Determinate is not required and that the HWRP/BMKV project continues to comply with 40 CFR 93, Subpart B, Section 176(c) of the Federal Clean Air Act (CAA).

II. Regulatory Background

The CAA requires states to establish and update a State Implementation Plan (SIP) to ensure that areas that are not in attainment of the National Ambient Air Quality Standards (NAAQS) have a viable plan in place to attain standards. Once standards are attained, the SIPs must provide for continued attainment or "maintenance" of the same standards. States submit SIP updates to EPA for approval. Section 176(c) of the CAA requires federal projects or actions to "conform" to the most recently approved SIP for each pollutant that has an attainment or maintenance plan. The HWRP is located in the Bay Area Air Quality Management District, (BAAQMD) which is classified as a Marginal Nonattainment Area for the national 8-hour ozone standard, and a Maintenance Area for the national 8-hour CO standard.

EPA promulgated General Conformity regulations on November 30, 1993. The rules are codified at 40 CFR Part 51, Subpart W and 40 CFR Part 93, Subpart B. The latter applies to federal agencies unless states adopt a rule identical to, or more stringent than, 40 CFR Part 51, Subpart W.

Section 93.153 (c)(1) of the General Conformity Regulations provide that projects do not need to demonstrate conformity if the combination of annual direct and indirect project emissions are less than threshold levels of nonattainment or maintenance pollutants. Project emissions below these thresholds are also referred to as “*de minimis*”. The applicable threshold level for each federal action in the BAAQMD, a nonattainment area, is 100 tons for carbon monoxide (CO), and the ozone precursors nitrogen oxides (NO_x) and volatile organic carbon (VOC).⁹ Notwithstanding these thresholds, projects with direct and indirect emissions that are greater than 10% of the regional emissions of nonattainment or maintenance pollutants are considered regionally significant and must demonstrate attainment.¹⁰

III. Applicability Analysis

The BAAQMD is an ozone nonattainment area and a CO maintenance area. Therefore this applicability analysis must address three pollutants, CO and the ozone precursors VOC and NO_x. Based on the attainment status and classifications of the BAAQMD, the applicable threshold above which a conformity determination is required is 100 tons/yr for each pollutant for each federal action. Although, the HWRP and BMKV expansion is related to the Oakland -50ft Project as a source of dredged material, each project is independent and is allowed emission up to the 100 ton/yr for each pollutant CO, VOC and NO_x.¹¹

Air emissions associated with HWRP are primarily from the transportation of dredged material from the Port of Oakland (Port) to the restoration site by diesel-powered tugs. All dredged material that is delivered to HWRP will be off-loaded with an electrically-powered off-loader and placed on the restoration site with the assistance earth moving equipment. On-shore construction and maintenance of levees and berms within the restoration site also contribute a small portion of total project to air emissions. The marine vessels and on-shore construction equipment in this project are primarily powered by diesel engines. Diesel engines have inherently low emission rates of CO and VOC, but much higher emissions of NO_x. Preliminary review of emissions calculations for HWRP revealed that CO and VOC emissions are lower than NO_x emissions, indicating that VOC and CO are *de minimis* if NO_x emissions are *de minimis*. Therefore, as the pollutant most likely to trigger the need for a conformity determination, NO_x is the focus of the remainder of this analysis.

9 40 CFR 93.153(b)(1), in accordance with the California State Implementation Plan

10 40 CFR 93.153 (i)

11 40 CFR 93.153(b)(1), in accordance with the California State Implementation Plan

Sharing of emissions associated with dredged material transportation

Unlike some aquatic disposal sites, such as the San Francisco Deep Ocean Disposal Site (SF-DODS), HWRP is not a passive repository of material. HWRP is an independently permitted and funded wetland restoration project that would not be viable unless it receives material from a variety of sources. HWRP requires and actively seeks suitable dredged materials from operations and maintenance (O&M) dredging and navigation improvement projects such as the Oakland -50ft. Project. As a result, the independently authorized projects of HWRP and the Oakland -50 ft Project are interdependent and it is appropriate to consider a portion of emissions from dredged material transport as reasonably foreseeable indirect emissions associated with HWRP.¹²

Emissions generated from the transportation of dredged material from non-maintenance dredging projects to HWRP are split equally between the dredging project and HWRP. For example, in 2006-2008, 50% of the total emissions from the transportation of dredged material are allocated each to HWRP and the Oakland -50ft Project. This is a change from previous Conformity Applicability Analyses for HWRP where air quality impacts associated with the transportation of dredged material were explicitly evaluated in the NEPA/CEQA documents prepared for individual dredging projects.¹³ Emissions generated by transportation of dredge material to HWRP from Operation & Maintenance dredging is excluded from this analysis since it is exempt from General Conformity.¹⁴ Air quality impacts associated with dredging and transportation of dredged material to disposal sites, such as SFDODS or upland disposal sites, are evaluated in the NEPA/CEQA documents of the individual dredging projects that may use disposal sites in addition to HWRP or other beneficial reuse sites.

Project Emissions

NOx emissions associated with on-shore construction and dredged material transportation, off-loading, and placement were estimated for activities that are projected to take place at HWRP, including BMKV, from 2006-2008 (table 1). The assumptions and construction schedules used to calculate these projections represent a reasonable worst-case scenario. Detailed information on the calculation of project emissions is provided in Attachment A of this document.

Annual emissions associated with HWRP, including 50% of emissions from the transportation of dredged materials from the Port of Oakland, are below the 100 ton threshold in all years that are examined in this analysis. Shared transportation emissions and total project emissions will need to be re-evaluated as new, non-maintenance dredging projects are identified as sources of dredged material to HWRP.

12 as defined in 40 CFR 93.152

13 Appendix E of the Final Supplemental EIR/EIS for Bel Marin Keys Unit V Expansion of the Hamilton Wetland Restoration Project, April 2003.

14 40 CFR 93.153(b)(2)(ix).

Table 1. Total NOx emissions for HWRP, 2006-2008

| Calendar Year | Dredged Material (cy) | Construction Emissions (tons) | Off-loading Emissions (tons) | Shared Transportation Emissions (tons) | Total Emissions (tons) |
|----------------------|------------------------------|--------------------------------------|-------------------------------------|-----------------------------------------------|-------------------------------|
| 2006 | 300,000 | 15.71 | 0.96 | 6.91 | 23.57 |
| 2007 | 1,900,000 | 0.34 | 8.01 | 43.78 | 52.13 |
| 2008 | 200,000 | 0.78 | 0.84 | 4.61 | 6.23 |

IV. Regional Significance Review

The BAAQMD shows that annual regional emissions for NOx are 191,600 tons/yr.¹⁵ As projected in table 1, HWRP will release significantly less than 10% of regional emissions in any given project year.

V. Conclusions

Annual project emissions for HWRP, as shown in table 1, are less than 100 tons/yr and are therefore *de minimis* under a reasonable worst case emissions scenario. In addition, the regional significance review shows that maximum annual project emissions are less than 10% of regional emissions inventory for NOx. As a result, a formal conformity determination is not required and the Hamilton Wetland Restoration Project, including the Bel Marin Key Unit V Expansion, complies with Section 176(c) of the Federal Clean Air Act. However, the Corps will monitor emissions from all on-shore construction and dredged material transportation, off-loading, and placement to assure that total annual project emissions remain below the applicable thresholds.

¹⁵ BAAQMD, October 24, 2001 "Attainment Plan for 1-hour Ozone Standard", Table 4

Hamilton Wetland Restoration Project with the Bel Marin Keys Unit V Expansion **Updated General Conformity Applicability Analysis:** **Technical Attachment** May 2006

I. Emission Generating Activities

This analysis examines the emissions produced in conjunction with the Hamilton Wetland Restoration Project (HWRP) receiving dredged material from the Oakland Harbor Navigation Improvement Project (-50ft Project) at the Port of Oakland. The -50ft. Project is projected to deliver a minimum of 2.4 million cubic yard (mcy) of dredged material to HWRP between 2006 and 2008. This technical attachment details the methods by which total project emissions are estimated and will be monitored during duration of construction activities at the restoration site. Since HWRP is a site actively seeking dredged material for wetland restoration, 50% of the emissions associated with dredged material transportation from the source dredging project to HWRP are accounted for in this Conformity Applicability Analysis. Total project emissions are the sum of emissions generated by the following on-shore construction, sediment off-loading, and transportation activities will be conducted at the HWRP during the given years:

- Mobilization of an electric off-loader, 2006
- Construction of North 2 and South levees and wave berms, 2006
- Construction of a Wildlife Corridor berm, 2006
- Pavement and building demolition, 2006
- Raise North 1 levee, 2008
- Interior restoration berms, 2006-2007
- Transportation and Placement of a minimum of 2.4 mcy dredged material, 2006-2008

On-shore Construction Emissions Estimates

NOx emissions associated with on-shore construction were estimated for activities that are scheduled to take place at HWRP from 2006-2008. During 2006, the scheduled activities include the constructions several perimeter and interior levees and berms, and pavement and building demolition. Minor maintenance, repair, and levee construction constitute on-shore construction in 2007 and 2008. On-shore construction emissions were estimated by the following formula for individual pieces of equipment projected for the above construction schedule:

$$\text{Engine}_{\text{emiss}} = \text{EF} * \text{Engine}_{\text{hp}} * \text{Time}_{\text{hours}} * \text{LF}_{\text{wt}} * 1/(453.6/2000)$$

Where:

Engine_{emiss} = tug emissions in tons per year,

EF = emission factor estimated to be an fleet engine average of 5.68g/hp-hr. 1

Engine_{hp} = engine horsepower rating,

Time = operating time per calendar year, in hours

LF_{wt} = time weighted load factor, based on different engine operating modes during a round trip, stated as a ratio 0.65, and

1/(453.6/2000) = conversion of grams to tons.

Values for the key variables, including engine load factors, engine age factors, and engine specific emission factors, will be modified to reflect the engine specific characteristics of the equipment actually used for on-shore construction. USACE will use these key variables to monitor on-shore construction emissions as the project progresses.

Dredged Material Off-loading Emissions Estimates

This section describes the methodology used to estimate the emissions associated with off-loading and placement dredged material, including activity would take place during the Dredged Material Placement Phase as described in the Bel Marin Keys Unit V Expansion of Hamilton Wetland Restoration Project: Final Supplemental EIS/EIR. Emission estimates include the mobilization and use of an electrically powered off-loader and booster pumps as well as support from smaller marine vessels that are ancillary to the off-loading and placement of dredged material.

Estimates of emissions were calculated for the following pieces of equipment as a function of hours of operation required to maintain the dredged material placement schedule:

- Off-loader mobilization equipment – includes crane and pile driver (500 hp), positioning tug (800 hp), delivery tug (2000 hp), and support vessels (combined 850 hp)
- Electrified Off-loader – includes main pump (4000 hp), jet pump (800 hp), snorkel (800 hp)

1 Average emission factor for a 50/50 mixed fleet 1996 and 2001 engines, adjusted for use of California diesel.
Prepared by Gaia Consulting, Inc. February 2006

- Electrified Booster – main pump (7200 hp)
- Diesel Generators (combined 230 hp)
- Crew and Survey Boat (100 hp)
- Earth moving equipment (combined 560 hp)

Emissions associated with the off-loading and placement of dredged material were estimated by the general engine emission formula presented for on-shore construction, with the following exceptions: the diesel generators were assumed to operate at a load factor of 0.9 while maintaining an emission factor of 5.68 g/hp-hr; marine vessels were assumed to have a load factor of 0.85 an emission factor of 9.84 g/hp-hr; and the crane and pile driver had a load factor of 0.8 and a unique emission factor of 7.81 g/hp-hr .

For the purposes of this analysis, electrified off-loading equipment is assumed to produce no emissions within the BAAQMD jurisdiction. Values for the key variables, including engine load factors, engine age factors, and engine specific emission factors, will be modified to reflect the engine specific characteristics of the equipment actually used of dredged material off-loading and placement. USACE will use these key variables to monitor off-loading and placement emissions as the project progresses.

Dredged Material Transportation Emissions Estimates

This section describes the methodology used to estimate emissions associated with the transportation of dredge material to HWRP, including BMKV site. Total, annual dredge material transportation emissions to HWRP are estimated as emissions from the tug main propulsion engines and auxiliary engines according to the following equation:

$$\text{Tug}_{\text{emiss}} = \text{EF} * \text{Engine}_{\text{Bhp}} * \text{Time}_{\text{hours}} * \text{Trips} * \text{LF}_{\text{wt}} * 1/(453.6/2000)$$

Where:

Tug_{emiss} = tug emissions in tons per year,

EF = emission factor in grams per brake horsepower-hour (g/bhp-hr) for the propulsion and/or auxiliary engine

Engine_{Bhp} = combined brake horsepower rating of a tug's propulsion and/or auxiliary engines,

Time = tug operating time per round trip from dredge project to HWRP, in hours

Trips = annual number of round trips from dredge project to HWRP per tug

LF_{wt} = time weighted load factor, based on different engine operating modes during a round trip, stated as a ratio of 1, and

1/(453.6/2000) = conversion of grams to tons.

An emission factor of 9.84 g/bhp-hr for tug engines.² Other key data, factors, and assumptions that affect the calculation of dredged material transportation emissions are summarized in table A-1. Values for the key variables, including engine load factors, engine age factors, and engine specific emission factors, will be modified to reflect the engine

² Updated EPA-based emission factor for marine propulsion engines presented in "Updated Conformity Applicability Analysis for Port of Oakland -50' Deepening Project: Technical Attachment".

specific characteristics of the equipment actually used for dredged material transportation. USACE will use these key variables to monitor transportation emissions as the project progresses.

Annual transportation emissions, equally divided between the non-maintenance dredging source project and HWRP, are presented in table A-2. Emissions associated with the transportation of dredged material for operations and maintenance dredging is exempt from this analysis.³

Table A-2. Key data and variables affecting NOx emission estimates for the transportation of dredged material.

| | |
|------------------------------------------------------------------|-------|
| One-way distance between Port of Oakland and HWRP (n.mi.) | 18.5 |
| Travel Time (hr)¹ | |
| Loading | 6.8 |
| Loaded Travel | 2.7 |
| Unloading | 1.5 |
| Unloaded Travel | 2.0 |
| Total Travel Time | 13.1 |
| Load Factors² | |
| Loading | - |
| Loaded Travel | 0.83 |
| Unloading | - |
| Unloaded Travel | 0.83 |
| Weighted Load Factor | 0.30 |
| Auxiliary engine load factor³ | 0.43 |
| Average Load per trip (cy/trip)⁴ | 3,060 |

Notes:

- 1 - Estimated based on observed average haul speed between the Port of Oakland and Montezuma Restoration Project Spring 2002 - Spring 2006.
- 2- Load factor set to zero per discussion from Len Cardoza, Port of Oakland, who indicates that tugs shut down while scow is being loaded and unloaded.
- 3 - From "Best Practices in Preparing Port Emissions Inventories", Prepared for EPA by ICF Kaiser for EPA, June 23, 2005, Table 2-15 through 2-18.
- 4 - Average net volume for scows based on reported actual bin counts, GAIA, 2006. Adjusted bin count by 85% to allow for bulking.

3 40 CFR 93.153(b)(2)(ix)

Table A-3. Emissions associated with the transportation of dredged material between the Port of Oakland and HWRP.

| Calendar Year | Dredged Material (cy) | Total Transportation Emissions (tons) | 50% Transportation Emissions (tons) |
|----------------------|------------------------------|----------------------------------------------|--------------------------------------------|
| 2006 | 300,000 | 13.82 | 6.91 |
| 2007 | 1,900,000 | 87.55 | 43.78 |
| 2008 | 200,000 | 9.22 | 4.61 |

Emissions from other Activities and Sources

As noted, diesel tenders and boats provide support services to electric dredges as they operate. In addition, small auxiliary engines are installed on dredges to operate winches and similar equipment. This analysis assumed default engine size and emissions and load factors from the literature to estimate emissions rates from this equipment. Source activity, or hours of operation, was estimated from engine operations data that was reported to the Corps in 2006 by its contractor.

II. Summary of Project Emissions

The total emissions projected for the HWRP, including BMKV, are the cumulative emission from on-shore construction vehicles, dredge material off-loading, and 50% of dredge material transportation from non-maintenance dredging (Table A-3). The sharing of transportation emissions has only be evaluated for dredged material transport between the Oakland Harbor Navigation Improvement (-50 ft.) Project and HWRP. Total emissions for HWRP from 2006-2008 will not exceed conformity thresholds. Shared transportation emission will need to be re-evaluated as new, non-maintenance dredging projects are identified as sources of dredged material to HWRP.

Table A-4. Total NOx emissions for HWRP, 2006-2008

| Calendar Year | Dredged Material (cy) | Construction Emissions (tons) | Off-loading Emissions (tons) | Shared Transportation (tons) | Total (tons) |
|----------------------|------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|---------------------|
| 2006 | 300,000 | 15.71 | 0.96 | 6.91 | 23.57 |
| 2007 | 1,900,000 | 0.34 | 8.01 | 43.78 | 52.13 |
| 2008 | 200,000 | 0.78 | 0.84 | 4.61 | 6.23 |