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DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED TRANS BAY CABLE PROJECT

Volume 1
Sections 1.0-11.0; Appendix A

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1.1 INTRODUCTION

This Draft Environmental Impact Report (Draft EIR) assesses the potential environmental impacts associated with the proposed Trans Bay Cable (TBC) Project (Project). The City of Pittsburg has prepared this Draft EIR in order to satisfy the requirements of the California Environmental Quality Act (CEQA). The City of Pittsburg is the Lead Agency under CEQA for preparation of this EIR. The Notice of Preparation for this EIR was issued on August 23, 2004. The Project is proposed by Trans Bay Cable LLC, an affiliate of Babcock & Brown, in cooperation with the City of Pittsburg and Pittsburg Power Company, a municipal utility.

A consortium of Siemens Power Transmission & Distribution, Inc. (Siemens) and Prysmian Cavi e Sistemi Energia S.r.L (Prysmian) would provide the converter station and cable technology. Siemens, using Prysmian (or comparable) cable and installation technology, would provide converter technology, engineering, and procurement and construction management.

The proposed Project is a 400 megawatt (MW) high voltage direct current (HVDC) transmission line consisting of installation of an approximately 57-mile-long HVDC cable in San Francisco Bay and the Carquinez Straits, from a terminus in the City of Pittsburg in Contra Costa County to a terminus in the City of San Francisco in the vicinity of Potrero Point (refer to Figure 1-1). The Project is proposed to transmit electrical power from a converter station in Pittsburg to a converter station in San Francisco, providing a dedicated connection between the East Bay and San Francisco. This electrical power delivered to San Francisco would help meet the City of San Francisco's electrical demand projected for 2012 and beyond. The Project is designed to be a cost-effective, energy-efficient solution addressing San Francisco's need for additional transmission capacity, while improving transmission reliability and load-serving capability. The HVDC transmission line would provide San Francisco with a highly reliable, secure source of the electricity needed to service the load in San Francisco.

The California Independent System Operator (CAISO) is a not-for-profit public benefit corporation that acts as the impartial operator of the state's wholesale power grid, maintaining reliability and directing the electricity traffic on the transmission grid that connects energy suppliers with the energy providers that serve over 30,000,000 Californians. The CAISO identified three transmission system reinforcements to meet the long–term reliable load-serving plan. The following are the three reinforcements with the Project included as the third component to meet the CAISO objectives:

- Jefferson-to-Martin Transmission Line
- Construction and Operation of the City & County of San Francisco Electrical Reliability Project

- TBC HVDC Transmission Line from Pittsburg to San Francisco

The primary goal of the Project is to deliver electricity to San Francisco to meet demand projected beginning in 2012 and beyond (e.g., at least 40 years). The proposed Project would be expected to:

- Meet the CAISO planning and reliability standards
- Decrease transmission grid congestion in the East Bay
- Reduce transmission losses
- Increase the overall security and reliability of the electrical system
- Provide potential savings to ratepayers

The CAISO Management and Board of Governors have determined the Trans Bay Cable Project is required to ensure reliable operation of the transmission system serving the San Francisco Bay area.

On September 8, 2005, the CAISO staff recommended and the Board of Governors approved the Trans Bay Cable Project as the preferred long-term transmission alternative to address the identified reliability concerns in northern San Mateo County and San Francisco beginning in 2012. The CAISO staff and Board of Governors support the early implementation of the Project for operation by 2009.

The proposed HVDC transmission system for the Project is made up of the following primary components:

- Installation of approximately 57 miles of new HVDC cable (submarine and buried onshore)
- Construction of two new converter stations; one in San Francisco and one in Pittsburg
- Installation of approximately 5.5 miles of new submarine, underground, and aboveground single-circuit 230 kilovolt (kV) alternating current (AC) transmission cable in Pittsburg
- Installation of approximately 0.3 mile of underground double-circuit 115 kV AC transmission cable (or overhead transmission line) in San Francisco

The proposed offshore submarine cable system is planned to be buried to a typical target depth of 3 to 6 feet below the Bay bottom, with the potential for local burial to greater depths if required, using a Hydroplow (or equivalent technology), which would minimize disturbance and suspension of sediments.

This EIR includes the following report sections:

- Executive Summary (1.0)
- Introduction (2.0)
- Project Description (3.0)
- Environmental Setting, Impacts, and Mitigation – Proposed Project (4.0)
- Environmental Setting, Impacts, and Mitigation – Project Alternatives (5.0)
- Comparison of Alternatives (6.0)
- Cumulative Impacts (7.0)
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- Unavoidable Adverse Significant Impacts (9.0)
- EIR Preparers (10.0)
- List of Acronyms (11.0)
- Appendices (A-K)

Sections 1.0 through 11.0 and Appendix A are presented in this Volume 1 of the Draft EIR. Technical Appendices B through K are presented in Volume 2 of the Draft EIR.

1.2 SUMMARY OF POTENTIALLY SIGNIFICANT IMPACT FINDINGS

The impact findings, including a listing of identified potentially significant impacts, proposed mitigation measures, and residual impact findings are presented by resource topic in Table 1-1 for the proposed Project. The table presents the summary findings for the proposed Project in the following order: 1) San Francisco HWC Converter Station site; 2) Pittsburg Standard Oil Converter Station site; and 3) Offshore Cable Route. A summary of key impact findings for the Project alternatives is presented in Section 1.3.4. Refer to Section 5.0 for more information regarding the impact findings for the Project alternatives and to Section 6.0 for a comparison of alternatives, including the proposed Project.

While many impacts associated with implementation of the proposed Project are considered to be potentially significant, with implementation of the proposed mitigation measures only one impact related to cultural resources would remain significant. The residual significant impact finding for cultural resources is associated with the proposed demolition of two potentially historic warehouses on the proposed San Francisco HWC Converter Station site, and potentially significant impacts to the Station A Complex on the adjacent Mirant Power Plant property associated with the proposed AC cable route between the HWC Converter Station and the PG&E Potrero Substation.

The resource topics addressed in this EIR and a summary of residual impact findings for the proposed Project follow:

Issue/Resource Topic	Resulting Level of Significance With Implementation of Mitigation
• Air Quality	Less than Significant
• Geologic Resources and Soils	Less than Significant
• Water Resources and Quality	Less than Significant
• Terrestrial Biological Resources	Less than Significant
• Marine Biological Resources	Less than Significant
• Cultural Resources	Significant (only at HWC Site)
• Land Use and Recreation	Less than Significant
• Marine Transportation and Commercial Fishing	Less than Significant
• Traffic and Transportation	Less than Significant
• Noise and Vibration	Less than Significant
• Public Services and Utilities	Less than Significant
• Visual Resources/Aesthetics	Less than Significant
• Hazardous Materials and Waste Management	Less than Significant
• Paleontological Resources	Less than Significant

The following discussions summarize the potentially significant impact findings by resource topic, for the proposed Project.

1.2.1 Air Quality

Construction of the proposed Project would generate fugitive dust and heavy equipment and truck exhaust emissions at the onshore facility locations in San Francisco and Pittsburg over the estimated 27- to 30-month construction period. Maximum emissions would be expected to occur over an approximate 8-month period during demolition and site preparation activities. Additionally, installation of the proposed offshore submarine HVDC cable system would generate substantial emissions from the marine vessels required to install the submarine cable over an estimated 4- to 5-month period. Project-related fugitive dust emissions and onshore equipment exhaust emissions (Impacts AIR-1 and AIR-2, respectively) are considered to be potentially significant. With implementation of proposed mitigation measures (Mitigation Measures AIR-1 and AIR-2), these potentially significant impacts would be reduced or limited to a less-than-significant level.

Marine vessel emissions of criteria pollutants (Impacts AIR-3) (e.g., estimated 0.7 tons per day of NO_x) and toxic air contaminants (Impact AIR-4) associated with installation of the proposed offshore submarine HVDC cable system would be potentially significant over a 4-

to 5-month period. With implementation of proposed Mitigation Measures AIR-3 and AIR-4, potentially significant Impacts AIR-3 and AIR-4 would be reduced or limited to less-than-significant levels.

Operation of the proposed Project would result in periodic emissions from required testing of one diesel-fueled emergency generator and two diesel-fueled fire pumps. This potential impact would be negligible and would be considered less than significant.

1.2.2 Geologic Resources and Soils

Construction of the proposed Project would involve excavation and grading activities at the converter station sites and onshore cable routes during the construction phase in San Francisco and Pittsburg. The construction activities would cause soil erosion (Impact GEO-1). With implementation of proposed Mitigation Measure GEO-1, this potentially significant impact would be reduced to a less-than-significant level.

Subsurface construction activities at the proposed San Francisco HWC Converter Station site could encounter serpentinite which is an asbestos bearing rock. Asbestos containing serpentinite could be disturbed and asbestos could be released during construction and this is considered to be a potentially significant impact (Impact GEO-2). With implementation of proposed Mitigation Measure GEO-2, this potentially significant impact would be reduced to a less-than-significant level.

Project facilities (i.e., converter stations and onshore cables) would potentially be subject to multiple significant geologic hazards (strong ground shaking, liquefaction, and shrink-swell/subsidence [Impacts GEO-3 through GEO-5]). With implementation of proposed Mitigation Measures GEO-3 through GEO-5, these potentially significant geologic hazards would be reduced to acceptable, less-than-significant levels.

1.2.3 Water Resources and Quality

Onshore Project-related construction activities could increase the potential for uncontrolled runoff laden with sediments or other pollutants that could significantly impact surface water quality. Additionally, operation and maintenance of the proposed converter station sites in San Francisco and Pittsburg could significantly impact surface water quality (e.g., San Francisco Bay) through inadvertent spills or discharges (Impact WATER-1). With implementation of proposed Mitigation Measure WATER-1, these potentially significant impacts would be reduced to less-than-significant levels.

Installation of the proposed HVDC cable in San Francisco and Pittsburg as well as the proposed HVAC cable in Pittsburg at the landfalls adjacent to the Bay would involve horizontal directional drilling (HDD) or comparable technology which could significantly impact water quality in the Bay and/or groundwater resources due to the potential release of drilling fluids (e.g., bentonite clay and inert, non-toxic polymers)(Impacts WATER-2 and WATER-3). These potentially significant impacts would be reduced to less-than-significant levels with implementation of proposed Mitigation Measures WATER-2 and WATER-3.

Construction and operation at the proposed Pittsburg Standard Oil Converter Station, including ancillary facilities, could significantly increase stormwater runoff to Kirker Creek within the Kirker Creek Watershed (Impact WATER-4). This potentially significant impact would be reduced to a less-than-significant level with implementation of Mitigation Measure WATER-4.

Installation of the offshore submarine cable system could significantly impact water quality in the Bay associated with the proposed use of a Hydroplow or equivalent technology (Impact WATER-5) and limited dredging activities (Impact WATER-6) if the construction zones contain contaminated sediments. These potentially significant impacts would be reduced to less-than-significant levels with implementation of proposed Mitigation Measures WATER-5 and WATER-6.

The proposed installation of the offshore submarine cable system would involve the use of marine vessels, which could result in an accidental vessel fuel spill. Although this event has a low probability of occurring, a potentially significant spill with associated water quality impacts could occur (Impact WATER-7). With implementation of proposed Mitigation Measure WATER-7, this potentially significant impact would be reduced to a less-than-significant level.

1.2.4 Terrestrial Biological Resources

The proposed San Francisco HWC Converter Station site and ancillary facilities are located on previously disturbed developed properties on artificial fill soils. No potentially significant impacts to terrestrial biological resources would be expected to result from construction or operation of the proposed Project facilities in San Francisco.

Construction of proposed Pittsburg Standard Oil Converter Station, including onshore cable route, proposed access road bridge construction, and laydown areas, has the potential to significantly impact wetlands and waters of the United States as well as special-status plant and animal species and the habitats that support them (Impacts TBIO-1 through TBIO-7). Potentially impacted habitats include vernal pools, salt marsh, and Kirker Creek. Potentially present and impacted fauna include: salt marsh harvest mouse, Giant garter snake, western pond turtle, California clapper rail, California black rail, short-eared owl, salt marsh yellow throat, white-tailed kite, raptors, and vernal pool shrimp. In addition, various special-status/rare plants could be impacted.

With implementation of proposed Mitigation Measures TBIO-1 through TBIO-7, potential construction-related impacts TBIO-1 through TBIO-7 would be reduced to less-than-significant levels.

No operations-related Project impacts to terrestrial biological resources would be expected to occur.

1.2.5 Marine Biological Resources

Potential Project-related impacts to marine biological resources would be limited to installation and operation of proposed offshore submarine cable system which is planned to typically be buried 3-6 feet below the bottom of the Bay. The actual burial depth will be determined by the forthcoming marine survey and Risk Analysis, and Insurance Company requirements. The construction phase for the offshore cable installation is planned to occur over a 4- to 5-month period between June 1 and November 30, thereby avoiding the sensitive life stages of salmonids (Chinook and steelhead), which are listed on the Endangered Species Act (ESA) list, and the typical Pacific herring spawning period. In addition, the proposed cable route was selected to avoid potentially sensitive marine habitat such as eelgrass beds and pinniped (e.g., seals and sea lions) haulout areas. Cable installation impacts on benthic organisms associated with use of the Hydroplow or equivalent technology burial method would be expected to be localized and minor. Potential operations-related impacts on marine organisms associated with electric and magnetic fields and cable heat are also expected to be insignificant. In summary, no potentially significant impacts to marine biological resources would be expected to occur associated with the proposed Project.

1.2.6 Cultural Resources

Potential Project-related impacts to cultural resources include construction-related impacts to historic resources and possibly archaeological resources that may be present in subsurface areas associated with proposed facilities in San Francisco. In addition, archaeological resources (shipwrecks) may be present along the offshore submarine cable system route between San Francisco and Pittsburg. Construction of the proposed San Francisco HWC Converter Station would require the demolition of two steel and concrete warehouses on the HWC site (435 23rd Street) that have been previously determined by a qualified architectural historian to be eligible for the California Register of Historic Resources. These structures are the last remaining structures of the Western Sugar Refinery complex dating from the 1920s; the Western Sugar Refinery ceased its operations in 1948. These warehouses are considered to be potential historic resources by the City of San Francisco and are therefore considered to be historic resources in this Draft EIR for the purposes of CEQA compliance. The proposed demolition of the historic resources at the HWC site is considered to be a potentially significant impact (Impact CUL-2). Proposed mitigation measures CUL-2a, b, and c would reduce the impact level but the impact would remain significant and a statement of overriding considerations would be required in accordance with CEQA-related project approvals.

Construction of the proposed San Francisco HWC Converter Station could also potentially impact subsurface archaeological resources that may be present on the Mirant Power Plant property, which is associated with the proposed AC cable interconnection between the HWC site and Pacific Gas and Electric Company’s (PG&E’s) Potrero substation (Impact CUL-1). With implementation of Mitigation Measures CUL-1a, b, and c, this potentially significant impact would be reduced to a less-than-significant level.

Construction and operation of the proposed Pittsburg Standard Oil Converter Station, including ancillary facilities, would not be expected to result in any potentially significant onshore impacts to cultural resources (archaeological or historic). Installation of the proposed offshore submarine cable, including the proposed AC cable associated with the proposed Pittsburg Standard Oil Converter Station site, has the potential to significantly impact submerged and buried shipwrecks (Impact CUL-3). Implementation of proposed Mitigation Measures CUL-3a, b, and c would reduce this potentially significant impact to a less-than-significant level.

1.2.7 Land Use and Recreation

In general, construction and operation of the proposed San Francisco Converter Station and ancillary facilities would not be expected to result in any potentially significant land use-related impacts. However, Project implementation at the HWC site may conflict with San Francisco Bay Conservation and Development Commission (BCDC) policies for future uses (e.g., expansion of Bay Trail) which stress the importance of public access to the Bay. The proposed San Francisco Converter Station would be located directly adjacent to the waterfront and, as proposed, would not improve public access to the Bay; this impact is considered to be potentially significant (Impact LU-1). With implementation of proposed Mitigation Measure LU-1, this potentially significant impact could be reduced to a less-than-significant level.

The proposed San Francisco HWC Converter Station site is currently zoned M-2 (Heavy Industrial) and the proposed Project is consistent with this zoning designation. The San Francisco Planning Department has proposed to rezone the site from M-2 to PDR. The PDR zoning would prohibit residential and most office developments. Utilities are described as a core use within the PDR district. Although the allowed uses within the PDR district are still being refined, City staff have indicated that they plan on adding a broad range of industrial uses within the PDR district and that the proposed converter station would be consistent with what they intend to propose.

Implementation of the proposed Project at the Pittsburg Standard Oil Converter Station could potentially exceed established building/structure height allowances in the City of Pittsburg. This impact is considered to be potentially significant (Impact LU-2). With implementation of proposed Mitigation Measure LU-2, this potentially significant impact would be reduced to a less-than-significant level.

The proposed Pittsburg Standard Oil Converter Station site includes construction of a new access road to the Pittsburg-Antioch Highway, including a new bridge over Kirker Creek. The proposed access road/bridge over Kirker Creek could be inconsistent with the City of Pittsburg's General Plan policy to use the Kirker Creek easement as a creek side trail; this potential policy inconsistency is considered to be potentially significant (Impact LU-3). With implementation of proposed Mitigation Measure LU-3, this potentially significant impact would be reduced to a less-than-significant level.

Installation of the proposed offshore submarine cables would involve a temporary (4 to 5 months) increase in vessel traffic on the Bay, which could conflict with recreational uses of the Bay. This potentially significant impact (Impact LU-4) would be reduced to a less-than-significant level with implementation of proposed mitigation measures LU-4a and b. Implementation of proposed Mitigation Measure LU-5 would ensure that installation of the proposed offshore cable system would not conflict with established local land use plans or policies.

1.2.8 Marine Transportation and Commercial Fishing

Construction and operation of the proposed onshore facilities (converter stations and ancillary facilities) in San Francisco and Pittsburg would not impact marine transportation or commercial fishing. Potential Project-related impacts to marine transportation and commercial fishing would be limited to the planned 4- to 5-month offshore submarine cable system installation phase. Potentially significant marine transportation-related Project impacts consist of the creation of potential navigation hazards due to the presence of Project-related marine vessels in the Bay during submarine cable installation (Impact MTRANS-1). With implementation of proposed Mitigation Measures MTRANS-1a, b, and c, this potentially significant impact would be reduced to a less-than-significant level.

Potentially significant Project-related impacts to commercial fishing operations could occur if the offshore submarine cable system installation activities coincided in time and place with commercial herring fishing/harvesting operations in the Bay (Impact MTRANS-2). With implementation of proposed Mitigation Measure MTRANS-2a and b, this potentially significant impact would be reduced to a less-than-significant level.

The proposed offshore cable system installation vessels could cross and conflict with commercial sport fishing vessel paths as they pursue migratory sport fish (e.g., salmon, striped bass, and steelhead) in the Bay. This potentially significant impact (Impact MTRANS-3) would be reduced to a less-than-significant level with implementation of proposed Mitigation Measures MTRANS-3a and b.

1.2.9 Traffic and Transportation

Construction of the proposed onshore Project components over a 27- to 30-month period would involve substantial truck traffic on the regional and local road networks in the Bay Area, San Francisco, and Pittsburg. The equipment to be installed at the proposed converter stations in San Francisco and Pittsburg would be delivered primarily to the Port of Oakland via container ships and then be trucked over the regional and local road networks to the converter station sites and/or construction laydown areas. Truck shipments would include a limited number of oversize loads (e.g., transformers and cable reels). Construction activities would also include truck traffic associated with hauling construction debris (e.g., demolished buildings) and possibly contaminated soil, as well as construction workforce commute trips.

Truck traffic associated with construction of the proposed San Francisco Converter Station would contribute to cumulative traffic impacts on regional roadways that are already operating with significant delays during peak periods (e.g., Interstate 280 and U.S. 101). The proposed Project's contribution of additional traffic during the peak periods on these roadways is considered to be a potentially significant cumulative traffic impact on regional road networks. With implementation of proposed Mitigation Measure TRAFFIC-1, this potentially significant impact would be reduced to a less-than-significant level. This potentially significant impact also applies to the proposed Pittsburg Standard Oil Converter Station site relative to the Project's contribution to cumulative traffic levels on Interstate 80 and State Route 4. Proposed Mitigation Measure TRAFFIC-1 would also reduce the potentially significant cumulative impact to a less-than-significant level for the Pittsburg converter station.

Another potentially significant traffic-related impact identified for the proposed San Francisco and Pittsburg converter stations consists of the transport of oversize loads (Impact TRAFFIC-2). This potentially significant impact would be reduced to a less-than-significant level via implementation of proposed Mitigation Measure TRAFFIC-2.

Additional potentially significant, localized traffic-related impacts identified for the construction phase of the proposed San Francisco HWC Converter Station and ancillary facilities are as follows: Impact TRAFFIC-3 – Temporary Street Closures Affecting Traffic, Bicycle, and Pedestrian Circulation; and Impact TRAFFIC-4 – Impact on Metro East Light Rail Facility. With implementation of proposed Mitigation Measures TRAFFIC-3 and -4, these potentially significant impacts would be reduced to less-than-significant levels.

The proposed Pittsburg Standard Oil Converter Station includes a new access road that would connect to the Pittsburg-Antioch Highway. Construction-related truck traffic utilizing this proposed new access road would create a potentially significant unsafe condition (Impact TRAFFIC-5) at the transition point between the Pittsburg-Antioch Highway and the new access road. With implementation of proposed Mitigation Measure TRAFFIC-5, this potentially significant impact would be reduced to a less-than-significant level.

No potentially significant operations-related traffic impacts have been identified for the proposed Project.

1.2.10 Noise and Vibration

Construction of the proposed Project facilities in San Francisco and Pittsburg would result in short-term (approximately 20 months) increases in ambient noise levels associated with the use of construction equipment, pile driving (4- to 5-month duration), and truck traffic. Operation of the proposed converter station would also generate noise associated with transformers, filters, heating and air conditioning units, circuit breakers, and emergency generators. Based on the results of the noise modeling performed, no potentially significant construction- or operations-related noise impacts have been identified for the proposed San Francisco HWC Converter Station. Although no potentially significant construction noise impacts have been identified for the construction phase at the proposed Pittsburg Standard Oil Converter Station (including ancillary facilities), a potentially significant noise impact (Impact NOISE-1) has been identified for the operations phase due to the estimated unmitigated noise level of 77 to 79 dbA L_{dn} at the property lines, which exceeds the City of Pittsburg's 75 dbA L_{dn} requirement. With implementation of proposed mitigation measure NOISE-1, this potentially significant noise impact would be reduced to a less-than-significant level.

No potentially significant noise impacts have been identified associated with installation of the proposed offshore submarine cable system.

1.2.11 Public Services and Utilities

Construction and operation of the proposed Project have the potential to require and adversely impact public services (e.g., fire, police, medical facilities, schools) and utilities (e.g., water, wastewater, and electrical supply). In addition, the proposed offshore submarine cable route crosses multiple utilities (fiber optic cables and pipelines, BART tube, etc.) that are present in the floor of the Bay.

Construction of the proposed converter stations in San Francisco and Pittsburg have the potential to result in significant impacts related to: creation of construction fire hazards (Impact PS-1); and damage to existing onshore underground utilities (Impact PS-2). With implementation of proposed Mitigation Measures PS-1 and -2, these potentially significant impacts would be reduced to a less-than-significant level.

Operations at the proposed converter stations in San Francisco and Pittsburg could create a fire hazard that is considered to be potentially significant (Impact PS-3). With implementation of proposed Mitigation Measure PS-3, this potentially significant impact would be reduced to a less-than-significant level.

Implementation of the proposed Project at the Pittsburg Standard Oil Converter Station site could result in a potentially significant impact related to the current lack of a fire hydrant within 1,500 feet of the site (Impact PS-4). With implementation of proposed Mitigation Measure PS-4, this potentially significant impact would be reduced to a less-than-significant level.

1.2.12 Visual Resources/Aesthetics

Implementation of the proposed Project in San Francisco and Pittsburg has the potential to result in long-term visual impacts associated with the proposed San Francisco and Pittsburg converter stations. Construction of the proposed converter stations at the HWC site in San Francisco and the Standard Oil site in Pittsburg would result in potentially adverse, but not significant, visual impacts associated with the facilities' domination of views (Impact VIS-1) from key observation points/public viewing locations. These include views of the HWC site from Warm Water Cove Park in San Francisco and views of the Standard Oil site from the Pittsburg-Antioch Highway. With implementation of proposed Mitigation Measures VIS-1a and b, these potentially adverse impacts would be reduced to a less-than-significant level.

The proposed San Francisco HWC Converter Station could also result in a potentially significant visual impact on viewers at Warm Water Cove Park related to the creation of visual clutter (Impact VIS-3). With implementation of proposed Mitigation Measure VIS-3, this potentially significant impact would be reduced to a less-than-significant level.

Operation of the proposed converter stations in San Francisco and Pittsburg could also result in adverse, but less than significant, visual impacts related to creation of substantial light and glare (Impact VIS-2) as viewed from key observation points in San Francisco (Warm Water Cove Park and Potrero Hill) and Pittsburg (Pittsburg-Antioch Highway). With implementation of proposed Mitigation Measure VIS-2, these potentially adverse visual impacts would be reduced to a less-than-significant level.

1.2.13 Hazardous Materials and Waste Management

The proposed Project has the potential to result in significant hazardous material- and waste management-related impacts associated with construction and operation of the onshore converter stations and ancillary facilities as well as the offshore submarine cable system.

Potentially significant hazardous material and waste management impacts associated with installation of the offshore submarine cable system are addressed in the Water Resources and Quality assessment. Construction of the proposed San Francisco HWC Converter Station and the Pittsburg Standard Oil Converter Station, including ancillary facilities, would involve demolition of existing structures and excavation/remediation of potentially contaminated soil material related to past activities at the sites and adjacent areas.

Development of the proposed Project at the San Francisco HWC Converter Station site would require demolition of buildings that likely contain hazardous building materials (e.g., asbestos and lead-based paint), excavation and remediation of subsurface, contaminated soil, and possibly groundwater. Development of the proposed Pittsburg Standard Oil Converter Station site, including ancillary facilities, would also involve demolition activities and excavation of potentially contaminated soils. Although the same impact categories generally apply to the proposed HWC and Standard Oil sites, the hazardous material/waste conditions for the HWC site in San Francisco are more substantial. Implementation of the proposed Project at the HWC site would also involve an AC cable interconnection from the HWC Converter Station to the PG&E Potrero substation, including a portion on the Mirant Potrero property, which is known to have subsurface contamination issues as well. The following potentially significant impacts have been identified for both the proposed HWC and Standard Oil converter station sites, including ancillary facilities (as applicable):

- Impact HAZ-1: Removal of Potentially Hazardous Building Materials Resulting from Demolition
- Impact HAZ-2: Soil Removal
- Impact HAZ-3: Construction-phase Hazardous Materials Use
- Impact HAZ-4: Construction-phase Waste Streams
- Impact HAZ-5: Construction-phase Accidental Spills
- Impact HAZ-6: Construction-phase Dust and Volatilization of Contaminants
- Impact HAZ-7: Contaminated Groundwater
- Impact HAZ-8: Operations-phase Hazardous Materials Usage
- Impact HAZ-9: Operations-phase Waste Streams
- Impact HAZ-10: Operations-phase Accidental Spills
- Impact HAZ-11: Operations-phase Fire and Explosion Risk
- Impact HAZ-12: Impacts from Seismic Activity

With implementation of proposed Mitigation Measures HAZ-1 through HAZ-12, all 12 potentially significant hazardous material- and waste management-related impacts would be reduced to less-than-significant levels.

1.2.14 Paleontological Resources

Construction of the proposed Project at the San Francisco HWC and Pittsburg Standard Oil sites, including ancillary facilities, has the potential to significantly impact fossil resources during subsurface excavation activities. Development of the proposed converter station sites may involve excavation of undisturbed quaternary alluvium (*Qal*) that may be present under the site areas. *Qal* deposits have a high potential for containing significant fossil resources. If excavations associated with construction involved disturbance of *Qal*, a potentially significant impact to paleontological resources could occur (Impact PALEO-1). With implementation of proposed Mitigation Measure PALEO-1, this potentially significant impact would be reduced to a less-than-significant level.

No potentially significant impacts to paleontological resources would be expected to occur associated with installation of the proposed offshore submarine cable system.

1.2.15 Summary

With implementation of the proposed mitigation measures, the majority of the identified potentially significant impacts would be reduced to levels that are less than significant. Implementation of the proposed Project would be expected to result in one unavoidable adverse significant impact—Disturbance of Historical Architectural Resources (Impact CUL-2). This impact would occur associated with development of the proposed San Francisco HWC Converter Station site, which would require demolition of the historic buildings on the site that date from the 1920s and represent the last remaining structures of the Western Sugar Refinery. The proposed mitigation measures would reduce the impact severity, however, the residual impact is still considered to be significant.

1.3 ALTERNATIVES CONSIDERED

1.3.1 Introduction

The primary goal of the Trans Bay Cable Project is to deliver 400 MW of generator-like electric capacity and energy to San Francisco to meet demand projected for the beginning of 2012 and beyond. The proposed Project is anticipated to meet CAISO planning and reliability standards while improving load serving capability and creating economic benefit compared to Project costs. Should the Project be approved it will potentially reduce the need for in-city generation in the City of San Francisco, decrease transmission grid congestion in the East Bay, increase the overall security and reliability of the electrical system, improve the load serving capability, and provide potential savings to ratepayers.

The Project proposes to meet the primary goals by constructing an approximately 57-mile-long 400 MW HVDC subsea cable in San Francisco Bay from Pittsburg in Contra Costa County to the Potrero area in San Francisco as well as converter stations on each end and associated AC cables to connect the converter stations with the existing PG&E substations near Pittsburg and in San Francisco. In accordance with CEQA Guidelines (Section 14126[a]), this EIR assesses a reasonable range of alternatives to the proposed Project that are potentially capable of meeting the Project goals and objectives, including:

a) Project Alternatives

- Alternative converter station sites, layouts, and associated ancillary facilities

b) Pittsburg to San Francisco land-based transmission routes

- New transmission corridor
- Within existing utility and transportation corridors (e.g., rail, highway, and BART)

c) Reconductoring and/or retrofitting of the existing transmission grid

d) New generation capacity in San Francisco

e) Transmission grid enhancements/demand management

f) No Project Alternative

1.3.2 Alternatives Considered But Eliminated From Further Consideration

Alternative categories b, c, d, and e (above) were subjected to a screening process to assess their potential feasibility and capability to meet the Project goals and objectives; none of these potential alternatives to the proposed Project were determined to be feasible and/or capable of meeting the Project goals and objectives. Accordingly, these alternative categories were eliminated from further consideration in this EIR.

Refer to Section A.8.3 in Appendix A of this EIR for more information regarding these potential alternatives, the screening process used, and the rationale for eliminating these alternatives from further consideration.

1.3.3 No Project Alternative

The No Project Alternative would involve taking no action to provide additional electrical transmission capacity to San Francisco—i.e., status quo. Under the No Project Alternative, the potential environmental impacts and benefits of the proposed Trans Bay Cable Project would not occur as a direct consequence of Project implementation. However, the No Project Alternative is incapable of meeting the Project goals and objectives, or the CAISO's objectives for solving the near-term and long-term electrical supply and reliability issues in

San Francisco and the northern Peninsula area. One potential consequence of the No Project Alternative would be that the relatively inefficient and polluting Mirant Potrero Power Plant may need to continue to run in the future to meet San Francisco's electrical supply needs. Another potential consequence of the No Project Alternative would be the lost potential to save an estimated 20 MW of electrical power that is currently expended in electrical line losses, which would be avoided by the proposed HVDC Project. In summary, the No Project Alternative does not constitute a reasonable alternative to the proposed Project.

1.3.4 Project Alternatives

The following Project Alternatives are assessed in detail in Section 5.0, and compared to each other and the proposed Project in Section 6.0 of this EIR:

- San Francisco Mirant Potrero Converter Station (three layouts) (and ancillary facilities)
- San Francisco Sheedy Converter Station (and ancillary facilities)
- Pittsburg West Tenth Street Converter Station Alternative 1 (and ancillary facilities)
- Pittsburg West Tenth Street Converter Station Alternative 2 (and ancillary facilities)
- Pittsburg Mirant Converter Station (and ancillary facilities)

In general, the potentially significant impacts of the various Project alternatives are the same or similar to those associated with the proposed Project. Key issues potentially associated with the Project alternatives are summarized below.

1.3.4.1 San Francisco Mirant Potrero Converter Station Alternative

Similar to the proposed San Francisco HWC Converter Station, development at this alternative site (at all three site layouts under consideration) would result in an unavoidable adverse significant cultural resource impact associated with the need to demolish historic structures (Station A Complex) during site preparation (Impact CUL-2).

1.3.4.2 San Francisco Sheedy Converter Station Alternative

No unavoidable significant impacts have been identified for this alternative site.

1.3.4.3 Pittsburg West Tenth Street Converter Station Alternatives 1 and 2

Two alternative sites/layouts (Alternative 1 [East/West] and Alternative 2 [North/South]) are considered at this alternative site area. The Pittsburg West Tenth Street Alternative 1 site would not result in any identified unavoidable adverse significant impacts. Implementation of the proposed Project on the Pittsburg West Tenth Street Alternative 2 site would result in unavoidable adverse significant noise impacts associated with pile driving activities (4-5 months) during the construction phase and long-term visual impacts. However, the alternative Pittsburg West Tenth Converter Station (Alternatives 1 and 2) would avoid the need to install offshore/onshore AC/DC cables between the PG&E Pittsburg substation and the proposed Standard Oil Converter Station site as well as avoid the need to construct a new access road over Kirker Creek adjacent to the Pittsburg-Antioch Highway.

1.3.4.4 Pittsburg Mirant Converter Station

No unavoidable adverse significant impacts have been identified for the Pittsburg Mirant Converter Station Alternative. As discussed above for the alternative Pittsburg West Tenth Street Converter Station Alternatives 1 and 2, the Pittsburg Mirant Converter Station would avoid the need to install offshore/onshore AC/DC cables to the proposed Standard Oil site and avoid the need to construct a bridge over Kirker Creek.

1.3.5 Environmentally Superior Alternative

The No Project Alternative would result in the fewest environmental effects. However, the No Project Alternative would not meet the Project/CAISO goals and is not considered to be a reasonable or feasible alternative. Numerous “non-Project” alternatives were also considered, as discussed in Section A.8.3 in Appendix A of this EIR. None of the various alternatives evaluated are considered to be capable of meeting all of the Project objectives and the related screening criteria for “feasibility” and “environmental impacts avoidance and minimization.” Therefore, none of the potential non-Project alternatives were retained for further consideration in this EIR.

The Trans Bay Cable Project is considered by the City of Pittsburg to be the only feasible alternative for meeting the Project and CAISO objectives at this point in time.

It is difficult to determine, however, which of the Trans Bay Cable Project converter station site alternatives in San Francisco and Pittsburg is the environmentally superior alternative as, with few exceptions, the sites are very similar to each other in terms of potential impacts. The San Francisco Sheedy Converter Station Alternative would avoid the unavoidable adverse significant impact to historic architectural resources associated with the proposed HWC and alternative San Francisco Mirant sites. However, Mirant already plans to demolish the buildings considered to be historic (i.e., Station A Complex) on the San Francisco Mirant property due to their deteriorated condition and seismic safety concerns. Locating the proposed Trans Bay Cable Project San Francisco converter station on any one of the three alternative San Francisco Mirant site layouts would consolidate the electrical station facilities (i.e., PG&E Potrero Substation and the Trans Bay Cable San Francisco converter station) at one location and would avoid potential conflicts with possible future improvements to public access to San Francisco Bay (Impact LU-1) associated with both the San Francisco HWC and Sheedy sites. In addition, the required electrical interconnection (115 kV AC) between the

TABLE 1-1
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
AIR-1: Fugitive Dust Emissions. The Project proposes to use fugitive dust suppression with water and other methods to control construction-related emissions. The use of chemical additives is not planned. Controlled worst-case fugitive dust is estimated to be 29 pounds per day; 0.32 tons per month; and 2.6 tons over the 27- to 30-month construction period for the San Francisco site. Without fugitive dust control measures the impact is considered potentially significant.	AIR-1: Fugitive Dust Controls. Best achievable control measures (BACM) shall be utilized during construction phases of the Project. Fugitive dust control measures are stipulated by BAAQMD Regulation 6 (BAAQMD, 1999) and shall include all of the following as applicable to the Project site: • Water all active construction areas at least twice daily • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites • Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets • Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) • Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)	Less than significant
AIR-2: Equipment Exhaust Emissions. See Table 4.2-10 for emissions estimates for the San Francisco HWC Converter Station site. The impact of these emissions would be considered to be potentially significant.	AIR-2: Exhaust Controls. T The following controls pertaining to equipment emissions (BAAQMD, 1999) shall be implemented during construction to reduce emissions from construction equipment exhaust: • Use alternative fueled construction equipment, as practical • Minimize idling time • Maintain properly tuned equipment • Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
GEO-1: Soil Erosion and Compaction. Construction activities would lead to soil compaction and could lead to soil erosion. This impact is considered to be potentially significant.	GEO-1: Design Project for Erosion Control. Standard Best Management Practices (BMPs) shall be incorporated into the Storm Water Pollution Prevention Plans (SWPPPs) for construction and operation, and shall minimize onsite soil erosion and offsite sedimentation. Temporary erosion control measures shall be required during the construction period to help maintain water quality, protect property from erosion damage, and prevent accelerated soil erosion or dust generation.	Less than significant
GEO-2: Asbestos-containing Serpentine. The San Francisco site is potentially underlain with asbestos-containing soils and rocks. Asbestos could be released during construction phases at the San Francisco sites. Asbestos is a human health hazard when airborne. This is considered a potentially significant impact.	GEO-2: Controls for Excavation of Serpentine. Prior to Project construction, previously-prepared geotechnical reports and boring and trenching logs from the site would be reviewed to identify areas of serpentinite bedrock that would be disturbed during excavation and Project construction. An Asbestos Dust Mitigation Plan would be submitted to the Bay Area Air Quality Management District (BAAQMD) for approval in accordance with the *Final Regulation Order Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations.*	Less than significant
GEO-3: Strong Ground Shaking. There is a high risk of strong ground shaking in the event of a large earthquake in the area. This impact is considered potentially significant.	GEO-3: Design to Seismic Design Requirements. Due to the site's proximity to earthquake faults and the characteristics of the soil profile, a site-specific study shall be conducted to develop seismic design criteria. Project facilities shall be designed and constructed at a minimum to the seismic design requirements for ground shaking specified in the Uniform Building Code for Seismic Zone 4. Additionally, to satisfy the provisions of the 1998 California Building Code, these facilities shall be designed to withstand ground motions equating to approximately a 500-year return period (10 percent probability of exceedance in 50 years). For design purposes, site-specific ground motions shall be calculated for all project sites.	Less than significant
GEO-4: Liquefaction. There is a potential for liquefaction at the Project site. This impact is considered potentially significant.	GEO-4: Design Project for Liquefiable Deposits. A site-specific program of exploratory borings and accompanying laboratory testing shall be required in order to delineate potentially liquefiable materials beneath the construction area. Geotechnical investigations shall be required for consideration prior to foundation design and development of site-specific design criteria.	Less than significant

**TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS
AND PROPOSED MITIGATION MEASURES**

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
GEO-5: Shrink-Swell/Subsistence. The proposed San Francisco HWC Converter Station site is potentially underlain with expansive soils, which requires specific attention during grading to avoid future heaving and cracking of overlying materials. The potential for damage due to shrink-swell/subsidence to site facilities is potentially significant.	GEO-5: Design Project for Shrink-Swell/Subsistence. A program of site-specific exploratory borings and accompanying laboratory testing shall be required to delineate any potentially expansive materials underneath the proposed Project facility sites and to evaluate the potential for site subsidence and identify and implement appropriate design measures (e.g. pile supports or replacement of undesirable materials) in accordance with applicable codes.	Less than significant
WATER-1: Erosion and Contaminated Runoff. Erosion and contaminated runoff during construction and operation could significantly impact water quality within San Francisco Bay. This is considered a potentially significant impact.	WATER-1: Erosion Control and Contaminant Source Control. Apply for and comply with NPDES construction permit, and Industrial Activities General Permit. Requirements for the permits include submittal of a Notice of Intent, development of a Stormwater Pollution Prevention Plan (SWPPP), monitoring and inspections, and submittal of annual compliance reports.	Less than significant
WATER-2: Surface Water Quality Impacts from HDD. HDD could have significant water quality impacts through loss of drilling fluids and disruption of Bay bottom sediment at the sediment surface where the borehole emerges. This is considered a potentially significant impact.	WATER-2: Spill Prevention and Control Plan for HDD. Drilling shall be performed in accordance with a site-specific Spill Prevention and Control (SPCC) Plan for HDD Operations for Drill Fluids and Cuttings. Spill response measures included in this plan, should a spill occur, shall include reducing fluid pressures, thickening the fluid mixture, and/or adding pre-approved loss circulation materials (LCMs) to the mixture.	Less than significant
WATER-3: Groundwater Quality Impacts from HDD. HDD could have significant water quality impacts through loss of drilling fluids that would increase suspended material in groundwater. This would be considered a potentially significant impact.	WATER-3: Use of Pilot Hole and Reaming. HDD shall be performed using a pilot hole plus reaming technique to minimize the potential for impacts to groundwater. To prevent significant water quality impacts, drilling muds shall consist of naturally occurring materials such as water and bentonite clay, plus inert, non-toxic polymers. Both the drilling technique and early detection and response shall be used to minimize release of fluids to the environment. HDD shall start with completion of a small-diameter pilot hole. The pilot hole is gradually enlarged using reaming. This technique acts to prevent sudden loss of large volumes of drilling fluids.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	Early detection and rapid response shall be implemented to minimize loss of drilling fluids. In the event loss of drilling fluids is detected, natural LCMs such as cotton dust, cottonseed hulls, wood fiber, mica, and cedar fiber shall be added to the drilling fluid. Alternative actions that shall be considered and implemented, as required, include reduction in drilling pressure, thickening of the fluid mixture, and construction of spill control structures, pits, and silt fences onshore, or silt curtains offshore.	
CUL-1: Disturbance of Archaeological Resources. Buried historical resources may exist on the Mirant Potrero Power Plant site. Construction of the AC cable route from the converter station across the power plant property to the PG&E Potrero substation may disturb these resources. This is considered a potentially significant impact.	CUL-1a: Archeological Resource Testing. Due to the potential for buried cultural resources within the Mirant Potrero Power Plant portion of the Project area, it is recommended that subsurface survey (i.e., testing) of the cable route across the plant utilizing mechanical exploratory borings be initiated prior to construction activities. The subsurface survey should be implemented as a means to determine the presence and extent of buried archaeological resources within the plant area as well as to evaluate the potential significance of any resources encountered. Identified remains would be evaluated against the NRHP/CRHR significance criteria. If the resources are not eligible for the NRHP/CRHR, then no further consideration of these resources would be required. If the resources are eligible for the NRHP/CRHR, additional mitigation measures may be required. The testing program would be documented within a technical report. The report would include the aforementioned resource evaluations, if any, and provide recommendations for the further management of cultural resources. Such recommendations could include data recovery excavations as well as the monitoring of all ground-disturbing activities associated with the project. CUL-1b: Archaeological Resource Data Recovery. Based upon the results of the testing program, it may be necessary that a data recovery excavation be implemented. CEQA stipulates that if avoidance of the important archaeological resource is not feasible, a data recovery excavation may be warranted. When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provisions for adequately	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	recovering the scientifically consequential information from and about the resource, shall be prepared and adopted prior to any excavation being undertaken. The development of this plan as well as the implementation of field work, would be conducted in consultation with the SHPO, and, if the site is of aboriginal association, with the NAHC and local Native American community as well. **CUL-1c: Archaeological Resource Construction Monitoring.** Following completion of the archaeological testing efforts, it may be determined that construction monitoring is necessary to prevent significant impacts to important cultural resources. In the event monitoring is warranted, a qualified professional archaeologist shall be retained to observe all ground-disturbing activities associated with the Project. If archaeological materials are observed by the monitoring archaeologist, he/she would have the authority to halt all ground-disturbing activities within the vicinity of the exposed materials until the nature and significance of the find could be evaluated and mitigation measures implemented, if needed. The development of mitigation measures would be conducted in consultation with SHPO and, if the site is of aboriginal association, with the NAHC and local Native American community as well.	
CUL-2: Disturbance of Historical Architectural Resources. The construction of the converter station would require demolition of historical resources. This action would cause a significant adverse change to these historical resources under CEQA. This is considered a significant impact.	**CUL-2a: Recording Architectural Resources.** Recording would ensure a permanent record of the present appearance and context of the historical resources. Under this mitigation proposal, the Project proponent would ensure that the historical resources to be demolished would be recorded to Historic American Buildings Survey (HABS) or Historic American Engineering Record (HAER) standards prior to any construction activities. The HABS/HAER documentation would be filed with the SHPO, the HABS/HAER collection in the Library of Congress, the University of California Bancroft Library, the San Francisco Landmarks Preservation Advisory Board files at the San Francisco Planning Department, the Foundation for San Francisco's Architectural Heritage (FSFAH), and the San Francisco Public Library.	Remains significant

TABLE 1-1 (CONTINUED) SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	It is possible the discharge tunnel associated with Station A would be exposed during construction activities. If the tunnel were sufficiently exposed during such activity, work would be halted until a qualified architectural historian could record a representative cross section of the tunnel to HAER standards. Recordation would include appropriate photographs and drawings as well as archival documentation, if available. Although recording eliminates one adverse impact of demolition (the loss of historical information) it does not prevent the physical loss of historically significant resources. CUL-2b: Architectural Resource Interpretive Display and/or Interpretive Material. The Project proponent would develop a display or interpretive material for public exhibition and dispersal. The display or interpretive material, such as a printed brochure, could be based on the photographs produced in the HABS/HAER documentation, and the historic archival research previously prepared for the resources in and near the project. This display and/or interpretive material would be provided to the City of San Francisco. CUL-2c: Architectural Resource Salvage Opportunities. After recording and at least 30 days prior to demolition, the interested parties would have the opportunity to salvage architectural elements for re-use or curation. Items selected would be removed in a manner that minimizes damage to those items..	
LU-1: Potential Conflict with Public Access Improvements. San Francisco and BCDC policies stress the importance of public access to the Bay. The proposed San Francisco HWC Converter Station site would be located directly adjacent to the waterfront and would not improve public access to the Bay. This impact is considered to be potentially significant.	LU-1: Public Access The Project proponent shall obtain any necessary permits from applicable agencies, including BCDC, and meet requisite conditions of approval including any conditions to provide Bay access in the vicinity of the Project site.	Less than significant
TRAFFIC-1: Cumulative Traffic Impacts. Project-related trips to and from the HWC Converter Station site would contribute to delays on the regional roadway	TRAFFIC-1: Coordination to Reduce Cumulative Traffic Impacts. Truck shipments on the regional roadway shall be scheduled for non-peak periods when delays are less prevalent, as practical. The construction contractor shall coordinate with Caltrans to	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
system, a potentially significant impact.	identify appropriate routings and times for site deliveries and comply with Caltrans recommendations. This mitigation measure would successfully mitigate the Project's contribution to cumulative impacts occurring on the regional roadway system.	
TRAFFIC-2: Oversized Loads. Oversized shipments would require a permit from Caltrans that identifies the permitted hours of operation and the size of the truck to transport the shipment on the regional roadway network. If the permit conditions were not followed adequately, this would constitute a potentially significant adverse impact.	TRAFFIC-2: Coordination of Oversized Loads. Coordination with Caltrans and local jurisdictions shall be conducted to ensure proper permitting for oversized loads, which shall be required in advance of construction.	Less than significant
TRAFFIC-3: Temporary Street Closures Affecting Traffic, Bicycle, and Pedestrian Circulation. The temporary closure of streets for Project-related construction would affect traffic circulation in the study area and may impede the delivery and access to businesses in the area and the use of the Bay Trail and bicycle circulation for short intervals. This impact is considered to be potentially significant.	TRAFFIC-3: Signage for Temporary Street Closures. Any needed temporary closure of local streets in San Francisco will be mitigated by coordinating street closures with the San Francisco Department of Parking and Traffic (DPT) and, if appropriate, erecting signage that reroutes traffic onto neighboring streets. The coordination would account for providing continued access for emergency vehicles in the study area and ensure that the City of San Francisco's Emergency Operations Plan could be activated without impediment. With these mitigation measures, temporary construction impacts on traffic circulation would be mitigated to a less-than-significant level.	Less than significant
TRAFFIC-4: Impacts on Metro East Light Rail Facility. If truck shipments were destined for the proposed laydown area (Western Pacific site) at the same time MUNI begins using 25th Street to dispatch light rail vehicles to Third Street, they could conflict with the most active light rail dispatch and return hours at the beginning and end of the peak periods. This is considered to be a potentially significant impact.	TRAFFIC-4: Reducing Impact on the Movement of MUNI Light Rail Vehicles into and out of the Metro East Maintenance Facility. Construction contractor will coordinate with MUNI to define times for scheduling of truck deliveries to the proposed laydown area (Western Pacific site) if the truck deliveries were to occur during the peak period. Alternatively, particularly if the peaker project is implemented at the Western Pacific site at the same time as the Trans Bay Cable Project is under construction, the Project laydown area could be located at Pier 94/96. As indicated in Section 4.10.3.2.1, Construction-related Impacts, truck deliveries to the Pier 94/96 laydown area would not produce significant impacts along Cargo Way and would avoid a potential conflict with the movement of MUNI light rail vehicles along 25th Street.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
PS-1: Construction Fire Hazards. Without appropriate precautions, construction activities requiring the use of flammable and combustible materials could create fire hazards. The potential to increase fire events could affect the level of service by the fire department to the surrounding area. This impact is considered potentially significant.	PS-1: Construction Fire Prevention. A Construction Fire Prevention and Protection Program shall be developed for the Project to be followed throughout all phases of construction. The program will specifically address: • General requirements • Responsibilities • Housekeeping • Employee alarm/communication system • Portable fire extinguishers • Fixed fire-fighting equipment • Fire control • Flammable and combustible liquid storage • Use and handling of flammable and combustible liquids • Dispensing and disposal of flammable and combustible liquids • Servicing and refueling areas • Training	Less than significant
PS-2: Existing Onshore Underground Utilities. Without appropriate precautions, installation of proposed underground utility lines could impact existing underground utilities and public service connections. This impact would be considered potentially significant.	PS-2: Utility Survey. Prior to any excavation work a survey shall be conducted to identify locations of subsurface utilities.	Less than significant
PS-3: Operations Fire Hazards. Without appropriate precautions, operations requiring the use of flammable and combustible materials could induce fire hazards. The potential to increase fire events could affect the level of	PS-3: Operations Fire Prevention. An Operations Fire Prevention and Protection Program shall be developed for the Project to be followed throughout all phases of operation. The program will specifically address:	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
service by the fire department to the surrounding area. This impact is considered potentially significant.	• Names and/or job titles responsible for maintaining equipment and accumulation of flammable or combustible material • Procedures in the event of fire • Fire alarm and protection equipment • System and equipment maintenance • Monthly inspections • Annual inspections • Fire-fighting demonstrations and training • Housekeeping practices • Training	
VIS-1: Converter Station Domination of View. Since the architectural design character of the building and the general character of proposed landscaping have not been identified in detail, there is the possibility of generating potentially significant visual impacts based upon the potential of the Project to dominate the scene or become obtrusive on views from Warm Water Cove Park. While this impact has been classified as less than significant without design controls, it may still be adverse. This adversity can be lessened through the application of Mitigation Measures VIS-1a and VIS-1b.	VIS-1a: Plan Submittal Requirements for Building Materials and Colors. All major Project features, including buildings, structures, fencing, and sign backgrounds (excluding electric switch gear and related wires and cables, etc. which shall be galvanized gray as shown in the simulations) shall be painted with neutral tan or gray colors that will minimize the size and height of the facility, blend with adjacent structures and be compatible with natural landscapes where applicable. A specific painting plan shall be developed for approval by the agency with local jurisdiction to ensure that the proposed colors do not unduly contrast with the surrounding landscape colors. All treatments shall be in non-reflective colors. The painting plan shall be submitted sufficiently early to ensure that any pre-colored buildings, structures and linear facilities shall have colors approved and included in bid specifications for such buildings or structures. VIS-1b: Plan Submittal Requirements for Landscaping. A specific landscaping plan shall be prepared showing the location of proposed landscaping, the varieties and sizes of plants to be planted, and the proposed time of maturity for each species. Plants shall be selected from the approved species list prepared by the agencies with jurisdiction.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
VIS-2: Converter Station will Create Substantial Light and Glare. There is potential for the Project to cast more ambient light into the immediate area than the existing conditions. There is also the possibility that the luminaries of some of the lighting fixtures may be seen directly by either residents of Potrero Hill or users of Warm Water Cove Park, which through the abrupt contrast of the fixtures' light with the surrounding general darkness, may create the effect of glare. While this impact has been classified as less than significant, without design controls it may still be adverse. This adversity can be lessened through the application of Mitigation Measure VIS-2.	VIS-2: Plan Submittal Requirements for Lighting. Except as required by security and worker-safety requirements, night lighting shall be hooded to direct illumination downward and inward toward the areas to be illuminated in order to minimize nighttime light and glare, backscatter to the nighttime sky, and visibility of lighting to public viewing areas. A specific lighting plan consistent with operational and safety needs and limiting the general lighting levels to a maximum reasonable level shall be submitted to each agency with jurisdiction for approval. The plan shall include provisions for timed and/or motion detection-controlled switches.	Less than significant
VIS-3: Creation of Visual Clutter. There is the possibility that views of the proposed HWC Converter Station from Warm Water Cove Park would be adversely affected without supplemental screening landscaping along the waterfront given the potential for the Project to be more obtrusive than the existing condition. This impact would be considered potentially significant.	VIS-3: Landscaping Plan. The view of the proposed HWC Converter Station from Warm Water Cove Park shall be improved by addition of landscaping screening. In order to improve views northward from Warm Water Cove Park, the applicant shall develop a landscape plan which provides screening foliage where consistent with facility location and safety. The landscaping plans shall be reviewed and approved by agencies with jurisdiction.	Less than significant
HAZ-1: Removal of Potentially Hazardous Building Materials Resulting from Demolition. Structures on the converter station site contain or potentially contain ACMs and LBP. Improper removal or remediation of these materials could result in a potentially significant environmental impact	HAZ-1: Complete an ACM Abatement Plan and an LBP Abatement Plan. Complete ACM and LBP investigation and characterization on the converter station site to fill data gaps and to support development of worker safety procedures, in accordance with regulatory requirements to protect construction workers and the public. The ACM and LBP Abatement Plans shall be completed in compliance with application regulations based on the historical and newly acquired ACM and LBP data. If ACM and LBP are confirmed to be present in concentrations above regulatory limits, the Project proponent shall use ACM-	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	and LBP-certified removal contractors and trained asbestos and lead-based paint removal workers, conduct dust monitoring, and properly dispose of generated wastes offsite. The Project proponent shall also prepare a site Health and Safety Plan for this work.	
HAZ-2: Soil Removal. Soils removed during construction of the converter station and cable routes could be contaminated. Improper sampling, handling, analyzing, or characterizing of the soils could result in a potentially significant environmental impact. Soils at the HWC site are likely to be contaminated with metals and either TPH or PAHs, depending on location. In the middle of the site, a naturally occurring subsurface serpentinite ridge may require excavation. Serpentinite contains naturally occurring asbestos and these soils, if disposed of offsite, would likely require disposal as California hazardous waste.	HAZ-2: Soil Removal Protocols. Previously uncharacterized soils that are stained or odiferous shall be segregated on plastic, sampled, and characterized for onsite use or offsite disposal. The Soil and Groundwater Management plans (SMP, GMP) shall detail storage, transportation, and disposal options for soil and groundwater excavated/extracted during the converter station construction. They would also specify dust monitoring needs for soil excavation and management. Previously characterized hazardous soils shall be loaded onto trucks for offsite disposal. Hazardous soil disposal requires that hazardous waste manifests accompany the waste. Hazardous waste transporters shall be required to haul hazardous soils to a Class I hazardous waste landfill. The personnel handling the hazardous soils are required to have met the OSHA hazardous work operations training requirements. A Health and Safety Plan shall be prepared for this work. Previously characterized non-hazardous soils shall be stockpiled for onsite or offsite reuse or offsite disposal, as needed.	Less than significant
HAZ-3: Construction-phase Hazardous Materials Use. Hazardous materials would be used during construction activities. Misuse, inadequate storage, or improper disposal of these materials could result in a potentially significant environmental impact.	HAZ-3: Reduction of Hazards During Construction Phase. The hazards presented by the use of hazardous materials during the construction phase are well understood, and the appropriate management controls to mitigate potential impacts shall be implemented. These controls include: 1) developing required management plans, e.g., a Spill Prevention, Control, and Countermeasure Plan (see HAZ-5 for more SPCC Plan details); 2) secondary containment; 3) separate storage of incompatible materials; and 4) proper training of personnel. Additionally, construction personnel shall be trained in safety and defensive emergency response procedures. Construction personnel shall also receive hazardous-waste-related	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	training that focuses on recognition of potentially contaminated soil and/or groundwater that may be encountered during subsurface excavations for foundations or pipeline/cable trenches. If such contaminated soil or groundwater is suspected, contingency procedures shall be followed to protect worker safety and public health. All vehicles and construction equipment shall be inspected to ensure that no fluids are leaking (e.g., oil, hydraulic fluid, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, clearly labeled containers. Hazardous materials that must be disposed of will be disposed of as hazardous waste in accordance with the appropriate regulations for storage, transportation, and disposal of hazardous waste.	
HAZ-4: Construction-phase Waste Streams. Improper storage and disposal of solid waste and hazardous construction wastes could result in a potentially significant environmental impact.	HAZ-4: Management of Construction-phase Waste Streams. The onsite management and offsite disposal procedures of solid wastes (including potentially contaminated soil) shall be in a Solid Waste Management Plan for the Project. Waste shall be stockpiled temporarily before disposal offsite. The local fire department and emergency management team shall be provided a list of the waste material expected to be generated and stored onsite. Hazardous wastes generated during construction shall be collected in hazardous waste accumulation containers near the point of generation and moved daily to the construction contractor's 90-day hazardous waste storage area at the converter station site. The accumulated waste shall be delivered to an authorized waste management facility. The exact volume of hazardous wastes to be generated at the San Francisco HWC Converter Station site cannot be estimated at this time, but the estimated amount of excavated soil that would need to be disposed of offsite is estimated at approximately 15,000 cubic yards for this converter station site. Even if this entire amount of excavated soil would need to be disposed of as hazardous waste, it would not exceed a significant portion of the available hazardous waste landfill capacity in California. The capacity details of various landfills for both non-hazardous and hazardous waste are detailed in Table	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	4.14-5. The capacity and estimates for daily volumes of waste received were verified, as detailed in the personal communications provided in the references for this section.	
HAZ-5: Construction-phase Accidental Spills. An accidental spill or a release of hazardous materials could occur during construction. This impact is considered potentially significant.	HAZ-5: Construction-phase Spill Prevention, Control, and Countermeasures. The following shall be implemented both to prevent spills from occurring and to minimize impacts in the event that they do occur: • All spills shall be cleaned up quickly and all workers shall be adequately trained to recognize the hazards associated with such spills. • A Spill Prevention, Control, and Countermeasure (SPCC) Plan for the converter station shall be prepared in accordance with federal and state regulations. This plan must be prepared if petroleum products are stored onsite in ASTs with a capacity that equals or exceeds 55 gallons for a single tank or equals or exceeds 1,320 gallons aggregate for more than one tank. The SPCC Plan must be prepared before the delivery of petroleum products to the site. The SPCC Plan shall include information on spill response procedures and fuel storage. • Material Safety Data Sheets (MSDSs) for each chemical used during construction shall be kept onsite. Construction employees shall be informed of the location and content of the MSDSs, as required by OSHA's Hazard Communication Standard, Title 29 of the Code of Federal Regulations (CFR) Section 1910.1200. • In case of an accident, the City and County of San Francisco Fire Department shall be notified as the first responder. All other federal, state, and local notification requirements shall be followed for any release that exceeds the reportable quantity or threatens to have a significant impact. • The Project shall comply with all transportation requirements for hazardous materials on state highways. These requirements apply to both hazardous materials coming onto the site and hazardous wastes leaving the site.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	• All vehicles and construction equipment shall be inspected to ensure that there are no leaking fluids (e.g., oil, hydraulic, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, labeled containers. Any observation of spills, leaking fluids, or improperly stored fluids shall trigger the issuance of a "stop work" notice until the problem is resolved, including the removal of any soil contaminated by vehicle fluids. The Project shall comply with all transportation requirements for hazardous materials on state highways. These requirements apply to both hazardous materials coming onto the site and hazardous wastes leaving the site.	
HAZ-6: Construction-phase Dust and Volatilization of Contaminants. Excavation of contaminated soil and generation of hazardous waste soils could result in construction dust and volatilization of contaminants that pose environmental and human health risks, particularly to construction workers. This impact is considered potentially significant.	HAZ-6: Reduction of Construction Dust and Volatilization of Contaminants. Dust control measures (i.e., keeping the soil wet during excavation) shall be implemented during excavation and construction activities, and dust monitoring shall be performed. Suspected contaminated soil that is stockpiled on the site shall be covered daily with plastic to prevent volatilization of contaminants and to control dust. Contaminated soil may also be loaded directly onto trucks for transport to an appropriate offsite disposal facility. The loaded soils shall be properly covered and manifested as necessary. Dust monitoring shall be performed during excavation and loading of hazardous soils. The accumulated waste will then be delivered to an authorized waste management facility. Dust monitoring shall confirm that the dust control measures are effectively protecting site workers and the public.	Less than significant
HAZ-7: Contaminated Groundwater. The San Francisco HWC Converter Station site is known to have contaminated groundwater. Groundwater may be encountered during construction and groundwater dewatering. The lead regulatory agency associated with the proposed Project may require control or remediation of the site groundwater for redevelopment of the property. Failure to control the contaminated groundwater flow	HAZ-7: Contaminated Groundwater Control. If groundwater was encountered during construction at the converter station site, the water shall be collected onsite in a tank or tanks, sampled, and analyzed. Based on the analytical data, the water shall be characterized for disposal by one of the following methods: • Used onsite for dust control. • Treated onsite and discharged under the authority of a general National Pollutant Discharge Elimination System (NPDES) permit. Treatment options would include, but	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
could result in a potentially significant impact.	are not limited to, filtration or filtration and treatment by granular-activated carbon [GAC]. Treatment residuals would be sampled, analyzed, characterized, and disposed of offsite in compliance with applicable regulations. • Disposed of offsite at a commercial water treatment facility in compliance with applicable regulations. If groundwater was encountered at the Pittsburg Standard Oil Converter Station site and it was found to be contaminated, it is possible that the RWQCB would require groundwater control as part of the development plan for the Project on that site. Potential groundwater-remedial strategies would depend on a number of factors including: site contaminants, evaluation of impacts to human health and the environment, and evaluation of the technical merits of available remedial strategies. Based on these factors the final selection would be negotiated between the RWQCB and TBC. The potential remedial options provided herein are for informational purposes only. Potential groundwater control methodologies include installing a slurry wall around a portion or the entire contaminated site combined with groundwater pump and treatment and discharge of treated groundwater to a storm drain/sewer system under the authority of an NPDES permit. Other alternative technologies include in situ biological treatment and in situ oxidation or reduction, depending on the site-specific contaminants and hydrogeological conditions.	
HAZ-8: Operations-phase Hazardous Materials Usage. Hazardous materials shall be used during operations and maintenance activities. Misuse, inadequate storage, or improper disposal of these materials could result in a potentially significant environmental impact.	**HAZ-8: Control of Operations-phase Hazardous Materials.** A Hazardous Materials Business Plan (HMBP) shall be developed and implemented prior to turnover of site management from the construction contractor to the operating company. All hazardous materials shall be handled and stored in accordance with applicable codes and regulations. Storage quantities of all hazardous materials shall be minimized, and non-hazardous materials shall be substituted for hazardous materials at the converter station to the extent practicable. Small-quantity chemicals used for maintenance tasks shall be kept in appropriate inflammable material or corrosive material storage lockers. Bulk chemicals shall be stored in ASTs, and all other chemicals shall be stored in their original	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	shipping containers. Incompatible materials shall be stored in separate storage containment areas. Chemical storage areas and transfer areas shall be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank, including an allowance for rainwater. Areas susceptible to potential leaks and/or spills shall be paved and bermed or otherwise secondarily contained. Specifically, the transformers and the diesel ASTs would have secondary containment. Periodic inspections shall be conducted to ensure that all containers are secure and properly marked. Piping and tanks will be protected from potential traffic hazards by concrete or other barriers. Hazardous materials will be delivered to the converter station periodically. Transportation of these materials shall comply with all applicable regulations of the U.S. Department of Transportation, the EPA, DTSC, the California Highway Patrol, and the State Fire Marshal. An HMBP shall be prepared prior to delivery of specified hazardous materials to the converter station in conformance with Title 19 of the California Code of Regulations (CCR) and California Health and Safety Code Section 25504. The HMBP requires facilities to develop the following information: • Facility map showing locations of hazardous materials and emergency response equipment • Hazardous materials inventory, including MSDSs for all hazardous materials stored and used onsite • Emergency contact information • Emergency response plans and procedures • Emergency notification procedures • Emergency response training for all employees	
HAZ-9: Operations-phase Waste Streams. Improper storage and disposal of operational wastes could result in a potentially significant environmental impact.	HAZ-9: Manage Waste Generation, Storage, and Disposal During Operations Phase. Before facility start-up, an application shall be made to DTSC for a hazardous waste generator number. The facility shall not treat, store, or dispose of hazardous waste in a	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	manner that will cause the facility to be characterized as a treatment, storage and disposal facility (TSDF). A detailed waste management plan shall be prepared prior to start-up to ensure proper storage, labeling, packaging, record keeping, manifesting, minimization, and disposal of all hazardous materials and wastes. The waste management plan will include: • A description of each hazardous waste stream • Handling, transport, treatment, and disposal procedures for each waste • Preparedness, prevention, contingency, and emergency procedures • Personnel training Scrap materials such as paper, packing materials, glass, metal, and plastic shall be segregated and managed for recycling. Non-recyclable inert wastes shall be stored in covered trash bins in accordance with local ordinances and picked up by an authorized local trash hauler on a regular basis for transport and disposal in suitable landfill. Skimmed oil collected from equipment drains and other liquids from equipment shall be transported by an authorized carrier to a certified recycling facility.	
HAZ-10: Operations-phase Accidental Spills. Non-compliance with regulatory requirements associated with storage, use, and containment of hazardous materials and/or petroleum hydrocarbons could result in accidental spills. The impact from accidental spills of these materials is considered potentially significant.	HAZ-10: Operations-phase Spill Prevention, Controls, and Countermeasures. The following shall be implemented during operations: • All workers shall be adequately trained to recognize the hazards associated with accidental spills. Training shall include ensuring that personnel who maintain the facility are adequately trained to recognize the hazards associated with such spills. Personnel who maintain the facility will be trained in the use of fire suppression equipment, evacuation, notification, and other defensive emergency response procedures. Maintenance personnel will also be trained in hazardous materials and hazardous waste awareness, handling, and management, as required for their level of responsibility. • The proper use of safety procedures and development and implementation of a	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	project-specific SPCC Plan will help prevent such incidents. The SPCC Plan will include information on spill response procedures and fuel storage. • An MSDS will be kept onsite for each onsite chemical. • The programs to be implemented to protect worker health and safety shall also benefit public safety. Facility design shall include redundant controls and monitoring systems to minimize the potential for conditions in which accidental spills could occur. Potential public health impacts associated with facilities operation will be mitigated by development and implementation of Emergency Response Plans, an SPCC Plan, secondary containment structures for oils and other hazardous materials, safety programs, and employee training.	
HAZ-11: Operations-phase Fire and Explosion Risk. Non-compliance with regulatory requirements associated with storage, use, and containment of flammable materials could result in a fire or explosion. The impact of a fire or explosion is considered potentially significant. If the onsite fire protection equipment could not address the fire, outside agencies would need to be called. This impact is considered potentially significant.	HAZ-11: Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase. The flashpoints of transformer oil and diesel fuel are 295°F and 100°F, respectively, and the auto ignition points are 484°F and 494°F, respectively (Sax, 1992; MSDS for transformer oil; MSDS for diesel fuel). The National Fire Prevention Association (NFPA) assigns lubricating oils a fire hazard rating of 1, meaning that the materials "must be preheated before ignition can occur. Materials of these types require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur" (Siemens, 2006). The converter station shall have onsite fire protection systems (including emergency backup systems). During the detailed design phase of the proposed Project, potential fire protection designs and systems shall be reviewed with local agencies to finalize design details. In general, the fire protection system shall consist of automatic detection and firefighting equipment. The fire detection control panel will be located in the control room and will be connected to the control and protection system for remote annunciation. The fire alarm will be initiated automatically by smoke, heat, or flame detectors, or manually by push-button.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	A combination of detectors will be used, including infrared and ultraviolet detectors, ionization and optical smoke detectors, and rate-of-rise temperature-sensitive detectors, depending on the equipment and/or space being monitored. Audible alarms and flashing lights will be activated in the event of a fire. The equipment or area where the alarm is triggered will be indicated on the control panel. The firefighting equipment would initiate automatically, using water sprays and curtains or an appropriate gas-extinguishing agent. Fire detection and automatic firefighting equipment will be connected to a power supply within the fire-detection control panel, which will be connected to the mains via a power supply/battery charger unit with an internal 24-volt battery. A pump house shall be included within the facility with 2 diesel fire-water pumps, each 225 kW. The fire-water pump and backup emergency lighting will be electrically powered by a diesel-powered generator capable of operating at full standby without refueling for 96 hours, as required in a seismically active area.	
HAZ-12: Impacts from Seismic Activity. Failure to abide by the building code for Seismic Zone 4 could lead to damage to the facility and resulting spills of hazardous materials. This impact could be potentially significant.	HAZ-12: Manage Seismic Activity. To minimize seismic damage to the facility and the resulting hazardous materials spills, the designers and construction contractor shall follow the Uniform Building Code for Seismic Zone 4. This action would reduce Impact HAZ-12 to a less-than-significant level.	Less than significant
PALEO-1: Disturbance of Fossil Resources. There are no known significant fossil resources at this location. However, excavations associated with construction have the potential to penetrate into undisturbed *Qal* sediments, which could contain significant fossil resources. This impact would be considered potentially significant.	PALEO-1: Potential Fossil Resources Protection. The following measures shall be implemented: • Pre-construction meetings shall be held with key construction personnel to provide brief discussions pertaining to paleontological resource significance, visual identification, and discovery notification procedures. • Proposed construction areas containing geological units designated with a potentially moderate or high sensitivity rating shall be monitored by a professional paleontologist during construction, to insure that subsurface paleontological resources are adequately	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
San Francisco HWC Converter Station Site		
	protected. • If unique paleontological resources are discovered, all significant fossil material shall be collected, prepared, identified, and curated, and then placed into a state-designated scientific repository. • Salvage operations shall be conducted in accordance with professional paleontological (e.g., SVP) standards.	

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
AIR-1: Fugitive Dust Emissions. The fugitive dust emissions impact (Impact AIR-1) described in Section 4.2.3.2.1 applies to the Pittsburg Standard Oil Converter Station site. The Project proposes to use fugitive dust suppression with water and other methods to control construction-related emissions. The use of chemical additives is not planned. Controlled worst-case fugitive dust is estimated to be 39 pounds per day; 0.43 tons per month; and 3.4 tons over the 27- to 30-month construction period for the Pittsburg site. Without fugitive dust control measures the impact is considered to be potentially significant.	AIR-1: Fugitive Dust Controls. Mitigation Measure AIR-1 described in Section 4.2.3.2.1 shall be applied at the Pittsburg Standard Oil Converter Station site.	Less than significant
AIR-2: Equipment Exhaust Emissions. The equipment exhaust emissions impact (Impact AIR-2) described in Section 4.2.3.2.1 applies to the Pittsburg Standard Oil Converter Station site. See Table 4.2-13 for emissions estimates for this site. Without mitigation measures this impact is considered to be potentially significant.	AIR-2: Exhaust Controls. Mitigation Measure AIR-2 described in Section 4.2.3.2.1 shall be applied to the Pittsburg Standard Oil Converter Station site.	Less than significant
GEO-1: Soil Erosion and Compaction. The soil erosion and compaction impact (Impact GEO-1) described in Section 4.3.3.2.1 applies to the Pittsburg Standard Oil Converter Station site.	GEO-1: Design Project for Erosion Control. Mitigation Measure GEO-1 described in Section 4.3.3.2.1 shall be applied at the Pittsburg Standard Oil Converter Station site.	Less than significant
GEO-3: Strong Ground Shaking. The strong ground shaking impact (Impact GEO-2) described in Section 4.3.3.2.2 applies at the Pittsburg Standard Oil Converter Station site.	GEO-3: Design to Seismic Design Requirements. Mitigation Measure GEO-3 described in Section 4.3.3.2.2 shall be applied at the Pittsburg Standard Oil Converter Station site.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
GEO-4: Liquefaction. The liquefaction impact (Impact GEO-4) described in Section 4.3.3.2.2 applies to the Pittsburg Standard Oil Converter Station site.	GEO-4: Design Project for Liquefiable Deposits. Mitigation Measure GEO-4 described in Section 4.3.3.2.2 shall be applied to the Pittsburg Standard Oil Converter Station site.	Less than significant
GEO-5: Shrink-Swell/Subsidence. The proposed Pittsburg Standard Oil Converter Station site is potentially underlain with expansive soils, which requires specific attention during grading to avoid future heaving and cracking of overlying materials. The potential for damage due to shrink-swell/subsidence to site facilities is potentially significant.	GEO-5: Design Project for Shrink-Swell/Subsidence. A program of site-specific exploratory borings and accompanying laboratory testing shall be required to delineate any potentially expansive materials underneath the proposed Project facility sites and to evaluate the potential for site subsidence and identify and implement appropriate design measures (e.g. pile supports or replacement of undesirable materials) in accordance with applicable codes.	Less than significant
WATER-1: Erosion and Contaminated Runoff. The erosion control and runoff impact (Impact WATER-1) described in Section 4.4.3.2.1 applies at the Pittsburg Standard Oil Converter Station site.	WATER-1: Erosion Control and Contaminant Source Control. Mitigation Measure WATER-1 described in Section 4.4.3.2.1 shall be applied for the Pittsburg Standard Oil Converter Station site.	Less than significant
WATER-2: Surface Water Quality Impacts from HDD. Impact WATER-2 described in Section 4.4.3.2.1 applies at the Pittsburg Standard Oil Converter Station site.	WATER-2: Spill Prevention and Control Plan for HDD. Mitigation Measure WATER-2 described in Section 4.4.3.2.1 shall be applied for the Pittsburg Standard Oil Converter Station site.	Less than significant
WATER-3: Groundwater Quality Impacts from HDD. Groundwater quality impacts from HDD (Impact WATER-3) described in Section 4.4.3.2.1 applies to the proposed subsurface Kirker Creek crossing associated with the onshore cable route at the Pittsburg Standard Oil Converter Station site.	WATER-3: Use of Pilot Hole and Reaming. Mitigation Measure WATER-3 is applicable at the Kirker Creek crossing for the Pittsburg Standard Oil Converter Station site.	Less than significant
WATER-4: Impacts to Kirker Creek Watershed Drainage Area Construction and operations of the	WATER-4: Kirker Creek Stormwater Management. Comply with Pittsburg Municipal Code (Chapter 15.104 – Stormwater Management Plan for Kirker Creek Watershed	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
Standard Oil Converter Station, onshore AC/DC cable routes, laydown areas, and access roads are all within the Kirker Creek Watershed. Project construction and operations could increase runoff to the creek. This impact is considered potentially significant.	Drainage Area) which states that new development within the Kirker Creek Watershed Drainage Area must: • Construct an onsite infiltration system, associated with small storm flows, that would detain and control the rate of stormwater runoff to the adjacent Kirker Creek Watershed	
TBIO-1: Trenching Near Pools Providing Habitat for Special-status Species. This is a potentially significant impact.	TBIO-1a: Avoidance and Prevention Measures for Work Near Vernal Pool Habitat. Cable construction along Arcy Lane shall be placed a minimum of 8 feet away from the vernal pool edge of the roadway and all construction activities shall maintain a 15-foot buffer to the hydrologic edge of the pool. The vernal pool edge of the roadway pool shall be fenced with a silt fence with hay bundles placed at the outside base of the fence to avoid impacts to this wetland. All construction personnel, work crews, and project staff shall be restricted from entering the vernal pool areas, staging equipment or depositing any waste disposal soils, littering in or otherwise in any way entering these sensitive habitats. Due to the fact that this portion of the Project area is relatively flat, significant erosion or soil movement is not expected from trenching activities within the adjacent roadway. TBIO-1b: Awareness Training for Workers. Prior to construction, all construction workers shall take part in a USFWS-approved worker environmental awareness program on vernal pool crustaceans given by a USFWS-approved biologist. TBIO-1c: Biological Monitoring Requirement. A USFWS-approved biologist shall be present on site during any construction activities adjacent to vernal pool crustacean habitat.	Less than significant
TBIO-2: Trenching Near Saltmarsh and Wetland Habitats (Pickleweed, Bulrush, and Cattail). The proposed Project has the potential to significantly impact,	TBIO-2a: Marking Habitat and Implementing Physical Avoidance Measures. In order to protect wildlife habitat and prevent disturbance or take of salt marsh harvest mouse, black rail, or California clapper rail, a silt fence with hay bundles placed at the outside	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
either directly or through habitat modifications, terrestrial endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12).	base of the fence shall be installed by a qualified biologist along the entire Arcy Lane portion (0.5 mile) of the proposed onshore cable route. All construction personnel, work crews, and project staff shall be restricted from crossing this fence at the edge of the dirt road, staging equipment or depositing any waste disposal soils, littering in or otherwise in any way entering these sensitive habitats. Due to the fact that this portion of the Project area is relatively flat, significant erosion or soil movement is not expected from trenching activities within the adjacent roadway. The fencing shall not be removed until all construction and clean-up activities were completed in the area. TBIO-2b: Monitoring Requirements for Salt Marsh Species. . In order to protect wildlife habitat and prevent disturbance or take of salt marsh harvest mouse, black rail, or California clapper rail, a qualified biological monitor familiar with the species shall be present during each day of construction and site preparation adjacent to these species potential habitats (i.e., salt marsh, grassland near salt marsh, pickleweed). As applicable, the biological monitor shall be authorized to require remedial protective measures in the field. TBIO-2c: Awareness Training for Construction Personnel. Prior to construction, all construction workers shall take part in a USFWS-approved worker environmental awareness program concerning these species given by a USFWS-approved biologist. The biological monitor shall train work crews in standard procedures for identifying and avoiding impacts to these species prior to the start of construction activities. TBIO-2d: Halting Work to Remove Endangered Species from Job Site. If a salt marsh harvest mouse, black rail, or California clapper rail is observed in or near the Project area, all construction shall cease until the mouse or bird moves out of the project area or, in the case of salt marsh harvest mouse, is captured by a qualified biologist and removed from the Project area for relocation.	

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	TBIO-2e: Check Under Parked Vehicles. The area beneath vehicles or equipment parked in the Project area shall be checked for the presence of salt marsh harvest mouse before being moved, during construction in the roadway and staging activities within the entire Arcy Lane habitat unit. Vehicle speed limits in this area shall not exceed 10 miles per hour. TBIO-2f: Pre-construction Nesting Surveys. A qualified wildlife biologist shall perform pre-construction nesting surveys for all bird and raptor species within the Project area and immediate vicinity a maximum of 30 days before construction begins. If an active raptor nest is located, no activities shall occur within 0.25 mile of the nest until young are fledged and the nest is abandoned. If construction activities occur outside of the nesting period (nesting period is typically between February and August) no nesting surveys shall be required.	
TBIO-3: Disturbance or Fill of Wetlands and Streams. Potential jurisdictional wetlands and streams exist in the project area that may be filled or altered during construction, due to project trenching for onshore cables associated with the Pittsburg Standard Oil Converter Station site. Other temporary and permanent impacts would occur from proposed bridge construction activities for the access road from the Pittsburg-Antioch Highway to the converter station site. Other wetlands occur in portions of proposed laydown area. This is a potentially significant impact.	TBIO-3a: Implement HDD or Comparable Technology Techniques to Avoid Impacts to Kirker Creek and Associated Floodplain Wetlands. As stated in the project description of this document (Section 3.0 and Appendix A), onshore cable route for the proposed site would incorporate HDD or comparable technology techniques from the west end of the paved road on the Delta Energy Center property all the way to the northeast corner of the Pittsburg Standard Oil Converter Station site. The HDD shall be drilled at a minimum of 15 feet below the bottom of the Kirker Creek streambed in order to avoid a “frac-out” (i.e., release of drilling mud). The temperatures associated with the buried AC cable are expected to be warmer than ambient soil temperatures over a limited area (refer to Appendix F for more information). The required minimum HDD depth shall also remove any potential for impacts to these wetlands or streams due to potential heating from the buried cable. Implementation of the HDD or comparable technology techniques will avoid impacts to wetlands and streams within this portion of the onshore cable route.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	TBIO-3b: Wetland and Jurisdictional Waters Delineation Survey. Prior to construction, the Applicant shall hire a qualified wetland delineator (i.e., biologist) familiar with the wetland types in the east Bay Area to survey the proposed onshore cable route, laydown areas and other portions of the Project area. The biologist shall mark the outer upland edges of potential wetlands and streams in the Project area and oversee installation of silt fences around the edges of these features in order to avoid Project impacts. TBIO-3c: Wetland and Pool Avoidance. Wetlands and a seasonal pool, representing vernal pool crustacean habitat for endangered species, shall be avoided by all construction activities in order to avoid fill or alteration of wetlands and streams in the project area and to avoid impacts to sensitive species or their habitats. No trenching or equipment shall enter within a minimum of 15 feet from the edge of the target seasonal pool boundaries and areas of hydrologic influence. In addition, no construction personnel shall be allowed to enter or disturb the seasonal pool or vegetated habitat immediately surrounding it. A trained biological monitor shall be present during all trenching activities occurring adjacent to vernal pool wetlands in the Project area. If disturbance occurs in any such feature during Project construction then the biological monitor shall immediately notify the USFWS and inform them of potential “take” of these federally endangered species. Any impacts to these habitats shall be considered “take” of these species and will require agency consultation to develop appropriate mitigation measures. TBIO-3d: Obtain Streambed Alteration Agreement. Potential impacts or alteration of streambeds from bridge construction over and HDD or comparable technology drilling beneath Kirker Creek at two locations would require a Streambed Alteration Agreement (Section 1600-1616) through CDFG.	
TBIO-4: Potential Impacts to Giant Garter Snake and Western Pond Turtle. The proposed Project has the	TBIO-4a: Avoidance of Habitat and Timing of Construction. No grading, excavating, or filling may take place in or within 50 feet of the marsh, wetland or stream edges within	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
potential to significantly impact, either directly or through habitat modifications, terrestrial endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12).	the Project area between October 1 and May 1 unless otherwise authorized by the USFWS and CDFG. **TBIO-4b: Worker Training for Giant Garter Snake and Western Pond Turtle.** Prior to construction, all construction workers shall take part in a Service-approved worker environmental awareness program given by a USFWS-approved biologist. **TBIO-4c: Biological Monitoring for Giant Garter Snake and Western Pond Turtle.** A USFWS-approved biologist shall be present on site during any construction activities within western pond turtle or giant garter snake habitat. If a giant garter snake or western pond turtle is found in the work area, all work shall cease until the snake or turtle leaves the work area. Monitoring and avoidance measures shall follow protocols established by the USFWS (see Appendix F for details).	
TBIO-5: Potential Impacts to Special-status Raptors and Birds in Construction Laydown Area. The proposed Project has the potential to significantly impact, either directly or through habitat modifications, terrestrial endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12).	**TBIO-5: Pre-construction Nesting Surveys at Construction Laydown Area.** A qualified wildlife biologist shall perform pre-construction nesting surveys for all bird and raptor species within the construction laydown area and immediate vicinity at least 30 days prior to start of construction. If an active raptor nest is located no activities will occur within 0.25 mile of the nest until young are fledged and the nest is abandoned. If construction activities occur outside of the nesting period (nesting period is typically between February and August), no nesting surveys would be required.	Less than significant
TBIO-6: Potential Impacts to Special-status Plants. The undeveloped grasslands, seasonal wetlands (e.g., saltgrass and seasonal pool) and marshes adjacent to and within the onshore cable route for the Pittsburg Standard Oil Converter Station site would require trenching, drilling, and related construction activities. These areas contain native soils that provide potential	**TBIO-6a: Rare Plant Surveys.** Because spring surveys have not yet been conducted in the Project area, prior to construction the entire Pittsburg Standard Oil Converter Station onshore cable route and undeveloped laydown areas, not including the developed and disturbed proposed converter station site or other roads or developed areas along the route, shall be surveyed by qualified botanist(s) for special-status plants at the appropriate flowering period using established CNPS and CDFG protocols (Appendix F).	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
habitat for numerous special-status plant species. This is a potentially significant impact.	TBIO-6b: Avoidance of Rare Plant Populations or Compensation for Loss. If special-status plants are detected within the construction zone, or the immediate vicinity, mitigation to avoid impacts within 50 feet of these plants or to compensate for unavoidable impacts or degradation of suitable habitat for these plants shall be identified in coordination with CDFG in accordance with Section 1913(c) of the California Fish and Game Code. Mitigation includes protection of existing rare plant occurrences and habitats by rerouting alignments, as practical, to avoid impacts to special-status plant species, and protecting other grassland and seasonal wetland habitats in the areas where the plants occur. This shall be accomplished through the purchase of credits (at a 1:1 ratio) in an existing service-approved mitigation bank. Avoidance can also be managed by narrowing the construction ROW at the plant population location and rerouting the cable to the other side of the easement. As a least-desired option, salvage of plants and potential seed bank soils and placement of these plants and materials in adjacent potential habitat that will remain undisturbed may also be considered. Any such salvage process should be planned and coordinated through oversight from a qualified plant ecologist or botanist.	
TBIO-7: Potential Impacts to Special-status Plants from Laydown Areas. Use of the proposed and alternative Pittsburg Standard Oil Converter Station laydown areas has the potential to cause disturbance to existing plants and surface soils from construction activities and equipment, and alteration of the sites. These areas may contain native soils that provide potential habitat for special-status plant species. This is a potentially significant impact.	TBIO-7a: Rare Plant Surveys in Laydown Areas. Prior to construction, undeveloped portions of the proposed and alternative laydown areas (e.g., grassland) shall be surveyed by a qualified botanist for special-status plants at the appropriate flowering period using established CNPS and CDFG protocols (Appendix F). These portions of the Project area shall receive both early season (March-May) and late season (July-September) rare plant surveys by a qualified botanist. TBIO-7b: Avoidance of Special-status Plants. If special-status plants are detected within the laydown areas, or the immediate vicinity, mitigation to avoid impacts within 30 feet of these plants will be implemented. Mitigation includes protection of existing rare plant occurrences and habitats by preventing equipment, materials or other project	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	related activities from disturbing the plants in order to avoid impacts to special-status plant species. Any special-status plant populations located during surveys shall be clearly identified, marked and fenced in order to adjust the extent of the laydown area to avoid the plants. Additionally, following surveys and identification of any sensitive resources, the perimeter of all laydown areas utilized will be fenced with a silt fence in order to prevent disturbances (e.g., soil disturbance, soil compaction, spills) outside of the designated laydown area.	
LU-2: Exceedance of Height Allowance. The Project structures exceed height allowances in the City of Pittsburg. This impact is considered to be potentially significant.	LU-2: Height Allowance. The Project proponent shall either: 1) apply for and be granted a height variance from the current zoning to allow for height requirements of the Project; or 2) ensure that the 64-foot-tall structure is located beyond a 14-foot setback from all sides of the property, and also ensure that the poles that make up part of the static electricity grounding grid are no more than 10 percent of the ground area covered by the structure to which they are accessory.	Less than significant
LU-3: Potential Conflict with Kirker Creek Policy. The proposed access road to the Standard Oil site could be inconsistent with the General Plan policy to use Kirker Creek easement as a creekside trail. This impact is considered to be potentially significant.	LU-3: Kirker Creek Policy. The Project proponent shall coordinate with the City of Pittsburg to ensure that the construction of the proposed access road is consistent with future planned development of Kirker Creek creekside trail, to the extent feasible.	Less than significant
TRAFFIC-1: Cumulative Traffic Impacts. The Cumulative Traffic Impacts (Impact TRAFFIC-1) on the regional roadway system described in Section 4.10.3.2.1 applies to the Pittsburg Standard Oil Converter Station site.	TRAFFIC-1: Coordination to Reduce Cumulative Traffic Impacts. Mitigation Measure TRAFFIC-1 described in Section 4.10.3.2.1 shall be applied at the Pittsburg Standard Oil Converter Station site. No other significant cumulative transportation-related impacts would be expected to occur on local roads.	Less than significant
TRAFFIC-2: Oversized Loads. The Oversized Loads impact (Impact TRAFFIC-2) described in Section 4.10.3.2.1 applies to the Pittsburg Standard Oil Converter Station site.	TRAFFIC-2: Coordination of Oversized Loads. Mitigation Measure TRAFFIC-2 described in Section 4.10.3.2.1 shall be applied at the Pittsburg Standard Oil Converter Station site.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
TRAFFIC-5: Traffic Impacts During Construction. The new road providing access to the Standard Oil site from the Pittsburg-Antioch Highway would have no traffic controls. At maximum allowable speeds of 50 miles per hour, truck left-turn movements from the Pittsburg-Antioch Highway onto the proposed access road would not be safe without traffic controls, and would result in a potentially significant impact.	TRAFFIC-5: Improve Vehicular Safety. A Traffic Control Plan that identifies measures to improve vehicular safety in this location shall be developed and submitted to the City of Pittsburg for approval prior to project implementation.	Less than significant
NOISE-1: Converter Station Operations Sound Levels. Sound levels from the operation of the Standard Oil Converter Station would range from 77 to 79 dBA L_{dn} at the property lines, which exceeds the Pittsburg 75 dBA L_{dn} requirement. This is considered a potentially significant impact.	NOISE-1: Noise Barrier Installation for Converter Station. An acoustical barrier approximately 10 feet high would be erected around a portion of the converter station and an acoustical barrier approximately 13 feet high would be erected around a portion of the emergency generator. If final design determined that an acoustical barrier were unnecessary, it shall not be required.	Less than significant
PS-1: Construction-related Fire Hazards. The construction-related fire hazards impact (Impact PS-1) discussed in Section 4.12.3.2.1 applies at the Pittsburg Standard Oil Converter Station site.	PS-1: Fire Water Service. Mitigation Measure PS-1 discussed in Section 4.12.3.2.1 shall be conducted at this site.	Less than significant
PS-2: Existing Underground Utilities. The underground utilities impact (Impact PS-2) discussed in Section 4.12.3.2.1 applies at the Pittsburg Standard Oil Converter Station site.	PS-2: Utility Survey. Mitigation Measure PS-2 described in Section 4.12.3.2.1 shall be conducted at this site.	Less than significant
PS-3: Operations Fire Hazards. The operations fire hazards impact (Impact PS-3) discussed in Section 4.12.3.2.2 applies at the Pittsburg Standard Oil Converter Station site.	PS-3: Operations Fire Prevention. Mitigation Measure PS-3 discussed in Section 4.12.3.3.2 shall be conducted at the Pittsburg Standard Oil Converter Station site.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
PS-4: Water Service. The nearest fire hydrant to the Standard Oil site is located approximately 1,500 feet from the site. Fire protection and water supply services could be impacted due to current unavailability of fire hydrants.	PS-4: Water Service. The Project proponent shall request that an access and water supply review and fire flow test be conducted by the City of Pittsburg. This shall include water supply and flow required for construction. If the water and flow are not adequate, the proponent shall supply water independent of the City's water system. If the water and flow are determined to be adequate, the proponent shall either bring in their own water during construction or obtain a meter with the City Finance Department to tie into a designated fire hydrant during construction.	Less than significant
VIS-1: Converter Station Domination of View. The Pittsburg Standard Oil Converter Station would be visible from the Pittsburg-Antioch Highway. Since the architectural design character of the building and the general character of proposed lighting have not been identified in detail, there is the possibility of generating significant visual impacts based upon the potential of the Project to dominate the scene or become obtrusive on views from the Pittsburg-Antioch Highway. While this impact has been classified as less than significant, without design controls it could still be adverse. This adversity can be lessened through the application of mitigation measures VIS-1a, VIS-1b and VIS1c.	VIS-1a: Plan Submittal Requirements for Building Materials and Colors. Mitigation Measure VIS-1a described in Section 4.13.3.2 shall be applied at the Pittsburg Standard Oil Converter Station site. Architectural design and site plans, plus a color and material palette, shall be reviewed and approved by the Pittsburg Planning Commission. Final architectural plans and conditions of approval shall be reviewed and signed off by the appropriate planning and building officials prior to operation of the Project. VIS-1b: Plan Submittal Requirements for Landscaping. Mitigation Measure VIS-1b described in Section 4.13.3.2 shall be applied at the Pittsburg Standard Oil Converter Station site. Landscape design plans shall be reviewed and approved by the Pittsburg Planning Commission. Final landscape plans shall be reviewed and signed off by the appropriate planning and engineering officials prior to operation of the Project. VIS-1c: Landscaping Plan. The Applicant shall extend the landscape screening along the eastern property line, using plants compatible with the existing vegetation screen along the Pittsburg-Antioch Highway. Such screening would be most visible from KOP P-2 along the side of the facility. In addition, several clusters of major trees from the Pittsburg planting list shall be located to help visually break up the large vertical planes of the DC/valve hall. The intent is not to completely screen the structure, but to soften its mass by providing intervening tree forms. Landscape design plans shall be reviewed and approved by the Pittsburg Planning Commission. Final landscape plans shall be reviewed	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	and signed off by the appropriate planning and engineering officials prior to operation of the Project.	
VIS-2: Converter Station will Create Substantial Light and Glare. There is potential for the Project to cast more ambient light into the immediate area than the existing conditions. There is also the possibility that the luminaries of some of the lighting fixtures may be seen directly by travelers along the Pittsburg-Antioch Highway which through the abrupt contrast of the fixtures' light with the surrounding general darkness, may create the effect of glare. While this impact has been classified as less than significant, without design controls it may still be adverse. This adversity can be lessened through the application of Mitigation Measure VIS-2.	VIS-2: Plan Submittal Requirements for Lighting. Mitigation Measure VIS-2 described in Section 4.13.3.2 shall be applied at the Pittsburg Standard Oil Converter Station site. Lighting plans shall be reviewed and approved by the Pittsburg Planning Commission. Final lighting plans shall be reviewed and signed off by the appropriate planning and building officials prior to operation of the Project.	Less than significant
HAZ-1: Removal of Potentially Hazardous Building Materials Resulting from Demolition. Existing structures on the converter station site contain or potentially contain ACMs and LBP. Improper removal or remediation of these materials could result in a potentially significant environmental impact.	HAZ-1: Complete an ACM Abatement Plan and an LBP Abatement Plan. Phase II ACM and LBP surveys on the converter station site shall be conducted to fill data gaps and to support development of worker safety procedures, in accordance with regulatory requirements to protect construction workers and the public. The ACM and LBP Abatement Plans shall be completed in compliance with applicable regulations based on the historical and newly acquired ACM and LBP data. If ACM and LBP were confirmed to be present in concentrations above regulatory limits, the Project proponent shall use certified asbestos and lead-based paint removal workers, conduct dust monitoring, and dispose of generated wastes offsite. A site Health and Safety Plan shall also be prepared for this work.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
HAZ-2: Soil Removal. Soils removed during construction of the converter station and cable routes could be contaminated. Improper sampling, handling, analyzing, or characterizing of the soils could result in a potentially significant environmental impact.	HAZ-2: Soil Removal Protocols. Previously uncharacterized soils that are stained or odiferous shall be segregated on plastic, sampled, and characterized for onsite use or offsite disposal. The Soil and Groundwater Management Plans shall detail storage, transportation, and disposal options for soil and groundwater excavated/extracted during the converter station construction. The plans shall also specify dust monitoring needs for soil excavation and management. Previously characterized hazardous soils shall be loaded onto trucks for offsite disposal. Hazardous soil disposal requires that hazardous waste manifests accompany the waste. Hazardous waste transporters shall be required to haul hazardous soils to a hazardous waste landfill that can properly accept them. The personnel handling the hazardous soils are required to have met the OSHA hazardous work operations training requirements. A Health and Safety Plan shall be prepared for this work. Previously characterized non-hazardous soils shall be stockpiled for onsite or offsite reuse or offsite disposal, as needed.	Less than significant
HAZ-3: Construction-phase Hazardous Materials Use. Hazardous materials would be used during construction activities. Misuse, inadequate storage, or improper disposal of these materials could result in a significant environmental impact.	HAZ-3: Reduction of Hazards During Construction Phase. The hazards presented by the use of hazardous materials during the construction phase are well understood, and the appropriate management controls to mitigate potential impacts shall be implemented. These controls include: 1) developing required management plans; 2) secondary containment; 3) separate storage of incompatible materials; and 4) proper training of personnel. Additionally, construction personnel shall be trained in safety and defensive emergency response procedures. Construction personnel shall also receive hazardous waste-related training that focuses on the recognition of potentially contaminated soil and/or groundwater that may be encountered during subsurface excavations for foundations or pipeline/cable trenches. If such contaminated soil or groundwater is suspected, contingency procedures shall be followed to protect worker safety and public health. All	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	vehicles and construction equipment shall be inspected to ensure that no fluids are leaking (e.g., oil, hydraulic fluid, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, clearly labeled containers. Hazardous materials that must be disposed of will be disposed of as hazardous waste in accordance with the appropriate regulations for storage, transportation, and disposal of hazardous waste.	
HAZ-4: Construction-phase Waste Streams. Improper storage and disposal of solid waste and hazardous construction wastes could result in a potentially significant environmental impact.	HAZ-4: Management of Construction-phase Waste Streams. The onsite management and offsite disposal procedures of solid wastes (including potentially contaminated soil) shall be detailed in a Solid Waste Management Plan for the Project. Waste shall be stockpiled temporarily before disposal offsite. The local fire departments and emergency management teams shall be provided a list of the waste material expected to be generated and stored onsite. Hazardous wastes generated during construction shall be collected in hazardous waste accumulation containers near the point of generation and moved daily to the construction contractor's 90-day hazardous waste storage area at the converter station site. The accumulated waste shall be delivered to an authorized waste management facility. The exact volume of hazardous wastes to be generated at the converter station site cannot be estimated at this time, but the estimated amount of excavated soil that would need to be disposed of offsite is estimated at approximately 15,000 cubic yards for this converter station site. Even if this entire amount of excavated soil would need to be disposed of as hazardous waste, it would not exceed a significant portion of the available hazardous waste landfill capacity in California. The capacity details of various landfills for both non-hazardous and hazardous waste are detailed in Table 4.14-5, above. The capacity and estimates for daily volumes of waste received were verified, as detailed in the personal communications provided in the references for this section.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	Management of these wastes shall be the responsibility of the construction contractor(s). Typical management practices required for contractor waste include recycling when possible, proper storage of waste and debris, including covering daily to prevent wind dispersion, and weekly pickup of waste with disposal of non-hazardous wastes at local Class III landfills.	
HAZ-5: Construction-phase Accidental Spills. An accidental spill or a release of hazardous materials could occur during construction. This impact is considered potentially significant.	HAZ-5: Construction-phase Spill Prevention, Control, and Countermeasures. The following shall be implemented both to prevent spills from occurring and to minimize impacts in the event that they do occur: • All spills shall be cleaned up quickly and all workers shall be adequately trained to recognize the hazards associated with such spills. • A Spill Prevention, Control, and Countermeasure (SPCC) Plan for the converter station shall be prepared in accordance with federal and state regulations. This plan must be prepared if petroleum products are stored onsite in ASTs with a capacity that equals or exceeds 55 gallons for a single tank or equals or exceeds 1,320 gallons for more than one tank. The SPCC Plan must be prepared before the delivery of petroleum products to the site. The SPCC Plan shall include information on spill response procedures and fuel storage. • A Hazardous Materials Business Plan shall be prepared to detail locations and volumes of hazardous materials kept on site. Copies of the HMBP shall be provided to the local Fire Department as provided by the regulations. • Material Safety Data Sheets (MSDSs) for each chemical used during construction shall be kept onsite. Construction employees shall be informed of the location and content of the MSDSs, as required by OSHA's Hazard Communication Standard, Title 29 of the Code of Federal Regulations (CFR) Section 1910.1200.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	• In case of an accident, the CCCFPD shall be notified as the first responder. All other federal, state, and local notification requirements shall be followed for any release that exceeds the reportable quantity or threatens to have a significant impact. • The Project shall comply with all transportation requirements for hazardous materials on state highways. These requirements apply to both hazardous materials coming onto the sites and hazardous wastes leaving the sites. • All vehicles and construction equipment shall be inspected to ensure that there are no leaking fluids (e.g., oil, hydraulic, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, labeled containers. Any observation of spills, leaking fluids, or improperly stored fluids shall trigger the issuance of "stop work" notice until the problem is resolved, including the removal of any soil contaminated by vehicle fluids.	
HAZ-6: Construction-phase Dust and Volatilization of Contaminants. Excavation of contaminated soil and the generation of hazardous waste soils could result in construction dust and volatilization of contaminants that pose environmental and human health risks, particularly to construction workers. This impact is considered potentially significant.	HAZ-6: Reduction of Construction Dust and Volatilization of Contaminants. Dust control measures (i.e., keeping the soil wet during excavation) shall be implemented during excavation and construction activities, and dust monitoring shall be performed. Suspected contaminated soil that is stockpiled on the sites shall be covered daily with plastic to prevent volatilization of contaminants and to control dust. Contaminated soil may also be loaded directly onto trucks for transport to an appropriate offsite disposal facility. The loaded soils shall be properly covered and manifested as necessary. Dust monitoring shall be performed during excavation and loading of hazardous soils. The accumulated waste shall then be delivered to an authorized waste management facility. Dust monitoring shall confirm that the dust control measures are effectively protecting site workers and the public.	Less than significant
HAZ-7: Contaminated Groundwater. The converter station site may have contaminated groundwater. This	HAZ-7: Contaminated Groundwater Control. If groundwater is encountered during construction at the converter station site, the water shall be collected onsite in a tank or	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
groundwater may be encountered during excavation, construction dewatering, or other subgrade activities. Control or remediation of the site groundwater may be a requirement for redevelopment of the property by the lead regulatory agency for the proposed Project. Failure to properly treat and/or dispose of water collected during dewatering activities or to control the contaminated groundwater flow could result in a potentially significant impact to the site or to downgradient sites and/or water bodies.	tanks, sampled, and analyzed. Based on the analytical data, the water shall be characterized for disposal by one of the following methods: • Used onsite for dust control. • Treated onsite and discharged under the authority of a general National Pollutant Discharge Elimination System (NPDES) permit. (Treatment options would include, but are not limited to, filtration or filtration and treatment by granular-activated carbon [GAC]. Treatment residuals would be sampled, analyzed, characterized, and disposed of offsite in compliance with applicable regulations.) • Disposed of offsite at a commercial water treatment facility in compliance with applicable regulations. If groundwater was encountered at the Pittsburg Standard Oil Converter Station site and it was found to be contaminated, it is possible that the Regional Water Quality Control Board would require groundwater control as part of the development plan for the Project on the site. Contamination at the Pittsburg Standard Oil site, if any, would likely be caused by offsite sources which would probably not require onsite remedial action. Potential groundwater-remedial strategies would depend on a number of factors including: site contaminants, evaluation of impacts to human health and the environment, and evaluation of the technical merits of available remedial strategies. Based on these factors the final selection would be negotiated between the RWQCB and TBC. Potential remedial options provided herein are for informational purposes only. Potential groundwater control methodologies include installing a slurry wall around a portion or the entire contaminated site combined with groundwater pump and treatment and discharge of treated groundwater to a storm drain/sewer system under the authority of an NPDES permit. Other alternative technologies include in-situ biological treatment and in-situ oxidation or reduction, depending on the site-specific contaminants and hydrogeological conditions.	

Sheedy Converter Station site and the PG&E Potrero Substation is problematic due to potential conflicts with existing underground utilities along Illinois Street. At this stage of the EIR process, no one site in San Francisco is clearly environmentally superior to another.

Of the proposed and alternative converter station sites in Pittsburg (including ancillary facilities), it is also difficult to determine the clearly environmentally superior alternative at this stage of the EIR process. Due to the unavoidable adverse significant noise and visual impacts associated with the Pittsburg West Tenth Street Alternative 2 site, this alternative site is the least preferable from an environmental impact perspective. The Pittsburg West Tenth Street Alternative 1 and Pittsburg Mirant sites both avoid various potentially significant impacts (e.g., potential water quality impacts due to dredging and potential onshore biological impacts associated with installation of AC/DC cables) that would be associated with the proposed Standard Oil Converter Station site. Accordingly, the Pittsburg West Tenth Street Alternative 1 and Pittsburg Mirant alternative sites are considered to be environmentally superior to the proposed Standard Oil Converter Station site and the Pittsburg West Tenth Street Alternative 2 site. At this stage of the EIR process, it is not possible to clearly differentiate the environmentally superior alternative in Pittsburg between the West Tenth Street Alternative 1 site and the Pittsburg Mirant site.

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
HAZ-8: Operations-phase Hazardous Materials Usage. Hazardous materials shall be used during operations and maintenance activities. Misuse, inadequate storage, or improper disposal of these materials could result in a potentially significant environmental impact.	HAZ-8: Control of Operations-phase Hazardous Materials. A Hazardous Materials Business Plan (HMBP) shall be developed and implemented prior to turnover of site management from the construction contractor to the operating company. All hazardous materials shall be handled and stored in accordance with applicable codes and regulations. Storage quantities of all hazardous materials shall be minimized, and non-hazardous materials shall be substituted for hazardous materials at the converter station to the extent practicable. Small-quantity chemicals used for maintenance tasks shall be kept in appropriate inflammable material or corrosive material storage lockers. Bulk chemicals shall be stored in ASTs, and all other chemicals shall be stored in their original shipping containers. Incompatible materials shall be stored in separate storage containment areas. Chemical storage areas and transfer areas shall be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank, including an allowance for rainwater. Areas susceptible to potential leaks and/or spills shall be paved and bermed or otherwise secondarily contained. Specifically, the transformers and the diesel ASTs would have secondary containment. Periodic inspections shall be conducted to ensure that all containers are secure and properly marked. Piping and tanks will be protected from potential traffic hazards by concrete or other barriers. Hazardous materials will be delivered to the converter station periodically. Transportation of these materials shall comply with all applicable regulations of the U.S. Department of Transportation, the EPA, DTSC, the California Highway Patrol, and the State Fire Marshal. An HMBP shall be prepared prior to delivery of specified hazardous materials to the converter station in conformance with Title 19 of the California Code of Regulations (CCR) and California Health and Safety Code Section 25504. The HMBP requires facilities to develop the following information: • Facility map showing locations of hazardous materials and emergency response equipment	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	• Hazardous materials inventory, including MSDSs for all hazardous materials stored and used onsite • Emergency contact information • Emergency response plans and procedures • Emergency notification procedures • Emergency response training for all employees	
HAZ-9: Operations-phase Waste Streams. Improper storage and disposal of operational wastes could result in a significant environmental impact. This impact is considered potentially significant.	**HAZ-9: Manage Waste Generation, Storage, and Disposal During Operations Phase.** Before facility start-up, an application shall be made to DTSC for a hazardous waste generator number. The facility shall not treat, store, or dispose of hazardous waste in a manner that will cause the facility to be characterized as a treatment, storage and disposal facility (TSDF). A detailed waste management plan shall be prepared prior to start-up to ensure proper storage, labeling, packaging, record keeping, manifesting, minimization, and disposal of all hazardous materials and wastes. The waste management plan will include: • A description of each hazardous waste stream • Handling, transport, treatment, and disposal procedures for each waste • Preparedness, prevention, contingency, and emergency procedures • Personnel training Scrap materials such as paper, packing materials, glass, metal, and plastic shall be segregated and managed for recycling. Non-recyclable inert wastes shall be stored in covered trash bins in accordance with local ordinances and picked up by an authorized local trash hauler on a regular basis for transport and disposal in suitable landfill.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	Skimmed oil collected from equipment drains and other liquids from equipment shall be transported by an authorized carrier to a certified recycling facility.	
HAZ-10: Operations-phase Accidental Spills. Non-compliance with regulatory requirements associated with storage, use, and containment of hazardous materials and/or petroleum hydrocarbons could result in accidental spills. The impact from accidental spills of these materials is considered potentially significant.	**HAZ-10: Operations-phase Spill Prevention, Controls, and Countermeasures.** The following shall be implemented during operations: • All workers shall be adequately trained to recognize the hazards associated with accidental spills. Training shall include ensuring that personnel who maintain the facility are adequately trained to recognize the hazards associated with such spills. Personnel who maintain the facility will be trained in the use of fire suppression equipment, evacuation, notification, and other defensive emergency response procedures. Maintenance personnel will also be trained in hazardous materials and hazardous waste awareness, handling, and management as required for their level of responsibility. • The proper use of safety procedures and development and implementation of a project-specific SPCC Plan will help prevent such incidents. The SPCC Plan will include information on spill response procedures and fuel storage. • An MSDS will be kept onsite for each onsite chemical. • The programs to be implemented to protect worker health and safety shall also benefit public safety. Facility design shall include redundant controls and monitoring systems to minimize the potential for conditions in which accidental spills could occur. Potential public health impacts associated with facilities operation will be mitigated by development and implementation of Emergency Response Plans, an SPCC Plan, secondary containment structures for oils and other hazardous materials, safety programs, and employee training.	Less than significant
HAZ-11: Operations-phase Fire and Explosion Risk. Non-compliance with regulatory requirements associated	**HAZ-11: Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase.** The flashpoints of transformer oil and diesel fuel are 295°F and	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
with storage, use, and containment of flammable materials could result in a fire or explosion. If the onsite fire protection equipment could not address the fire, outside agencies would need to be called. This impact is considered potentially significant. The impact of a fire or explosion is considered potentially significant.	100°F, respectively, and the auto ignition points are 484°F and 494°F, respectively (Sax, 1992; MSDS for transformer oil; MSDS for diesel fuel). The National Fire Prevention Association (NFPA) assigns lubricating oils a fire hazard rating of 1, meaning that the materials “must be preheated before ignition can occur. Materials of these types require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur” (Siemens, 2006). The converter station shall have onsite fire protection systems (including emergency backup systems). During the detailed design phase of the proposed Project, potential fire protection designs and systems shall be reviewed with local agencies to finalize design details. In general, the fire protection system shall consist of automatic detection and firefighting equipment. The fire detection control panel shall be located in the control room and shall be connected to the control and protection system for remote annunciation. The fire alarm shall be initiated automatically by smoke, heat, or flame detectors; or manually by push-button. A combination of detectors shall be used, including infrared and ultraviolet detectors, ionization and optical smoke detectors, and rate-of-rise temperature-sensitive detectors, depending on the equipment and/or space being monitored. Audible alarms and flashing lights shall be activated in the event of a fire. The equipment or area where the alarm is triggered shall be indicated on the control panel. The firefighting equipment would initiate automatically, using water sprays and curtains or an appropriate gas-extinguishing agent. Fire detection and automatic firefighting equipment shall be connected to a power supply within the fire-detection control panel, which will be connected to the mains via a power supply/battery charger unit with an internal 24-volt battery. A pump house shall be included within the facility with 2 diesel fire-water pumps, each 225 kW. The fire-water pump and backup emergency lighting shall be electrically powered by a diesel-powered	

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Pittsburg Standard Oil Converter Station Site		
	generator capable of operating at full standby without refueling for 96 hours, as required in a seismically active area.	
HAZ-12: Impacts from Seismic Activity. Failure to abide by the building code for Seismic Zone 4 could lead to damage to the facilities and resulting spills of hazardous materials. This impact could be potentially significant.	HAZ-12: Manage Seismic Activity. To minimize seismic damage to the facilities with resulting hazardous materials spills, the designers and construction contractor shall follow the Uniform Building Code for Seismic Zone 4. This action would reduce Impact HAZ-12 to a less-than-significant level.	Less than significant

TABLE 1-1 (CONTINUED) SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Offshore Cable Route		
AIR-3: Marine Construction – Criteria Pollutants. Based on Project marine emissions rates in comparison to background levels, the air quality impacts of criteria pollutant emissions of the marine construction phase are considered to be potentially significant. Based on Project marine emissions rates in comparison to background levels, the air quality impacts of criteria pollutant emissions of the marine construction phase are considered to be potentially significant.	AIR-3: Marine Vessel Emission Controls. The following shall be implemented to control emissions from vessels owned by Prysmian: • Use California diesel, Purinox, biodiesel, or other fuel (whichever is feasible and would result in lowest emissions) • Minimize diesel engine fuel usage as much as possible • Use shore-side power when docked instead of running engines, where feasible	Less than significant
AIR-4: Marine Construction – Toxic Air Contaminants. Although there are no established impact significance criteria set forth by BAAQMD, the diesel PM emissions from marine construction may be potentially significant.	AIR-4: Implement Mitigation AIR-3. Implement Mitigation Measure AIR-3.	Less than significant
WATER-5: Water Quality Impacts from Cable Laying Operation. Nearshore and offshore sediment in the Potrero area is contaminated with elevated levels of PAHs. Disturbance of these sediments could result in substantial water quality impacts. This would be considered a potentially significant impact.	WATER-5: Avoidance of Sediment Contamination. To avoid potential known nearshore and offshore sediment contamination, the HDD shall be completed as far offshore as is feasible and remote from RMP station CB012S near Potrero Point in San Francisco. Hydroplow or equivalent technology activities shall also avoid known contamination in the area of station CB012S. Confirmation sediment sampling shall be performed at the location where the HDD emerges into the Bay and the results would be considered and addressed prior to commencement of construction near this location.	Less than significant
WATER-6: Water Quality Impacts from Dredging and Dredge Material Disposal. Dredging at two locations in New York Slough and disposal of the dredge material has the potential to significantly impact water quality in the Bay.	WATER-6: Dredging Controls and Sediment Testing Program. A consolidated Dredging – Dredge Material Reuse/Disposal permit shall be obtained through the San Francisco DMMO. In accordance with this permit, a dredged sediment testing program shall be conducted on dredged material to determine whether the material is suitable for reuse. If sediment is not suitable for reuse, it would need to be transported to an acceptable disposal site.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Offshore Cable Route		
WATER-7: Water Quality Impacts from Vessel Fuel Spills. Water quality degradation from vessel fuel spills would likely not be significant in light of its low probability and the past record. However, a potentially significant spill could still occur. This event would constitute a potentially significant impact.	WATER-7: Vessel Fuel Spill Response Plan. All vessel operators associated with the proposed Project shall update their contingency plans and continue to use emergency response services for pollution incidents. Review of updates and modifications to plans shall be done under the USCG's regular oversight of oil spill contingency plans. The work of updating and expanding the spill response plans shall be based on NOAA's Environmental Sensitivity Index (ESI), which involves the systematic compilation in a standardized format of information related to coastal shoreline sensitivity, biological resources, and human uses.	Less than significant
CUL-3: Offshore Cable Route Archaeological Resources. Submerged and buried archaeological resources have been identified along the offshore AC cable route associated with the Pittsburg Standard Oil Converter Station and the entire offshore DC cable route. Disturbance of these historical resources is considered a potentially significant impact.	CUL-3a: Archaeological Resources Geophysical Survey. A geophysical remote-sensing survey shall be conducted along the offshore cable route to detect any potential submerged or sub-bottom archaeological resources. Depending on the geographic or bathymetric setting, an appropriate remote-sensing field survey could include deployment of a side scan sonar, sub-bottom profiler, and magnetometer to help detect these resources. The results of the geophysical survey will be reviewed by a qualified marine archaeologist and a report documenting these efforts and interpreting the results shall be produced. CUL-3b: Archaeological Resources Avoidance. Potential submerged and/or buried archaeological resources detected through the geophysical survey shall be avoided unless they can satisfactorily be determined to not represent archaeological resources (e.g., modern debris, existing infrastructure) as documented in the technical report. CUL-3c: Archaeological Resources Supplemental Underwater Investigation. If it is infeasible to avoid potential submerged and/or buried archaeological resources, follow-up diver survey or Remote Operated Vehicle investigations might be required to positively identify the targets. If targets are determined to be archaeological resources, they should be evaluated against the NRHP/CRHR significance criteria. If the resources are not eligible for the NRHP/CRHR, then no further consideration of these resources is required. If the resources are eligible for the NRHP/CRHR, Data Recovery (Mitigation Measure CUL-1b) may be required.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Offshore Cable Route		
LU-4: Increased Vessel Traffic. Project construction activities would temporarily increase vessel traffic in the Bay. Recreational users of the Bay could experience a temporary increased risk from additional vessel traffic. This impact is considered to be potentially significant.	LU-4a: Vessel Crew Procedures. Marine crews shall watch for navigational hazards (i.e., during periods of high use by recreational boaters including windsurfers within the vicinity of selected terminal locations; during periods of high recreational use, such as weekends or race events; or when weather hazards exist) to reduce the risk of incidents involving construction vessels and recreational users in the Bay. LU-4b: Coast Guard Coordination. Construction crew management shall coordinate construction activities with the USCG Safety Branch to ensure that no marine recreational events conflicts arise. The Project coordinator would include information to the USCG which would issue a Local Notice to Mariners. In addition, each affected harbor district will be made aware of the timing of water-based Project activities such as the cable laying operations. Applicable navigation rules will be enforced including the Cable Act of 1992 (47 CFR §76) which states that other vessels must maintain a 1.15 mile (1-nm) separation from a vessel laying or repairing an undersea cable.	Less than significant
LU-5: Potential Conflict with Local Plans and Policies. Cable installation is not expected to conflict with local jurisdictions plans or policies. Based on available feedback, no apparent conflict in land use plans or policies would occur with installation of the submarine cable. However, Contra Costa County has indicated that their agency would incur some level of responsibility and could require relocation of utilities where necessary. In addition, the City of Martinez requires a Conditional Use Permit for installation of the offshore cable. Not obtaining appropriate planning permits or coordinating with local agencies would be considered a potentially significant impact.	LU-5: Local Plans and Policies Coordination. The Project proponent shall coordinate with the City of Martinez and Contra Costa County to provide adequate notification and gain the appropriate permits and authorization required for installation of the submarine cable.	Less than significant

TABLE 1-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT ENVIRONMENTAL IMPACTS AND PROPOSED MITIGATION MEASURES

Potentially Significant Impact	Proposed Mitigation Measure(s)	Resulting Level of Significance
Offshore Cable Route		
MTRANS-1: Vessel Navigation Hazards. For the duration of construction, the vessels engaged in cable laying would present a potential hazard to navigation on the Bay. The cable-laying vessels themselves would be "restricted in their ability to maneuver." This means that the nature of the vessels themselves or of their operations limits their ability to take actions to avoid collisions that would be expected of otherwise fully maneuverable vessels. Vessels are by definition restricted in their ability to maneuver when engaged in laying, servicing, or picking up a navigational mark, submarine cable, or pipeline. Statutory navigation rules define the responsibilities of vessels restricted in their ability to maneuver, and of other vessels operating in their vicinity, all aimed at preventing collisions or other incidents. Non-compliance with these rules would be considered to result in a potentially significant impact.	MTRANS-1a: Project Registration, Information and Pilotage. Large construction vessels like the C/S Giulio Verne and any support vessels shall be required to notify the VTS at the beginning and end of each transit, and would be monitored continuously. The USCG would also notify operators of vessels in the area of the construction activities via Notices to Mariners. To ensure safe entrance into the Bay, all ships operating under foreign registry, like the Giulio Verne, are required to have a San Francisco Bar Pilot navigate the ship into the Bay. MTRANS-1b: Compliance with Navigation Rules. The vessels involved in cable laying shall be required to identify themselves and operate in accordance with the COLREGS. The applicable navigation rules for San Francisco Bay shall regulate the cable laying operations and are designed to prevent collisions. Within the Bay, the operators of all vessels engaged in the Project shall have the legal responsibility to preclude hazardous situations, according to the applicable navigation rules MTRANS-1c: Precautionary Area. A safety precautionary area shall be established around the construction vessels, and will be identified via the USCG Notice to Mariners to make vessels operating in the area aware of Project activities. All cable-laying vessels shall also operate in accordance with the applicable navigation rules including the Cable Act of 1992.	Less than significant

2.1 OVERVIEW

The City of Pittsburg has prepared this Draft Environmental Impact Report (Draft EIR) document on the Trans Bay Cable Project in order to satisfy the requirements of the California Environmental Quality Act (CEQA). This Draft EIR contains information from the California Independent System Operator (CAISO), a not-for-profit public benefit corporation that acts as the impartial operator of the state's wholesale power grid, maintaining reliability and directing the electricity traffic on the transmission grid that connects energy suppliers with the energy providers that serve over 30,000,000 Californians. The City of Pittsburg is the lead agency under CEQA for the preparation of this EIR.

The proposed Trans Bay Cable (TBC) Project (Project) consists of installation of an approximately 57-mile-long High Voltage Direct Current (HVDC) cable in San Francisco Bay and connecting waterways, from a terminus near the City of Pittsburg in Contra Costa County to a terminus in the City and County of San Francisco in the vicinity of Potrero Point (refer to Figure 3-1). The Project is proposed to transmit electrical power from a converter station in Pittsburg to a converter station in San Francisco, providing a dedicated connection between a substation in the East Bay near Pittsburg, which is fed by sufficient generating and transmission capacity, and distribution facilities in San Francisco. This electrical power delivered to San Francisco would help meet the City of San Francisco's electrical demand projected for 2012 and beyond (e.g., at least 40 years). The Project is designed to be a cost-effective, energy-efficient solution addressing San Francisco's need for additional transmission capacity, while improving transmission reliability and load serving capability. The HVDC transmission line would provide San Francisco with a highly reliable, secure source of the electricity needed to service the load in San Francisco. The CAISO identified three transmission system reinforcements to meet the long–term reliable load-serving plan. The following are the three reinforcements with the TBC Project included as the third component to meet the CAISO objectives:

- Jefferson-to-Martin Transmission Line
- Construction and Operation of the City and County of San Francisco Electrical Reliability Project
- TBC HVDC Transmission Line from Pittsburg to San Francisco

The Project is proposed by Trans Bay Cable LLC, an affiliate of Babcock & Brown, a Sydney, Australia-based company, with its major overseas office based in San Francisco, in cooperation with the City of Pittsburg and Pittsburg Power Company, a municipal utility. A consortium of Siemens Power Transmission & Distribution, Inc. (Siemens) and Prysmian Cavi e Sistemi Energia S.r.L (Prysmian) would provide the converter station and cable technology. Siemens, using Prysmian (or comparable) cable and installation technology, would provide converter technology, engineering, and procurement and construction management.

Two converter stations would be constructed, one in the City of Pittsburg and one in the City and County of San Francisco near Potrero Point. The proposed converter stations would convert electrical power from Alternating Current (AC) to Direct Current (DC) in Pittsburg and from DC back to AC in San Francisco. The proposed Project also includes AC cable segments to interconnect the proposed converter stations with existing Pacific Gas and Electric Company (PG&E) from a terminus near the City of Pittsburg in Contra Costa County.

The primary goal of the Project is to deliver electricity to San Francisco to meet projected demand. The proposed Project would be expected to:

- Meet the California Independent System Operator (CAISO) planning and reliability standards
- Decrease transmission grid congestion in the East Bay
- Reduce transmission losses
- Increase the overall security and reliability of the electrical system
- Provide potential savings to ratepayers

The balance of this Section is organized as follows:

- 2.2 – Summary of the Proposed Project
- 2.3 – Purpose and Need for the Project
- 2.4 – Approvals to be Sought Through Use of this EIR
- 2.5 – Scope of the EIR and Public Participation

2.2 SUMMARY OF THE PROPOSED PROJECT

The proposed HVDC Transmission System is made up of the following components:

- Installation of approximately 57 miles of new HVDC cable (submarine and buried onshore)
- Construction of two new converter stations
- Installation of approximately 5.5 miles of new submarine, underground, and aboveground single-circuit 230 kV AC transmission cable/line in Pittsburg

- Installation of approximately 0.3 mile of underground double-circuit 115 kV AC transmission cable (or overhead line) in San Francisco

2.3 PURPOSE AND NEED FOR THE PROJECT

2.3.1 Introduction

The CAISO Management and Board of Governors have determined the Trans Bay Cable Project is required to ensure reliable operation of the transmission system serving the San Francisco Bay area.

2.3.2 Project Objectives

On September 8, 2005, the CAISO staff recommended and the Board of Governors approved the Trans Bay Cable Project as the preferred long term transmission alternative to address the identified reliability concerns in northern San Mateo County and San Francisco beginning in 2012. The CAISO staff and Board of Governors support the early implementation of the Project for operation in 2009.

Trans Bay Cable LLC identified the following Project objectives. These objectives are used to guide and evaluate the selection of the most feasible alternative in this EIR and to meet the CAISO's San Francisco Stakeholders Study Group (SFSSG) plan reliability project requirements dated September 2, 2005. The following web address provides the San Francisco Peninsula, Phase 2, Long-Term Electric Transmission Planning Technical Study, Final Report, November 14, 2005: http://www.caiso.com/14cd/14cd7bd415cb0ex.html

2.3.2.1 Project Location Objectives

2.3.2.1.1 Converter Stations. Locate the converter stations such that: 1) they are in close proximity to existing, high capacity PG&E substations; 2) the converter station site in the East Bay provides access to a substation that supports local generation as well as being reinforced by diverse generation from outside the local area; 3) the San Francisco converter station site allows for a substation connection at the northerly end of the San Francisco Peninsula nearest the load center; 4) connecting the two converter station sites with new transmission wires should create minimum short-term disruption to the areas and no long-term undesirable impacts; 5) they should not require the construction of significant overhead transmission lines on the San Francisco Peninsula or in the East Bay; 6) they can be expected to reduce the burden on the existing south-to-north Peninsular transmission system that currently supplies the large majority of San Francisco's electrical energy; and 7) they possess long-term financeable real estate rights.

2.3.2.1.2 <u>Cable Routes</u>. Select AC and DC cable routes such that: 1) the efficiency and economies of electric power transmission in the area are improved; 2) the routes involve minimal environmental impacts, as practical; 3) installation of new transmission cables is in compliance with the CAISO-approved reliability project that supports the early implementation of the Project for commercial operation no earlier than 2009; 4) access to and control of the land required to install the new cable should be obtainable through long-term financeable real estate rights; and 5) installation and the final location of the cable should result in minimal short-term disruption to the public, ensure public safety, and provide an appreciable measure of long-term security.

2.3.2.2 <u>Transmission System Reliability Objectives</u>

2.3.2.2.1 <u>Objective: Create a More Diverse Transmission System in the Area</u>. The objective is to increase transmission system reliability in the greater San Francisco Peninsula by providing a second independent major transmission route into the northerly end of the San Francisco Peninsula. This provides a long-term reliable access to a load-serving source of energy, provides access to more economically available energy in the East Bay, and decreases the San Francisco Peninsula's vulnerability and dependence over the single existing south-to-north transmission path.

2.3.2.2.2 <u>Objective: Comply with Planning Criteria</u>. The objective is to ensure that the transmission system serving the City of San Francisco will continue to provide both the capacity and flexibility necessary to meet the planning standards and criteria established by the CAISO and the North American Electric Reliability Council (NERC). In addition, compliance with the San Francisco Peninsula Long Term Transmission Planning Study Phase II prepared by the SFSSG will result in an integrated transmission system capable of supplying the City of San Francisco with the energy necessary to meet load demands beyond 2012 (see Appendix C of this EIR for certain CAISO documents related to this study).

2.3.2.2.3 <u>Objective: New Generation and/or Transmission Facilities</u>. With no new generation anticipated to be built north of the Martin Substation except the San Francisco Electrical Reliability Project, the CAISO plan to reliably serve the San Francisco load from 2012 and beyond requires a new transmission system to be installed. The singular and heavily loaded existing south-to-north transmission path serving San Francisco should be supported with the addition of new major transmission capacity. In addition, the installation of new transmission lines and pathways should be complementary to and compatible with allowing the San Francisco Peninsula access to available local generation as well as provide the CAISO the robust operating system necessary to effectively manage the area's transmission and generating systems.

2.3.2.2.4 <u>Objective: Current Electric Supply and Demand</u>. The objective is to supply northern San Mateo County and San Francisco County with a reliable, efficient, economic, and environmentally compatible source of energy from the East Bay. CAISO transmission studies estimate that the Project would allow the same load to be served with approximately 20 megawatts (MW) less generation because: 1) the Project would create a new, shorter transmission path into the northern San Francisco peninsula; 2) the DC transmission line losses are less than a typical AC transmission line; and 3) congestion would be relieved in the transmission grid. The current transmission infrastructure within the San Francisco Peninsula area is insufficient to accommodate the CAISO-anticipated area load projections.

2.4 APPROVALS TO BE SOUGHT THROUGH USE OF THIS EIR

Finalization of this EIR, which includes the governmental agency and public review and comment process, will constitute the basis for compliance with CEQA and for establishing the regulatory conditions that the Project shall adhere to. Authorization to construct the Project would require the issuance of permits by the various governmental agencies that have jurisdiction over the different component areas that the Project traverses and/or regulatory authorities over the environmental resources.

Generally, environmental permitting will fall into four categories, as follows:

- Coordination with the U.S. Army Corps of Engineers (USACE), Operations and Readiness Division, Dredged Materials Management Office (DMMO) for components of the Project pertaining to dredging bottom sediments in the bay for laying cable
- Coordination with the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) regarding potential effects to species protected under the federal Endangered Species Act, marine mammals protected under the Marine Mammal Protection Act, and potential adverse affects to Essential Fish Habitat
- Coordination through the Joint Aquatic Resource Permit Application (JARPA) process for components of the Project that take place in the Bay, including areas near or in wetlands or creeks that flow into the Bay
- All other discretionary federal, state, and local land use and construction permitting requirements

The filing of the majority of the required permit applications would follow certification of the EIR, which will be considered by the City of Pittsburg acting as lead agency. The City of Pittsburg has the greatest responsibility for supervising or approving the Project as a whole. Pittsburg Power Company would determine after certification whether to exercise its option to acquire the Project's physical assets coincident with the commercial operation date (see CEQA Guidelines Section 15051). Depending upon the converter station site selected in

Pittsburg, the City of Pittsburg is expected to consider any or all of the following discretionary approvals for the Project: development agreement (pursuant to Government Code sections 65864 to 65869.5), franchise agreement (pursuant to Public Utilities Code sections 6201 to 6302) and design review. In addition, for the two alternative Pittsburg West Tenth Street sites, a rezoning of the current overlay zoning district would be required to allow the converter station. If the Redevelopment Agency of the City of Pittsburg were to acquire real property for Project purposes, such agency would utilize this EIR in connection with its consideration of all steps associated with acquisition. Pittsburg Power Company is expected to utilize this EIR as it considers whether to approve a Purchase and Sale Agreement as to the Project's physical assets. Finally, either the City of Pittsburg, its Redevelopment Agency or Pittsburg Power Company may consider the adoption of a resolution of necessity to initiate eminent domain proceedings pursuant to Code of Civil Procedure sections 1230.010 and following, as and if necessary to acquire real property interests for Project facilities. The acquiring agency would utilize this EIR in its consideration of the acquisition of any such interests in real property, and any disposition of those interests as required by Trans Bay Cable LLC during construction of Project facilities.

The specific approvals that have been identified as necessary or potentially necessary for authorizing construction of the Project, with the City of Pittsburg as the Lead Agency and the corresponding regulatory entities, acting as responsible agencies, are identified in Table 2-1.

2.5 SCOPE OF THE EIR AND PUBLIC PARTICIPATION

2.5.1 Introduction

Consistent with the CEQA environmental review process, the scope of this EIR for the proposed Project includes a description of the Project design, location, environmental setting, and alternatives, and evaluates potential environmental impacts associated with construction and operation of the Project. The CEQA process also requires that the Project's governmental lead agency shall notify the public and shall make resources and opportunities available for public participation in developing the scope of the EIR, then reviewing and commenting on the EIR before its finalization and certification by the lead agency. The lead agency for the Trans Bay Cable Project is the City of Pittsburg Planning Department, 65 Civic Avenue, Pittsburg, CA 94565-3814.

Four of the basic purposes of CEQA are to: 1) inform governmental decision-makers and the public about potentially significant environmental impacts of proposed projects; 2) identify ways that environmental impacts can be avoided or significantly reduced; 3) prevent significant, avoidable impacts to the environment by requiring changes in projects through the use of alternatives or mitigation measures; and 4) disclose to the public the reasons why a governmental lead agency approved the project if significant environmental impacts

TABLE 2-1
POTENTIALLY REQUIRED PERMITS AND APPROVALS FOR THE TRANS BAY CABLE PROJECT

Approval	Regulatory Entity
An individual permit or general permits pursuant to the USACE Regulatory Program for authorizing actions under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act	USACE, San Francisco District
Consolidated Dredging-Dredged Material Reuse/Disposal Application	USACE, Operations and Readiness Division, Dredged Materials Management Office (DMMO)
Possible Section 7 consultation between USACE and NMFS regarding Section 10 and Section 404 permitting	NMFS, Southwest Regional Office
Possible consultation regarding applicability of Marine Mammal Protection Act of 1972 (MMPA) and a possible need to apply for a MMPA Incidental Harassment Authorization (IHA)	NMFS, Southwest Regional Office
Federal agencies which fund, authorize (e.g., USACE Section 10 and Section 404 permitting), or undertake activities that may adversely effect Essential Fish Habitat (EFH), regarding the potential effects of their actions on EFH, and respond in writing to EFH conservation recommendations	NMFS, Southwest Regional Office
Possible Section 7 consultation between USACE and U.S. Fish and Wildlife Service (USFWS) regarding Section 10 and Section 404 permitting	USFWS, Sacramento Field Office
Review of and concurrence with DMMO permit; Issuance of a Notice to Mariners; and coordination with the Vessel Traffic Service, of the Waterways Management Branch	U.S. Coast Guard (USCG) Marine Safety Office (MSO), Captain of the Port, San Francisco Bay
Leases from the California State Lands Commission (SLC)	SLC
Possible California Fish & Game Code (Code) Section 2081 permit	California Department of Fish and Game (CDFG), Central Coast Region 3
Possible Lake and Streambed Alteration Program, Code Sections 1600-1616 permit	CDFG, Central Coast Region 3
Potential encroachment permits	California Department of Transportation (Caltrans)
Approval of hazardous waste remediation related activities	California Environmental Protection Agency, Department of Toxic Substances Control (CalEPA/DTSC/RWQCB).
Major/Admin Permit Federal consistency review	Bay Conservation and Development Commission (BCDC)
Section 401 Water Quality Certification or Waiver	San Francisco Bay Regional Water Quality Control Board
Potential easement agreement with BART	Bay Area Rapid Transit District (BART) Government and Community Relations Department

TABLE 2-1 (CONTINUED)
POTENTIALLY REQUIRED PERMITS AND APPROVALS FOR THE TRANS BAY CABLE PROJECT

Approval	Regulatory Entity
Authority to Construct, Permit to Operate permits and related data forms	Bay Area Air Quality Management District (BAAQMD)
CEQA Lead Agency EIR Certification and entitlements (e.g., land use, demolition, building permit, other permits and approvals)	City of Pittsburg, Pittsburg Redevelopment Agency and Pittsburg Power Company
Submerged land easement; possible Environmental Evaluation Application (EEA); demolition and building permits; parcel map approval; sewer improvement permit	City and County of San Francisco, Planning Department, Planning Information Center (PIC/counter)
Potential lease, easements, building permits	Port of San Francisco, Planning and Development Division, Pier 1, San Francisco
Potential pipeline and cable crossing agreements, easements	Various private parties
Conditional Use Permit for offshore cable	City of Martinez
Marsh Development Permit for offshore cable	County of Solano

are identified. As stated in Section 15151 (Standards for Adequacy of an EIR) of the CEQA Guidelines:

> *An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible.*

2.5.2 Consistency of EIR Scope with CEQA Requirements

The scope of this EIR was developed to be consistent with CEQA regulations, so that it can be used by federal, state, and local regulatory agencies and the public in their review of the potential environmental impacts of the proposed Project, its alternatives, and the recommended mitigation measures that are intended to minimize, avoid, or eliminate any environmental impacts. The sections below describe several relevant CEQA regulations that serve as guidance for the overall EIR development, notification, public review and comment, approval and certification, filing, and compliance monitoring and reporting process.

2.5.2.1 <u>Impacts Analysis and Significance Determinations</u>

To be consistent with CEQA, the scope of this EIR included qualitative and quantitative analysis of the potential environmental impacts that the proposed Project could have upon the surrounding area and its identified environmental resources. The analysis process also included determining the potential significance of identified impacts based upon significance criteria developed for each environmental resources category following the guidance provided in Appendix G of the CEQA Guidelines. CEQA Section 21081 and CEQA Guidelines Section 15092 (Approval) require that a lead agency shall neither approve nor carry out a project as proposed unless it finds that changes or alterations have been required in, or incorporated into, the project which avoid or substantially lessen the significant environmental effect as identified in the Final EIR. In accordance with Section 21081.6 (Mitigation Monitoring or Reporting), the lead agency shall also adopt a program for reporting on or monitoring the changes which it has either required in the Project or made a condition of approval to avoid or substantially lessen significant environmental effects. These measures must be fully enforceable through permit conditions, agreements, or other measures. Furthermore, Section 21081 stipulates that where changes or alterations are within the responsibility and jurisdiction of another public agency and not the lead agency, those changes have been, or can and should be, adopted by the other agency.

However, if there are no feasible mitigation measures or alternatives to the project available that will substantially lessen the significant and unavoidable impacts of the project, then CEQA Guidelines Section 15093 (Statement of Overriding Considerations) does allow a lead agency to approve or carry out a project by adopting a Statement of Overriding Considerations. A Statement of Overriding Considerations may only be approved if the lead agency finds that the specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental effects. The lead agency shall state in writing the specific reasons to support its action based on the Final EIR and/or other information in the record. The Statement of Overriding Considerations shall be supported by substantial evidence in the record, should be included in the record of the project approval, and should be mentioned in the Notice of Determination.

2.5.2.2 Notice of Preparation

In accordance with CEQA Section 21080.4 and CEQA Guidelines Section 15082, a Notice of Preparation (NOP) was issued by the City of Pittsburg on August 23, 2004 (refer to Appendix B of this EIR). Distribution of the NOP included:

- Posting on the City of Pittsburg website at http://www.ci.pittsburg.ca.us/Pittsburg/Government/Departments/Redevelopment+Agency/Trans+Bay+Cable+Project.htm
- Distribution to local, state, and federal agencies and other interested parties included on the NOP Distribution List maintained by the City of Pittsburg

The comment period was open for 30 days with a comment due date of September 22, 2004. The contact for comments was Mr. Randy Jerome, Planning and Building Director (now a consultant to the City of Pittsburg on the Project). An EIR scoping session was announced on the City of Pittsburg website and was held on Wednesday, October 19, 2005, from 7:00 p.m. to 9:00 p.m. in the City Council Chambers, City Hall, at 65 Civic Avenue, Pittsburg. A second EIR scoping session was held on Thursday, November 3, 2005, from 7:00 p.m. to 9:00 p.m. at the Potrero Hill Neighborhood House, 953 DeHaro Street, San Francisco. Comments received on the NOP and at the EIR scoping sessions have been considered, as appropriate, in the scope of this EIR. Refer to Appendix B for more information.

2.5.2.3 Public Participation Program

Consistent with CEQA Guidelines Section 15201 (Public Participation), Section 15202 (Public Hearings), and Section 15203 (Adequate Time for Review and Comment), this Draft EIR will be distributed to federal, state, and local regulatory agencies, and to interested organizations and individuals, for the purpose of soliciting comments on the Draft EIR. Commencement of this distribution will mark the beginning of a 45-day Public Review and Comment Period.

CEQA Guidelines Section 15204 (Focus of Review) provides public and agency commentors basic guidance for conducting a focused review and comment on this Draft EIR, stated as follows:

> *In reviewing draft EIRs, persons and public agencies should focus on the sufficiency of the document in identifying and analyzing the possible impacts on the environment and ways in which the significant effects of the project might be avoided or mitigated. Comments are most helpful when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate the significant environmental effects. At the same time, reviewers should be aware that the adequacy of an EIR is determined in terms of what is reasonably feasible, in light of factors such as the magnitude of the project at issue, the severity of its likely environmental impacts, and the geographic scope of the project. CEQA does not require a lead agency to conduct every test or perform all research, study, and experimentation recommended or demanded by commentors. When responding to comments, lead agencies need only respond to significant environmental issues and do not need to provide all information requested by reviewers, as long as a good faith effort at full disclosure is made in the EIR.*

2.5.2.4 Review by State Agencies

As stipulated in CEQA Guidelines Section 15205 (Review by State Agencies), Draft EIRs to be reviewed by state agencies shall be submitted to the State Clearinghouse when a project is identified by the criteria set forth in Section 15206 as being of statewide, regional, or area-wide significance. Copies of this Draft EIR were sent to the State Clearinghouse for distribution to State Agencies.

2.5.2.5 Final EIR

Written and verbal public hearing comments received during the comment period in response to the Draft EIR will be addressed in a Final EIR. The Final EIR will contain responses to comments on the environmental issues raised during the Public Review and Comment Period, revisions that may be required to the Draft EIR based on comments received, and other information that may be added. The City of Pittsburg will review the Final EIR and will consider a resolution for the Final EIR certification. Certification must include a finding made at a noticed public meeting that Final EIR complies with the requirements of CEQA.

2.5.2.6 Mitigation Monitoring or Reporting

As stipulated in CEQA Guidelines Section 15097, the lead agency shall adopt a program for monitoring or reporting on the revisions which it has required in the Project and/or the mitigation measures it has imposed to mitigate or avoid significant environmental effects. Furthermore, the lead agency may delegate reporting or monitoring responsibilities to another public agency or to a private entity which accepts the delegation; however, until mitigation measures have been completed the lead agency remains responsible for ensuring that implementation of the mitigation measures occurs in accordance with the program.

2.6 ORGANIZATION OF EIR

The balance of this Draft EIR is organized as follows:

- 3.0 Project Description
- 4.0 Environmental Setting, Impacts, and Mitigation – Proposed Project
- 5.0 Environmental Setting, Impacts, and Mitigation - Project Alternatives
- 6.0 Comparison of Alternatives
- 7.0 Cumulative Impacts
- 8.0 Growth-Inducing Impacts
- 9.0 Unavoidable Adverse Significant Impacts
- 10.0 EIR Preparers and Agency Consultation
- 11.0 List of Acronyms
- Appendices A - K

Sections 1.0 through 11.0 and Appendix A are presented in Volume 1 of this Draft EIR and Appendices B through K are presented in Volume 2.

This Project involves the installation of a submarine cable between the City of San Francisco and the City of Pittsburg. As previously discussed, the Project includes a converter station at each end of the cable. In Section 4.0, this EIR describes the potential environmental impacts of the proposed converter station sites in San Francisco (the HWC site) and Pittsburg (the Standard Oil site). In Section 5.0, this EIR describes the potential environmental impacts of two alternative converter station sites in San Francisco (the Mirant Potrero [three layouts] and Sheedy sites), and three alternative converter station sites in Pittsburg (West Tenth Street Alternatives 1 and 2, and the Mirant [Pittsburg Power Plant] site). This EIR complies with the requirements of CEQA and provides the environmental documentation necessary for the selection of either of the proposed sites or any of the alternative sites.

3.1 INTRODUCTION

This section of the EIR describes the Trans Bay Cable Project (Project) proposed by Trans Bay Cable LLC (an affiliate of Babcock & Brown, which is a Sydney, Australia-based company with its major overseas office in San Francisco), in cooperation with the City of Pittsburg and Pittsburg Power Company (a municipal utility). Babcock & Brown would provide the financing for the Project. A consortium of Siemens Power Transmission & Distribution, Inc. and Prysmian Cavi e Sistemi Energia S.r.L would provide the converter station and cable technology, Project engineering, procurement and installation, and construction management. The Project is intended to be a cost-effective, energy-efficient solution addressing San Francisco’s need for additional energy, while improving transmission grid reliability and load serving capability. The following discussion summarizes the Detailed Project Description (refer to Appendix A of this EIR for more information).

The Project as proposed would involve the installation of a submarine High Voltage Direct Current (HVDC) transmission cable and associated onshore facilities that would transmit electrical power and provide a dedicated connection between the East Bay near Pittsburg (which currently has transmission grid congestion and is fed by sufficient generating and transmission capacity) and the electrical transmission and distribution facilities serving the northern San Francisco peninsula. Figure 3-1 illustrates the general location of the facilities and the route of the transmission cable system. Use of a submarine HVDC cable allows for transmission of power over a very long distance with minimal energy loss.

Existing electrical power at a Pacific Gas and Electric Company (PG&E) substation near Pittsburg is provided as alternating current (AC). The proposed Project would involve drawing AC power from this existing Pittsburg PG&E substation and converting it to direct current (DC) at a proposed converter station in Pittsburg. The DC power would then be transmitted approximately 57 miles through a proposed submarine and buried onshore HVDC cable installed undersea beneath New York Slough, Suisun Bay, the Carquinez Straits, San Pablo Bay, and San Francisco Bay to a proposed converter station in San Francisco, where it would be converted back to AC power. This AC power would then be transmitted to the existing Potrero PG&E substation for release to the electrical grid.

3.2 PROJECT OBJECTIVES

The California Independent System Operator (CAISO) is a not-for-profit public benefit corporation that acts as the impartial operator of the state’s wholesale power grid, maintaining reliability and directing the electricity traffic on the transmission grid that connects energy suppliers with the energy providers that serve over 30,000,000 Californians. The CAISO management and Board of Governors, in their decision of September 8, 2005, determined that the Trans Bay Cable Project is required to ensure reliable operation of the transmission system serving the San Francisco Bay Area. In keeping with the CAISO determination, the basic objectives of the Trans Bay Cable Project are discussed in greater detail in Section 2.3.

3.3 PROJECT COMPONENTS

The proposed Project consists of the following major components:

- Approximately 5.5 miles of new single-circuit, three-phase 230 kilovolt (kV) AC submarine and buried onshore cable and overhead transmission line that would connect the proposed Pittsburg converter station with the existing PG&E Pittsburg substation
- A 7.5-acre site in Pittsburg, with a proposed converter station (5.4 acres) which would convert AC power from the grid to DC power for transmission through the submarine HVDC cable
- Approximately 57 miles of submarine and buried onshore HVDC cable transmitting up to 400 megawatts (MW) of high-voltage DC electrical power from the proposed Pittsburg converter station to the proposed San Francisco converter station
- A 6.8-acre site in San Francisco, with a proposed converter station (5.6 acres) which would convert the DC power back to AC power for distribution to the grid
- Approximately 0.3 mile of new double-circuit, three-phase 115 kV AC underground cable or aboveground line connecting the proposed San Francisco Converter Station and the existing PG&E Potrero substation

3.4 CONSTRUCTION

The proposed Project has major components in three distinct locations:

- San Francisco: converter station (primary or alternative site), onshore HVDC cable, AC cable, and AC transmission line routes, and construction laydown areas
- Pittsburg: converter station (primary or alternative site), onshore HVDC and AC cable routes, construction laydown areas, and access roads
- The submarine HVDC cable that would run through San Francisco Bay and adjoining waterways

Overall Project construction would be expected to take approximately 27 to 30 months from the Notice to Proceed, including approximately 4 to 5 months to install the submarine cable, and 3 to 6 months for demolition of existing structures on the two proposed converter station sites. Construction activities at the converter station sites would overlap and would include grading and site preparation, foundation construction, erection of major equipment and structures, and installation of electrical and control systems. Connection of HVAC and HVDC transmission cables, switchyards and substations would also occur. A general overview of the three sites, and how they connect to one another, is presented on Figures 3-1 and 3-2.

3.4.1 Construction in San Francisco

The proposed 6.8-acre converter station site in San Francisco is known as the HWC site, and is located on 23rd Street, south of the existing Mirant Power Plant, southeast of the PG&E Potrero substation, and adjacent to San Francisco Bay. The site is currently developed and occupied by several businesses. The site is currently zoned Major Industrial, which permits the proposed use. The site currently contains subsurface contamination. Planned remediation prior to construction of the converter station is discussed in Section 4.14, Hazardous Materials and Waste Management.

An aerial view of the existing HWC site is shown on Figure 3-3, with the proposed converter station overlaid. The converter station buildings would occupy approximately 23,000 square feet at the site, and range in height up to 64 feet. Outdoor air-cooled radiators, transformers, AC switchgear, filters, and other equipment would occupy the balance of the site. The site would receive an architecturally appropriate treatment in areas that are visible to the public on the south and west sides, and would have a chain link fence on the north and east sides. Access to the site would be via 23rd Street, and no new offsite road construction would be required.

The proposed onshore route for the HVDC entry into the San Francisco Converter Station from San Francisco Bay would parallel the southern fence line of the HWC site for approximately 1,000 feet, to enter the DC hall at the proposed converter station site (refer to Figure 3-3). To avoid aquatic habitat and protect the cable at the shore crossing, the proposed cables would enter the Bay floor through casings placed by horizontal directional drilling (HDD). The casings would terminate offshore, and burial in the Bay floor would begin at the exit of the casings.

The double-circuit 115 kV HVAC interconnecting cable would exit the proposed San Francisco Converter Station from the north side and cross 23rd Street approximately 900 feet from the easterly line of Illinois Street, then run west along 23rd Street for approximately 600 feet. The HVAC cable would then extend along the eastern boundary of the existing PG&E Potrero substation for approximately 375 feet, where it would enter the substation and connect with the electrical grid.

The proposed construction laydown area for the San Francisco site is just south of the HWC site**.** The laydown area covers approximately 11 acres that is owned by the Port of San

Francisco and designated as the "Western Pacific" site. The area would be devoted to equipment and materials laydown, storage, parking of construction equipment, small fabrication areas, and office trailers supporting construction at the San Francisco converter station site. Access to the proposed laydown area would be via 25th Street. The site has no standing buildings or structures, and lies on land that was reclaimed from San Francisco Bay early in the twentieth century. An alternate laydown area south of the proposed laydown area (Pier 94-96) is also shown on Figure 3-3.

3.4.2 Construction in San Francisco Bay and Adjoining Waterways

The submarine and onshore cable portion of the proposed Project would consist of an HVDC transmission cable system that would run approximately 57 miles from the HWC Converter Station site in San Francisco to the Standard Oil Converter Station site in Pittsburg, California (refer to Figure 3-1). The proposed HVDC transmission cable system would include a high voltage transmission cable, a separate medium voltage (MV) metallic return cable, and a fiber optic communication cable (refer to Figure 3-4).

The proposed submarine cable would extend from San Francisco to Pittsburg below the floor of San Francisco Bay, San Pablo Bay, the Carquinez Strait, Suisun Bay, and New York Slough. The cable route was selected to avoid shipping channels, anchorages, dredge disposal areas, Regional Water Quality Control Board-listed toxic hotspot areas, and other known obstacles.

The submarine cable would be put in place using Prysmian installation technology. Cable lay would be performed using a combination of the cable ship (C/S) Giulio Verne (or comparable vessel) and a barge equipped to lay the cable. The southern portion of the submarine cable would be installed using the Giulio Verne, and the eastern portion would be installed using a barge.

The cable would be buried in a bundled configuration (as shown on Figure 3-5) using the Hydroplow burial machine (or equivalent technology) towed by either the C/S Giulio Verne or by the barge. The working principle for the Hydroplow is to gently fluidize by the use of water jets the seabed materials in a narrow path and to a typical target depth of 3 to 6 feet, with the potential for local burial to greater depths if required, without displacing the majority of the material and minimizing the suspension of sediment in surrounding waters. The method effectively places cables at a consistent required depth of embedment in jettable bottom conditions.

3.4.3 Construction in Pittsburg

The proposed 7.5-acre converter station site in the City of Pittsburg is known as the Standard Oil site (this name reflects the site's proximity to the former Standard Oil Avenue; no portion of this site was connected with previous oil processing or storage). It is located within a developed area with a mix of existing and former industrial uses. The only existing structures on the site are two abandoned concrete wastewater storage tanks and a small dilapidated building. The remainder of the site was previously occupied first by a wastewater treatment facility and then intermittently by an automobile storage yard. The site would be cleared of all structures and stored materials prior to construction of the proposed converter station. There is no vegetation on the site except for a few scattered patches of ruderal (i.e., weedy plants, growing in rubble) species. The relatively flat site is surrounded by a berm, and contains no waterways or wetlands. The site is zoned IG (General Industrial), which permits the proposed use.

An aerial view of the existing Standard Oil site is shown on Figure 3-6, with the proposed converter station overlaid. The converter station buildings would occupy approximately 23,000 square feet at the site, and range in height up to 64 feet. Outdoor air-cooled radiators, transformers, AC switchgear, filters, and other equipment would occupy the balance of the site. The site would receive an architecturally appropriate treatment in areas that are visible to the public on the south and west sides, and would have an acoustical barrier on the north, and portions of the east and west sides, as shown on Figure A.3-8 in Appendix A. Access to the proposed Standard Oil Converter Station site and adjacent laydown area would be from a proposed new permanent access road that would run south from the site to the Pittsburg-Antioch Highway, or from an existing access road that runs west from the site to Loveridge Road.

The construction laydown area for the Pittsburg site is proposed for an approximately 7-acre area of vacant property adjacent to and north of the site. The area would be devoted to equipment and materials laydown, storage, parking of construction equipment, small fabrication areas, and office trailers supporting construction of the Pittsburg converter station. Temporary construction parking, staging, and storage areas would be developed by clearing/grubbing/removing topsoil from unimproved areas that would receive vehicular traffic and laydown. In addition to the proposed new access road, the existing access to the proposed converter station site and adjacent laydown area off Loveridge Road south of the existing railroad right-of-way (ROW) would likely be used to transport heavy loads during the construction phase (e.g., transformers).

The proposed HVAC and HVDC cable routings from the Standard Oil site would begin at the Pittsburg Standard Oil Converter Station site, as shown on Figure 3-1, which shows the HVDC cable that connects to the San Francisco Converter Station in blue, and the HVAC cable that connects to the PG&E substation in red. Both the HVDC and HVAC cable bundles run approximately 0.2 mile to the northeast to an existing paved access road associated with the Delta Energy Center (south of the BNSF Railroad ROW). This initial section of the buried cable routes would be installed via a horizontal directional drill (HDD). The route would then follow the existing paved access road in an easterly direction for a distance of approximately 0.25 mile, then turn north for approximately 0.5 mile along the Delta Diablo outflow access road before ending at a splice box between 100 and 500 feet south of New York Slough on Dow Chemical property. The submarine cable would be drawn in from the bay side, and would be joined to the underground cable in a splice box.

To avoid aquatic habitat and protect the cable at the shore crossing, the proposed cables would enter the bay floor through casings placed by HDD. The casings would terminate offshore, and direct burial in the bay floor would begin at the exit of the casings.

The proposed 230 kV HVAC interconnect between the PG&E substation and the proposed Pittsburg converter station would exit from the southernmost bay of the 230 kV switchyard, bearing west-northwest for approximately 850 feet, and then on a north-northeast bearing for a distance of 650 feet to a bore pit approximately 200 feet from the shoreline on Mirant property. The proposed HVAC would enter New York Slough approximately 500 feet west of Mirant’s Pittsburg Power Plant Unit 7 and would be placed parallel to the HVDC cable. HVDC and AC cable would exit parallel to each other, as shown on Figure 3-6.

3.5 OPERATION

It is currently anticipated that the Project would become operational in 2009. The HVDC system transmission control activities would be performed under the direction of the CAISO. The HVDC technology proposed for the Project is highly reliable and requires minimal maintenance. The converter stations at each end of the submarine cable route (in San Francisco and Pittsburg) would normally operate with a minimal staff and/or be remotely operated. Personnel would support the stations by performing periodic inspections and routine maintenance.

The converter stations would use proven AC/DC conversion technology of thyristor valves, allowing the rapid control of power transfers and a fast response to changing system conditions. All critical auxiliary equipment, controls, protections, metering, and communications would use redundant systems to maximize system availability and reliability.

Automatic computer control systems would adjust operating parameters to maintain system operation within input settings directed by the CAISO. The fiber optic communications component of the submarine cable would allow direct communication between computer control systems at both of the converter stations. This would facilitate rapid response to changes in the AC transmission grid, converter station equipment, and/or the HVDC cable. The operators and/or computer systems would alert needed staff in the event that an incident requiring attention was detected.

At the commencement of system commercial operation, maintenance procedures and critical spare parts would be in place to ensure that reasonably foreseeable problems with the cable or converter stations could be remedied quickly.

3.5.1 Converter Station Maintenance

The proposed electrical equipment and electronic controls at the converter stations would be expected to require a minimal amount of routine maintenance on a periodic basis. Planned routine maintenance activities include: general visual inspections for signs of external damage, leakage, and overheating; checks of insulating fluids levels and properties; lubrication of cooling fans; and electrical checks that are beyond those performed automatically by the station computer systems. Some of the proposed equipment would be expected to operate indefinitely, without maintenance, while other components have limited life expectancies and would require periodic service or replacement. Approximately 5 planned outage days would be required every year.

The station control systems would be designed to automatically alert on-call personnel if problems were detected with the cable or converter stations. Contractual arrangements would be in place for specialized services that may be required to perform repairs on short notice.

3.5.2 Cable Repair

The proposed transmission cable is expected to require no scheduled maintenance for the proposed operational life of the Project (at least 40 years). If substantial damage to the cable were to occur, the repair might require a new section of cable to be added to the cable by splicing. A spare length of cable would be stowed on a boat or barge moored at the Pittsburg Marina or other suitable local facility, or in a nearby onshore storage area, specifically for making emergency repairs. Contractual arrangements would be in place for specialized services that may be required.

3.6 DECOMMISSIONING

Once the Project had reached the end of its useful life, Project facilities would be decommissioned in accordance with applicable regulations in place at that time. It is currently envisioned that the submarine and onshore-buried cable segments would be abandoned in place, that the converter stations in San Francisco and Pittsburg would be removed, and that those sites would be prepared for the subsequent land use appropriate for each site at that point in time.

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4.1 INTRODUCTION

Sections 4.2 through 4.15 of this Draft Environmental Impact Report (EIR) present assessments of the potential environmental effects that could result from implementation of the proposed Trans Bay Cable Project (Project). This section also presents mitigation measures, where appropriate, to avoid or minimize potential environmental effects associated with the Project. The primary Project components that are assessed in this Draft EIR are:

- Proposed Project
    - San Francisco HWC Converter Station/Onshore AC Cable Route/Laydown Areas
    - Pittsburg Standard Oil Converter Station/Onshore AC/DC Cable Routes/Laydown Area/Access Roads
    - Offshore Submarine DC Cable Route (between San Francisco and Pittsburg)

Each issue area section provides an overview of existing conditions, a summary discussion of the applicable regulatory framework, an assessment of the type and magnitude of Project impacts, feasible mitigation measures to reduce or avoid potentially significant environmental effects, and identification of residual impacts following mitigation. The threshold criteria that were used to determine impact significance are also specified for each resource area.

Alternative converter station locations, including associated Project components (e.g., onshore cable routes and construction laydown areas), are addressed in Section 5.0 of this Draft EIR. A comparison of Project alternatives, including the proposed Project, is presented in Section 6.0.

4.1.1 Scope of the Environmental Analysis

The potential environmental effects of the proposed Project are analyzed in subsequent sections (as indicated) for the following environmental issue areas:

- 4.2 – Air Quality
- 4.3 – Geologic Resources and Soils
- 4.4 – Water Resources and Quality
- 4.5 – Terrestrial Biological Resources
- 4.6 – Marine Biological Resources
- 4.7 – Cultural Resources

- 4.8 – Land Use and Recreation
- 4.9 – Marine Transportation and Commercial Fishing
- 4.10 – Traffic and Transportation
- 4.11 – Noise and Vibration
- 4.12 – Public Services and Utilities
- 4.13 – Visual Resources/Aesthetics
- 4.14 – Hazardous Materials and Waste Management
- 4.15 – Paleontological Resources

The cumulative impact analysis is presented in Section 7.0.

4.1.2 Format of the Environmental Analysis

4.1.2.1 Overview

In general, the individual resource analyses presented in this Draft EIR are organized as follows:

- Environmental Setting
  - San Francisco HWC Converter Station
  - Pittsburg Standard Oil Converter Station
  - Offshore DC Cable Route
- Regulatory Setting
  - Federal
  - State
  - Local
- Environmental Impacts (including mitigation measures and residual impact determinations)
  - San Francisco HWC Converter Station
  - Pittsburg Standard Oil Converter Station
  - Offshore DC Cable Route

The impact assessments by individual environmental discipline/resource topic follow.

4.1.2.2 Mitigation Monitoring and Reporting Program

Section 21081.6 of the California Public Resources Code requires that the City of Pittsburg adopt a reporting and monitoring program regarding mitigation measures that would be made a condition of Project approval. The mitigation reporting and monitoring program would contain all mitigation measures in the EIR that were specified as conditions of Project approval. The mitigation monitoring and reporting program would:

- Briefly describe the potential impact addressed by each mitigation measure
- Describe details of the mitigation measure
- Indicate the level of significance of the impact after mitigation
- Identify the person(s) or agency(ies) responsible for implementing each mitigation measure
- Identify the person(s) or agency(ies) responsible for verification of the implementation of each mitigation measure
- Specify when the mitigation measures should be implemented
- Provide a standardized format for "sign-off" for verification of the implementation of each mitigation measure by authorized persons or agency representatives

All mitigation measures would be implemented after approval of the Trans Bay Cable Project. For this reason, the timing of mitigation measures is presented in terms of the permits and project review process, not dates (i.e., prior to issuance of a building permit). Furthermore, all mitigation measures would be made a condition of approval of the Project.

4.1.2.2.1 Implementation of the Program. The City of Pittsburg (City) Planning Director (Director) shall be responsible for ensuring full compliance with the provisions of the mitigation monitoring and reporting program. The Director may delegate duties and responsibilities to City staff, other departments, the Project proponent, the qualified consultants, or individuals as necessary. The Director shall also ensure that monitoring reports are filed on a timely basis and, when identified, that plan violations are corrected.

Other City staff may assist the Director in administering the program. The Director shall ensure compliance with those portions of mitigation related to project design, construction, and operations phase activities. City staff may be responsible for responding to and reporting on complaints and violations related to approved plans, including monitoring and reporting on issues related to traffic and parking. The Director may also delegate specific responsibilities for monitoring and reporting to the Project proponent or qualified consultants, and may coordinate with responsible agencies and other local jurisdictions. For example, the Director may coordinate with appropriate departments of the City and County of San Francisco as to construction activities within San Francisco.

4.1.2.2.2 <u>Reporting</u>. The progress toward completion of the required mitigation monitoring and reporting program, or violation thereof, shall be reported by the Project proponent to the Director on a biweekly basis until completion of the project, or through the designated implementation period. The reports shall be prepared using approved forms or an acceptable format. All reports shall be filed in the Project file in the Planning Department. These reports shall be available for public review at any time.

4.1.2.2.3 <u>Compliance</u>. Reports that indicate progress is being made on the implementation of mitigation measures shall be reviewed and filed appropriately. Reports that indicate completion of the mitigation monitoring and reporting program also shall be filed. The Director shall notify the Project proponent in writing of such within 5 working days of receipt of such a report.

4.1.2.2.4 <u>Violations</u>. If a report identifies one or more violations of the program, the Director shall, within 5 working days of receipt of such a report:

- Directly notify the Project proponent or representative in writing of the violation and attempt to obtain voluntary compliance
- Notify the Project proponent or designated representative by telephone of the violation and attempt to obtain voluntary compliance
- Request an appropriate City staff person to conduct a field inspection
- Refer the violation to the appropriate regulatory agency

4.2 AIR QUALITY

This analysis of the potential air quality impacts of the proposed Project was conducted according to CEQA requirements. This section addresses Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines (BAAQMD, 1999) as applied to estimated air pollutant emissions during Project construction and BAAQMD permitting requirements for an Authority to Construct/Permit to Operate (ATC/PTO) application for the operations phase of the proposed Project. U.S. Environmental Protection Agency (EPA) Prevention of Significant Deterioration (PSD) requirements would not apply because this project would not be a major source of air pollutants as defined by the PSD regulations.

This section gives an overview of the local environmental setting as well as the regulatory setting and attainment status of the region. Meteorological data, including temperature and precipitation are discussed, and ambient concentrations for the appropriate criteria pollutants are summarized. Pollutants considered are ozone (O_3); nitrogen oxides (NO_x); carbon monoxide (CO); sulfur dioxide (SO_2); precursor organic compounds (POC), which consist of all carbon-containing organic compounds that can lead to ozone formation, excluding methane, carbon monoxide, and carbon dioxide; particulate matter less than 10 microns (µm) in diameter (PM_{10}); particulate matter less than 2.5 µm in diameter ($PM_{2.5}$); and diesel particulate matter, a toxic air contaminant.

4.2.1 Environmental Setting

4.2.1.1 Climatology

The climate of the San Francisco Bay region, along with much of coastal California, is controlled by a semi-permanent high-pressure system that is centered over the northeastern Pacific Ocean. In the summer, the relatively northern location of this strong high-pressure system results in clear skies inland and frequent coastal fog. Very little precipitation occurs during the summer months because storm systems are blocked by the high-pressure system. Beginning in the fall and continuing through the winter, the high-pressure system weakens and moves south, allowing storm systems originating from the Alaska Gulf and the Pacific Ocean into the area. Temperature, winds, and rainfall are more variable during these months.

The predominant regional surface winds during the winter are northerly and southerly. During the spring, summer, and fall, the winds are stronger and westerly. These strong westerly winds are caused by the combination of high pressure offshore and a thermal low pressure resulting from higher temperatures inland.

Atmospheric stability and mixing heights are important parameters in the determination of pollutant dispersion. Atmospheric stability reflects the amount of atmospheric turbulence and mixing. In general, the less stable an atmosphere, the greater the turbulence, resulting in more mixing and better dispersion. The mixing height, measured from the ground upward, is the height of the atmospheric layer in which convection and mechanical turbulence promote mixing. Good ventilation results from a high mixing height and at least moderate wind speeds within the mixing layer. In general, the frequent occurrence of temperature inversions over the San Francisco Bay Area limits this mixing height and consequently limits the availability of air for dilution.

4.2.1.1.1 San Francisco Area Climatology. Because the topography of San Francisco is mostly below 200 feet, the marine layer is able to flow across most of the city, making its climate cool and windy. The speeds of these winds are generally sufficient to carry pollutants away before they can accumulate. Long-term average temperature and precipitation data have been collected in the Mission Dolores area of San Francisco, the surface meteorological station nearest to the Project site, and are presented in Table 4.2-1. Average low and high temperatures (given throughout this section in degrees Fahrenheit [°F]) during the summer vary from the mid-50s to the upper-60s, respectively. Summer precipitation is extremely low due to the strong stationary high-pressure system located off the coast that prevents most weather systems from moving through the area. The Project site receives an average of about 20 inches of rain annually. During the winter, average low and high temperatures vary from the mid-40s to the mid-50s, respectively. More than 80 percent of the precipitation in the area occurs from November through March, generally in association with storm systems that move through the region.

4.2.1.1.2 Pittsburg Area Climatology. In the Carquinez Strait region, low mixing depths and low wind speeds typically occur when the pressure gradient direction shifts to an easterly direction due to a high-pressure system over the Central Valley. Furthermore, if this occurs in the summer or fall, the winds from the Central Valley are warmer, increasing photochemical activity, and contain more pollutants than the usually cooler marine air. An easterly flow is more common during the winter when the high-pressure system over the Pacific Ocean is no longer offshore. During the spring, summer and fall, the air pollution potential in the region is moderated by the strong westerly winds.

Long-term average temperature and precipitation data have been collected at Antioch, the surface meteorological station nearest to the Project site, and are presented in Table 4.2-2. Average low and high temperatures during the summer vary from the mid-50s to the low-90s, respectively. Summer precipitation is extremely low due to the strong stationary high-pressure system located off the coast that prevents most weather systems from moving through the area. The Project site receives an average of 13 inches of rain annually. This amount is lower than most of the region due to a rain-shadow effect caused by Mt. Diablo to the southwest. During the winter, average low and high temperatures vary from the mid-30s to the mid-60s, respectively. About 80 percent of the precipitation in the area occurs from

As described in Section 4.2.3.2.1, installation of onshore transmission cables for both AC and DC would also be required during construction phases. On the basis of that discussion, Impact AIR-1 would be applicable to construction of the onshore transmission cables.

Impact AIR-1: Fugitive Dust Emissions. The fugitive dust emissions impact (Impact AIR-1) described in Section 4.2.3.2.1 applies to the Pittsburg Standard Oil Converter Station site. The Project proposes to use fugitive dust suppression with water and other methods to control construction-related emissions. The use of chemical additives is not planned. Controlled worst-case fugitive dust is estimated to be 39 pounds per day; 0.43 tons per month; and 3.4 tons over the 27- to 30-month construction period for the Pittsburg site. Without fugitive dust control measures the impact is considered to be potentially significant.

Mitigation Measure AIR-1: Fugitive Dust Controls. Mitigation Measure AIR-1 described in Section 4.2.3.2.1 shall be applied at the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Implement fugitive dust control measures on an ongoing basis during all site preparation and construction activity
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Implementation of Mitigation Measure AIR-1 would reduce or limit Impact AIR-1 to a less-than-significant level.

This analysis of PM_{10} as fugitive dust treats dust only as a criteria air pollutant and not as a carrier of any potentially hazardous material. All remediation activities conducted on this Project shall be performed in strict compliance with site-specific health and safety plans. Compliance with the health and safety plans would ensure protection of both worker safety and health and the general public health.

***Equipment Exhaust Emissions*.** Equipment exhaust would be a second source of emissions. Equipment-specific emissions factors were used to estimate emissions for all criteria pollutants from construction equipment (SCAQMD, 2005). Table A.4-3 in Appendix A presents a list of equipment to be used during construction and the estimated number of pieces of equipment that would operate during each month of construction for the Pittsburg site. Emissions from equipment would occur over a 27- to 30-month construction period.

Further, the kinds of construction equipment commonly used are primarily diesel-powered that emit diesel particulate matter. The California Air Resources Board (CARB) has identified diesel engine particulate matter as a toxic air contaminant (TAC) and known carcinogen.

TABLE 4.2-1
TEMPERATURE AND PRECIPITATION DATA FOR
MISSION DOLORES STATION, SAN FRANCISCO, CALIFORNIA

Month	Average Temperatures (°F)[1]			Average Precipitation (Inches)
	Low	High	Daily	
January	45.7	56.3	51.1	4.1
February	48.6	59.9	54.3	2.9
March	48.9	60.8	54.9	3.1
April	49.6	62.1	55.9	1.3
May	50.4	62.6	56.5	0.2
June	52.5	64.0	58.3	0.1
July	53.4	64.6	59.0	0.0
August	54.5	65.5	60.1	0.1
September	55.8	68.5	62.2	0.3
October	55.0	68.5	61.9	1.3
November	51.4	62.6	57.2	3.2
December	46.9	56.3	51.6	3.1
Annual Average	51.1	62.6	56.8	19.7 (Total)

Source: NCDC, 2005. Location 37.76N 122.43W.

1 Average temperature and precipitation data represent 1961–1990.

November through March, generally in association with storm systems that move through the region.

4.2.1.2 Existing Air Quality Conditions

The entire Project is within BAAQMD's jurisdiction. However, the majority of the potential impacts to air quality would be on a very local level adjacent to the converter station sites. Existing air quality representative of the two converter station sites is presented below. Existing air quality information is not collected on the Bay. The cable-laying portion of the construction phase of the Project would produce emissions from vessels operating in the Bay only during the estimated 4- to 5-month cable laying period within the overall construction phase. However, due to the short-term, temporary nature of these emissions and the fact that the emissions source would move as the cable-laying progresses, it is not necessary to characterize the existing air quality specifically on the Bay. However, it is not unreasonable to assume that the existing air quality on the Bay is similar to the existing air quality in the air basin. It also makes no difference to the conclusions reached later in this section if slight variations in air quality exist on the Bay.

TABLE 4.2-2
TEMPERATURE AND PRECIPITATION DATA FOR ANTIOCH, CALIFORNIA

Month	Average Temperatures (°F)[1]			Average Precipitation (Inches)
	Low	High	Daily	
January	35.9	53.0	44.5	2.56
February	40.0	60.4	50.2	2.05
March	42.8	65.1	54.0	1.97
April	45.6	71.4	58.5	0.88
May	50.4	78.9	64.7	0.28
June	55.4	85.7	70.6	0.1
July	56.8	90.8	73.8	0.04
August	56.3	89.6	73.0	0.06
September	54.4	85.7	70.1	0.23
October	49.2	77.5	63.4	0.86
November	42.7	63.9	53.3	1.92
December	36.6	53.6	45.1	1.85
Annual Average	47.2	73.0	60.1	12.8 (Total)

Source: NWS, 1999.

1 Average temperature and precipitation data represent 1961-1990.

4.2.1.2.1 <u>San Francisco HWC Converter Station Site Air Quality</u>. Air quality measurements (for O_3, CO, SO_2, nitrogen dioxide [NO_2], PM_{10}, and $PM_{2.5}$) from the BAAQMD-maintained San Francisco, Arkansas Street monitoring station are presented in Tables 4.2-3 through 4.2-4. The Arkansas Street monitoring station is located about 1 mile from the proposed San Francisco HWC Converter Station site and site alternatives. This location was chosen as the primary monitoring site due to its proximity to the Project site. This station was operated in accordance with EPA guidelines for stations collecting data in support of PSD review. For the analysis, the maximum criteria pollutant concentration from the three most recent years of reported air quality data (2001 to 2004) was used. This value is highlighted in bold on Tables 4.2-3 through 4.2-4.

The monitoring data indicate that there were no measured violations of the federal and California Ambient Air Quality Standards (AAQS) for CO, NO_2, SO_2, and $PM_{2.5}$ for all averaging periods. Table 4.2-3 shows that the state O_3 AAQS was exceeded in 2004. Table 4.2-4 shows that the state PM_{10} AAQS was exceeded on several days.

TABLE 4.2-3
AMBIENT CRITERIA POLLUTANT LEVELS AT ARKANSAS STREET STATION, SAN FRANCISCO, CALIFORNIA (1995–2004 [ppm])

Measurement	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nitrogen Dioxide (NO_2)										
Maximum 1-Hour Average [1]	0.088	0.081	0.067	0.080	0.103	0.074	0.073	**0.075**	0.072	0.063
Annual Average [2]	0.021	0.022	0.020	0.020	0.021	0.020	0.019	**0.019**	0.018	0.017
Ozone (O_3)										
Maximum 1-Hour Average [3]	0.088	0.071	0.068	0.053	0.079	0.058	0.082	0.054	0.085	**0.093**
Maximum 8-Hour Average [4]	0.067	0.050	0.059	0.046	0.057	0.043	0.054	0.049	0.059	**0.059**
Sulfur Dioxide (SO_2)										
Maximum 1-Hour Average [5]	0.044	0.036	0.026	0.036	0.028	0.019	0.025	**0.053**	0.024	0.044
Maximum 3-Hour Average [6]	0.022	0.020	0.022	0.019	0.017	0.016	0.017	0.020	0.017	**0.027**
Maximum 24-Hour Average [7]	0.007	0.008	0.006	0.006	0.007	0.008	0.007	0.006	0.007	**0.008**
Annual Average [8]	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	**0.002**
Carbon Monoxide (CO)										
Maximum 1-Hour Average [9]	5.3	5.4	4.8	7.1	5.4	5.5	4.0	**3.5**	3.2	2.9
Maximum 8-Hour Average [10]	4.4	3.8	3.5	4.0	3.7	3.2	2.8	2.3	**2.8**	2.2

Source: CARB, 2005.
Notes:
Maximum average values occurring during the most recent three years are indicated in bold.
ppm = parts per million.

1 All 1-hr concentrations are below the California NO_2 ambient air quality standard of 0.25 ppm.

2 All annual average concentrations are below the federal NO_2 ambient air quality standard of 0.053 ppm.

3 The 1-hr concentration for 2004 was above the California O_3 ambient air quality standard of 0.09 ppm but below the federal O_3 ambient air quality standard of 0.12 ppm. All other 1-hr concentrations were below the California O_3 ambient air quality standard and the federal O_3 ambient air quality standard.

4 All 8-hr concentrations are below the federal O_3 air quality standard of 0.08 ppm, 8-hour average. Regulatory standard is to maintain 0.08 ppm as a 3-year average of the 4th-highest daily maximum. Therefore, number of days exceeding standard concentration is not necessarily the number of violations of the standard for the year.

5 All 1-hour average concentrations are below the California SO_2 ambient air quality standard of 0.25 ppm.

6 All 3-hour average concentrations are below the federal SO_2 ambient air quality standard of 0.5 ppm (1,300 $\mu g/m^3$).

7 All 24-hr concentrations are below the California SO_2 ambient air quality standard of 0.05 ppm (131 $\mu g/m^3$) and the federal ambient air quality standard of 0.14 ppm (365 $\mu g/m^3$).

8 All annual average concentrations are below the federal SO_2 ambient air quality standard of 0.03 ppm (80 $\mu g/m^3$).

9 All 1-hr concentrations are below the California CO ambient air quality standard of 20 ppm and the federal CO ambient air quality standard of 35 ppm.

10 All 8-hr concentrations are below the California and federal CO ambient air quality standards of 9.0 ppm.

TABLE 4.2-4
AMBIENT PARTICULATE LEVELS AT ARKANSAS STREET STATION, SAN FRANCISCO, CALIFORNIA (1995–2004 [μg/m³])

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
PM_{10}										
Maximum 24-Hour Average	49.9	70.9	81.0	52.4	77.9	63.2	67.4	74.1	50.8	48.6
Estimated Number of Days Exceeding California Standard [1] (50 μg/m³; 24-hour avg.)	0	12	18	6	37	12	48	24	6	6
Annual Arithmetic Mean [2] Federal	24.8	24.3	24.9	21.7	26.4	24.0	25.9	24.7	21.8	21.6
Annual Geometric Mean [3] State	24.8	24.3	24.9	22.9	27.5	25.1	27.8	26.0	22.7	22.5
$PM_{2.5}$										
Maximum 24-Hour Average	--	--	--	--	71	48	77	70	42	46
Number of Days Exceeding Federal Standard (65 μg/m³; 24-hour avg.)	--	--	--	--	0	0	0	0	0	0
98th Percentile	--	--	--	--	52	35	51	58	33	32
3-year average, 98th Percentile [4]	--	--	--	--	--	--	--	--	47	41
Annual Arithmetic Mean	--	--	--	--	12.6	11.4	11.5	13.1	10.1	9.9
3-year average, Annual Arithmetic Mean [5]	--	--	--	--	--	--	--	--	11	11

Source: EPA, 2005.

Maximum average values occurring during the most recent three years are indicated in bold.

1 Measurements are typically collected about every six days. Values reported are estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. All daily average concentrations are below the federal PM_{10} ambient air quality standard of 150 μg/m³.

2 All annual arithmetic mean concentrations are below the federal PM_{10} ambient air quality standard of 50 μg/m³.

3 The state PM_{10} ambient air quality standard was lowered from 30 μg/m³ to 20 μg/m³. State and federal arithmetic means may differ due to being based on different statistical criteria.

4 The number of days above the standard is not necessarily the number of violations of the standard for the year. The federal standard is 65 μg/m³ based on the 3-year average of the 98th percentiles.

5 The federal annual $PM_{2.5}$ ambient air quality standard is 15 μg/m³ based on the 3-year average. The state annual $PM_{2.5}$ ambient air quality standard is 12 μg/m³.

μg/m³ = micrograms per cubic meter.

μm = micrometer.

4.2.1.2.2 <u>Pittsburg Standard Oil Converter Station Site Air Quality</u>. Air quality measurements from Pittsburg, Tenth Street and Concord Treat Boulevard stations are presented in Tables 4.2-5 through 4.2-7. Both stations were operated in accordance with EPA guidelines for stations collecting data in support of PSD review. For the analysis, the maximum criteria pollutant concentration from the three most recent years of reported air quality data (2001-2004) was used. This value is highlighted in bold on Tables 4.2-5 through 4.2-7.

Air quality data for CO, SO_2, NO_x, and O_3 were obtained from data collected at BAAQMD-maintained air monitoring stations located at Tenth Street in Pittsburg and Concord Treat Boulevard. The Concord Treat Boulevard station was used for $PM_{2.5}$ because it is the only $PM_{2.5}$ monitoring station in Contra Costa County. The Tenth Street location in Pittsburg was chosen as the primary monitoring site due its proximity to the Project site. These data are considered representative of air quality at the Pittsburg Standard Oil Converter Station site.

The monitoring data indicate that the local air quality is in compliance with federal and California AAQS for CO, NO_2, and SO_2 for all averaging periods. Table 4.2-5 shows that the federal one-hour ozone AAQS was not exceeded once in the past 10 years; the more stringent state ozone AAQS was exceeded more frequently (as many as 8 times in one year). The PM_{10} data in Table 4.2-6 show some exceedances of only the California 24-hour AAQS. The $PM_{2.5}$ data in Table 4.2-7 show some exceedances of the California 24-hour and annual AAQS.

4.2.2 Regulatory Setting

Federal, state, and local air quality regulations that are potentially applicable to the proposed Project include the following:

- 40 CFR 50, National Ambient Air Quality Standards (federal AAQS)
- Title 17, California Code of Regulations, California Ambient Air Quality Standards (California AAQS)
- BAAQMD Regulation 1, Rule 301, Public Nuisance
- BAAQMD Regulation 2, Rule 1, Authority to Construct, Permit to Operate
- BAAQMD Regulation 2, Rule 2, New Source Review
- BAAQMD Regulation 2, Rule 2, Best Available Control Technology
- BAAQMD Regulation 6, Particulate Matter and Visible Emissions
- BAAQMD Regulation 7, Odorous Substances
- BAAQMD Regulation 8, Organic Compounds
- BAAQMD Regulation 9, Inorganic Gaseous Pollutants

TABLE 4.2-5
AMBIENT CRITERIA POLLUTANT LEVELS AT PITTSBURG, TENTH STREET (1995 – 2004 [ppm])

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Nitrogen Dioxide (NO_2)										
Maximum 1-Hour Average [1]	0.076	0.071	0.070	0.064	0.087	0.054	0.062	0.054	**0.061**	0.048
Annual Average [2]	0.016	0.015	0.014	0.014	0.015	0.013	0.014	**0.013**	0.012	0.011
Ozone (O_3)										
Maximum 1-Hour Average	0.124	0.121	0.087	0.097	0.098	0.107	0.118	**0.111**	0.094	0.090
Number of Days Exceeding California Standard (0.09 ppm; 1-hour avg.)	8	5	0	4	2	1	2	4	0	0
Number of Days Exceeding Federal Standard (0.12 ppm; 1-hour avg.)	0	0	0	0	0	0	0	0	0	0
Maximum 8-Hour Average	0.102	0.093	0.067	0.089	0.087	0.080	0.092	**0.096**	0.080	0.081
Number of Days Exceeding Federal Standard Concentration [3]	3	3	0	1	1	0	1	2	0	0
Sulfur Dioxide (SO_2)										
Maximum 1-Hour Average [4]	0.041	0.028	0.027	0.059	0.049	0.028	0.040	0.111	**0.134**	0.035
Maximum 3-Hour Average [5]	0.027	0.021	0.014	0.046	0.031	0.016	0.035	0.046	**0.047**	0.019
Maximum 24-Hour Average [6]	0.011	0.011	0.008	0.016	0.010	0.009	0.012	**0.016**	0.007	0.008
Annual Average [7]	0.002	0.003	0.002	0.003	0.002	0.002	0.003	0.002	0.002	**0.002**
Carbon Monoxide (CO)										
Maximum 1-Hour Average [8]	5.8	6.8	5.5	4.6	7.8	4.9	5.2	**6.2**	3.4	4.1
Maximum 8-Hour Average [9]	2.75	2.89	3.19	2.65	3.27	2.45	2.44	**2.51**	1.66	1.91

Source: CARB, 2005.
Maximum average values occurring during the most recent three years are indicated in bold.

1 All 1-hr concentrations are below the California NO_2 ambient air quality standard of 0.25 ppm.

2 All annual average concentrations are below the federal NO_2 ambient air quality standard of 0.053 ppm.
ppm = parts per million.

3 Number of days with an 8-Hour average Exceeding Federal Standard Concentration of 0.08 ppm. Regulatory standard is to maintain 0.08 ppm as a 3-year average of the 4th-highest daily maximum. Therefore, number of days exceeding standard concentration is not the number of violations of the standard for the year.

4 All 1-hour average concentrations are below the California SO_2 ambient air quality standard of 0.25 ppm.

5 All 3-hour average concentrations are below the federal SO_2 ambient air quality standard of 0.5 ppm (1300 $\mu g/m^3$).

6 All 24-hr concentrations are below the California SO_2 ambient air quality standard of 0.05 ppm (131 $\mu g/m^3$) and the federal ambient air quality standard of 0.14 ppm (365 $\mu g/m^3$).

7 All annual average concentrations are below the federal SO_2 ambient air quality standard of 0.03 ppm (80 $\mu g/m^3$).

8 All 1-hr concentrations are below the California CO ambient air quality standard of 20 ppm and the federal CO ambient air quality standard of 35 ppm.

9 All 8-hr concentrations are below the California and federal CO ambient air quality standards of 9.0 ppm.

TABLE 4.2-6
AMBIENT PARTICULATE LEVELS (<10µm) AT PITTSBURG, TENTH STREET (1995-2004 [µg/m³])

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Maximum 24-Hour Average	--	--	--	--	--	56	98	73	59	64
Estimated Number of Days Exceeding California Standard [1] (50 µg/m³ ; 24-hour avg.)	--	--	--	--	--	12	--	18	6	6
Annual Arithmetic Mean [2] Federal	--	--	--	--	--	16.4	20.6	23.7	21.1	21.7
Annual Geometric Mean [3] State	--	--	--	--	--	13.9	26.6	21.1	--	--

Source: EPA, 2005.
Maximum average values occurring during the most recent three years are indicated in bold.

1 Measurements are typically collected about every six days. Values reported are estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year. All daily average concentrations are below the federal PM_{10} ambient air quality standard of 150 µg/m³.

2 All annual arithmetic mean concentrations are below the federal PM_{10} ambient air quality standard of 50 µg/m³.

3 The state PM_{10} ambient air quality standard was lowered from 30 µg/m³ to 20 µg/m³ in June 2002. State and federal arithmetic means may differ due to being based on different statistical criteria.

-- = Data not available.
µg/m³ = micrograms per cubic meter.
µm = micrometer.

The EPA established federal AAQS in 40 Code of Federal Regulations (CFR) 50 in response to the federal Clean Air Act (CAA) of 1970. The federal AAQS include both primary and secondary standards for six “criteria” pollutants. These criteria pollutants are O_3, CO, NO_2, SO_2, PM_{10}, and lead (Pb). Primary standards were established to protect human health, and secondary standards were designed to protect property and natural ecosystems from the effects of air pollution.

The 1990 Clean Air Act Amendments (CAAA) established attainment deadlines for all designated areas that were not in attainment with the federal AAQS. In addition to the federal AAQS described above, a new federal $PM_{2.5}$ standard and a revised O_3 standard were promulgated in July 1997. Under an interim policy, the PM_{10} and 1-hour O_3 standards will continue to be implemented for the next several years while the new standards are being phased in. In 1988, as part of the California Clean Air Act, the State of California adopted the California AAQS, which are in some cases more stringent than the federal AAQS. The state and federal AAQS are summarized in Table 4.2-8.

TABLE 4.2-7
AMBIENT PARTICULATE LEVELS (<2.5 µm) AT CONCORD TREAT BLVD.
1995-2004 ($\mu g/m^3$)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Maximum 24-Hour Average	--	--	--	--	57	53	68	77	50	74
Number of Days Exceeding Federal Standard (65 $\mu g/m^3$; 24-hour avg.)	--	--	--	--	0	0	1	1	0	1
98th Percentile	--	--	--	--	44	43	38	49	34	38
3-year average, 98th Percentile[1]	--	--	--	--	--	--	42	43	40	40
Annual Arithmetic Mean	--	--	--	--	12.0	10.9	10.2	12.7	9.7	10.7
3-year average, Annual Arithmetic Mean [2]	--	--	--	--	--	--	11.0	11.3	10.9	11.0

Source: EPA, 2005.
Maximum average values occurring during the most recent three years are indicated in bold.
[1] The number of days above the standard is not necessarily the number of violations of the standard for the year. The federal standard is 65 $\mu g/m^3$ based on the 3-year average of the 98th percentiles.
[2] The federal annual $PM_{2.5}$ ambient air quality standard is 15 $\mu g/m^3$ based on the 3-year average. The state annual $PM_{2.5}$ ambient air quality standard is 12 $\mu g/m^3$.
-- = Data not available.
$\mu g/m^3$ = micrograms per cubic meter.

The EPA, the California Air Resources Board (CARB), and the local air pollution control districts determine the air quality attainment status of designated areas by comparing local ambient air quality measurements from the state or local ambient air monitoring stations with the federal and California AAQS. Those areas that meet ambient air quality standards are classified as “attainment” areas; areas that do not meet the standards are classified as “nonattainment” areas. Areas that have insufficient air quality data may be identified as unclassifiable areas. These attainment designations are determined on a pollutant-by-pollutant basis. The San Francisco Bay Area has been designated as a federal nonattainment area for O_3 and as a state nonattainment area for O_3 and PM_{10}. The attainment status for all other criteria pollutants is considered attainment. Table 4.2-9 presents the attainment status (both federal and state) for the San Francisco Bay Area.

As mentioned above, both the EPA and CARB are involved with air quality management in the San Francisco Bay Area along with BAAQMD. The area of responsibility for each of these agencies is described below.

The EPA has ultimate responsibility for ensuring, pursuant to the CAAA, that all areas of the United States meet, or are making progress toward meeting, the federal AAQS. The state of California falls under the jurisdiction of EPA Region IX, which is headquartered in San Francisco. EPA requires that all states submit State Implementation Plans (SIPs) for

TABLE 4.2-8
RELEVANT FEDERAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California AAQS [1,3]	Federal AAQS [2,3]	
			Primary	Secondary
Ozone (O_3)	8-hour [4]	0.07 ppm (137 μg/m³)	0.08 ppm (157 μg/m³)	Same as primary standard
	1-hour	0.09 ppm (180 μg/m³)	See footnote [4]	
Carbon Monoxide (CO)	8-hour	9 ppm (10 mg/m³)	9 ppm (10 mg/m³)	-
	1-hour	20 ppm (23 mg/m³)	35 ppm (40 mg/m³)	-
Nitrogen Dioxide (NO_2) [5]	Annual (Arithmetic Mean)	-	0.053 ppm (100 μg/m³)	Same as primary standard
	1-hour	0.25 ppm (470 μg/m³)	-	
Sulfur Dioxide (SO_2)	Annual (Arithmetic Mean)	-	0.03 ppm (80 μg/m³)	-
	24-hour	0.04 ppm (105 μg/m³)	0.14 ppm (365 μg/m³)	-
	3-hour	-	-	0.05 ppm (1,300 μg/m³)
	1-hour	0.25 ppm (655 μg/m³)	-	-
Respirable Particulate Matter (PM_{10}) [6]	Annual (Arithmetic Mean)	20 μg/m³	50 μg/m³	Same as primary standard
	24-hour	50 μg/m³	150 μg/m³	
Fine Particulate Matter ($PM_{2.5}$) [6, 7]	Annual (Arithmetic Mean)	12 μg/m³	15 μg/m³	Same as primary standard
	24-hour	-	65 μg/m³	
Sulfates	24-hour	25 μg/m³	-	-
Visibility Reducing Particles	1 observation	See footnote [8]	No federal standard	No federal standard

1 Title 17, California Code of Regulations, California AAQS for ozone (as volatile organic compounds), carbon monoxide, sulfur dioxide (1-hour), nitrogen dioxide, and particulate matter (PM_{10}), are values that are not to be exceeded. The visibility standard is not to be equaled or exceeded.

2 40 CFR 50. National AAQS, other than those for ozone and based on annual averages, are not to be exceeded more than once a year. The 80-hr ozone standard is based on a three-year average of the fourth-highest daily maximum.

3 Concentrations are expressed first in units in which they were promulgated. Equivalent units are given in parentheses and based on a reference temperature of 25°C and a reference pressure of 760 mm of mercury. All measurements of air quality area to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of mercury (1,013.2 millibar); ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4 New federal 8-hour ozone and fine particulate matter ($PM_{2.5}$) standards were promulgated by EPA on July 18, 1997. The federal 1-hour ozone standard was revoked by EPA on June 15, 2005.

5 Nitrogen dioxide (NO_2) is the compound regulated as a criteria pollutant; however, emissions are usually based on the sum of all oxides of nitrogen (NO_x).

TABLE 4.2-8 (CONTINUED)
RELEVANT FEDERAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

[6] California Air Resources Board established new standards for PM_{10} and $PM_{2.5}$ in June 2002.

[7] Annual federal standard is 3-year average. The 24-hour federal standard is 3-year average of 98th percentile.

[8] In sufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70%. "Prevailing visibility" is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

AAQS = Ambient Air Quality Standard
mg/m^3 = milligrams per cubic meter
$\mu g/m^3$ = micrograms per cubic meter
ppm = parts per million

TABLE 4.2-9
FEDERAL AND STATE ATTAINMENT STATUS FOR THE BAY AREA

Pollutant	Federal Attainment Status	State Attainment Status
Ozone	Nonattainment	Nonattainment
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
PM_{10}	Attainment	Nonattainment
$PM_{2.5}$	Attainment	Nonattainment
Lead	Attainment	Attainment

Source: CARB 2006

nonattainment areas that describe how the federal AAQS will be achieved and maintained. The EPA has delegated this attainment responsibility to CARB.

CARB, in turn, has delegated attainment responsibility to regional or local air quality management districts (or air districts), such as the BAAQMD. CARB is responsible for attainment of the California AAQS, implementation of nearly all phases of California's motor vehicle emissions program, and oversight of the operations and programs of the regional air districts.

Each air district is responsible for establishing and implementing rules and control measures to achieve air quality attainment within its district boundaries. The air district also prepares an air quality management plan (AQMP) that includes an inventory of all emission sources within the district (both man-made and natural), a projection of future emissions growth, an evaluation of current air quality trends, and any rules or control measures needed to attain the AAQS. This AQMP is submitted to CARB, which then compiles AQMPs from all air districts within the state into the SIP. The responsibility of the air districts is to maintain an effective permitting system for existing, new, and modified stationary sources, to monitor local air quality trends, and to adopt and enforce such rules and regulations as may be necessary to achieve the AAQS.

The applicable regulations related to the potential air quality impacts from the proposed Project are primarily administered (either independently or cooperatively) by the BAAQMD. The BAAQMD has been delegated responsibility for implementing the federal, state and local regulations on air quality in the nine-county region that includes the proposed Project area. The proposed Project is subject to BAAQMD regulations that apply to new sources of emissions, to the prohibitory regulations that specify emissions standards, and to the requirements for evaluation of air pollutant impacts for both criteria and toxic air pollutants. The following sections include the evaluation of the Project's compliance with the applicable BAAQMD requirements. The BAAQMD will review the proposed Project in conjunction with its permit review process. Impacts caused by the Project to the attainment status of any applicable ambient air quality standard will be generally assessed by the BAAQMD. However, no new exceedances of any applicable air quality standard would be expected due to Project operation.

4.2.3 Environmental Impacts

This section describes the analyses conducted to assess the potential air quality impacts from the proposed Project. Emissions estimates for both construction and operation of the proposed Project are presented. Separate activities within the construction phase were addressed separately due to their occurrence at different periods within the overall 27- to 30-month construction phase.

4.2.3.1 Thresholds of Significance

Air quality impacts would be considered potentially significant if the following were to occur:

- Project construction activities would not be in compliance with feasible air pollution control measures set forth in BAAQMD CEQA Guidelines (BAAQMD, 1999).
- Project emissions would be higher than applicable, established significant emission levels or, when compared to background emission levels, emissions would represent a significant increase in emissions (CEQA Checklist and BAAQMD CEQA Guidelines).
- Operations would not comply with BAAQMD rules and regulations and, therefore, could not pass pre-construction review and receive a permit (BAAQMD Rules and Regulations).

- Activities would expose sensitive receptors to substantial pollutant concentrations (CEQA Checklist and BAAQMD Rules and Regulations).

Other potential significant impact criteria (CEQA Guidelines, Appendix G) were considered but rejected from this analysis because they are not applicable to this Project. These include:

- *Conflict with or obstruct implementation of the applicable air quality plan.* The BAAQMD has air quality plans in place for ozone and particulate matter; both of these pollutants are addressed in terms of the significance criteria listed above.
- *Violate any air quality standard or contribute substantially to an existing or projected air quality violation.* Pollutant emission levels would be too low for this to occur.
- *Result in cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standard.* This Project would not contribute considerable long-term cumulative pollutant emissions.
- *Create objectionable odors affecting a substantial number of people.* The Project would not emit objectionable odors.

4.2.3.2 San Francisco HWC Converter Station

4.2.3.2.1 Construction-related Impacts. The primary emission sources during construction include: fugitive dust from disturbed areas due to demolition/site remediation, grading, excavating, and construction at the site; heavy equipment exhaust emissions; commuter vehicle and delivery truck traffic exhaust emissions. Impacts for these categories are identified in the sections below.

***Fugitive Dust*.** A particulate matter emission factor of 1.3 lb/hr of PM_{10} per acre was used to estimate fugitive dust emissions (MRI, 1996). The construction plans estimate that 5.6 acres would be disturbed during construction at the San Francisco HWC Converter Station site.

Based on the construction schedule, the worst-case monthly emissions would occur at some point during 12 months of demolition and site preparation, and construction. This would result in uncontrolled emissions of approximately 60 to 80 pounds of PM_{10} per day. Assuming 50 percent control efficiency from frequent water applications on active construction surfaces during hours of construction (or other equivalent dust suppression measures), these emissions would be reduced to approximately 30 to 40 pounds per day. The estimated controlled worst-case construction dust emissions is identified as Impact AIR-1 (refer to Table 1 of Air Quality Appendix D for additional information).

Installation of onshore transmission cables for both AC and DC would also be required during the construction phase. The majority of these cables would be installed by digging a trench, placing the cables and then backfilling the trench. Fugitive dust would be generated during these activities. One major difference between the onshore cable construction and converter station site construction is that onshore cable installation progresses from point to point rather than continuing to occur at the same location. This difference would tend to shorten the duration of air pollutant emissions at any given location along the cable route. Other differences are that a smaller area would be disturbed and fewer pieces of equipment would be used. Therefore, air quality impacts from cable installation would be less than from the converter station construction. However, Impact AIR-1 would apply to the onshore cable installation activity as well. Once construction of the onshore cable line was complete, there would no longer be impacts to air quality.

Impact AIR-1: Fugitive Dust Emissions. The Project proposes to use fugitive dust suppression with water and other methods to control construction-related emissions. The use of chemical additives is not planned. Controlled worst-case fugitive dust is estimated to be 29 pounds per day; 0.32 tons per month; and 2.6 tons over the 27- to 30-month construction period for the San Francisco site. Without fugitive dust control measures the impact is considered potentially significant.

Mitigation Measure AIR-1: Fugitive Dust Controls. Best achievable control measures (BACM) shall be utilized during construction phases of the Project. Fugitive dust control measures are stipulated by BAAQMD Regulation 6 (BAAQMD, 1999) and shall include all of the following as applicable to the Project site:

- Water all active construction areas at least twice daily
- Cover all trucks hauling soil, sand, and other loose materials *or* require all trucks to maintain at least two feet of freeboard
- Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets
- Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more)
- Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.)

- Limit traffic speeds on unpaved roads to 15 mph
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways
- Replant vegetation in disturbed areas as quickly as possible

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implement fugitive dust control measures on an ongoing basis during all site preparation and construction activity

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Implementation of Mitigation Measure AIR-1 would reduce or limit Impact AIR-1 to a less-than-significant level.

This analysis of PM_{10} as fugitive dust treats dust only as a criteria air pollutant and not as a carrier of any potentially hazardous material. All remediation activities conducted on this Project shall be performed in strict compliance with site-specific health and safety plans. Compliance with the health and safety plans will ensure protection of both worker safety and health and the general public health.

***Equipment Exhaust Emissions*.** Equipment exhaust would be a second source of emissions during construction. Equipment-specific emissions factors were used to estimate emissions for all criteria pollutants from construction equipment (SCAQMD, 2005). Table A.4-3 in Appendix A presents a list of equipment to be used during construction and the estimated number of pieces of equipment that would operate during each month of construction for the San Francisco site and the Pittsburg site, respectively. The San Francisco site would use more construction equipment than the Pittsburg site. Emissions from equipment would occur over a 27- to 30-month period.

Further, the kinds of construction equipment commonly used are primarily diesel-powered and emit diesel particulate matter. The California Air Resources Board (CARB) has identified diesel engine particulate matter as a toxic air contaminant (TAC) and known carcinogen.

The worst-case hourly, daily, monthly, and annual emissions for the San Francisco HWC Converter Station site are presented in Table 4.2-10. Construction emission calculations are provided in Table 2 in Appendix D. Worst-case monthly emissions are based on an assumption that each piece of equipment would operate 176 hours per month during each month of scheduled activity. Worst-case hourly emissions were estimated by dividing worst-

TABLE 4.2-10
ESTIMATED CRITERIA POLLUTANT EMISSIONS FROM CONSTRUCTION EQUIPMENT EXHAUST FOR SAN FRANCICO HWC CONVERTER STATION

	POC	CO	NO_x	SO_x	PM_{10}
Worst-Case Hourly Emissions (lbs/hr) [1]	1.05	5.14	9.30	1.27	0.50
Worst-Case Daily Emissions (lbs/day)	8.4	41.1	74.4	10.2	4.0
Worst-Case Monthly Emissions (lbs/month) [2]	184	906	1,637	224	89
Worst-Case Annual Emissions (tons/yr) [3]	0.87	4.03	7.22	1.03	0.42

1 Worst-case hourly emissions were estimated by dividing worst case monthly emissions by 176 hours.

2 Using the estimated construction schedule and the utilization factor for each piece of equipment, monthly emissions were estimated for each piece of equipment assuming 176 hours of use per month. Worst case month is month 13.

3 Worst case annual emissions were estimated by summing emissions for each 12-month period (i.e., months 1-12, 2-13, etc.) during the 27- to 30-month construction period and taking the maximum emissions for the worst 12-month period (i.e., months 7-18).

case monthly emissions by 176. Worst-case daily emissions were estimated assuming an eight-hour workday. Annual emissions were estimated by summing the monthly emissions for all equipment and determining the 12-month period having the highest emissions (months 7 through 18); emissions for this 12-month period were summed to get the annual emissions.

Impact AIR-2: Equipment Exhaust Emissions. See Table 4.2-10 for emissions estimates for the San Francisco HWC Converter Station site. The impact of these emissions would be considered to be potentially significant.

Mitigation Measure AIR-2: Exhaust Controls. The following controls pertaining to equipment emissions (BAAQMD, 1999) shall be implemented during construction to reduce emissions from construction equipment exhaust:

- Use alternative fueled construction equipment, as practical
- Minimize idling time
- Maintain properly tuned equipment
- Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implement exhaust control measures during all applicable construction activities

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Implementation of Mitigation Measure AIR-2 would reduce or limit Impact AIR-2 to a less-than-significant level.

Equipment exhaust would also be generated during installation of the onshore cables (AC and DC). However, as stated above, the transmission line construction progresses from point to point rather than continuing to occur at the same location. This difference would tend to shorten the duration of air pollutant emissions at any given location along the cable route. Other differences are that a smaller area would be disturbed and fewer pieces of equipment would be used. Therefore, air quality impacts from onshore cable installation would be less than from the converter station site construction. However, Impact AIR-2 would apply to the onshore cable installation activity as well. Once construction of the onshore cables was complete, there would no longer be impacts to air quality.

On-road Construction Traffic Exhaust Emissions**.** Another source of emissions during converter construction is exhaust from construction worker commute vehicles and from delivery vehicle trips to the San Francisco HWC Converter Station site. The estimated number of construction workers is shown in Table A.4-2, and peaks at 45 workers between months 12 and 19. These workers are expected to be drawn from the existing labor pool in the area and are not expected to have long commute distances. Therefore, a maximum of 45 local vehicle round trips per workday would result. Due to this relatively small number of commuters compared to existing traffic in the area and the temporary nature of the construction period, the air quality impact from construction worker commute traffic would be negligible and less than significant.

The estimated number of construction delivery trucks coming to the San Francisco HWC Converter Station site is shown in Table A.4-4. Delivery truck trips would peak at fewer than 500 trips per month or about 22 trips per average workday based on 22 workdays per month. The delivery truck trip length would vary but about 30 percent of the deliveries (up to 700 deliveries of electrical equipment over a 6-month period per site), are expected to originate from the Port of Oakland. The round trip distance between the Port of Oakland and the San Francisco HWC Converter Station site is about 30 miles. If this distance represents the average delivery truck trip length, total delivery trip lengths of about 690 truck-miles per day would be expected for the average workday. A typical tractor-trailer emits about 0.035 pounds per mile of NO_x and lesser amounts of the other criteria pollutants (Emfac Emission Model 2002 Version). Total estimated truck traffic emissions of NO_x would be about 24 pounds per day for the San Francisco deliveries. Daily emissions of the other criteria pollutants would be less. Due to the small amount of emissions compared to existing emissions in the area and the temporary nature of the construction period, the air quality impact from construction delivery truck traffic would be negligible and less than significant.

4.2.3.2.2 <u>Operations-related Impacts</u>. The Project does not include generation of electrical power; therefore, emissions of the air pollutants typically associated with power generation would not occur during Project operation. Operational emissions from the San Francisco HWC Converter Station site would be exclusively from required intermittent testing of one diesel-fueled emergency generator and two diesel-fueled emergency fire pumps. The San Francisco HWC Converter Station would have one 900-kilowatt diesel engine generator set to provide emergency electrical power during power outages and two 225 kW diesel engines each powering one firewater pump. Operation of the emergency diesel engines is only expected to occur for routine testing/maintenance purposes. This should be no more than a few hours per month at each site. Estimates of pollutant emissions from the diesel engines are shown in Table 4.2-11. Each of these diesel engines shall be required to obtain an ATC/PTO from the BAAQMD.

TABLE 4.2-11
OPERATIONAL EMISSION ESTIMATES FOR
EMERGENCY DIESEL ENGINES[1] AT EACH CONVERTER STATION

Pollutant	Emission Factor (gram/kW-Hr)	Emission Rate (lb/hr)	Emission Rate (lb/yr)
NO_x + POC	6.4	19.0	951.5
CO	3.5	10.4	520.4
SO_2 (at 500 ppm fuel sulfur)	0.25	0.74	37.2
PM_{10}	0.20	0.60	29.7

[1] Emissions factors are EPA Tier 2 non-road diesel compliance requirements. Actual engines installed may emit less. Each converter station would have one diesel generator and two diesel fire pumps for a total of 1,350 kW. Emissions estimated for testing only. Annual usage estimated at 50 hours.

The emissions values provided in Table 4.2-11 would be considered negligible with respect to air quality impacts from operation at both the San Francisco and Pittsburg Converter Station sites. As such, the CEQA significance determination is less than significant. Per Regulation 2, Rule 1, Sections 301 and 302, "Authority to Construct and Permit to Operate" (Amended 06/15/05), the Project proponent shall submit an application to the BAAQMD to obtain an Authority to Construct and Permit to Operate for the emergency diesel engines at each converter station. The diesel engines shall be required to comply with all applicable BAAQMD regulations including Regulation 2, Rule 5, New Source Review of Toxic Air Contaminants. All diesel engines will be CARB certified in compliance with BAAQMD requirements. Demonstration of no significant human health impacts shall be required prior to issuance of the ATC/PTO.

Operation of the proposed Project would increase the efficiency of power transmission in the Bay Area. The Project would create a new, shorter transmission path into the northern San

Francisco peninsula. DC transmission line losses are less than a typical AC transmission line, and the Project would relieve congestion in the transmission grid. Accordingly, it is estimated that 20 MW (or 175,200 MW hours, energy saved in a given year) (CAISO, 2005) of power that is currently lost without the Project would be saved when the Project was operating. An estimate of the air pollution emissions that would be reduced by generating 20 MW less electrical power is shown in Table 4.2-12. These estimates are based on the emissions from a state-of-the-art combined cycle gas turbine power plant using the best available air pollution control technology. Daily emissions assume 24 hours per day of operation and monthly emissions assume 30 days per month of operation. These emission reductions are included for comparison purposes only; no direct reduction of air pollutant emissions associated with power generation is proposed as part of the Project. As such, an impact with a CEQA significance determination was not developed.

TABLE 4.2-12
ESTIMATED CRITERIA POLLUTANT EMISSIONS REDUCTIONS FROM ANTICIPATED 20 MW IN POWER SAVINGS

	POC	CO	NO_x	SO_x	PM_{10}
Typical Hourly Emissions (lbs/hr)[1]	0.42	2.19	1.5	0.23	0.96
Typical Daily Emissions (lbs/day)	10.1	52.6	36	5.5	23
Typical Monthly Emissions (lbs/month)[2]	300	1,575	1,080	165	690
Typical Annual Emissions (tons/yr)[3]	1.8	9.5	6.5	1.0	4.1

Notes:

[1] From new state-of-the-art combined cycle gas turbine power plant equipped with best available air pollution control technology. Plant size of 500+ MW. Emissions scaled linearly to 20 MW.

[2] Based on 720 hours per month.

[3] Based on 12 months per year.

4.2.3.3 Pittsburg Standard Oil Converter Station

4.2.3.3.1 Construction-related Impacts. As described in Section 4.2.3.2.1, the primary emission sources during converter station construction include: fugitive dust; heavy equipment exhaust emissions; commuter vehicle and delivery truck traffic exhaust emissions. Impacts for these categories are identified in the sections below.

***Fugitive Dust*.** A particulate matter emission factor of 1.3 lb/hr of PM_{10} per acre was used to estimate fugitive dust emissions (MRI, 1996). The construction plan calls for the 7.5 acres to be disturbed during construction at the Pittsburg Standard Oil Converter Station site, including the proposed access road. The estimated controlled worst-case construction dust emissions are identified as Impact AIR-1 (refer to Section 4.2.3.2.1 and Table 1 of Air Quality Appendix D for additional information).

The worst-case hourly, daily, monthly, and annual emissions for the Pittsburg Standard Oil Converter Station site are presented in Table 4.2-13. Construction emission calculations are provided in Table 2 in Appendix D. Worst-case monthly emissions are based on an assumption that each piece of equipment would operate 176 hours per month during each month of scheduled activity. Worst-case hourly emissions were estimated by dividing worst-case monthly emissions by 176. Worst-case daily emissions were estimated assuming an 8-hour workday. Annual emissions were estimated by summing the monthly emissions for all equipment and determining the 12-month period having the highest emissions; emissions for this 12-month period (i.e., months 7 through 18) were summed to get the annual emissions.

TABLE 4.2-13
ESTIMATED CRITERIA POLLUTANT EMISSIONS FROM CONSTRUCTION EQUIPMENT EXHAUST FOR PITTSBURG STANDARD OIL CONVERTER STATION

	POC	CO	NO_x	SO_x	PM_{10}
Worst-Case Hourly Emissions (lbs/hr) [1]	0.93	4.48	8.28	1.16	0.45
Worst-Case Daily Emissions (lbs/day)	7.5	35.8	66.3	9.3	3.6
Worst-Case Monthly Emissions (lbs/month) [2]	164	789	1,458	205	80
Worst-Case Annual Emissions (tons/yr) [3]	0.78	3.56	6.36	0.92	0.36

1 Worst-case hourly emissions were estimated by dividing worst case monthly emissions by 176 hours.

2 Using the estimated construction schedule and the utilization factor for each piece of equipment, monthly emissions were estimated for each piece of equipment assuming 176 hours of use per month. Worst case month is month 8.

3 Worst case annual emissions were estimated by summing emissions for each 12-month period (i.e., months 1-12, 2-13, etc.) during the 27-month construction period and taking the maximum emissions for the worst 12-month period (i.e., months 7-18).

Impact AIR-2: Equipment Exhaust Emissions. The equipment exhaust emissions impact (Impact AIR-2) described in Section 4.2.3.2.1 applies to the Pittsburg Standard Oil Converter Station site. See Table 4.2-13 for emissions estimates for this site. Without mitigation measures this impact is considered to be potentially significant.

Mitigation Measure AIR-2: Exhaust Controls. Mitigation Measure AIR-2 described in Section 4.2.3.2.1 shall be applied to the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility: Construction contractor

Requirements and Timing: Implement exhaust control measures during all applicable construction activities

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Implementation of Mitigation Measure AIR-2 would reduce or limit Impact AIR-2 to a less-than-significant level.

Equipment exhaust would also be generated during construction of the onshore DC and AC transmission cable. Impact AIR-2 would apply to the onshore cable installation activity as well.

***On-road Construction Traffic Exhaust Emissions*.** Another source of emissions during converter construction is exhaust from construction worker commute vehicles and from delivery vehicle trips to the Pittsburg Standard Oil Converter Station site. The estimated number of construction workers is shown in Table A.4-2, and peaks at 45 workers between months 12 and 19. These workers are expected to be drawn from the existing labor pool in the area and are not expected to have long commute distances. Therefore, a maximum of 45 local vehicle round trips per workday would result. Due to this relatively small number of commuters compared to existing traffic in the area and the temporary nature of the construction period, the air quality impact from construction worker commute traffic would be negligible.

The estimated number of construction delivery trucks coming to the Pittsburg Standard Oil Converter Station site is shown in Table A.4-4. Delivery truck trips are estimated at fewer than 400 trips per month or about 17 trips per average workday based on 22 workdays per month. The delivery truck trip length would vary but about 30 percent of the deliveries (up to 700 deliveries of electrical equipment over a 6-month period per site), are expected to originate from the Port of Oakland. The round trip distance between the Port of Oakland and the Pittsburg site is about 66 miles. If this distance represents the average delivery truck trip length per site, total delivery trip lengths of about 1,518 truck-miles per day would be expected for the average workday. A typical tractor-trailer emits about 0.035 pounds per mile of NO_x and lesser amounts of the other criteria pollutants (EMFAC Emission Model 2002 Version). Total estimated truck traffic emissions of NO_x would be about 53 pounds per day for the Pittsburg deliveries. Daily emissions of the other criteria pollutants would be less. Due to the small amount of emissions compared to existing emissions in the area and the temporary nature of the construction period, the air quality impact from construction delivery truck traffic would be negligible and less than significant.

4.2.3.3.2 Operations-related Impacts. The Project does not include generation of electrical power; therefore, emissions of the air pollutants typically associated with power generation would not occur during Project operation. Operational emissions from the Pittsburg Standard Oil Converter Station site would be exclusively from required periodic testing of one diesel-fueled emergency generator and two diesel-fueled emergency fire pumps as described in Section 4.3.2.2.2.

The emissions values provided in Table 4.2-11 would be considered negligible with respect to air quality impacts from operation at the Pittsburg Standard Oil Converter Station site. As such, the CEQA significance determination is less than significant.

4.2.3.4 Offshore DC Cable Route

4.2.3.4.1 Construction-related Impacts. Installing the offshore cable would involve marine operations that produce exhaust emissions. The cable ship (C/S) Giulio Verne, cable barges and dredges would produce emissions during construction. The dynamic positioned (DP) C/S Giulio Verne has five main diesel engine-generators (one acting as a redundant spare) that produce electrical power to drive the propulsion, DP and other operating systems. For the proposed Project, only four engines would be in service. Each engine is rated at 2,268 brake horsepower (bhp) and has electromechanical controls, turbochargers, aftercoolers, and original standard injectors and injection pumps for controlling NO_x emissions. The fuel consumption control due to these devices has a reductive influence on NO_x emissions.

As mitigation, the Project proponent intends to use low sulfur diesel fuel oil in the Giulio Verne while it is operating in the San Francisco Bay to reduce emissions of SO_2. Equipment-specific emissions factors were used to estimate emissions for all criteria pollutants from marine vessels (EPA, 1991). Marine Operations Construction emission calculations are provided in Table 3 in Appendix D. Once construction of the approximately 56-mile-long submarine HVDC cable line was complete, there would no longer be impacts to air quality.

***Criteria Pollutant Impacts*.** The total construction emissions from each of the different Project marine construction activities are on an order of magnitude of about 1,375 pounds (equal to about 0.7 ton) per day, with NO_x being the largest quantity (see Table 4.2-14). The BAAQMD has not established CEQA impact significance criteria applicable to construction activities using marine vessels. Therefore, the corollary significance criterion of whether the emissions would pose a significant increase in existing emissions was evaluated.

Multiple cable-laying scenarios are under consideration at this time. One scenario would involve first laying cable from Suisun Bay to Pittsburg utilizing a barge, and then laying cable from Suisun Bay to San Francisco utilizing the C/S Giulio Verne. This scenario includes the possible use of up to 3 splices of the cable. The second scenario would involve laying cable from Suisun Bay to Pittsburg and San Francisco simultaneously using the barge and the C/S Giulio Verne, respectively. This scenario would not require splicing of the cable. The following discussion is based on the first scenario because it would result in higher total emissions. The simultaneous use of the barge and the C/S Giulio Verne would result in higher daily emissions (e.g., a two-thirds increase), but lower total emissions (e.g., up to a 15 percent decrease) and less time on the Bay (e.g., up to 30 fewer days).

TABLE 4.2-14
TYPICAL MARINE EQUIPMENT EMISSIONS DURING CONSTRUCTION

Equipment Description	Engine Power Rating (HP)			Emission Factors (lb/hp-hr)				
				CO	NO_x	PM_{10}	SO_x	VOC
Marine Vessels								
Cable Ship Giulio Verne	2,268			0.0049	0.0109	0.0005	0.00162	0.0008
Cable Barge	6,000			0.0049	0.0109	0.0005	0.00001	0.0008
Dredge	6,000			0.0049	0.0109	0.0005	0.00001	0.0008
Month After Start of Construction	Utilization Factor (%)	Capacity Factor (%)	# of Engines	Emissions (lbs)				
				CO	NO_x	PM_{10}	SO_x	VOC
Marine Vessel: Cable Ship Giulio Verne								
Month 22	100	58	4	18,699	41,137	1,870	6,150	2,841
Month 23	100	58	4	18,699	41,137	1,870	6,150	2,841
Marine Vessel: Cable Barge								
Month 20	100	55	1	11,727	25,800	1,173	29	1,782
Month 21	100	55	1	11,727	25,800	1,173	29	1,782
Month 24	100	55	1	11,727	25,800	1,173	29	1,782
Marine Vessel: Dredge								
Month 20	50	Not Appl.	2	5,212	11,466	521	13	792
Monthly Totals								
Month 20				16,939	37,266	1,694	42	2,574
Month 21				11,727	25,800	1,173	29	1,782
Month 22				18,699	41,137	1,870	6,150	2,841
Month 23				18,699	41,137	1,870	6,150	2,841
Month 24				11,727	25,800	1,173	29	1,782
Total Emissions				77,920	171,424	7,792	12,399	11,840

Notes:
Mass emissions are calculated by the following equation: Em = EF x hrs x Equipment # x P.
Em = Mass of emissions (lbs).
EF = Emission Factor for each type of engine operated (lbs/hr); Provided in top half of this table.
hrs = Work hours per month (hours per month * utilization factor * capacity factor).
Hours per month equal 720 for Cable Ship and Cable Barge and equal 176 for Dredge.
Capacity Factor is engine average power output divided by engine rated output for a typical day.
Engine # = The number of engines on the particular vessel.
P = Power per Engine (horsepower).

Because of the non-attainment status of the region, the BAAQMD is required to develop an Air Quality Plan to address the actions it anticipates to achieve attainment for the region. The Air Quality Plan addresses emissions of POC and NO_2 (as precursor pollutants to ozone) and Particulate Matter. The BAAQMD has published projected POC, NO_2 and PM_{10} emissions (BAAQMD, 2000) within the San Francisco Bay air basin. Their estimates of the district-wide emissions of these pollutants for planning year 2006 are shown in Table 4.2-15. The projected emissions are on an order of magnitude of hundreds of tons per day.

TABLE 4.2-15
BAAQMD PROJECTED DISTRICT-WIDE CRITERIA POLLUTANT EMISSIONS FOR 2006

Pollutant	Emissions (tons/day)[1]
POC	467
CO	--
NO_x	456
SO_2	--
PM_{10}	185

Source: BAAQMD 2000, Table 1. CO and SO_2 emissions not included by BAAQMD because they are attainment pollutants
Notes:
CO = carbon monoxide.
NO_x = nitrogen oxides.
PM_{10} = particulate matter less than 10 microns in diameter.
POC = precursor organic compound.
SO_2 = sulfur dioxide.
1 PM_{10} emissions include 103 tons per day from "other sources" which include entrained road dust, construction operations and wind blown dust.

While the NO_x emissions from the Giulio Verne may appear to be large, the BAAQMD has no published significance criteria for short-term, mobile marine vessel emissions. However, this EIR assumes that the BAAQMD may consider the Project emissions of NO_x to be potentially significant without mitigation. They would be unavoidable and temporary and would end when the ship concludes operation in the Bay. The NO_x emissions increase of 0.15 percent would likely be too small to be discernable to the results of ozone modeling. The NO_x emissions increase would also be too small and too distant from any ambient air monitoring station to cause an exceedance of the NO_2 ambient air quality standard.

A comparison of the projected district-wide emission rates to the peak construction emission rates for the Project and the percentage increase in emissions due to the Project is presented in Table 4.2-16. For each of the activities comprising the construction phase, the increase would be 0.15 percent or less of the projected background emissions. On the basis of this discussion, the following Impact AIR-3 is identified.

Impact AIR-3: Marine Construction Impact – Criteria Pollutants. Based on Project marine emissions rates in comparison to background levels, the air quality impacts of criteria

TABLE 4.2-16
COMPARISON OF BAAQMD PROJECTED DISTRICT-WIDE CRITERIA POLLUTANT EMISSIONS FOR 2006 TO ESTIMATED PROJECT MARINE CONSTRUCTION EMISSIONS

Pollutant	Projected District-Wide Emissions (tons/day)	Project Marine Construction Activity/Peak Emissions (tons/day)[1,2]		Percent Increase
POC	467	Marine Construction	0.05	0.01
NO_x	456	Marine Construction	0.7	0.15
PM_{10}	185[1]	Marine Construction	0.03	0.02

1 PM_{10} emissions include 103 tons per day from "other sources" which include entrained road dust, construction operations and wind blown dust.
Notes:
NO_x = nitrogen oxides.
PM_{10} = particulate matter less than 10 microns in diameter.
POC = precursor organic compound.

pollutant emissions of the marine construction phase are considered to be potentially significant.

Mitigation Measure AIR-3: Marine Vessel Emission Controls. The following shall be implemented to control emissions from vessels owned by Prysmian:

- Use California diesel, Purinox, biodiesel, or other fuel (whichever is feasible and would result in lowest emissions)
- Minimize diesel engine fuel usage as much as possible
- Use shore-side power when docked instead of running engines, where feasible

Resulting Level of Significance. Implementation of Mitigation Measure AIR-3 would reduce or limit Impact AIR-3 to a less-than-significant level.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implement approved marine vessel emission controls during all marine vessel operations in San Francisco Bay

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

***Diesel Particulate Impacts*.** It is highly unlikely that the diesel PM from the Giulio Verne would result in a significant increase in health risk to any exposed population. The emissions from the vessel would be on the Bay, removed from sensitive receptor populations and persist for only a few months. The vessel would move along the cable installation route and not remain in one location for extended periods of time. The health effects of diesel PM are associated with long term, chronic exposure and are generally assessed using a 70-year lifetime cancer exposure. Those exposure scenarios are inconsistent with the nature of the potential exposure to emissions from the construction phase of this Project. On the basis of this discussion, the following air quality impact is identified:

Impact AIR-4: Marine Construction Impact – Toxic Air Contaminants. Although there are no established impact significance criteria set forth by BAAQMD, the diesel PM emissions from marine construction may be potentially significant.

Mitigation Measure AIR-4: Implement Mitigation Measure AIR-3.

Resulting Level of Significance. Implementation of Mitigation Measure AIR-4 would reduce or limit Impact AIR-4 to a less-than-significant level.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implement approved marine vessel emission controls during all marine vessel operations in San Francisco Bay

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

4.2.3.4.2 Operations-related Impacts. No air quality impacts are associated with the operation of the offshore cable.

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4.3 GEOLOGIC RESOURCES AND SOILS

This section addresses regional and site-specific geologic and seismic conditions, and discusses potential geologic and seismic hazards, as they might pertain to implementation of the proposed Project. San Francisco Bay sediments are addressed in Section 4.4, Water Resources and Quality. Paleontological Resources are discussed in Section 4.15, Paleontological Resources.

4.3.1 Environmental Setting

The study area for geology and seismic hazards for the proposed Project is the broad geographic area of northern San Francisco Bay, San Pablo Bay, and Suisun Bay. The following sections present the regional geologic and seismic settings, as well as geologic hazards, and local geology.

4.3.1.1 Regional Geology

General regional geology of the Project area is shown on Figure 4.3-1. The topography of the Bay Area consists of north- to northwest-trending mountain ranges and intervening valleys that are characteristic of the Coast Range geomorphic province. The Coast Ranges consist of the Mendocino Range to the north of San Francisco Bay, the Santa Cruz Mountains west of the Bay, and the Diablo Range to the east of the Bay. The San Andreas Fault Zone lies to the west, and represents a major boundary that separates Franciscan Complex rocks on the North American Plate from Salinian basement rocks of the Pacific Plate.

The geology of the San Francisco Bay Area is made up primarily of three different geologic provinces: the Salinian block, the Franciscan complex, and the Great Valley sequence. The Salinian block is located west of the San Andreas fault (see Figure 4.3-2) and is composed primarily of granitic plutonic rocks.

The Mesozoic Franciscan complex is bounded on the east side by the Hayward fault and on the west side by the San Andreas fault. The Franciscan rocks represent pieces of former oceanic crust that have been accreted to North America by subduction and collision. These rocks are primarily deep marine sandstone and shale. However, chert and limestone are also found within the assemblage. The rocks of the Franciscan complex are prone to landslides.

To the east of the Hayward fault is the Great Valley sequence. This is composed primarily of Cretaceous and Tertiary marine sedimentary rocks in the Bay Area. These rocks are also prone to landsliding.

The Coast Ranges represent northwest-southeast trending structural blocks comprised of a variety of basement lithologies that are juxtaposed by major geologic structures. The Coast

Ranges-Sierran Block boundary zone lies to the east of the site. To the west, the major boundary is the San Andreas Fault Zone, which separates Franciscan Complex rocks of the North American plate from the Salinian basement rocks on the Pacific plate. The Coast Ranges ophiolites within the Franciscan Complex have been deformed by a series of thrust faults, most of which appear to be inactive.

The Diablo Range extends from the Sacramento River Delta, south along the western side of the San Joaquin Valley. Rocks of the Mesozoic Great Valley are thrust upon Franciscan basement along the San Joaquin Valley margin, and are covered locally by younger sediments of Paleocene to Pleistocene age.

Faults of the San Andreas system separate the Diablo Range from the remainder of the Coast Ranges. Mount Diablo is separated from the western East Bay hills by the Calaveras fault and from the southern extension of the Diablo Range by the Livermore Valley, an east-west-trending Cenozoic basin. The Diablo Range is bounded to the east by the Coast Range-Sierran Block boundary zone, which typically is represented by a series of blind and partially concealed thrust faults (Wong et al., 1988; Unruh and Moores, 1992). The eastern side of Mount Diablo is bounded by the San Joaquin fault (Sowers et al., 1992).

The Diablo Range comprises a series of large asymmetrical anticlines, with intervening synclines. The anticlines are composed of Franciscan Complex rocks, while the synclines contain younger rocks. The folds are frequently cut by east- and west-verging thrust faults. These thrust faults are displaced or truncated by strike-slip movement on the northwest-striking, right-lateral faults of the San Andreas fault system.

4.3.1.2 Regional Seismic Setting

The San Francisco Bay region is located on the boundary between the North American and Pacific tectonic plates. The Pacific plate is moving northwest relative to North America across a plate boundary oriented in a north-northwest direction that is approximately 100 kilometers wide. This zone encompasses all the major faults in Northern California (Figure 4.3-2). The relative motion across this plate boundary amounts to 35 to 38 millimeters per year, with the majority of this motion occurring during large earthquakes (Working Group on Northern California Earthquake Potential [WGNCEP], 1999). Seismically, this region is one of the most active in the world, highlighted by the number of large, damaging earthquakes that have occurred in the past. Major earthquakes have occurred along the margins of the Bay on the San Andreas and Hayward faults in 1836, 1838, 1868, and 1906 (Bakun, 1999). Some slip also occurs as aseismic fault creep (i.e., fault movement that does not generate earthquakes) on the Hayward, Concord, and Calaveras faults (Galehouse, 1992).

Faults of the San Andreas system form the major structural features in the vicinity of the study area. The San Andreas fault is the major tectonic boundary between the Pacific and North American plates. This portion of the San Andreas fault also marks the boundary with the less active San Francisco Bay block described by Olsen et al. (1994). The San Francisco Bay block is an area of low to moderate rates of seismicity and structural deformation, with no Holocene active tectonic features. The Hayward fault located approximately 10 miles to the east of the Bay block is another major active tectonic feature in the Bay Area and separates the Bay block from the East Bay hills. As described in the following sections, both the San Andreas and Hayward faults have generated major historical earthquakes and are considered to have a moderate probability of producing another major earthquake within the next 30 years.

Historical seismicity for the region is primarily associated with the strike-slip faults of the San Andreas system. Fourteen earthquakes of magnitude (M) 6.0 or greater have occurred in the Bay Area in historical times. Earthquakes of this magnitude pose significant ground-shaking hazard to the study area.

The most significant Quaternary faults in the region of the proposed Project, as well as estimates of the maximum earthquake for each fault, are listed in Table 4.3-1; their locations are shown on Figure 4.3-2. Maximum earthquake magnitude estimates are based on data from WGNCEP (1996). The table also indicates the closest distance from each fault to the Project sites. The proposed offshore cable alignment potentially crosses traces of both the Pittsburg-Kirby Hills Fault Zone and the Hayward-Rodgers Creek fault. Descriptions of the significant faults in the study area are described below.

4.3.1.2.1 San Gregorio Fault. The San Gregorio fault is a major Holocene active fault that lies west of the San Andreas fault. It extends from Big Sur northward to the area offshore of Bolinas Bay. Most of the fault lies offshore; however, in several areas the fault lies onshore and has been actively investigated (Simpson et al., 1992). The fault has an estimated Quaternary slip rate of 5 millimeters per year (mm/yr). Paleoseismic estimates of earthquake recurrence intervals on the fault range from 350 to 680 years based on offset archaeological remains at Seal Cove (Simpson et al., 1992). The maximum earthquake magnitude for the San Gregorio fault is estimated to be approximately Moment Magnitude (M_W) 7.3. M_W refers to measurement of earthquake size based on the energy released. The amount of energy released during an earthquake is a function of the surface area of the fault that has slipped, the amount of slip, and the rigidity of the rock through which the fault passes.

4.3.1.2.2 San Andreas Fault. The San Andreas fault is the largest active fault in California, and extends from the Gulf of California to Cape Mendocino. It was the source of the 1906 M_W 7.9 San Francisco earthquake (Wallace, 1990). In the Bay Area, various segments of the fault include the southern Santa Cruz Mountains, possible source of

TABLE 4.3-1
MAXIMUM EARTHQUAKE POTENTIALS FOR FAULTS PROXIMAL TO THE PROPOSED SAN FRANCISCO AND PITTSBURG PROJECT SITES

Fault	Approximate Distance from San Francisco Site (Miles)	Approximate Distance from Pittsburg Site (Miles)	Maximum Earthquake Potential (M_W)
San Andreas	9.5	51	7.1
Hayward	12	28	6.9
San Gregorio	15.5	59	7.3
Mount Diablo Thrust	20	13	6.3
Concord/Green Valley	25	16.5	6.9
Greenville	34.5	8	6.9
Pittsburg-Kirby Hills Fault Zone	43	1.1	6.8

the 1989 M_W 7.0 Loma Prieta earthquake; the Peninsula segment; and the North Coast segment. These segments have been assigned maximum earthquakes of M_W 7, M_W 7.1, and M_W 7.9, respectively, by WGNCEP (1996).

4.3.1.2.3 Hayward Fault. The Hayward fault is approximately 62 miles long and has been divided into two fault segments: a longer southern segment and a shorter northern segment. This structure is considered to be the most likely source of the next major earthquake in the San Francisco Bay Area (WGNCEP, 1996). The WGNCEP (1996) has assigned maximum earthquakes of M_W 6.9 for both the northern and southern segments of the Hayward fault. The proposed submarine cable route traverses the Hayward-Rodgers Creek fault north of Point Pinole in San Pablo Bay.

4.3.1.2.4 Rodgers Creek Fault. The Rodgers Creek fault is a 38-mile-long, northwest-striking, right-lateral strike-slip fault that extends northward from the projection of the Hayward fault on the south side of San Pablo Bay. Paleoseismic investigations by Schwartz et al. (1992) identified evidence for three earthquakes in the last 925 to 1,000 years, yielding a predicted earthquake recurrence interval of 230 years for an earthquake of M_W 7.0.

4.3.1.2.5 Calaveras Fault. The 75-mile-long Calaveras fault represents a significant seismic source in the southern and eastern San Francisco Bay region. It extends from an intersection with the Paicines fault south of Hollister, through the Diablo Range east of San Jose, and along the Pleasanton-Dublin-San Ramon urban corridor. The fault consists of three major sections: the southern Calaveras fault (from the Paicines fault to San Felipe Lake), the central Calaveras fault (from San Felipe Lake to Calaveras Reservoir), and the northern

Calaveras fault (from Calaveras Reservoir to Danville). The level of contemporary seismicity along the southern section is low to moderate, whereas the central section has generated numerous moderate earthquakes in historic time. The northern section has a relatively low level of seismicity and may be locked. Paleoseismologic studies suggest a recurrence interval for large ruptures of between 250 and 850 years on the northern fault section. The timing of the most recent rupture on the northern Calaveras fault is unknown, but it may have occurred several hundred years ago (Kelson, 1999). Seismologic evidence suggests that the southern and central sections may produce earthquakes as large as M_W 6.2. Geologic and seismologic data suggest that the northern section may produce earthquakes as large as M_W 7.0.

4.3.1.2.6 Concord-Green Valley Fault Zone. The Concord-Green Valley fault is a northwest-striking, right-lateral strike-slip fault zone that extends from the Walnut Creek area across Suisun Bay and continues to the north. The Concord fault extends approximately 12 miles, from the northern slopes of Mt. Diablo to Suisun Bay. North of Suisun Bay, the Green Valley fault continues to the north about 28 miles. The Concord fault is an actively creeping structure that has a long-term creep rate of approximately 5 mm/yr. It is estimated that rupture of both faults would produce a maximum earthquake of about M_W 6.9 with a recurrence interval of approximately 180 years (WGNCEP, 1996).

4.3.1.2.7 Greenville-Marsh Creek Fault. The Greenville-Marsh Creek fault is a northwest-striking strike-slip fault of the San Andreas system in the northern Diablo Range, extending from Bear Valley to the east side of Mount Diablo. This fault has a lower slip rate than other structures within the San Andreas system with a long-term rate of approximately 1 to 3 mm/yr. This fault produced a moderate magnitude earthquake in 1980. Research is currently being conducted on the fault zone to better constrain its slip rate and its history of past earthquakes. WGNCEP (1996) assigned a maximum earthquake of M_W 6.9 to the Greenville fault; the recurrence interval is estimated to be about 550 years.

4.3.1.2.8 West Napa Fault. The West Napa fault consists of a north-northwest-striking zone of short right-lateral strike-slip fault segments in the hills to the west of the city of Napa (Bryant, 1982). The fault extends about 19 miles from Napa to Yountville. It is characterized by well-defined active fault features such as tonal lineations, scarps in late Pleistocene and Holocene alluvium, closed depressions, and right-laterally deflected drainages. WGNCEP (1996) has assigned a maximum earthquake of M_W 6.5 for the West Napa fault based on fault length and continuity.

4.3.1.2.9 Coast Range-Sierran Block Boundary Zone. The Coast Range-Sierran Block (CRSB) boundary zone consists of a complex zone of thrust faulting marking the boundary between the Coast Ranges block and the Sierran basement rocks concealed beneath the Great Valley sedimentary sequence of the Sacramento and San Joaquin valleys. The basal detachment within the CRSB is a low-angle, west-dipping thrust accommodating eastward thrusting of the Coast Range block over the Sierran block. Above this detachment is a complex array of west-dipping thrusts and east-dipping back-thrusts. The CRSB extends from near Red Bluff in the northern Sacramento Valley to Wheeler Ridge in the southern San Joaquin Valley (Wong et al., 1988; Wakabayashi and Smith, 1994).

The CRSB was the probable source of the two M_W 6.25 to 6.75 earthquakes recorded in 1892 near Winters, and the 1983 M_W 6.5 Coalinga earthquake in the western San Joaquin Valley (Wong et al., 1988). Although the faults themselves do not have surface expression, the CRSB is marked by an alignment of fault-propagation folds such as the Rumsey Hills along much of its length (Unruh and Moores, 1992). Empirical relationships between fault length and earthquake magnitude suggest that these segments of the CRSB are capable of generating maximum earthquakes of M_W 6.5 to 6.75, with an average recurrence interval of 360 to 440 years (Wakabayashi and Smith, 1994).

4.3.1.2.10 <u>Pittsburg-Kirby Hills Fault</u>. The Pittsburg-Kirby Hills fault extends a distance of approximately 26 miles from the Kirby Hills north of the Sacramento River, to the eastern flank of Mount Diablo, south of Pittsburg (refer to Figure 4.3-2). Unruh and Sawyer (1997) suggest that the structure is a right-lateral tear fault bounding the eastern margin of a series of thrusts and folds in the Grizzly Bay-Van Sickle Island area. The fault is defined by a linear alignment of microseismicity, which is unusual in that it occurs at depths of 20 to 25 kilometers (Wong et al., 1988). Focal mechanisms indicate that the movement on the fault is almost pure right-lateral strike-slip. Empirical relationships among various fault parameters and earthquake magnitude indicate that the maximum earthquake for the fault is M_W 6.75 (Wells and Coppersmith, 1994). The Pittsburg thrust has been considered to be a potentially active trace (Williams, 1998). In the vicinity of Pittsburg, the fault is defined as the Pittsburgh-Kirby Hills Fault Zone (refer to Figure 4.3-5) and is located approximately 1.1 miles to the west of the Standard Oil site. However, a recent fault rupture hazard investigation for the proposed Mariner Walk housing development at Herb White Way and 8th Avenue in Pittsburg (Terrasearch, 2005) found no evidence that the fault is active in the Project vicinity. The investigation included a series of trenches across the fault zone as well as review of previous boring data.

4.3.1.2.11 <u>Mount Diablo Thrust Fault</u>. The Mount Diablo thrust fault is a northeast-dipping structure located beneath the Mount Diablo anticline. Unruh and Sawyer (1997) estimated long-term average Quaternary shortening rates across the Mount Diablo region, from balanced cross sections, to be 3.4 ± 0.9 mm/yr. Taking into consideration the presumed fault geometry, an average slip rate for the Mount Diablo thrust is calculated to be approximately 4.1 ± 1.4 mm/yr. This blind thrust fault is judged capable of generating a maximum earthquake of M_W 6.25.

4.3.1.2.12 Antioch Fault. The Antioch fault was previously considered active and was zoned under the Alquist-Priolo Act as potentially capable of surface rupture. A recent study by Wills (1992) indicates that the Antioch fault is not active and does not pose a surface-faulting hazard. The fault is no longer zoned by the State of California as an earthquake fault zone under the Alquist-Priolo Act.

The majority of contemporary seismicity in the San Francisco Bay Area is associated with the major faults, namely, the Hayward, Rodgers Creek, San Gregorio, Calaveras, and San Andreas faults, or related secondary structures located within about 5 kilometers (km) of the major faults (Zoback et al., 1999).

4.3.1.3 Geologic Hazards

4.3.1.3.1 Surface Fault Rupture. Surface fault rupture is defined as slip on a fault plane that has propagated upward to, and offsetting or disturbing, the earth's surface. Offset on a fault intersecting the ground surface can create a discrete step or fault scarp if fault slip occurs on a single fault plane or within a narrow fault zone. If fault slip is accommodated over a broader area, then the deformation may manifest as a zone of fracturing and ground cracking, with minor amounts of offset on individual fractures. However, the cumulative offset across the entire zone may be significant. Surface faulting may also arise as a secondary effect from other geologic processes. Secondary surface faulting can be triggered by aquifer compaction and subsidence or by the effects of strong ground shaking triggering slip on neighboring faults. Surface fault rupture has occurred on a number of faults within the study region during the last 10,000 years. The San Andreas, Hayward, Calaveras, and Greenville faults have all experienced surface rupture associated with large, damaging earthquakes during historical time (Figure 4.3-2).

4.3.1.3.2 Earthquake Ground Shaking. Strong earthquake ground shaking is probably the most important seismic hazard that can be expected anywhere in the San Francisco Bay Area. The amount of earthquake shaking at a site is a function of earthquake magnitude; the type of earthquake source (i.e., type of fault); distance between the site and the earthquake source; the geology of the site; and how the earthquake waves attenuate (decrease) or amplify (increase) as they travel from their source to the site in question. The larger the earthquake and the shorter the distance between the earthquake source and the site, the greater the amount of shaking. The geologic materials through which the earthquake energy travels toward the site act to attenuate the amount of shaking. Conversely, softer soils and topographic ridges can amplify seismic ground motions.

***Liquefaction*.** Liquefaction is a phenomenon in which the strength and stiffness of a saturated granular soil is reduced by earthquake shaking. Liquefaction and related phenomena have been responsible for tremendous amounts of damage by historical earthquakes around the world.

Liquefaction is the transformation of a granular material from a solid state into a liquefied state as a consequence of increased pore pressure and decreased effective stress. Observed types of ground failure resulting from liquefaction can include sand boils, lateral spreads, ground settlement, ground cracking, and ground warping. Liquefaction occurs in saturated soils of low density.

Lateral spread is the lateral displacement of surficial blocks of sediment as the result of liquefaction in the subsurface. Once liquefaction transforms the subsurface layer into a fluidized mass, gravity may cause the mass to move downslope toward a cut slope or free face (such as a river channel or a canal). Lateral spreads most commonly occur on gentle slopes that range between 0.3 degrees and 3 degrees. When liquefaction occurs, the strength of the soil decreases and the ability of a soil deposit to support foundations for buildings or other structures is reduced. Liquefied soil also exerts higher pressure on retaining walls, which can cause them to tilt or slide. This movement can cause settlement of the retained soil and destruction of structures on the ground surface. Extensive liquefaction was triggered by the 1906 M_W 7.9 San Francisco earthquake, resulting in widespread damage in areas of loose, saturated soils. Liquefaction also resulted locally in major damage during the 1989 M_W 6.9 Loma Prieta earthquake.

4.3.1.3.3 <u>Subsidence</u>. Land surface subsidence can result from both natural and man-made phenomena. Natural phenomena include subsidence resulting from tectonic deformations and seismically induced settlements (see liquefaction); soil subsidence due to consolidation; subsidence due to oxidation or dewatering of organic-rich soils: and subsidence related to subsurface cavities. Subsidence or settlement related to human activities includes subsidence caused by decreased pore pressure due to the withdrawal of subsurface fluids, including water and hydrocarbons.

4.3.1.3.4 <u>Expansive Soils</u>. Expansive soils contain mixed-layer clay minerals that increase and decrease in volume upon wetting and drying, respectively. Expansive soils are common throughout California and can cause damage to foundations and slabs unless properly treated during construction. Most fine-grained deposits along the margins of San Francisco Bay contain clay layers and exhibit expansive or potentially expansive behavior. However, the hazard for expansive behavior is considered a low risk for coastal locations in and around the Bay Area because these areas are permanently saturated.

4.3.1.3.5 <u>Asbestos-containing Serpentine Excavation</u>. Asbestos is a term used for several types of naturally occurring fibrous minerals that are a human health hazard when airborne. Serpentinite may contain chrysotile asbestos, especially near fault zones. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by the California Air Resources Board (CARB) in 1986.

Asbestos can be released from serpentine and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing human health hazards. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations. All of these activities may have the effect of releasing potentially harmful asbestos into the air. Natural weathering and erosion processes can also act on asbestos-bearing rock and make it easier for asbestos fibers to become airborne if such rock is disturbed.

CEQA provides an opportunity for lead agencies to identify whether serpentinite or ultramafic rocks would be disturbed by the proposed Project, to investigate ways to avoid, control, or otherwise mitigate the impacts and gives lead agencies the authority to require mitigation measures as a condition of the approval of a proposed Project. CARB has developed a list of mitigation measures that can reduce asbestos emissions during the design, construction, and operation phases of projects. These have been incorporated into Mitigation GEO-2 in Section 4.3.3.2.1.

4.3.1.4 Local Geologic Setting

4.3.1.4.1 San Francisco HWC Converter Station. The San Francisco HWC Converter Station discussion includes the onshore AC and DC cable routes and the proposed and alternative construction laydown areas as shown on Figure 4.3-3.

***Site Geology*.** The majority of the San Francisco peninsula near the proposed Project is comprised of Franciscan complex serpentinites (Schlocker, 1974), which are locally overlain by Holocene Bay Mud, late Pleistocene alluvial deposits, and eolian deposits of the Colma formation. Along the western portion of the peninsula, and within the Colma Valley to the south of the site, Neogene rocks of the Merced and Colma formations unconformably overlie rocks of the Franciscan complex.

The geology of the San Francisco area is shown on Figure 4.3-3. Soil types are shown on Figure 4.3-4. The proposed San Francisco HWC Converter Station site is underlain by Pleistocene and Holocene alluvial deposits and by artificial fill over reclaimed tidal flats featuring Bay Mud and estuarine deposits. The northwestern portion of the site is underlain by Franciscan serpentine bedrock at depth. The artificial fill consist of gravels, sands, and clays.

The proposed laydown area of up to 7 acres (located at the Western Pacific site) (Figure 4.3-3) would be devoted to equipment and materials laydown, storage, parking of construction equipment, small fabrication areas, and office trailers for the San Francisco HWC Converter Station site. The proposed laydown area as well as the alternative laydown area (at Pier 94/96) are located on Quaternary alluvial deposits locally overlain by fill.

***Geologic Resources*.** The converter station site does not have any identified unique geologic features or resources.

***Faults*.** The closest known active faults are the San Andreas fault (9.5 miles to the west of the site) and the Hayward fault (12 miles to the east of the site). Figure 4.3-2 illustrates the location of the site with respect to the major Quaternary faults in the site region. Table 4.3-1 presents maximum earthquake magnitude estimates based on WGNCEP (1996) and indicates the closest distance from each fault to the site. Each fault zone is described in detail in Section 4.3.1.2.

4.3.1.4.2 Pittsburg Standard Oil Converter Station. The discussion for the proposed Standard Oil site includes the onshore AC/DC cable, as well as proposed and alternative laydown areas and access roads. The converter station site is a 7.5-acre parcel within an industrial area in Pittsburg. The converter station location is shown on Figure 4.3-5. The site contains two abandoned concrete wastewater storage tanks and a small dilapidated building. The remainder of the site has been intermittently occupied by an automobile storage yard. There is very little vegetation on the relatively flat potion of the site where the converter station would be located. The southernmost edge of the site is bordered by Kirker Creek, just north of the Pittsburg/Antioch Highway. The proposed access road crosses over a channelized portion of Kirker Creek.

***Site Geology*.** The Pittsburg Standard Oil Converter Station site is located approximately 3,600 feet southwest of New York Slough. The geology of the Pittsburg area is shown on Figure 4.3-5. Soil types are shown on Figure 4.3-6. The soils in the area are flatland soils (soils with slopes between 0 and 20 percent) (City of Pittsburg, 2001). They are mostly clays and loams of Pleistocene alluvial and fluvial deposits. The proposed and alternative access roads and laydown areas are underlain by the same Pleistocene alluvial and fluvial deposits as the proposed converter station site.

***Geologic Resources*.** The converter station site does not have any identified unique geologic features or resources.

***Faults*.** Figure 4.3-2 illustrates the location of the site with respect to the major Quaternary faults in the site region. Table 4.3-1 presents maximum earthquake magnitude estimates based on WGNCEP (1996) and indicates the closest distance from each fault to the site. The Pittsburg-Kirby Hills Fault Zone is approximately 1.1 miles west of the site and the Greenville Fault is approximately 8 miles southwest of the site. The Pittsburg-Kirby Hills

Fault Zone, the Greenville Fault, and other regional fault zones are described in detail in Section 4.3.1.2.

4.3.1.4.3 <u>Offshore DC Cable Route</u>. San Francisco Bay is California's largest estuarine system, and its configuration and the surrounding landscape have been shaped by a combination of tectonic activity, recent sea level changes, and human activities. Along the centerline of the Bay, the majority of the bottom consists of thick sequences of Younger Bay Mud (very fine soft silty clays), underlain by Older Bay Mud (more cohesive silty clays). Nearer the margins, sediments tend to be coarser, with interbedded layers of Bay Mud and layers of fine to coarse sand, shell deposits, and occasional layers of peat.

The proposed cable system would be buried underwater and routed from the Pittsburg Converter Station into the water at Suisun Bay and New York Slough, through Carquinez Strait, San Pablo Bay, and San Francisco Bay to a landing point near the San Francisco Converter Station. The cable system route has been selected to avoid shipping channels, anchorages, dredge disposal areas, and all other known obstacles to the greatest extent possible.

The proposed cable route traverses the Pittsburg-Kirby Hills Fault Zone (refer to Figure 4.3-5) and the Hayward-Rodgers Creek fault north of Point Pinole in San Pablo Bay.

Before cable laying commenced, a detailed survey of the Bay floor would be conducted over a study corridor centered on the HVDC cable. Sonar devices would be used to detect both natural and man-made obstructions. Electromagnetic devices would be used to detect and precisely locate existing cables and pipelines that cross the cable path.

4.3.2 Regulatory Setting

4.3.2.1 <u>Federal</u>

No federal regulations related to geologic hazards and conditions have been identified for the proposed Project.

4.3.2.2 <u>State</u>

4.3.2.2.1 <u>California Building Code</u>. The California Building Code (CBC) contains the minimum standards for design and construction of structures in California. Local standards other than the CBC may be adopted if those standards are stricter. Design considerations associated with seismic hazards would need to address the appropriate building codes for each converter station facility location. The CBC includes the standards associated with seismic engineering detailed in the Uniform Building Code (UBC) of 1997.

4.3.2.2.2 California Public Resources Code Section 25523(a); 20 CCR 1752(b) and (c); 1972 Alquist-Priolo Earthquake Fault Zoning Act (Amended 1994). The Alquist-Priolo (AP) Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. Its main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults.

Before a project can be permitted in an Alquist-Priolo Earthquake Fault Zone, cities and counties must require a geologic investigation to demonstrate that potential buildings will not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (generally 50 feet).

Fault rupture hazard is generally assessed for specific sites and ranked as follows: High (located within an AP Earthquake Fault Zone), Moderate (located adjacent to an AP Zone), and Low (located away from known AP Zones).

4.3.2.2.3 California Public Resources Code Chapter 7.8, 1990 Seismic Hazards Mapping Act. The Seismic Hazards Mapping Act of 1990 allows the lead agency to withhold permits until geologic investigations are conducted and mitigation measures are incorporated into plans. The Seismic Hazards Mapping Act addresses not only seismically induced hazards but also expansive soils, settlement, and slope stability.

4.3.2.3 Local

4.3.2.3.1 City of Pittsburg General Plan. The Health and Safety Element of the General Plan identifies various hazards that may occur in the City of Pittsburg. It gives basic policies that consider geologic conditions in the selection of land for development and the design of developments in order to preserve life and protect property in the event of a disaster.

The Resource Conservation Element of the General Plan identifies the City's basic policies pertaining to natural resources, including soil and water resources.

4.3.2.3.2 Public Health Code. Article 22A of the City and County of San Francisco Public Health Code governs development of properties located in the filled land adjacent to San Francisco Bay with respect to hazardous materials that would be encountered during construction. Formerly known as the Maher Ordinance, it stipulates testing and reporting protocols for proposed developments in its area of jurisdiction.

4.3.2.3.3 Local Building Code. Acceptable design criteria for excavations and structures for static and dynamic loading conditions are specified by the Uniform Building Code (UBC) of 1997. The City of Pittsburg has adopted the UBC per Section 15.08.010 of the Municipal

Code. The San Francisco Building Code (SFBC) adopts the UBC and CBC, including Chapter 70, which establishes excavation, grading, and erosion control standards.

4.3.3 Environmental Impacts

The following section discusses potential impacts to and from the geologic environment for the proposed Project. Geologic hazards considered include surface fault rupture, earthquake ground shaking, liquefaction, expansive soils, subsidence, and soil erosion. Mitigation measures to reduce the various geologic hazards are presented, as applicable.

4.3.3.1 Thresholds of Significance

Based on CEQA Guidelines (Appendix G), impacts would be considered significant if they would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides
- Result in substantial soil erosion or loss of topsoil
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on or offsite landslide, lateral spreading, subsidence, liquefaction or collapse
- Be located on expansive soil as defined in Table 18-1-B of the Uniform Building Code (1997), creating substantial risks to life or property

4.3.3.2 San Francisco HWC Converter Station

4.3.3.2.1 Construction-related Impacts.

***Soil Erosion*.** Construction, including demolition, excavation and grading of the site, could lead to soil erosion. Soil erosion causes the loss of topsoil and can increase the sediment load in surface receiving waters downstream of the construction site. Surface erosion resulting from construction of the proposed Project could also have a local impact on water quality, which is discussed in Section 4.4, Water Resources and Quality.

Construction of the proposed Project would also result in soil compaction due to the erection of foundations and paving. In addition, soil compaction would result from vehicular traffic along temporary access roads and in construction laydown areas (if not paved). Compaction densifies the soil, reducing pore space, and impeding water and gas movement through this medium. This can result in increased runoff, erosion, and sedimentation.

Impact GEO-1: Soil Erosion and Compaction. Construction activities would lead to soil compaction and could lead to soil erosion. This impact is considered to be potentially significant.

Mitigation Measure GEO-1: Design Project for Erosion Control. Standard Best Management Practices (BMPs) shall be incorporated into the Storm Water Pollution Prevention Plans (SWPPPs) for construction and operation, and shall minimize onsite soil erosion and offsite sedimentation. Temporary erosion control measures shall be required during the construction period to help maintain water quality, protect property from erosion damage, and prevent accelerated soil erosion or dust generation. These measures shall be installed before construction begins and shall be removed after completion and shall include the following:

- Temporary erosion control measures include slope stabilizers, dust suppression, construction of berms and ditches, and sediment barriers.
- During construction of the proposed Project, dust erosion control measures shall be employed to minimize wind erosion and loss of soil. Clean water shall be sprayed on the soil in construction areas to minimize wind erosion.
- Sediment barriers, such as straw bales or silt fences, slow runoff and trap sediment. These are generally placed below disturbed areas, at the base of exposed slopes. Sediment barriers are often placed around sensitive areas, such as wetlands or creeks, to prevent contamination by sediment-laden water. Barriers shall be placed around the proposed Project site, including ancillary facilities, to prevent sediment from leaving the site. Because the sites are relatively level, standard surface erosion control techniques should be effective. The need for runoff retention basins, drainage diversions, and other large-scale sediment traps shall be evaluated and incorporated into the construction SWPPP, as appropriate. Soil stockpiles generated during construction shall be covered and protected from rainfall if left onsite for long periods of time.
- Temporary erosion control devices shall be installed in accordance with the required Construction SWPPP before initial site clearing and shall be visually inspected during the regular site environmental compliance inspections.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Notice of Intent (NOI) submitted to RWQCB prior to construction

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance with SWPPP over course of construction

Resulting Level of Significance. Implementation of Mitigation Measure GEO-1 would reduce Impact GEO-1 to a less-than-significant level.

<u>Asbestos-containing Serpentine Excavation</u>**.** The HWC site may be underlain by serpentinite within the footprint of the proposed Project. Excavation of serpentine could expose asbestos, which is a human health hazard when airborne. Ultramafic rock, a rock closely related to serpentinite, may also contain asbestos minerals. Asbestos is classified as a known human carcinogen by state, federal, and international agencies and was identified as a toxic air contaminant by CARB in 1986. Asbestos could be released from serpentine and ultramafic rocks when the rock is broken or crushed. It can become airborne from wind, due to vehicular traffic on unpaved roads, during grading for development projects, and at quarry operations.

Impact GEO-2: Asbestos-containing Serpentine. The San Francisco site is potentially underlain with asbestos-containing soils and rocks. Asbestos could be released during construction phases at the San Francisco sites. Asbestos is a human health hazard when airborne. This is considered a potentially significant impact.

Mitigation Measure GEO-2: Controls for Excavation of Serpentine. Prior to Project construction, previously-prepared geotechnical reports and boring and trenching logs from the site would be reviewed to identify areas of serpentinite bedrock that would be disturbed during excavation and Project construction. An Asbestos Dust Mitigation Plan would be submitted to the Bay Area Air Quality Management District (BAAQMD) for approval in accordance with the *Final Regulation Order Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations*. The Asbestos Dust Mitigation Plan would address the following:

- Prevention of dust emissions offsite
- Control of dust for disturbed areas and storage piles
- Traffic control for on-site unpaved areas; Control for earthmoving activities
- Track-out prevention
- Control for off-site transport
- Post-construction stabilization of disturbed areas
- Air monitoring for asbestos (if required by the district Air Pollution Control Officer [APCO])

The Asbestos Dust Mitigation Plan would include BMPs to minimize dust during grading and other earthmoving operations. BMPs could include, but not be limited to:

- Limiting vehicle speed to fifteen mph or less on the site
- Applying water to the site prior to and during ground disturbance to prevent visible emissions from crossing the property line
- Keeping storage piles adequately wetted or covered
- Washing down vehicles before leaving the site
- Cleaning visible track-out on paved public roads using wet sweeping or a HEPA filter-equipped vacuum within 24 hours

The BAAQMD would also be notified at least fourteen days prior to construction activities at the site.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implementation of Asbestos Dust Mitigation Plan during all excavation activities in areas underlain with serpentinite

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Levels of Significance. Mitigation Measure GEO-2 would reduce Impact GEO-2 to a less-than-significant level.

4.3.3.2.2 Operations-related Impacts. Converter station operation would not result in impacts to the soil from erosion. Routine vehicle traffic during Project operation would be limited to existing roads, all of which are or would be paved, and standard operational activities would not involve the disruption of soil.

Earthquake-related Impacts**.** Ground fault rupture occurs during seismic events along active faults. Since there are no active faults onsite, the potential for ground rupture on the site is considered less than significant.

Due to the relatively flat topography of the Project site, landslide potential is considered less than significant. Because the proposed HWC Converter Station site is within 9.5 and 12 miles of the San Andreas and Hayward faults, respectively, there is a potentially high risk of strong ground shaking in the event of a large earthquake in the area.

Impact GEO-3: Strong Ground Shaking. There is a high risk of strong ground shaking in the event of a large earthquake in the area. This impact is considered potentially significant.

Mitigation Measure GEO-3: Design to Seismic Design Requirements. Due to the site's proximity to earthquake faults and the characteristics of the soil profile, a site-specific study shall be conducted to develop seismic design criteria. Project facilities shall be designed and constructed at a minimum to the seismic design requirements for ground shaking specified in the Uniform Building Code for Seismic Zone 4. Additionally, to satisfy the provisions of the 1998 California Building Code, these facilities shall be designed to withstand ground motions equating to approximately a 500-year return period (10 percent probability of exceedance in 50 years). For design purposes, site-specific ground motions shall be calculated for all project sites.

Implementation Responsibility: Project proponent

Requirements and Timing: Prior to final design

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Levels of Significance. Implementation of Mitigation Measure GEO-3 would reduce Impact GEO-3 to a less-than-significant level.

***Liquefaction*.** The Project site is within the potential Liquefaction Zone (CDMG, 2000), which is defined as "areas where historical occurrence of liquefaction or local geological, geotechnical, and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693c would be required."

Impact GEO-4: Liquefaction. There is a potential for liquefaction at the Project site. This impact is considered potentially significant.

Mitigation Measure GEO-4: Design Project for Liquefiable Deposits. A site-specific program of exploratory borings and accompanying laboratory testing shall be required in order to delineate potentially liquefiable materials beneath the construction area. Geotechnical investigations shall be required for consideration prior to foundation design and development of site-specific design criteria.

Implementation Responsibility: Project proponent

Requirements and Timing: Investigation to be conducted prior to final design and appropriate design completed prior to issuance of building permit.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Levels of Significance. Mitigation Measure GEO-4 would reduce Impact GEO-4 to a less-than-significant level.

Impact GEO-5: Shrink-Swell/Subsidence. The proposed San Francisco HWC Converter Station site is potentially underlain with expansive soils, which requires specific attention during grading to avoid future heaving and cracking of overlying materials. The potential for damage due to shrink-swell/subsidence to site facilities is potentially significant.

Mitigation Measure GEO-5: Design Project for Shrink-Swell/Subsidence. A program of site-specific exploratory borings and accompanying laboratory testing shall be required to delineate any potentially expansive materials underneath the proposed Project facility sites and to evaluate the potential for site subsidence and identify and implement appropriate design measures (e.g. pile supports or replacement of undesirable materials) in accordance with applicable codes.

Implementation Responsibility:	Project proponent
Requirements and Timing:	Investigation and appropriate design completed prior to issuance of building permit
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure GEO-5 would reduce Impact GEO-5 to a less-than-significant level.

4.3.3.3 Pittsburg Standard Oil Converter Station

4.3.3.3.1 Construction-related Impacts. Use of the site would require demolition and removal of two abandoned concrete wastewater storage tanks, a dilapidated building, and debris. Before construction of the proposed converter station, the site would be cleared of all structures and stored materials and graded.

An area of up to approximately 7 acres located on vacant property adjacent to and north of the site would be devoted to equipment and materials laydown, storage, parking of construction equipment, small fabrication areas and office trailers for the Pittsburg Converter Station site. The laydown site location and proposed access road to the Pittsburg-Antioch Highway are shown on Figure 4.3-5.

Construction, including excavation and grading of the site, including ancillary facilities, could lead to soil erosion. Soil loss estimates have not been calculated for the Project site or for the onshore cable routes.

Construction of the proposed Project would also result in soil compaction due to the erection of foundations and paving. In addition, soil compaction would result from vehicle traffic along temporary access roads and in equipment staging areas.

Impact GEO-1: Soil Erosion and Compaction. The soil erosion and compaction impact (Impact GEO-1) described in Section 4.3.3.2.1 applies to the Pittsburg Standard Oil Converter Station site.

Mitigation Measure GEO-1: Design Project for Erosion Control. Mitigation Measure GEO-1 described in Section 4.3.3.2.1 shall be applied at the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Approval of SWPPP by RWQCB prior to construction
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance with SWPPP over course of construction

Resulting Level of Significance. Mitigation Measure GEO-1 would reduce Impact GEO-1 to a less-than-significant level.

4.3.3.3.2 <u>Operations-related Impacts</u>.

***<u>Earthquake-related Impacts</u>*.** Ground fault rupture occurs during seismic events along active faults. Since there are no active faults on site, the potential for ground rupture on the site is considered less than significant.

Due to the relatively flat topography of the Project site, landslide potential is considered less than significant.

Because the Pittsburg-Kirby Hills Fault Zone is approximately 1.1 miles from the site, there is potentially a high risk of strong ground shaking in the event of a large earthquake in the area.

Impact GEO-3: Strong Ground Shaking. The strong ground shaking impact (Impact GEO-2) described in Section 4.3.3.2.2 applies at the Pittsburg Standard Oil Converter Station site.

Mitigation Measure GEO-3: Design to Seismic Design Requirements. Mitigation Measure GEO-3 described in Section 4.3.3.2.2 shall be applied at the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility: Project proponent

Requirements and Timing: Prior to final design, construction, and operations

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure GEO-3 would reduce Impact GEO-3 to a less-than-significant level.

***Liquefaction*.** As with the HWC site, the nature of the alluvial and fluvial deposits on which the facility would be sited and the presence of potentially liquefiable materials indicates that liquefaction and lateral spreading could occur.

Impact GEO-4: Liquefaction. The liquefaction impact (Impact GEO-4) described in Section 4.3.3.2.2 applies to the Pittsburg Standard Oil Converter Station site.

Mitigation Measure GEO-4: Design Project for Liquefiable Deposits. Mitigation Measure GEO-4 described in Section 4.3.3.2.2 shall be applied to the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility: Project proponent

Requirements and Timing: Investigation to be conducted prior to final design and appropriate design competed prior to the issuance of building permit

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure GEO-4 would reduce Impact GEO-4 to a less-than-significant level.

***Shrink-Swell/Subsidence*.** Expansive soils shrink and swell as a result of moisture changes. This can cause heaving and cracking of slabs-on-grade, pavements, and structures founded on shallow foundations. Successful construction on expansive soils requires special attention during grading. The site soils have moderate to high shrink-swell/subsidence potential (City of Pittsburg, 2001).

Impact GEO-5: Shrink-Swell/Subsidence. The proposed Pittsburg Standard Oil Converter Station site is potentially underlain with expansive soils, which requires specific attention during grading to avoid future heaving and cracking of overlying materials. The potential for damage due to shrink-swell/subsidence to site facilities is potentially significant.

Mitigation Measure GEO-5: Design Project for Shrink-Swell/Subsidence. A program of site-specific exploratory borings and accompanying laboratory testing shall be required to delineate any potentially expansive materials underneath the proposed Project facility sites and to evaluate the potential for site subsidence and identify and implement appropriate design measures (e.g. pile supports or replacement of undesirable materials) in accordance with applicable codes.

Implementation Responsibility: Project proponent

Requirements and Timing: Investigation and appropriate design completed prior to issuance of building permit

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure GEO-5 would reduce Impact GEO-5 to a less-than-significant level.

4.3.3.4 Offshore DC Cable Route

4.3.3.4.1 Construction-related Impacts. Installation of the proposed offshore DC (and AC for the Pittsburg Standard Oil Converter Station) would disturb and temporarily suspend Bay sediments. This impact is addressed in Section 4.4, Water Resources and Quality.

4.3.3.4.2 Operations-related Impacts.

***Surface Rupture*.** The proposed offshore cable alignment crosses both the Pittsburg-Kirby Hills Fault Zone and the Hayward-Rodgers Creek Fault Zone. A strong earthquake along either of these faults could potentially cause surface rupture along the cable alignment. This potential impact is considered to be adverse, but less than significant. In the event of cable damage during the operational phase, the line would shut down automatically and be repaired as described in Section A.5.2.2 in Appendix A of this EIR.

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4.4 WATER RESOURCES AND QUALITY

The waters within San Francisco Bay provide critical sheltered water habitat for a wide variety of marine and aquatic species. These waters are important both ecologically and to commercial and recreational interests such as fisheries and water contact recreation. Bay resources are affected by commercial, transit, and recreational activities in the Bay because dredge and fill operations, fuel spills, and pollutants can adversely affect water quality.

This section presents the existing hydrology, water quality, and sediment quality in the Bay along with current water quality concerns. These concerns potentially relate to the proposed Project due to Hydroplow (or other equivalent cable-burial technology whose sediment disturbances are similar to those of the Hydroplow) activities. These potential concerns relate to: burying the cable in the bottom of the Bay, dredging along a small portion of the cable route, potentially polluted stormwater runoff from onshore construction of converter stations, temporary use of laydown areas, and construction of onshore cable routes and access roads.

4.4.1 Environmental Setting

San Francisco Bay is California’s largest estuarine system, and its configuration and the surrounding landscape have been shaped by a combination of tectonic activity, recent sea level changes, and human activities. Since the formation of the Sacramento-San Joaquin drainage outlet through the Bay approximately 400,000 years ago, the environment of deposition has fluctuated between estuarine (periods of high sea level) and alluvial (periods of low sea level).

The present Bay estuary formed less than 10,000 years ago as the global climate warmed and sea levels rose. Seawater re-entered the Bay approximately 10,000 years ago and by about 4,000 years ago had reached its present level. With the establishment of true estuarine conditions, sedimentation in the Bay changed from alluvial sands and silts to dark-colored estuarine clays and silts, commonly called Bay Mud. Deposition of sandier sediment was confined to channels.

Since about 1850, human activities have made enormous modifications to the Bay, causing changes in the patterns of circulation and sedimentation. Between 1856 and about 1900, hydraulic mining in the Sierra foothills deposited several feet of sediment throughout the Bay. Starting in the 1800s, the construction of levees and dikes altered the patterns of drainage and annual flooding in the Sacramento River Delta. Also, the placement of fill at numerous localities around the Bay margins has dramatically altered the shoreline profile.

4.4.1.1 San Francisco Bay Estuary Hydrodynamics

San Francisco Bay and the San Joaquin-Sacramento River Delta form the largest estuary on the west coast of the United States. Shown on Figure 4.4-1, it encompasses roughly 1,600 square miles, drains more than 40 percent of the state, and provides drinking water to approximately two-thirds of California (SFEP, 1999). Here, fresh water from the rivers and numerous smaller tributaries flows out through the Bay to the Pacific Ocean. The San Francisco Bay Estuary (Estuary) is composed of three distinct hydrographic regimes: the South Bay, which extends from the Bay Bridge to the southern terminus of the Bay in San Jose, and the Central and North bays, which connect the delta and the Pacific Ocean.

The North Bay consists of several small embayments, the two largest being San Pablo Bay and Suisun Bay. The embayments are connected to each other and the ocean by deep, narrow channels ranging from 42 feet deep in San Pablo Bay to over 360 feet deep at the Golden Gate. San Pablo Bay is characterized by a deep channel surrounded by broad shoals. San Pablo Bay is connected to Suisun Bay by the narrow Carquinez Strait. Suisun Bay is a shallow basin consisting of braided channels and shallow shoals. The Central Bay has a highly complex bathymetry. East of the Golden Gate, the depth is approximately 300 feet, while extensive intertidal mudflats are present at the eastern edge of the Central Bay.

Freshwater inflows, tidal flows, and their interactions largely determine variations in the hydrology of the Estuary. Hydrology has profound effects on all species that live in the Estuary because it determines the salinity in different portions of the Estuary, and controls the circulation of water through the channels and bays.

Approximately 90 percent of the freshwater inflow to the Bay comes from the delta (Cheng et al., 1993) and flows through the northern portion of the Bay, resulting in a partially to well-mixed Estuary (Walters et al., 1985; Uncles and Peterson, 1995). The North Bay is hydrologically distinct from the Central and South Bays. The degree of mixing depends on seasonally varying river inflow. The timing and magnitude of the highly seasonal river inflow modulates permanent estuarine circulation, which is largely maintained by salinity-controlled density differences between river and ocean waters.

Currents in San Francisco Bay are dominated by tidal action. Tides in the Bay Area are classified as mixed semidiurnal, with two flood tides and two ebb tides of unequal range occurring over a 24.8-hour period. Mean tidal range at the Potrero power plant is 4.6 feet. Mean tidal range in Pittsburg is 3.0 feet. Currents measured at the National Oceanic and Atmospheric Administration (NOAA) station at Potrero Point range from 0 knots (kt) at slack tide to 2.3 kt at average maximum ebb tide and 2.5 kt at average maximum flood tide. Flood tides flow at 160° and ebb at 320° relative to north.

4.4.1.2 San Francisco Bay Water Quality

The overall goals of water quality regulation according to the Water Quality Control Plan for San Francisco Bay Basin (Basin Plan) (RWQCB, 2005) are to protect and maintain thriving aquatic ecosystems and the resources those systems provide to society, and to accomplish these goals in an economically and socially sound manner.

Since 1993, the San Francisco Estuary Institute (SFEI) has administered a Regional Monitoring Program (RMP) for the Regional Water Quality Control Board (RWQCB) and major Bay dischargers. Most dischargers to the Bay are required to participate in the RMP as a condition of their discharge permit. SFEI conducts monitoring from the Delta to the South Bay. The Estuary is divided into five regions, and eight random locations are sampled within each region each year for sediment quality (SFEI, 2005a). Four or more random locations within each region are sampled for water quality. In addition, a few historical fixed sites are sampled annually for long-term trend analysis.

The RMP seeks to characterize contaminant concentrations in San Francisco Estuary water, sediment, fish, and shellfish. The ultimate goal is to determine how contaminant concentrations in the Estuary are changing in response to pollution prevention and reduction measures, and to provide feedback to water quality management agencies. The five key objectives are:

- To describe patterns and trends in contaminant concentration and distribution
- To describe general sources and loadings of contamination to the Estuary
- To measure contaminant effect on selected parts of the Estuary ecosystem
- To compare monitoring information to relevant water quality objectives and other guidelines
- To synthesize and distribute information from a range of sources to present a more complete picture of the sources, distribution, fates, and effects of contaminants in the Estuary ecosystem

Data collected for the RMP indicate contamination areas in the Estuary. The primary known contamination problems include:

- The top water quality concerns in the Estuary are polychlorinated biphenyls (PCBs) and mercury
- Measured values of contaminants in the Estuary exceed relevant water, sediment, and tissue quality guidelines

- The South Bay most frequently exceeds the guidelines
- The northern and southern segments exceed the guidelines more frequently than the Central Bay
- Estuary waters do not tend to be toxic and there has been a decrease in the incidences of aquatic toxicity observed in the tributaries during storm events between 1997 and 2001

A summary of water quality data from the 2003 RMP Annual Monitoring Results Report (SFEI, 2005b) is presented in Table 4.4-1.

TABLE 4.4-1
SAN FRANCISCO BAY WATER QUALITY

	Concentration (µg/L)				
			Water Quality Objectives [1]		
Constituent	Maximum Measured	Median Measured	4-day Avg	1-hr Avg	24-hr Avg
Arsenic	8	2.8	36	69	
Cadmium	0.2	0.1	9.3	42	
Copper	14	3	3.1 [2]	4.8 [2]	
Lead	0.6	0.5	8.1	210	
Mercury	0.08	0.007	0.025	2.1	
Nickel	25	3	8.2	74	
Selenium	0.8	0.01	5 [3]	20 [3]	
Silver	0.15	0.02		1.9	
Zinc	30	3	81	90	
Polyaromatic Hydrocarbons (PAH)	300,000	50,000			15
PCB	2000	450			

[1] Source: RWQCB, 2005. Basin Plan.

[2] Water quality objectives for copper were promulgated by the California Toxics Rule (CTR) and may be updated by EPA without amending the Basin Plan. Note: at the time of writing of the Basin Plan, the values are 3.1 µg/l (4-day average) and 4.8 µg/l (1-hr. average).

[3] Selenium criteria were promulgated for all San Francisco Bay/Delta waters in the National Toxics Rule (NTR). The NTR criteria specifically apply to San Francisco Bay upstream to and including Suisun Bay and Sacramento-San Joaquin Delta. Note: at the time of writing of the Basin Plan, the values are 5.0 µg/l (4-day average) and 20 µg/l (1-hr. average).

4.4.1.3 San Francisco Bay Sediment Quality

The Bay's sediment can be both a source of and sink for pollutants in the overlying water column. Past and present waste disposal practices from the surrounding land and waste discharges have resulted in the introduction of pollutants into the Bay, some of which have degraded Bay sediments. The overall influx of pollutants can cause increases in sediment pollutant levels. These pollutants are not distributed evenly in the Bay, and localized areas are highly contaminated. Natural resuspension processes, biological processes, other mechanical disturbances, dredging, and sediment disposal can remobilize particulate-bound pollutants. While pollutant loading to the Estuary from point sources has declined dramatically over the past two decades, and surface sediment contamination may be declining from historical highs, Bay sediments are still an important source and sink of pollutants. The mean concentrations of metals in sediments vary according to grain size, organic carbon content, and seasonal changes associated with riverine flow, flushing, sediment dynamics, and anthropogenic inputs. Anthropogenic inputs appear to have the greatest effect on sediment levels of copper, silver, cadmium, and zinc, but may also have elevated concentrations of chromium, nickel, and cobalt above background (RWQCB, 1994).

Sediment contamination concerns include:

- Various toxic contaminants found only in barely detectable amounts in the water column can accumulate in sediments to much higher levels
- Sediments serve as both a reservoir for contaminants and a source of contaminants to the water column and organisms
- Sediments integrate contaminant concentrations over time, whereas water column contaminant concentrations are much more variable and dynamic
- Sediment contaminants (in addition to water column contaminants) affect bottom-dwelling organisms and other sediment-associated organisms, as well as the organisms that feed on them and humans
- Results from the RMP, described in the previous section, has indicated that Estuary sediment is frequently toxic, and has shown no decrease in toxicity over time

A summary of sediment quality data from the 2003 RMP Annual Monitoring Results Report (SFEI, 2005b) for the entire Estuary is presented in Table 4.4-2. In Table 4.4-2, sediment quality data are compared to the NOAA sediment benchmarks termed Effects Range Low (ERL) and Effects Range Mean (ERM). The ERM is the concentration below which toxic or adverse effects in organisms living in the sediment are rarely observed, and above which adverse effects are frequently observed. Sediment concentrations greater than the ERM are generally interpreted as an indication of contamination.

4.4.1.3.1 **<u>Sediment Quality Along the Proposed Cable Route</u>.** The proposed HVDC cable would be buried under the Bay and extend between landing points near the San Francisco-based converter station and the Pittsburg converter station. The proposed route

TABLE 4.4-2
SAN FRANCISCO BAY SEDIMENT QUALITY SUMMARY

Constituent	Notes
Arsenic	Approximately 40% of the total sampled area in the Estuary had sediment arsenic concentrations above the ERL of 8.2 milligrams per kilogram (mg/kg).
Cadmium	None of the total sampled area in the Estuary had sediment cadmium concentrations above the ERL of 1.2 mg/kg.
Copper	Approximately 65% of the total sampled area in the Estuary had sediment copper concentrations above the ERL of 34 mg/kg. San Pablo Bay and the majority of the lower South Bay are above the ERL, and about half the area of Suisun Bay, Central Bay, and South Bay are above the ERL.
Lead	None of the total sampled area in the Estuary had sediment lead concentrations above the ERL of 46.7 mg/kg.
Mercury	Approximately 80% of the total sampled area in the Estuary has sediment mercury concentrations above the total maximum daily load (TMDL) target of 0.2 mg/kg. Available data indicate that both San Pablo Bay and the lower South Bay regions are above the target, and about half of the area of Suisun Bay is above the TMDL target.
Nickel	Almost all of the total sampled area in the Estuary had sediment nickel concentrations above the ERL guideline of 20.9 mg/kg.
Selenium	None of the total sampled area in the Estuary had sediment selenium concentrations above the ASC guideline of 0.64 mg/kg.
Silver	None of the sampled area in the Estuary had sediment silver concentrations above the ERL of 1 mg/kg.
Zinc	Only approximately 5% of the total sampled area in the Estuary had sediment zinc concentrations above the ERL of 150 mg/kg.
Total PAH	Approximately 5% of the total sampled area in the Estuary had sediment total PAH concentrations above the ERL of 4,022 micrograms per kilogram (µg/kg).

from San Francisco to Pittsburg lies within San Francisco Bay, San Pablo Bay, the Carquinez Strait, Suisun Bay, and New York Slough. The specific proposed route was selected with guidance from relevant agencies and organizations to avoid shipping channels, anchorages, known areas of sediment contamination, dredge disposal areas, and other known obstacles.

The Bay Protection and Toxic Cleanup Program (BPTCP) has identified sediment “toxic hot spots” where sediment dredging could result in the degradation of water quality in San Francisco Bay. The Bay Protection and Toxic Cleanup section of the California Water Code (Division 7, Sections 13390-13396.5) established a program to identify and plan remediation of toxic hot spots in bays and estuaries. Under this law, the RWQCB has implemented a program to identify potential toxic hot spots, sample and assess biological impacts in areas of unknown condition, confirm the biological impacts in areas that have been previously sampled, and assess the relationship between toxic pollutants and biological effects. In the Bay region, the RWQCB has reviewed existing data and reports; collected and analyzed new water, sediment, and tissue samples; and prepared reports. The *Final Regional Toxic Hot Spot Cleanup Plan* (RWQCB, 1999) summarizes the situation in the Bay, and identifies sites of concern and candidate toxic hot spots. The cable route for the proposed Project was designed to avoid known toxic hot spots.

Sampling Methodology. In order to confirm that cable installation along the proposed route would not disturb or disperse contaminated sediments (at levels above regulatory thresholds) that may be present along the proposed route, as well as guide selection of cable burying equipment and procedures, a Sampling and Analysis Program (SAP) of Bay floor sediments for the proposed Project was prepared (with regulatory guidance and approval from the San Francisco Dredged Materials Management Office) and implemented to complement and confirm existing data and surveys (refer to Appendix E of this EIR for more information). A total of 27 cores (twenty-three 6-foot cores and four 15-foot cores) were collected from the 27 sampling locations shown on Figure 4.4-2. Sampling was conducted from September 21 to 30, 2005 by URS field personnel and TEG Oceanographic Services, Santa Cruz, California, using a ship-mounted vibracore. One composite environmental sample was collected from each 6-foot core (23 samples) and two composite samples were collected from each 15-foot core (except one core which did not yield enough recovery for 2 samples). In addition, 4 duplicate sediment samples were analyzed for quality control purposes. The samples were analyzed for the chemicals displayed in Table 4.4-3.

TABLE 4.4-3
CONSTITUENTS ANALYZED
DURING SEDIMENT SAMPLING

Analyte	Method
Metals	6020
Selenium	7740
Butyltins	GC-FPD/ECD
Polyaromatic Hydrocarbons (PAHs)	8270D SIM
Organochlorine Pesticides	8081B
Aroclors	8082A
Total Solids	160.3
TOC	9060

***Sediment Sampling Results*.** The sediment sampling results did not indicate elevated levels of chemicals with the exception of nickel. However, the naturally occurring concentrations of nickel in Bay Area sediments are much higher than the national sediment benchmarks as discussed below.

No pesticides, PCBs, or butyltins were detected in the sediment samples. All PAHs detected were well below the ERL benchmark.

Lead, cadmium, and silver were not detected at levels above the ERLs of 47, 1.2, and 1.0 mg/kg, respectively. The highest detected concentration of zinc was at the ERL of 150 mg/kg. Selenium was detected in approximately three-quarters of the samples, at concentrations up to 1.1 mg/kg. Arsenic, chromium, copper, and mercury were detected at concentrations above the ERLs, but below the ERMs.

Nickel concentrations in the samples ranged from 36 to 120 mg/kg, all of which are above the ERL of 20.9 mg/kg, and 29 samples had concentrations above the ERM of 51.6 mg/kg. The highest nickel concentrations (120 mg/kg) were in the samples from New York Slough near Pittsburg. While the concentrations of nickel are above the NOAA ERL and ERM benchmarks, they are not elevated compared to the ambient concentrations of chemicals in San Francisco Bay sediments developed by the RWQCB for Beneficial Reuse of Dredged Materials (RWQCB, 2000). Because nickel naturally occurs in Bay Area rock formations, the ambient concentration of nickel in Bay sediment is 112 mg/kg. Therefore, the range of 36 to 120 mg/kg is considered to be consistent with background concentrations.

***Comparison to Regional Monitoring Program Data Near the Cable Route*.** Figure 4.4-2 shows sampling locations from the RMP along the proposed cable route. Sediment data from 10 RMP stations was compared to the results from the TBC sampling program (SFEI, 2005b,c). Table 4.4-4 presents a sediment data summary for locations along the proposed alignment.

With the exception of two samples, no PAHs, pesticides, or PCBs (total) were detected in the RMP samples at levels above the ERLs. The sample from RMP Station CB012S had 8 of the 17 analyzed PAHs at levels above the ERL but below the ERM. Station CB012S is located offshore of the Southeast Water Pollution Control Plant discharge, which extends offshore from the end of Pier 80 near the proposed (Western Pacific) laydown area. The sample from location CB073S (between Treasure Island and Angel Island) contained benzo(a)pyrene at a concentration just above the ERL. SU008S (Suisun Bay near Roe Island) had a dieldrin concentration above the ERL.

Cadmium, copper, lead, selenium, silver, and zinc were not detected above the ERLs. Arsenic was detected at levels from 2.8 to 11.5 mg/kg. The ERL for arsenic is 8.2 mg/kg and the ERM is 70 mg/kg. With the exception of one sample location where mercury was not detected, mercury was detected above the ERL but below the ERM for all samples. Mercury

TABLE 4.4-4
CABLE ROUTE SEDIMENT QUALITY SUMMARY[1,2,3]

	TBC (SAP) Sampling Data				RMP Data Along Cable Route		
Constituent	ERM	ERL	Min	Max	Min	Max	Max Without Sample CB012S
Inorganics							
Arsenic	70	8.2	3.8	67	2.83	11.51	11.51
Cadmium	9.6	1.2	0.19	0.44	0.11	0.46	0.46
Chromium	370	81	29	100			
Copper	270	34	6.5	69	12.81	51.15	51.15
Lead	218	46.7	3	29	3.10	21.12	21.12
Mercury	0.71	0.15	0.025	0.51	ND	0.38	0.38
Nickel	51.6	20.9	36	120	56.02	154.32	154.32
Selenium			ND	1.1	0.04	0.58	0.58
Silver	3.7	1	0.032	0.36	ND	0.34	0.34
Zinc	410	150	22	150	49.30	129.90	129.90
Polyaromatic Hydrocarbons							
Acenaphthene	0.5	0.016	ND	ND	ND	0.0336	0.0299
Acenaphthylene	0.64	0.044	ND	ND	ND	0.0726	0.0324
Anthracene	1.1	0.0853	ND	ND	ND	0.2410	0.0777
Benzo (a) Anthracene	1.6	0.261	ND	0.018	0.0007	0.5290	0.2060
Benzo (a) Pyrene	1.6	0.43	ND	0.027	0.0035	0.7550	0.2930
Benzo (b) Fluoranthene	3.6	3.6	ND	0.027	0.0041	0.4360	0.1550
Benzo (g,h,i) Perylene	0.72	0.72	ND	0.038	0.0015	0.6230	0.2290
Benzo (k) Fluoranthene	3.6	3.6	ND	0.019	0.0021	0.4400	0.1580
Chrysene	2.8	0.384	ND	0.022	ND	0.5440	0.2120
Dibenzo (a,h) Anthracene	0.26	0.0634	ND	ND	ND	0.0079	0.0079
Fluoranthene	5.1	0.6	ND	0.067	ND	1.4200	0.4470
Fluorene	0.54	0.019	ND	ND	ND	0.0664	0.0263
Indeno (1,2,3-cd) Pyrene	0.69	0.69	ND	0.025	ND	0.4730	0.2390
1-Methylnaphthalene	0.67	0.07	ND	ND	ND	0.0177	0.0094
2-Methylnaphthalene	0.67	0.07	ND	ND	ND	0.0298	0.0135
Naphthalene	2.1	0.16	ND	ND	0.0029	0.1200	0.0407
Phenanthrene	1.5	0.24	ND	0.012	0.0025	0.8210	0.3280
Pyrene	2.6	0.665	ND	0.085	0.0051	1.9000	0.5260

TABLE 4.4-4 (CONTINUED)
CABLE ROUTE SEDIMENT QUALITY SUMMARY[1,2,3]

	TBC (SAP) Sampling Data				RMP Data Along Cable Route		
Constituent	ERM	ERL	Min	Max	Min	Max	Max Without Sample CB012S
Pesticides							
p,p-DDD	0.02	0.002	ND	ND	ND	0.0003	0.0003
p,p-DDE	0.027	0.0022	ND	ND	ND	0.0004	0.0004
p,p-DDT	0.007	0.001	ND	ND	ND	0.0000	ND
Dieldrin	0.008	0.00002	ND	ND	ND	**0.0008**	**0.0008**
Total PCBs			ND	ND	ND	0.0000	ND
Total PAHs					0.1769	9.3319	3.3564

1 All data are reported in mg/kg.

2 **Data in bold** = above ERL.

3 **Data in bold and underlined** = above ERM.

was not detected at sample location SU010S (Suisun Bay). Nickel was detected at concentrations above the ERM at all sample locations. The highest measured nickel concentration was 154 mg/kg at station SU008S (Suisun Bay).

In general, with the exception of RMP location CB012S, sediment results were comparable between the RMP stations along the alignment and the samples taken for the Project. Station CB012S is approximately 1,800 feet southeast of the cable route where the route turns towards the shore at milepost (MP) 0.4 (refer to Map A.2-1, sheet 1; and Figure 4.4-2). When data from this sample is discounted, only one PAH, acenaphthene, was detected above the ERL (but below the ERM) for the RMP stations along the alignment. The maximum concentrations when the CB012S results are not included are shown in the far rightmost column of Table 4.4-4.

4.4.1.4 Groundwater Quality

Groundwater is defined as subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated.

Coastal groundwater quality can be degraded through the intrusion of saltwater. Degradation of water quality reduces the groundwater basin yield, diminishing production from existing activities and limiting future groundwater development. In undeveloped coastal areas, saltwater is prevented from migrating landward by the hydraulic head of the fresh water, which must be high enough above sea level to compensate for the greater density of saltwater. Groundwater quality at each of the proposed Project sites is discussed in Section 4.4.1.6 below.

4.4.1.5 Drainage and Flooding

4.4.1.5.1 City of San Francisco. The majority of San Francisco is served by a combined storm sewer system where stormwater, along with residential and commercial sewage is directed to three wastewater treatment plants prior to being released to San Francisco Bay or the Pacific Ocean. The San Francisco Public Utilities Commission (SFPUC) treats and discharges approximately 84 million gallons per day of treated wastewater during dry weather to San Francisco Bay and the Pacific Ocean. During wet weather, with additional facilities and increased operations, the plants can treat approximately 465 million gallons of combined flows per day (SFPUC, 2005).

Flood hazard maps show that the proposed converter station site in San Francisco is located outside of the 100-year and 500-year floodplains and is not subject to flooding.

4.4.1.5.2 City of Pittsburg. Pittsburg's existing drainage system is comprised primarily of channelized creeks fed by surface runoff and underground storm drains. The City of Pittsburg maintains the system within incorporated areas (City of Pittsburg, 2001). Outside city limits, the responsibility lies with either Contra Costa County or the County Flood Control District.

The developed portions of the City of Pittsburg are within two major watersheds: Kirker and Lawlor Creeks (Figure 4.4-4). Lawlor Creek drains into Suisun Bay. Kirker Creek drains into New York Slough.

Kirker Creek originates in the hills in the southernmost end of the watershed and flows approximately 7 miles north through the city. The watershed covers approximately 8,539 acres. In the southern hills, the creek and its tributary channels have sufficient capacity to carry peak stormwater flows. Farther downstream, however, natural flow capacity declines as the creek channel flattens. Urbanization north of Buchanan Road further decreases capacity as the channel becomes restricted and enclosed by storm drain culverts. Reduction in permeable soils caused by development also increases the total volume and rate of runoff. Most runoff of the Lawlor Creek watershed is conveyed by natural channels, except for storm drains located in developed areas and culverts under State Route 4 (SR 4).

Annual rainfall in the Pittsburg planning area ranges from 12.5 inches along the Sacramento River to 17.5 inches in the southern hills. Average annual precipitation is 13 inches, nearly all of which falls between November and April, with the heaviest rainfall between December and February (City of Pittsburg, 2001). Much of the shoreline in the Pittsburg area is susceptible to storm flooding.

Flood hazard maps show that the proposed Standard Oil Converter Station site in Pittsburg is located outside of the 100-year and 500-year floodplains and is not subject to flooding.

4.4.1.6 Local Water Resources and Quality

4.4.1.6.1 San Francisco HWC Converter Station. The proposed San Francisco HWC Converter Station site and laydown areas are shown on Figure 4.4-3. The converter station site is located adjacent to the Bay. The proposed construction laydown site (Western Pacific) is also located adjacent to the Bay. There is no surface water on the HWC site. Stormwater from the site is currently directed to the San Francisco combined stormwater and sanitary sewer system.

Local groundwater levels are approximately 18 feet below ground surface (bgs). Groundwater at the site is known to be contaminated with petroleum hydrocarbons, including TPH. Groundwater contamination at the site is discussed further in Section 4.14, Hazardous Materials and Waste Management.

The alternative laydown area (Pier 94/96) is shown on Figure 4.4-3. There is no surface water on the site. Stormwater from the site is currently directed to the San Francisco combined stormwater and sanitary sewer system. Local groundwater levels at the alternative laydown area are expected to be similar to the HWC site (approximately 18 feet bgs). Groundwater flows to the southwest, south, and southeast direction.

4.4.1.6.2 Pittsburg Standard Oil Converter Station. The Standard Oil Converter Station site location is shown on Figure 4.4-5. It is approximately 3,800 feet south-southwest of New York Slough and 400 feet west of Dowest Slough and is situated in the Kirker Creek watershed. The southernmost edge of the site (at southernmost end of the proposed access road) is bordered by Kirker Creek, just north of the Pittsburg-Antioch Highway. The alternative Standard Oil construction laydown area (Delta Energy Center) is approximately 3,100 feet south of New York Slough and 400 feet west of Dowest Slough.

The proposed Pittsburg Standard Oil Converter Station site lies within the Pittsburg Plain Groundwater Basin, an 18-square-mile, elongated basin that runs east-west along and parallel to SR 4 (CDWR, 2003). This basin is bounded by Suisun Bay on the north, the Tracy Basin on the east, and the Clayton Basin on the west (CDWR, 2003). The southern boundary extends 1 to 3 miles inland from Suisun Bay.

The water-bearing units in the basin are Pleistocene to Recent age alluvial deposits up to 400 feet thick (CDWR, 2003). The water-bearing materials consist of lenticular beds of sand, gravel, and clay. Aquifers in the basin area are hydrologically connected to the Sacramento River. The groundwater flows in a northerly direction following the slope of the land to the below-sea-level aquifer that is part of the Sacramento/San Joaquin groundwater system (City of Pittsburg, 2001).

Geotechnical reports prepared for sites in the Pittsburg area indicate that groundwater levels vary considerably. Groundwater depth within upland areas of the Pittsburg Plain has been documented between 18 to 28 feet, whereas shallow groundwater (2 to 7 feet below ground surface [bgs]) may be encountered in low-lying areas near Suisun Bay and in ravines and creek channels. Shallow groundwater from seasonal saturation occurs in the upper 5 to 10 feet of surface soil and underlying bedrock (City of Pittsburg, 2001).

Shallower groundwater in low-lying areas near Suisun Bay and in ravines and creek channels is tidally influenced and tends to be saline with high mineral concentrations (City of Pittsburg, 2001). Intense pumping for industrial uses in the 1930s through 1950s resulted in overdraft and seawater intrusion. Limited amounts of water drawn from the underground aquifer are now blended with raw water from the Contra Costa Canal before treatment and distribution to the city. No subsurface investigations have been conducted on the site to determine groundwater quality. However, based on a Phase I Environmental Site Assessment conducted at the site, groundwater at the site may contain TPHs or other constituents. Potential groundwater contamination at the site is discussed further in Section 4.14, Hazardous Materials and Waste Management.

Stormwater currently flows from the site to its natural water course and then discharges into Kirker Creek. As described in Section 4.4.1.5 (Drainage and Flooding), Kirker Creek originates in the hills in the southernmost end of the watershed and flows approximately 7 miles north through the City of Pittsburg, draining into New York Slough.

4.4.1.6.3 Offshore DC Cable Route. The proposed HVDC cable would be buried under the Bay between a San Francisco-based converter station and the Pittsburg Converter Station. The proposed route lies within San Francisco Bay, San Pablo Bay, the Carquinez Strait, Suisun Bay, and New York Slough. Sediment quality along the cable route is described in Section 4.4.1.3.1 above (Sediment Quality Along the Proposed Cable Route).

4.4.2 Regulatory Setting

4.4.2.1 Federal

4.4.2.1.1 Clean Water Act. The Clean Water Act (CWA) empowers the EPA with regulation of wastewater and stormwater discharges into surface waters by using National Pollutant Discharge Elimination System (NPDES) permits and pretreatment standards. At the state level, these permits are issued by the RWQCBs, but the EPA may retain jurisdiction at its discretion. The CWA's primary effect on the proposed Project has to do with control of soil erosion during construction. The following federal regulations pertain to the CWA (33 USC 1251–1376).

***Section 401*.** Dredging permit applicants intending to dispose material in water must obtain water quality certification from the State of California through the RWQCB with jurisdiction over the Project area. The RWQCB, after reviewing the Project, may recommend to the State Water Resources Control Board (SWRCB) that certification be granted or denied.

Dredged material considered for disposal in water must be tested to determine its suitability for disposal. Authority to determine suitability is exercised by the state under Section 401 of the CWA. The RWQCB defined its testing guidelines for wetland and upland beneficial reuse of dredged material in *Interim Screening Criteria and Testing Requirements for Wetland Creation and Upland Beneficial Use* (Wolfenden and Carlin, 1992). Those guidelines have been superseded by the Draft Staff Report *Beneficial Reuse of Dredged Materials: Sediment Screening and Testing Guidelines* (RWQCB, 2000).

***Section 402*.** Drainage and runoff from proposed landside construction, including laydown areas, parking lots, and access roads, would likely add pollutants to stormwater discharges unless mitigation measures are implemented. Stormwater discharges associated with Project construction activities are regulated under the NPDES permitting system. Under the NPDES construction permit, owners of proposed projects where construction would disturb more than 1 acre of land would have to submit a Notice of Intent (NOI), develop a Stormwater Pollution Prevention Plan (SWPPP), conduct monitoring and inspections, retain monitoring records, report incidences of noncompliance, and submit annual compliance reports by July 1 of each year.

The State of California has permitting authority from the U.S., and the EPA implements the NPDES permit program. Stormwater NPDES permitting for certain classes of activities are regulated under the Industrial Activities General Permit adopted by the SWRCB on April 17, 1997 (WQO 97-03-DWQ NPDES Permit No. CAS000001). To comply with the conditions of this permit, facility operators are required to submit an NOI, develop a SWPPP, and conduct stormwater monitoring, in addition to submitting annual reports by July 1 of each year.

Stormwater discharges associated with construction activities are regulated under the General Construction Activity Stormwater Permit adopted by the State on August 19, 1999 (WQO 99-08 DWQ, NPDES Permit No. CAS000002). Under this permit, owners of land where a construction activity occurs that disturbs more than 1 acre of land must submit an NOI, develop an SWPPP, conduct monitoring and inspections, retain records of the monitoring, report incidences of noncompliance, and submit annual compliance reports.

***Section 404*.** Dredged material disposal is regulated pursuant to Section 404 of the CWA, which requires authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), for the discharge of dredged or fill material into all waters of the United States, including wetlands. The USACE is mandated to protect and maintain navigable capacity of the nation's waters under 33 Code of Federal Regulations (CFR), Navigation and Navigable Waters. Section 33 CFR requires the USACE to issue permits for dredging and placement of dredged or fill material into the waters of the U.S. (Part 323), and for ocean dumping of dredged material (Part 324).

Dredging material for disposal at aquatic sites must undergo testing to determine its potential effects on the disposal site environment. Testing is also used to determine whether dredged material is suitable for unconfined aquatic disposal (SUAD). For disposal sites in or potentially affecting inland waters, such as San Francisco Bay, testing requirements are defined by Section 404 of CWA. Guidance for suitability testing procedures for inland waters is provided by the *Evaluation of Dredged Material for Discharge in Inland and Near Coastal Waters – Testing Manual*, also called Inland Testing Manual or ITM (EPA/USACE, 1998). For ocean disposal sites, suitability requirements are defined by 40 CFR 227.6. Guidance for suitability testing is provided by the *Evaluation of Dredged Material Proposed for Ocean Disposal – Testing Manual*, also known as the Green Book (EPA and USACE, 1991).

4.4.2.1.2 Rivers and Harbors Act of 1899 (33 USC 401 et seq.). The Rivers and Harbors Act of 1899 (33 USC 401 et seq.) regulates development and use of the nation's navigable waterways. Section 10 of the Act prohibits unauthorized obstruction or alteration of navigable waters, and vests regulatory authority in the Secretary of the Army, acting through the USACE, for work in, under, or over any navigable water of the U.S. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States.

4.4.2.1.3 Oil Pollution Act of 1990 (OPA) (33 USC 2701-2761). This is the principal statute governing oil spills into the nation's waterways. OPA was passed in the wake of the Exxon Valdez oil spill in March of 1989. The statute establishes liability and limitations on liability for damages resulting from oil pollution, and establishes a fund for the payment of compensation for such damages. In conjunction with CERCLA, OPA mandates a National Oil and Hazardous Substances Pollution Contingency Plan (NCP) to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants. OPA requires preparation of spill prevention and response plans by coastal facilities, vessels, and certain geographic regions. OPA amended the CWA and includes the Oil Terminal and Oil Tanker Environmental Oversight and Monitoring Act of 1990.

4.4.2.1.4 <u>The Ports and Waterways Safety Act of 1972 (33 USC 1221 et seq.)</u>. As amended by the Port and Tanker Safety Act of 1978, this act provides the strongest authority for the United States Coast Guard's (USCG's) program to increase vessel safety and protect the marine environment in ports, harbors, waterfront areas, and navigable waters. It authorizes Vessel Traffic Services, controls vessel movement, and establishes requirements for vessel operation and other related port safety controls.

In addition, a number of other laws call for USCG enforcement. These include the Federal Water Pollution Control Act, which delegates enforcement authority and responsibility to the USCG in cases where oil and hazardous substances are discharged into U.S. waters in harmful quantities. The Act to Prevent Pollution from Ships (33 USC 1901 et seq.) limits the operational discharges of oil from ships and requires reception facilities to receive waste that cannot be discharged at sea. The Marine Protection, Research and Sanctuaries Act of 1972 (33 USC 1401 et seq.) requires USCG surveillance of ocean dumping activities. The Oil Pollution Act of 1990 (33 USC 2701 et seq.) requires increased USCG involvement with vessel traffic service systems, vessel and facility monitoring, and oil spill prevention and cleanup, in addition to amending the Federal Water Pollution Control Act.

NOAA established the Damage Assessment and Restoration Program (DARP) in 1990 to fulfill natural resource trustee responsibilities assigned in the CWA, CERCLA, OPA, NMSA, and other federal laws. DARP has the mission to restore coastal and marine resources that have been injured by releases of oil or hazardous substances and to obtain compensation for the public's lost use and enjoyment of these resources.

4.4.2.1.5 <u>Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA) (16 USC 1431 et seq.)</u>. Section 103 of the MPRSA of 1972, as amended, requires authorization from the Secretary of the Army, acting through the USACE, for the transportation of dredged material for the purpose of ocean disposal. The EPA is charged with providing oversight of the USACE's regulatory program and maintaining the integrity of the nation's waters. The EPA has responsibility for designating ocean disposal sites. According to the MPRSA, the EPA oversees disposal of materials into ocean waters and must provide written concurrence before material can be disposed in the ocean.

4.4.2.2 <u>State</u>

4.4.2.2.1 <u>Water Quality Control Act (Porter-Cologne Act) (California Water Code Section 13000 et seq.; CCR Title 23, Chapter 3, Subchapter 15)</u>. Under this act, the RWQCB may also act by either issuing or waiving waste discharge requirements for dredging projects with upland disposal of dredged material. These actions by the RWQCB are not equivalent to issuing or waiving water quality certification. The RWQCB must issue a separate 401 Certification.

The SWRCB, as authorized by the act, has promulgated regulations in Subchapter 15 of Title 23 of the California Code of Regulations (CCR) designed to protect water quality from the effects of waste discharges to land. Under Subchapter 15, wastes that cannot be discharged directly or indirectly to waters of the state (and therefore must be discharged to land for treatment, storage, or disposal) are classified to determine specifically where such wastes may be discharged.

In addition to the provisions contained in the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act, the California Department of Fish and Game (CDFG) Code provides general law regarding water pollution prohibitions and both criminal and civil penalties on discharges of petroleum and other hazardous materials entering California waters (Sections 5650 et seq.). State Fish and Game wardens enforce these sections.

Further, California Water Code Section 13272 requires any person who knows of any oil or petroleum product discharge into California waters to notify the Office of Emergency Services (OES). Failure to comply is a misdemeanor.

All Oil Spill Prevention and Response regulations are found in Title 14, CCR. Regulations promulgated by the State Lands Commission are found in Title 2, CCR.

California State Lands Commission Marine Facilities Division (MFD) derive legislative authority from the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990 Division 7.8 of the Public Resources Code. The act expanded the State Lands Commission's (SLC's) pollution prevention responsibilities.

4.4.2.2.2 State Lands Commission (Public Resources Code Section 6001 et seq.). Projects involving use of state lands may require lease or permitting from the SLC, which is charged with managing California's sovereign lands for purposes consistent with the public trust.

4.4.2.2.3 Dredged Materials Management Office (DMMO) Dredging Permit. Dredging and dredge disposal would require a permit issued by DMMO. In addition, a CWA Section 401 Certification would be required from RWQCB for dredging to ensure that proposed dredging would not impair water quality and Section 7 Biological Consultation (e.g., with the National Marine Fisheries Service [NMFS]) could be required.

4.4.2.3 Local

4.4.2.3.1 McAteer-Petris Act (Public Resources Code Section 66600 et seq.). The Bay Conservation and Development Commission (BCDC) regulates dredging and disposal under the provisions of the McAteer-Petris Act. BCDC, on the basis of the Suisun Marsh Preservation Act of 1977 (Public Resources Code Section 29000-29612SB 1981) and the federal Coastal Zone Management Act (CZMA) (33 USC 1451 et seq.), is mandated to reduce Bay fill and to protect and manage the coastal zone resources of San Francisco Bay. The BCDC's jurisdiction includes the Bay and a 100-foot shoreline band, salt ponds, managed wetlands, tidal marshes 5 feet above mean sea level, and certain named tributary waterways, such as rivers. According to the San Francisco Bay Plan, BCDC can authorize dredging when it can be demonstrated that the dredging is needed to serve a water-oriented use or other important public purpose, the materials to be dredged meet the water quality requirements of the RWQCB, important fisheries and natural resources would be protected through seasonal restrictions established by CDFG, USFWS, and/or NMFS, dredging is minimized through project siting and design, and the materials would, if feasible, be reused or disposed outside the Bay and certain waterways. The amendments to the Water Quality Control Plan for the San Francisco Bay Basin focus on regulating the known and potential impacts to water quality, and beneficial uses of those waters by disposal activities.

4.4.2.3.2 Pittsburg Municipal Code (Chapter 15.104 – Stormwater Management Plan for Kirker Creek Watershed Drainage Area). Prior to the completion of planned, non-Project related downstream improvements to the Kirker Creek Watershed, the addition of new impervious surface areas in the Kirker Creek Watershed create a substantial risk of flooding. The Standard Oil Converter Station site is located at the downstream end of the Kirker Creek Watershed, and adjacent to, Dowest Slough, and the point at which the Kirker Creek Watershed discharges into the New York Slough. In accordance with the requirements of the Pittsburg Municipal Code (Chapter 15.104) and the Contra Costa Clean Water Program Stormwater C.3 Guidebook, this new development must:

- Construct an onsite infiltration system, associated with small storm flows, that would detain and control the rate of stormwater runoff to the adjacent Kirker Creek Watershed

4.4.3 Environmental Impacts

This section discusses potential Project-related onshore and offshore impacts to water resources and quality, including the criteria used to assess potential impact significance.

4.4.3.1 Thresholds of Significance

Based on CEQA Guidelines (Appendix G), Project-related impacts to water resources are considered to be potentially significant if they would:

- Violate any water quality standards or waste discharge requirements
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge
- Substantially alter the existing drainage pattern of the site or area in a manner which would result in substantial erosion or siltation on- or offsite
- Substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or offsite
- Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff
- Otherwise substantially degrade water quality

4.4.3.2 San Francisco HWC Converter Station

4.4.3.2.1 Construction-related Impacts. The proposed HWC Converter Station site, onshore AC cable route, and temporary construction laydown area are shown on Figure 4.4-3.

***Erosion and Contaminated Runoff*.** Stormwater on the site is currently directed to the San Francisco combined stormwater and sanitary sewer system. Stormwater and sanitary discharges for the converter station would also be discharged to the City of San Francisco's combined collection and treatment system. Stormwater falling in contained areas would pass through oil-water separators and the clear-well water would be discharged to the combined sewer system.

Onshore construction activities at the converter station site and proposed and alternative construction laydown areas could increase the potential for uncontrolled runoff of stormwater contaminated with sediments or other pollutants that could impact surface water quality and sedimentation. Construction of the proposed Project could increase the potential for silts to impact the water quality of San Francisco Bay through both suspended solids and water quality contaminants. Operation and maintenance of the facility could impact surface water quality of San Francisco Bay through inadvertent spills or discharges.

Stormwater pollution occurs when rainwater comes into contact with materials onsite and washes contaminants into storm drains, creeks, or directly into the Bay. Sources of pollution during Project construction could include oil leaked from heavy equipment and vehicles, grease, hydraulic fluid, fuel, construction materials and products, waste materials, landscaping runoff containing fertilizers, pesticides, or weed killers, and erosion of disturbed soil.

Stormwater discharges associated with Project construction activities are regulated according to CCR Section 402(p). Under the NPDES construction permit, owners of the proposed locations where construction would disturb more than 1 acre of land would have to submit an NOI, develop an SWPPP, conduct monitoring and inspections, retain monitoring records, report incidences of noncompliance, and submit annual compliance reports by July 1 of each year.

Impact WATER-1: Erosion and Contaminated Runoff. Erosion and contaminated runoff during construction and operation could significantly impact water quality within San Francisco Bay. This is considered a potentially significant impact.

Mitigation Measure WATER-1: Erosion Control and Contaminant Source Control. Apply for and comply with NPDES construction permit, and Industrial Activities General Permit. Requirements for the permits include submittal of a Notice of Intent, development of a Stormwater Pollution Prevention Plan (SWPPP), monitoring and inspections, and submittal of annual compliance reports.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: SWPPP shall be developed by construction contractor, or qualified consultant prior to commencement of construction; General Construction Activity Stormwater Permit adopted by the State on August 19, 1999 (WQO 99-08 DWQ, NPDES Permit No. CAS000002) prior to commencement of construction

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure WATER-1 would reduce Impact WATER-1 to a less-than-significant level.

Horizontal Directional Drilling (HDD)**.** The directional drilling location for the HWC Converter Station site is shown on Figure A.4-9 (Appendix A) and is located on the southeast portion of the site near the edge of the Bay. Construction activities using HDD could impact Bay water quality through loss of drilling fluids and disruption of Bay bottom sediment at the sediment surface where the borehole emerges. It is possible that a small amount of drilling mud (also known as drilling fluid) and disturbed sediment could be released into the Bay at the HDD location. Drilling mud would consist of water, bentonite clay, and inert, non-toxic polymers. Construction activities using HDD could also impact groundwater quality through loss of drilling mud that would increase suspended material in groundwater.

Impact WATER-2: Surface Water Quality Impacts from HDD. HDD could have significant water quality impacts through loss of drilling fluids and disruption of Bay bottom sediment at the sediment surface where the borehole emerges. This is considered a potentially significant impact.

Mitigation Measure WATER-2: Spill Prevention and Control Plan for HDD. Drilling shall be performed in accordance with a site-specific Spill Prevention and Control (SPCC) Plan for HDD Operations for Drill Fluids and Cuttings. Spill response measures included in this plan, should a spill occur, shall include reducing fluid pressures, thickening the fluid mixture, and/or adding pre-approved loss circulation materials (LCMs) to the mixture.

Implementation Responsibility:	Project proponent/HDD contractor, in conjunction with the cable laying firm
Requirements and Timing:	Prepare SPCC plan prior to commencement of construction
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure WATER-2 would reduce Impact WATER-2 to a less-than-significant level.

Impact WATER-3: Groundwater Quality Impacts from HDD. HDD could have significant water quality impacts through loss of drilling fluids that would increase suspended material in groundwater. This would be considered a potentially significant impact.

Mitigation Measure WATER-3: Use of Pilot Hole and Reaming. HDD shall be performed using a pilot hole plus reaming technique to minimize the potential for impacts to groundwater. To prevent significant water quality impacts, drilling muds shall consist of naturally occurring materials such as water and bentonite clay, plus inert, non-toxic polymers.

Both the drilling technique and early detection and response shall be used to minimize release of fluids to the environment. HDD shall start with completion of a small-diameter pilot hole. The pilot hole is gradually enlarged using reaming. This technique acts to prevent sudden loss of large volumes of drilling fluids.

Early detection and rapid response shall be implemented to minimize loss of drilling fluids. In the event loss of drilling fluids is detected, natural LCMs such as cotton dust, cottonseed hulls, wood fiber, mica, and cedar fiber shall be added to the drilling fluid. Alternative actions that shall be considered and implemented, as required, include reduction in drilling pressure, thickening of the fluid mixture, and construction of spill control structures, pits, and silt fences onshore, or silt curtains offshore.

Implementation Responsibility: Project proponent/HDD contractor, in conjunction with the cable laying firm

Requirements and Timing: Monitor for loss of drilling fluids and implement SPCC Plan, as applicable, during drilling

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure WATER-3 would reduce Impact WATER-3 to a less-than-significant level.

***Spills and Discharges*.** Groundwater resources at the site are not used for drinking water or other purposes. However, construction of the facility would require the use of petroleum products and hazardous materials and would generate solid waste. Inadvertent spills or discharges or improper handling of these materials could affect surface water or groundwater quality. Impacts and Mitigation Measures associated with accidental spills and waste management during operation are addressed in Section 4.14, Hazardous Materials and Waste Management. These Mitigation Measures (HAZ-3, HAZ-4, HAZ-5) include development of a Spill Prevention, Control and Countermeasure Plan and waste management protocols for construction areas.

4.4.3.2.2 Operations-related Impacts.

***Flooding*.** Some areas along the shoreline and drainages leading to the Bay are potential floodplains. Risks associated with building in a floodplain include threats to life and property. Local city or county government agencies regulate floodplain development through land use controls, based on determinations of flood elevations. The Federal Emergency Management Agency (FEMA) maintains maps of 100-year flood areas in the Bay Area counties. A “100-year flood” refers to a flood level with a 1 percent or greater chance of being equaled or exceeded in any given year (Figure 4.4-4).

A review of FEMA records indicates that San Francisco is not listed as a Special Flood Hazard Area (SFEC, 1994). Additionally, the City and County of San Francisco are not part of FEMA’s National Flood Insurance Program.

Based on a USACE Tidal Stage versus Frequency Study (1984), the 100-year tide level in the area of Hunters Point/India Basin was 6.7 feet National Geodetic Vertical Datum (NGVD)

(SFEC, 1994). Based on the wind-generated wave runup calculations reported in SFEC (1994) for a site near Hunters Point (based on an effective fetch of 5.7 miles and annual average peak wind speeds from San Francisco International Airport), the calculated maximum runup, including the maximum 100-year tide, wind runup, wind setup and mean higher high water (MHHW) tide level, is 16.1 feet above mean lower low water (MLLW). The lowest site elevation is approximately 20 feet above MLLW. Therefore, the potential flooding hazard is considered to be less than significant.

***Spills and Discharges*.** Groundwater resources at the site are not used for drinking water or other purposes. However, operation and maintenance of the proposed facility would require the use of petroleum products and minor quantities of hazardous materials in addition to generating solid wastes. Inadvertent spills or discharges or improper handling of these materials could affect surface water or groundwater quality. Impacts and Mitigation Measures associated with accidental spills and waste management during operation are addressed in Section 4.14, Hazardous Materials and Waste Management. These Mitigation Measures (HAZ-8, HAZ-9, HAZ-10) include development of a Hazardous Materials Business Plan and waste management protocols for the converter station sites.

4.4.3.3 Pittsburg Standard Oil Converter Station

4.4.3.3.1 Construction-related Impacts. The proposed Pittsburg Standard Oil Converter Station site, onshore AC/DC cable routes, temporary proposed and alternative construction laydown areas, and proposed and alternative access roads are shown on Figure 4.4-5.

An area of up to approximately 7 acres located on vacant property adjacent to and north of the site would be devoted to equipment and materials laydown, storage, parking of construction equipment, small fabrication areas, and office trailers for the Pittsburg Standard Oil Converter Station site. General Project parking would be located at the laydown area.

The proposed access road for the site would include a bridge crossing at Kirker Creek just north of the Pittsburg-Antioch Highway. The bridge would be a single span, 80-feet long, 30-feet wide, and would accommodate a 10-foot rise in elevation from south to north. The concrete abutments on each end of the bridge would be supported on piles, if required. Kirker Creek is channelized but unlined in the location of the proposed access road bridge and it drains upstream areas including nearby industrial properties and the Pittsburg-Antioch Highway. The bridge would be designed and constructed to avoid the potential for slope failure and hence erosion which could degrade water quality in Kirker Creek.

Most stormwater from the converter station site would continue to flow along its natural watercourse into Kirker Creek. Stormwater falling onto paved and contained areas such as transformers would pass through oil-water separators and the clear-well water would be discharged to its natural watercourse in a manner that would control discharge velocity and the potential for erosion.

***Erosion and Contaminated Runoff*.** Onshore construction activities at the converter station, proposed and alternative access roads, and proposed and alternative laydown areas could increase the potential for soil erosion and uncontrolled runoff of stormwater contaminated with sediments or other pollutants that could impact surface water quality and sedimentation. Construction of the proposed Project could increase the potential for silts to impact the water quality of Kirker Creek, New York Slough, and San Francisco Bay through both suspended solids and water quality contaminants. Operation and maintenance of the facility could impact surface water quality of the aforementioned water bodies through inadvertent spills or discharges.

Stormwater pollution occurs when rainwater comes into contact with materials on site and washes contaminants into storm drains, creeks, or directly into the Bay. Sources of pollution during Project construction could include oil leaked from heavy equipment and vehicles, grease, hydraulic fluid, fuel, construction materials and products, waste materials, landscaping runoff containing fertilizers, pesticides or weed killers, and erosion of disturbed soil.

Stormwater discharges associated with Project construction activities are regulated according to CCR Section 402(p) under NPDES. Under the NPDES construction permit, owners of the proposed converter station locations where construction would disturb more than 1 acre of land would have to submit an NOI, develop an SWPPP, conduct monitoring and inspections, retain monitoring records, report incidents of noncompliance, and submit annual compliance reports by July 1 of each year.

Impact WATER-1: Erosion and Contaminated Runoff. The erosion control and runoff impact (Impact WATER-1) described in Section 4.4.3.2.1 applies at the Pittsburg Standard Oil Converter Station site.

Mitigation Measure WATER-1: Erosion Control and Contaminant Source Control. Mitigation Measure WATER-1 described in Section 4.4.3.2.1 shall be applied for the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: SWPPP shall be developed by construction contractor, or qualified consultant. General Construction Activity Stormwater Permit adopted by the State on August 19, 1999 (WQO 99-08 DWQ, NPDES Permit No. CAS000002) prior to commencement of construction

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure WATER-1 would reduce Impact WATER-1 to a less-than-significant level.

***Directional Drilling (HDD)*.** HDD would be used at the shore crossing for the AC/DC cable installation to the Standard Oil site and beneath Kirker Creek. The directional drilling locations for the site are shown on Figure A.4-10 (Appendix A) for the shore crossing and Map A.2-1 (Sheet 10 of 10) for the HDD crossing of Kirker Creek.

HDD could impact Bay water quality through loss of drilling fluids and disruption of Bay bottom sediment at the sediment surface where the borehole emerges. It is possible that a small amount of drilling muds and disturbed sediment could be released at the HDD location. Such releases are known as “frac-out.” It is also possible that a small amount of drilling muds could be released to Kirker Creek if frac-out occurred. Drilling mud would consist of water, bentonite clay and inert, non-toxic polymers.

Impact WATER-2: Surface Water Quality Impacts from HDD. Impact WATER-2 described in Section 4.4.3.2.1 applies at the Pittsburg Standard Oil Converter Station site.

Mitigation Measure WATER-2: Spill Prevention and Control Plan for HDD. Mitigation Measure WATER-2 described in Section 4.4.3.2.1 shall be applied for the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility: Project proponent/HDD contractor, in conjunction with the cable laying firm

Requirements and Timing: SPCC Plan prepared prior to commencement of construction; HDD contractor to monitor for potential spills and implement remedial contingency plan, as applicable

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure WATER-2 would reduce Impact WATER-2 to a less-than-significant level.

***Impacts to Kirker Creek*.** HDD would also be used to pass under Kirker Creek, a dry waterbed except during rainfall events. If frac-out occurred, drilling mud could be released into the creek causing a water quality impact. This event would constitute a potentially significant impact.

Impact WATER-3: Groundwater Quality Impacts from HDD. Groundwater quality impacts from HDD (Impact WATER-3) described in Section 4.4.3.2.1 applies to the proposed subsurface Kirker Creek crossing associated with the onshore cable route at the Pittsburg Standard Oil Converter Station site.

Mitigation Measure WATER-3: Use of Pilot Hole and Reaming. Mitigation Measure WATER-3 is applicable at the Kirker Creek crossing for the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility:	Project proponent/HDD contractor in conjunction with the cable laying firm
Requirements and Timing:	Monitor for loss of drilling fluids and implement SPCC Plan, as applicable; during drilling
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure WATER-3 would reduce Impact WATER-3 to a less-than-significant level.

<u>Spills and Discharges</u>**.** Groundwater resources at the site are not used for drinking water or other purposes. However, construction of the facility would require the use of petroleum products and hazardous materials and would generate solid waste. Inadvertent spills or discharges or improper handling of these materials could affect surface water or groundwater quality. Impacts and Mitigation Measures associated with accidental spills and waste management are addressed in Section 4.14, Hazardous Materials and Waste Management. These Mitigation Measures (HAZ-3, HAZ-4, HAZ-5) include development of a Spill Prevention, Control and Countermeasure Plan and waste management protocols for construction areas.

<u>Kirker Creek Watershed Drainage Area</u>**.** The proposed Standard Oil Converter Station site, the proposed onshore AC/DC cable routes that connect to New York Slough, the proposed and alternative laydown areas, and the proposed and alternative access roads are all within the Kirker Creek Watershed (Figure 4.4-4). Project construction and operations could increase runoff to the creek.

Impact WATER-4: Impacts to Kirker Creek Watershed Drainage Area. Construction and operations of the Standard Oil Converter Station, onshore AC/DC cable routes, laydown areas, and access roads are all within the Kirker Creek Watershed. Project construction and operations could increase runoff to the creek. This impact is considered potentially significant.

Mitigation Measure WATER-4: Kirker Creek Stormwater Management. Comply with Pittsburg Municipal Code (Chapter 15.104 – Stormwater Management Plan for Kirker Creek Watershed Drainage Area) which states that new development within the Kirker Creek Watershed Drainage Area must:

- Construct an onsite infiltration system, associated with small storm flows, that would detain and control the rate of stormwater runoff to the adjacent Kirker Creek Watershed

Implementation Responsibility:	Project proponent
Requirements and Timing:	Must be completed in conformance with the Pittsburg Municipal Code Stormwater Management Plan for Kirker Creek prior to completion of final design, City of Pittsburg Design Review and prior to commencement of construction
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure WATER-4 would reduce Impact WATER-4 to a less-than-significant level.

4.4.3.3.2 Operations-related Impacts.

***Flooding*.** Some areas along the shoreline and drainages leading to the Bay are potential floodplains. Risks associated with building in a floodplain include threats to life and property. Local city or county government agencies regulate floodplain development through land use controls, based on determinations of flood elevations. FEMA maintains maps of 100-year flood areas in the Bay counties. A "100-year flood" refers to a flood level with a 1 percent or greater chance of being equaled or exceeded in any given year. As shown on Figure 4.4-4, the Standard Oil site is not located within the FEMA 100-year floodplain. Therefore, the risk of flooding is considered less than significant.

***Spills and Discharges*.** Groundwater resources at the site are not used for drinking water or other purposes. However, operation and maintenance of the facility would require the use of petroleum products and minor quantities of hazardous materials and would generate solid waste. Inadvertent spills or discharges or improper handling of these materials could affect surface water or groundwater quality. Impacts and Mitigation Measures associated with accidental spills and waste management are addressed in Section 4.14, Hazardous Materials and Waste Management. These Mitigation Measures (HAZ-8, HAZ-9, HAZ-10) include development of a Hazardous Materials Business Plan and waste management protocols for the converter station sites.

4.4.3.4 Offshore DC Cable Route

4.4.3.4.1 Construction-related Impacts. The proposed Project would involve construction and operation of approximately 56 miles of HVDC cable buried in the bottom of San Francisco Bay. Refer to Figure 4.4-2 for an overview of the proposed submarine cable route, including delineation of a 500-meter-wide study corridor that is centered on the cable route over the majority of its length.

***Cable Placement*.** The cable would be laid using the Cable Ship (C/S) Giulio Verne (or equivalent) in deeper waters and using a barge in shallower waters. To the greatest extent possible, a Hydroplow or equivalent technology towed behind the cable-laying vessel or barge would be used to bury the cable at the targeted depth of 3 to 6 feet below the Bay bottom. The Hydroplow's "stinger" fluidizes bottom sediments and carries the cable to the bottom of the fluidized trench.

It is expected that the cable would be laid in two sections. The section between Potrero and a point east of the Benicia Bridge would be laid using the C/S Giulio Verne, which has an operation draft of 10 meters. In shallower waters in Suisun Bay and possibly also across the Pinole Shoals, the cable would be laid from a barge. Up to three potential splice locations (refer to Map A.2-1) are indicated pending final detailed design. It takes approximately 10 days to complete a single splice.

Hydroplow operations would produce a light sediment plume and locally increased turbidity. The plume is estimated to represent approximately 10 to 20 percent of the displaced sediment and would be expected to dissipate rapidly as the Hydroplow proceeds, leaving little or no spoil pile ridges alongside the trench. This percentage is an indicative figure which could vary depending on soil conditions, trench depth, etc. Over the approximately 56-mile-long submarine cable alignment, approximately 70,000 yd^3 would be fluidized by the Hydroplow, resulting in 7,000 to 14,000 yd^3 of ejected material. If the fluidized materials were contaminated, however, they have the potential to create water quality impacts. Hence, sediment quality data are required to assess this possibility.

Shallower water depths in the Pinole Shoals area of the alignment limit the ability of the Giulio Verne to both lay and bury the cable in this area. Consequently, a two-step operation of cable laying followed by a separate burial activity would be used in this area. This two-step operation would not be required if a barge were used for cable installation across the Pinole Shoals. First, the cable would be laid on the Bay bottom using the Giulio Verne, and second, a Hydroplow or equivalent technology pulled behind the barge would perform post-placement. The second type of Hydroplow ejects approximately 20 percent of material from the trench. This percentage could vary due to soil conditions, trench depth, etc.

***Dredging*.** At two locations along New York Slough, the cable route crosses the shipping channel which is currently maintained to a water depth of 35 feet. Based on discussion with the USACE, this section of channel may eventually be deepened to 45 feet as has been proposed in the San Francisco to Stockton Phase III (John F. Baldwin) Navigation Channel Project (USACE, 1998). To allow for overdredging during future maintenance dredging of the shipping channels, it has been recommended that the cable be laid on the order of 15 to 20 feet, with the potential for burial to be greater if required, below the existing channel bottom.

Limited dredging would be required in two locations in order to bury the HVDC cable at a depth of greater than 15 feet, as this depth is beyond the reach of the Hydroplow or equivalent technology. The first location is at the west end of the West Reach, northeast of the Mirant Pittsburg Power Plant. This location is at approximately MP 52.4 - 52.5 (refer to Map A.2-1, Sheet 10 of 10, Appendix A). The second location is just east of the Dow Chemical Plant property in Pittsburg at approximately MP 55.9 - 56.0 (refer to Map A.2-1, Sheet 10 of 10, Appendix A). At these locations, the proposed DC/AC cables would cross the existing shipping channel in New York Slough. The channel in these areas is between 45 and 50 feet deep. USACE routinely performs maintenance dredging in these areas.

The requirement to excavate a cable trench is similar in both areas. At each location, it would be necessary for the dredge to excavate approximately 38,000 cubic yards. These excavations would provide a trench that is approximately 400 feet long by 30 feet wide at the bottom of the excavation by 15 - 20 feet deep beneath the Bay floor, in which the two cables would be installed using the Hydroplow or equivalent technology to achieve the targeted burial depth. The sides of the trenches would be sloped at 4 feet horizontal to 1 foot vertical. It is currently planned that the trench would be backfilled after the cables were installed.

The dredging method would utilize a barge-mounted crane excavating with a clamshell bucket. Excavated material would be brought to the surface and deposited in a barge. The USACE and private firms use this method to perform maintenance dredging of shipping channels and ship docks in the area.

During the dredging process, material that is excavated and loaded on the barge would be sampled and tested in a laboratory to determine its acceptability for reuse as backfill. If the excavated material is determined to be acceptable, the material would be stored until the HVDC and HVAC cable installation was complete. At that time, the excavated material would be returned to the bottom of New York Slough as backfill. If testing determined that the material was unacceptable for reuse as backfill, the material would be brought to an acceptable disposal site. One possible use for such material is to support ongoing wetland reclamation projects in the area. If the excavated material was unacceptable for use as backfill, the excavated area would be expected to fill naturally over time.

The dredging schedule, along with all cable laying activities in the Bay, would be coordinated with USACE, the USCG, the San Francisco Bar Pilots, and all other designated agencies. The time required to excavate both trenches is estimated to be approximately 2 weeks. Backfilling after the cables are in place is anticipated to take four to five days. This working schedule would be coordinated to ensure that the normal flow of ship traffic in the area was maintained.

Water Quality Impacts from Hydroplow**.** Use of the Hydroplow or equivalent technology could result in temporary and transient localized increases in turbidity as well as resuspension of contaminated sediments if they occur along the cable route.

The increase in turbidity would be very localized and would not be expected to significantly impact water quality. Experience on other cable-laying projects using a Hydroplow or equivalent technology indicates approximately 10 to 20 percent of the fluidized sediments would be dispersed during cable laying. The cable is scheduled to be installed over a period of approximately 4 to 5 months. It is expected that cable installation using the Giulio Verne would proceed at a faster rate than installation using a barge.

The anticipated volume of suspended sediment is small compared to the volume of sediment resuspended in San Francisco Bay during the monthly spring tides or during wind-storm events. Each major tidal event or storm event resuspends over 1 million cubic yards of sediment (assuming an average 200 mg/L suspended sediment concentration during the events – see McKee et al., 2002). Because the sediments in San Francisco Bay are very dynamic, the local disturbance of a small volume of sediment is not considered to be potentially significant.

As previously described, the cable route was chosen to avoid known sediment “toxic hot spots,” identified in San Francisco Bay by BPTCP, where sediment dredging could result in the degradation of water quality. Because toxic hot spots are associated with land-based industrial activities, the proposed cable route was located in deep water as far offshore as possible.

A sediment sampling program was performed along the cable route as described in Section 4.4.1.4 and Appendix E. The sample locations and RMP locations are shown on Figure 4.4-2. Both the Project-specific sediment sampling program and the RMP data indicate that the sediment along San Pablo Bay, Carquinez Strait, Suisun Bay, and New York Slough portions of the proposed cable route is not contaminated. While elevated nickel levels (compared to

NOAA sediment benchmarks) were recorded near New York Slough, the ambient nickel concentrations in San Francisco Bay are more than twice the NOAA ERM value. The maximum nickel concentrations are close to ambient levels and are not considered significant.

The RMP data recorded at station CB012S (near the HWC site laydown area [Western Pacific]) shows elevated levels of PAHs. Nearshore elevated PAH concentrations were also recorded offshore of the Potrero Power Plant in San Francisco (URS, 2001). HDD or Hydroplow or equivalent technology activities near either of these locations could encounter elevated PAH levels.

Impact WATER-5: Water Quality Impacts from Cable Laying Operation. Nearshore and offshore sediment in the Potrero area is contaminated with elevated levels of PAHs. Disturbance of these sediments could result in substantial water quality impacts. This would be considered a potentially significant impact.

Mitigation Measure WATER-5: Avoidance of Sediment Contamination. To avoid potential known nearshore and offshore sediment contamination, the HDD shall be completed as far offshore as is feasible and remote from RMP station CB012S near Potrero Point in San Francisco. Hydroplow or equivalent technology activities shall also avoid known contamination in the area of station CB012S. Confirmation sediment sampling shall be performed at the location where the HDD emerges into the Bay and the results would be considered and addressed prior to commencement of construction near this location.

Implementation Responsibility:	Project proponent/HDD contractor in conjunction with the cable laying firm; during the final design process
Requirements and Timing:	Prior to completion of final design and initiation of construction
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure WATER-5 would reduce Impact WATER-5 to a less-than-significant level.

<u>Dredging and Dredge Material Disposal</u>**.** As described in Section 4.4.1.4, four 15-foot sediment cores were obtained during the sediment sampling program for this Project; two cores were obtained in each proposed dredge area. No pesticides, PCBs, or butyltins were detected in the sediment samples. All PAHs detected were well below the ERLs.

The following discussion regarding Bay sediment has also been described in table form. Table 4.4-2 summarizes sediment quality in the San Francisco Bay based on core samples taken. Table 4.4-3 details what chemicals were analyzed for and by what method. Table 4.4-4 summarizes the sediment quality along the proposed cable route more specifically.

At the proposed dredge locations, lead, mercury, cadmium, silver, and zinc were not detected at levels above the ERLs of 47, 0.15, 1.2, 1.0, and 150 mg/kg, respectively. Selenium was detected in half of the samples, at concentrations up to 1.1 mg/kg. There is no published ERL for selenium. Arsenic, chromium, and copper, were detected at concentrations above the ERLs, but below the ERMs.

Nickel concentrations in the samples ranged from 45 to 120 mg/kg, all of which are above the ERL of 20.9 mg/kg. The highest nickel concentrations (120 mg/kg) were in the samples from New York Slough (NYW-2, NYE-1, and NYE-2). While the concentrations of nickel are above the NOAA ERL and ERM benchmarks, they are not elevated compared to the Ambient Concentrations of chemicals in San Francisco Bay sediments developed by the RWQCB for Beneficial Reuse of Dredged Materials (RWQCB, 2000). Because nickel naturally occurs in Bay Area rock formations, the ambient concentration of nickel in Bay sediment is 112 mg/kg. Therefore, the range of 36 to 120 mg/kg is considered to be consistent with background concentrations.

Dredging and the disposal of sediments have the potential to directly affect the health of the Bay because these activities can remobilize previously deposited particulate-bound pollutants. For this reason, regulatory controls greatly restrict new activities that might require dredging/dredge material disposal in the Bay.

Sediment testing and removal would be conducted in accordance with a consolidated Dredging – Dredge Material Reuse/Disposal permit that would need to be applied for and issued by the San Francisco DMMO. The permit covers both Section 404 and Section 10 dredging permits and is functionally equivalent to an RWQCB Report of Waste Discharge, pursuant to Article 4, Chapter 4 of the Porter-Cologne Water Quality Control Act. In accordance with this permit, a dredged sediment testing program would be conducted. Non-compliance with these regulatory controls could result in significant impacts to water quality in the Bay.

Impact WATER-6: Water Quality Impacts from Dredging and Dredge Material Disposal. Dredging at two locations in New York Slough and disposal of the dredge material has the potential to significantly impact water quality in the Bay.

Mitigation Measure WATER-6: Dredging Controls and Sediment Testing Program. A consolidated Dredging – Dredge Material Reuse/Disposal permit shall be obtained through the San Francisco DMMO. In accordance with this permit, a dredged sediment testing program shall be conducted on dredged material to determine whether the material is suitable for reuse. If sediment is not suitable for reuse, it would need to be transported to an acceptable disposal site.

Implementation Responsibility: Project proponent/dredging contractor

Requirements and Timing: Apply for and conform to DMMO permit

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance with dredge permit

Resulting Level of Significance. Mitigation Measure WATER-6 would reduce Impact WATER-6 to a less-than-significant level.

***Vessel Operations and Fuel Spills*.** Vessel discharges of ballast water, bilge water, and sewage can impact water quality. Ballast water discharges are prohibited in San Francisco Bay. The Giulio Verne would not discharge bilge, gray water, or sewage in the Bay.

Marine oil spills can result from leaks or breaks in vessel fueling equipment, vessel accidents, mechanical or structural failures, or human errors such as valves left open or misaligned. Vessel refueling and other operations involving the handling of potentially harmful products and materials are carried out under strict USACE and EPA regulations prohibiting water pollution. Existing regulations and codes treat large vessels similarly to major industrial facilities sited on land. They are recognized as potential “point specific” sources of water pollution. Detailed procedures and engineering requirements have been written into regulations to prohibit harmful spills and discharges.

NOAA’s Hazardous Materials Response and Assessment Division and the Office of Response and Restoration have issued a fact sheet on small diesel spills, which are defined as those in the range of 500 to 5,000 gallons (www.response.restoration.noaa.gov). This would be the general range of potential spills from vessels to be utilized for cable laying in the Bay for the proposed Project (i.e., Giulio Verne, barges, and tugboats). Diesel fuel is a light, refined petroleum product with a relatively narrow boiling range, meaning that, when spilled on water, most of the oil evaporates or naturally disperses within a few days. According to the NOAA fact sheet, this is particularly true for small spills, even in cold water. Consequently, after a few days there is rarely any oil on the surface for oil spill responders to recover. After spilling on water, diesel oil spreads very quickly to a thin film. Even when the oil is described as a heavy sheen, it is 0.0004 inch thick and contains about 1,000 gallons per square nautical mile of continuous coverage. Diesel has a very low viscosity and is readily dispersed into the water column when winds reach 5 to 7 knots.

Diesel oil is much lighter than water (its specific gravity is about 0.85, compared to 1.03 for seawater). It is not possible for this oil to sink and accumulate on the seafloor as pooled or free oil. However, it is possible for the oil to be physically mixed into the water column by wave action, forming small droplets that are carried and kept in suspension by the currents. Oil dispersed in the water column can adhere to fine-grained suspended sediments, which would eventually settle on the Estuary bottom. However, this process is not likely to result in measurable sediment contamination from small spills.

Diesel oil is not very sticky or viscous, compared to black oils. When small spills strand on the shoreline, the oil tends to penetrate porous sediments quickly, but also tends to be washed off quickly by waves and tidal flushing. Shoreline cleanup is usually not needed. Diesel oil is readily and completely degraded by naturally occurring microbes in 1 to 2 months.

Diesel is considered to be one of the most acutely toxic oil types. Fish, invertebrates, and seaweed that come in direct contact with a diesel spill may be killed. However, according to the NOAA fact sheet, small spills in open water are so rapidly diluted that fish kills have never been reported. Fish kills have been reported for small spills in confined, shallow water. Crabs and shellfish can be tainted from small diesel spills in shallow, nearshore areas. Small diesel spills can affect marine birds by direct contact, though the number of birds affected is usually small because of the short time the oil is on the water surface. Mortality is caused by ingestion during preening as well as hypothermia from matted feathers. According to NOAA's experience with small diesel spills, few birds are directly affected. However, small spills could result in serious impacts to birds under worst-case conditions, such as grounding of a vessel next to a large nesting colony or transport of diesel sheens into areas of high bird concentrations.

Accidental spills only account for a small fraction, up to 10 percent, of the total fuel contamination of waters. As much as 90 percent of oil in marine waters is from chronic sources that are difficult to identify, such as urban runoff, small craft boating, and improper disposal of used oil products (CDFG, 2002). Since 1991, when the California Oil Spill Prevention and Response Act and the Federal Oil Pollution Act of 1990 (OPA) took effect, there has been an 86 percent drop in the volume of oil spilled from oil tankers and barges in the United States. (It is important to note, however, that not all spills are necessarily reported.)

The primary mission of the Marine Environmental Protection (MEP) Division of the USCG San Francisco Marine Safety Officer (MSO) is emergency response to pollution incidents. This includes containment and cleanup of oil discharges and hazardous substances introduced into the navigable waters of the United States. The MSO coordinates response efforts with other agencies (federal, state, and local) in a joint effort to minimize damage to the environment caused by pollutants.

MEP Division personnel are trained in Incident Command System procedures and carry the qualifications of pollution investigators and Federal On-scene Coordinators. Actual removal is primarily done by qualified clean-up contractors and supervised by MSO personnel on scene.

The MEP Division is also involved in preparedness planning. The OPA mandated that Area Contingency Plans (ACPs) be created to respond to large oil spill incidents. Three ACPs are maintained by the San Francisco MSO: California North Coast, San Francisco Bay and Delta, and Central Coast.

Several Oil Spill Removal Organizations (OSROs) operate in the Bay and collaborate with the USCG, California Office of Spill Prevention and Response (OSPR), and other organizations in the Unified Command System during drills and spill responses. Response is available to OSRO members, or through the USCG or OSPR for orphan spills. Spill cleanup costs are paid by the party accepting responsibility for the spill. Spills occurring within the Bay can be attended to within 1 hour or less.

Impact WATER-7: Water Quality Impacts from Vessel Fuel Spills. Water quality degradation from vessel fuel spills would likely not be significant in light of its low probability and the past record. However, a potentially significant spill could still occur. This event would constitute a potentially significant impact.

Mitigation Measure WATER-7: Vessel Fuel Spill Response Plan. All vessel operators associated with the proposed Project shall update their contingency plans and continue to use emergency response services for pollution incidents. Review of updates and modifications to plans shall be done under the USCG's regular oversight of oil spill contingency plans. The work of updating and expanding the spill response plans shall be based on NOAA's Environmental Sensitivity Index (ESI), which involves the systematic compilation in a standardized format of information related to coastal shoreline sensitivity, biological resources, and human uses.

Implementation Responsibility:	Project proponent/vessel operator
Requirements and Timing:	Oil Spill Response Plan shall be completed in accordance with USCG guidance and submitted to the USCG, California OSPR prior to commencement of cable laying operations
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance. The USCG-OSPR may also monitor compliance

Resulting Level of Significance. Mitigation Measure WATER-7 would reduce Impact WATER-7 to a less-than-significant level.

4.4.3.4.2 Operations-related Impacts. No water quality impacts from operation of the offshore cable have been identified. Refer to Section 4.6, Marine Biological Resources, and Appendix F for a discussion of potential minor temperature increases in Bay sediments associated with offshore, buried DC and AC cable operation.

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4.5 TERRESTRIAL BIOLOGICAL RESOURCES

The following section describes the terrestrial biological resources and natural communities occurring within the Project area, outlines potential impacts to biological resources that may result from the proposed Project, and presents mitigation measures to reduce impacts. This evaluation of biological resources includes a review of potentially occurring special-status species, wildlife habitats, vegetation communities, jurisdictional waters of the U.S., and waters of the State of California. This assessment is based upon field reconnaissance, literature searches, and data base queries. Marine biological resources are described in Section 4.6, Marine Biological Resources.

Biological site reconnaissance were conducted in April, September, and October of 2005. The proposed San Francisco HWC Converter Station site and the Pittsburg Standard Oil Converter Station site both consist of previously disturbed and developed industrial sites, including the proposed and alternative construction laydown areas. The biological site reconnaissance were supplemented with review of high-resolution digital aerial photography and topographic maps.

The sources of reference data reviewed for this assessment included the following:

- Antioch North, Honker Bay, and San Francisco North, California 7.5-minute topographic quadrangles (U.S. Department of the Interior, Geological Survey [USGS], 1979 and 1980)
- California Natural Diversity Database (CNDDB) queries of the Antioch North, Honker Bay and San Francisco North USGS 7.5-minute quadrangles (CDFG, 2005)
- California Native Plant Society (CNPS), 6th Online Inventory of Rare Plants queries of Antioch North, Antioch South, Clayton, Rio Vista, Jersey Island, Brentwood, Birds Landing, Denverton, Honker Bay, Hunters Point, Oakland West, Richmond, Point Bonita, San Francisco North, San Francisco South, San Quentin and San Rafael USGS 7.5 minute quadrangles (California Native Plant Society, 2005)
- U.S. Fish And Wildlife Service Species List for Antioch North, Honker Bay, and San Francisco North USGS 7.5-minute quadrangles (U.S. Fish and Wildlife Service [USFWS], 2005)

4.5.1 Environmental Setting

This section provides a review—followed by specific descriptions—of the natural communities/vegetation types, soils, and associated wildlife that occur in the proposed Project area. Also included in this section is a review of the special-status species either known or with potential to occur in the Project area. The onshore Project sites are located within the City of San Francisco, the City of Pittsburg, and unincorporated Contra Costa County. Areas with natural vegetation and wetlands are most prevalent along the onshore cable routes associated with the Pittsburg Standard Oil Converter Station site. Native plants are uncommon elsewhere in the Project area and are generally limited to the ditches, sloughs, and marshes bordering the proposed cable alignment and access road in Pittsburg and converter station locations. The lack of native vegetation is likely the result of a history of industrial development, and other disturbance. A list of vascular plants identified at the Project sites is included in Appendix F.

4.5.1.1 Regional Setting

The Project area is located in the central coastal region of California within the Sacramento and San Joaquin River Delta, the Suisun Bay, San Francisco Bay, and the San Francisco Peninsula. The San Francisco Bay Area is a heavily urbanized and developed region. The landscape is composed of rolling hills, broad alluvial valleys, the Delta, and San Francisco Bay. The climate in San Francisco is coastal and moderate, with yearly rainfall averaging 19.6 inches. Average summer temperatures range between 54 and 73 degrees Fahrenheit (˚F), while average winter temperatures range between 41˚F and 56˚F. The eastern portion of the Project area in Contra Costa County exhibits more seasonality, with average summer temperatures ranging between 56˚F and 91˚F, and average winter temperatures ranging between 35˚F and 55˚F. The average yearly rainfall levels for the Pittsburg area is approximately 12.9 inches (Worldclimate, 2005).

4.5.1.2 Project Area Setting

4.5.1.2.1 San Francisco HWC Converter Station. San Francisco is located on the peninsula of land extending northward into the mouth of San Francisco Bay along the central coast of California. Historically, San Francisco County supported extensive native grasslands intermixed with a variety of vegetative communities, including oak woodland, salt marsh wetlands, coastal scrub, and riparian woodland. Intensive urban and industrial development has resulted in large losses and conversion of these habitats. The remaining native vegetative communities exist now as isolated remnant patches within urban, agricultural, and industrial landscapes, or in areas where varied topography has made disturbance difficult. The project area for the San Francisco HWC Converter Station site includes Township 2 South, Range 5 West, in an undefined southeastern section of the San Francisco North 7.5-minute USGS Quadrangle with elevations ranging from 0 to 25 feet above mean sea level (Map A.2-1, Sheet 1 of 10, in Appendix A of this EIR). These locations correspond to the eastern shoreline of the San Francisco Peninsula just south of Potrero Point and east of Potrero Hill and the shoreline at Pier 94/96. This area is currently composed of developed and industrial lands.

4.5.1.2.2 <u>Pittsburg Standard Oil Converter Station</u>. The Project area for the Pittsburg Standard Oil Converter Station site includes Township 2 North, Range 1 East, southwestern sections of the Antioch North 7.5-minute USGS Quadrangle with elevations ranging from 0 to 35 feet above mean sea level (see Sheet 10 of Map A.2-1). The proposed onshore DC/AC cable routes correspond to the edge of New York Slough near Winter Island, Arcy Lane adjacent to the Dow Chemical property, areas adjacent to portions of the Burlington Northern Santa Fe (BNSF) Railroad right-of-way (ROW) adjacent to the Dow Chemical property then south-southwest at a diagonal across Kirker Creek, an open grassland and wetlands to the northeast corner of the 7.5-acre Standard Oil site (refer to Map A.2-1, Sheet 10 of 10).

The Project area also includes an approximately 7-acre proposed construction laydown area located in an old drained constructed industrial pond bed located just north of the converter station site. The proposed laydown area currently includes annual grassland and some coyote brush (*Baccaris pilularis*) shrubs, with a red willow (*Salix laevigata*) and bulrush (*Scirpus sp.*) wetland in the northeastern corner. An alternative laydown area is located in a previously disturbed industrial area at the Delta Energy Center immediately south of the existing electrical power plant. The Pittsburg Standard Oil Converter Station site includes an existing access road from Loveridge Road.

The proposed Project site also includes a proposed access road, which would connect the converter station site with the Pittsburg-Antioch Highway. Construction of this access road would require construction of a bridge running from south to north from the Pittsburg-Antioch Highway across Kirker Creek. Kirker Creek has an ordinary high water mark (OHWM) that is approximately 12 feet wide at this crossing location and the remainder of the road would be constructed in a previously graded existing dirt road that runs north to the converter station site, past an abandoned baseball field. The area proposed for construction of the new access road had no vegetation at the time of the survey and consisted of graded dirt and fill. This area includes natural communities, such as annual grassland, salt marsh wetland, brackish wetland and seasonal wetlands, as well as previously disturbed and/or developed property.

4.5.1.2.3 <u>Soils</u>.

***<u>San Francisco HWC Converter Station</u>*.** Soils at the San Francisco HWC Converter Station site are composed largely of fill materials. The soils along the proposed cable route near Potrero Point in the City of San Francisco consist of Urban land and Orthents, reclaimed complex. The urban lands are covered by asphalt, concrete, and buildings and other structures while the Orthents are recent developing soils composed from a mixture of soil, gravel, cement, Bay mud, and solid waste material (USDA-SCS, 1991). These soils are not listed as hydric soils.

***Pittsburg Standard Oil Converter Station*.** Pittsburg Standard Oil Converter Station site soils are typically poorly drained and dominated by deep alluvium from the historical floodplains of the San Joaquin River and Kirker Creek. The soils along the Pittsburg proposed cable route between the converter station site and New York Slough include Clear Lake clay, Omni silty clay, Joice muck, and Rincon clay loam. Clear Lake clay, Omni silty clay, and Joice muck are all poorly drained alluvium soils associated with salt marsh, brackish marsh, and other wetlands and uplands in the Project area (USDA-SCS, 1980). These three soil types are listed as hydric soils in the region (USDA-SCS, 1995). The proposed DC/AC cable routes between the Standard Oil site and New York Slough traverse areas that have been previously disturbed, including existing roadways.

4.5.1.3 Natural Community/Habitat Types

Plant communities are assemblages of plant species that occur together in the same area, which are defined by species composition and relative abundance. The plant communities were classified using *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995 and updated list from CDFG, 2003). Detailed descriptions of the plant communities occurring in and around the Project area and their general locations along the proposed and alternative on-shore cable routes are included in Appendix F. The plant communities described below generally correlate with wildlife habitat types. Plant communities considered rare and worthy of consideration by the CDFG are designated with an asterisk. The wildlife habitats identified in this section were described using CDFG's A Guide to Wildlife Habitats of California (Zeiner, 1988).

The nine primary plant community or habitat types in the Project area, including both the San Francisco and Pittsburg sites, are listed below:

- California Annual Grassland Series
- Bulrush Series
- Cattail Series
- Disturbed/Developed
- Northern Claypan Vernal Pool Series
- Pickleweed Series
- Red Willow Series
- Saltgrass Series
- Salt and Brackish Open Water and Creeks

4.5.1.4 Local Environmental Setting

The setting for the offshore cable route is discussed in Section 4.6, Marine Biological Resources. The local environmental settings for the converter station sites, including ancillary facilities, are described below.

4.5.1.4.1 San Francisco HWC Converter Station. This portion of the Project area includes previously developed and industrialized landscapes characterized above as Disturbed/Developed habitats. Any remnant vegetation included in these areas is dominated by landscaped, ruderal, and non-native species.

The proposed laydown area (Western Pacific site) and the alternative laydown area at Pier 94/96 and onshore cable route to the existing PG&E Potrero Substation include previously developed and industrialized landscapes described above as Disturbed/Developed habitats. Any remnant vegetation included in these areas is dominated by landscaped, ruderal, and non-native species. These areas are located on fill soils.

4.5.1.4.2 Pittsburg Standard Oil Converter Station. The proposed DC/AC cable route between the Standard Oil site and New York Slough comes onshore at Arcy Lane, an existing dirt access road near Dowest Slough and the Dow Chemical property. This road is adjacent to pickleweed and other salt marsh communities to the east. The cable would be routed from a splice box approximately 200 feet from the shoreline. The cables would be placed in and above the roadway and would travel down Arcy Lane, cross the BNSF ROW and then turn west on a paved road on the Delta Energy Center property before crossing under Kirker Creek (via horizontal directional drill) diagonally to the northeastern corner of the converter station site. Underground directional boring techniques would be implemented from the west end of the paved road at the Delta Energy Center to the northeast corner of the converter station site in order to avoid wetland and stream habitats associated with Kirker Creek.

In addition, the proposed site would include an access road running north from the Pittsburg-Antioch Highway to the Project site. This road would include construction of a bridge across Kirker Creek, an intermittent drainage, immediately adjacent to the Pittsburg-Antioch Highway. A substantial number and diversity of natural communities occurs adjacent to and within this portion of the Project area. These communities include Bulrush Series, Cattail Series, California Annual Grassland Series, Disturbed/Developed lands, Northern Claypan Vernal Pool Series, Pickleweed Series, Red Willow Series, Saltgrass Series, and Salt and Brackish Open Water and Creeks, including Kirker Creek. These communities are described in more detail in Appendix F.

4.5.1.5 Special-status Species

Special-status plant and animal species are those that are recognized as rare and vulnerable to habitat loss or population decline. Some of these species receive specific protection as defined in federal or state endangered species legislation. Others have been designated as "sensitive" on the basis of adopted policies and expertise of state resource agencies or other organizations with acknowledged expertise, or policies adopted by local governmental agencies such as counties, cities, and special districts, to meet local conservation objectives. These species are referred to collectively as "special-status species" in this EIR. The various categories encompassed by the term, and the legal status of each, are summarized in Section 4.5.2, Regulatory Setting.

4.5.1.5.1 Special-status Species Within the Project Area. A list of special-status plant and animal species reported to occur within or in the vicinity of the Project area was compiled using data in the CNDDB consultation with the CDFG and United States Fish and Wildlife Service (USFWS), and a review of the CNPS online sixth inventory of rare plants (CDFG, 2005; CNPS, 2005, USFWS, 2005). These species and their potential to be impacted by the Project are summarized in a table included in Appendix F of this report. The table indicates each species' potential to occur in suitable habitat that is located in the immediate vicinity of the Project. Of the special-status plants and animals listed in the table, 10 wildlife species and nine plants have a medium or higher potential to occur within portions of the Project area. The "Potential for Impact" determination is made based on locations of known occurrences of the species, the presence of preferred habitats, and the potential for Project activities to affect a species or associated habitats. Species that may be impacted by the proposed Project (and are therefore addressed in detail in this document) are in bold type.

4.5.2 Regulatory Setting

4.5.2.1 Federal

4.5.2.1.1 Federal Endangered Species Act. Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 USC 1533[c]). Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed threatened or endangered species could be present in the project area and determine whether the proposed project would have a potentially significant impact on such species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC 1536[3], [4]).

The USFWS also publishes a list of candidate species. Species on this list receive "special attention" from federal agencies during environmental review, although they are not protected otherwise under the FESA. The candidate species are taxa for which the USFWS has sufficient biological information to support a proposal to list as endangered or threatened.

4.5.2.1.2 <u>Regulation of Activities in Waters of the United States</u>. The U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern "waters of the U.S." within the Project area. The USACE acts under two statutory authorities: the Rivers and Harbors Act (Sections 9 and 10), which governs specified activities in "Navigable Waters of the U.S.;" and the Clean Water Act (Section 404), which governs specified activities in "other waters of the United States" including wetlands. The USACE requires that a permit be obtained if a project proposes placing structures within, over, or under navigable waters and/or discharging dredged or fill material into "waters of the U.S." below the ordinary high-water mark in non-tidal waters. The Environmental Protection Agency (EPA), USFWS, the National Marine Fisheries Services (NMFS), and several other agencies provide comment on USACE permit applications.

Wetlands are ecologically complex habitats that support a variety of both plant and animal life. In a jurisdictional sense, the federal government defines wetlands in Section 404 of the Clean Water Act as "areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3[b] and 40 CFR 230.3). The federal definition of wetlands requires three wetland identification parameters to be present: wetland hydrology, hydric soils, and hydrophytic vegetation. Examples of wetlands include freshwater marsh, seasonal wetlands, and vernal pool complexes that have a hydrologic link to other waters of the U.S. (see definition below for "other waters of the U.S."). The USACE is the responsible agency for regulating wetlands under Section 404 of the Clean Water Act, while the EPA has overall responsibility for the Act. The USACE has the option to issue a permit on a case-by-case basis (individual permit) or at a program level (general permit). Nationwide permits (NWPs) are an example of general permits; they cover specific activities that generally have minimal environmental effects. Activities covered under a particular NWP must fulfill several general and specific conditions, as defined by the NWP. If a proposed Project cannot meet these conditions, an individual permit may be required.

"Other waters of the U.S." refers to those hydric features that are regulated by the Clean Water Act but are not wetlands (33 CFR 328.4). To be considered jurisdictional, these features must exhibit a defined bed and bank and an ordinary high-water mark. Examples of other waters of the U.S. include rivers, creeks, intermittent and ephemeral channels, ponds, and lakes. Wet areas that are not regulated under the Clean Water Act would include stock watering ponds, agricultural ditches created in upland areas, and isolated wetlands that do not have a hydrologic link to other waters of the U.S., either through surface or subsurface flow. The discharge of fill into a jurisdictional feature requires a permit from the Corps.

4.5.2.2 State Regulation

The state's authority to regulate activities in "waters of the U.S." resides primarily with the CDFG and the State Water Resources Control Board (SWRCB). CDFG provides comment on USACE permit actions under the Fish and Wildlife Coordination Act. CDFG is also authorized under the California Fish and Game Code, Sections 1600-1607 to develop mitigation measures and enter into Streambed Alteration Agreements with applicants who propose projects that would obstruct the flow of, or alter the bed, channel, or bank of a river or stream in which there is a fish or wildlife resource, including intermittent and ephemeral streams. The SWRCB, acting through the appropriate Regional Water Quality Control Board (RWQCB), must certify that an USACE permit action meets state water quality objectives (Section 401, Clean Water Act).

California Fish and Game Code Sections 1600-1607 require the notification of CDFG for any activity that could affect the bank or bed of any stream that has value to fish and wildlife. Upon notification, the CDFG has the responsibility to prepare a Streambed Alteration Agreement, in consultation with the project proponent.

4.5.2.2.1 California Endangered Species Act. Under the California Endangered Species Act (CESA), CDFG has the responsibility for maintaining a list of threatened species and endangered species (California Fish and Game Code 2070). The CDFG also maintains a list of "candidate species" which are species that the CDFG has formally noticed as being under review for addition to either the list of endangered species or the list of threatened species. The CDFG also maintains lists of "species of special concern" which serve as "watch lists." Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species could be present in the project area and determine whether the proposed Project would have a potentially significant impact on such species. In addition, the CDFG encourages informal consultation on any proposed project that could impact a candidate species.

California Environmental Quality Act (CEQA) Guidelines Section 15380 provides protection to both currently listed rare or endangered species and those that may soon become rare or endangered in order to determine whether a project could have a significant effect on, for example, a "candidate species" that has not yet been listed by either the USFWS or CDFG.

4.5.2.3 <u>Other Statutes, Codes, and Policies Affording Limited Species Protection</u>

4.5.2.3.1 <u>The Migratory Bird Treaty Act</u>. The Migratory Bird Treaty Act (16 USC, Sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, bird nests, and eggs. Birds of prey are protected in California under the State Fish and Game Code (Section 3503.5, 1992). Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFG.

4.5.2.3.2 <u>Rare or Endangered Species</u>. Although threatened and endangered species are protected by specific federal and state statutes, CEQA Guidelines Section 15380 provides that a species not listed on the federal or state list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals.

As such, vascular plants listed as rare or endangered by the CNPS (CNPS, 2001), but which have no designated status or protection under federal or state endangered species legislation, are defined as follows:

- List 1A – Plants Believed Extinct
- List 1B – Plants Rare, Threatened, or Endangered in California and elsewhere
- List 2 – Plants Rare, Threatened, or Endangered in California, but more numerous elsewhere
- List 3 – Plants About Which We Need More Information - A Review List
- List 4 – Plants of Limited Distribution - A Watch List

4.5.3 Environmental Impacts

4.5.3.1 <u>Thresholds of Significance</u>

CEQA Guidelines Section 15206 specifies that a project shall be deemed to be of statewide, regional, or area-wide significance if it would substantially affect sensitive wildlife habitats including, but not limited to, riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species as defined by State Fish and Game Code Section 903.

CEQA Guidelines (Appendix G) state that the project would have a significant effect on the environment if it would:

- Interfere substantially with the movement of any resident or migratory fish or wildlife species
- Substantially diminish habitat for fish, wildlife, or plants
- Substantially affect a rare or endangered species or animal or plant or the habitat of the species

CEQA Guidelines Section 15380 further provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future.

The discussions below for the proposed Project provide an assessment of potential impacts and determinations of significance based on consideration of Section 15380 of the CEQA Guidelines, the policies and regulations governing biological resources of the project area, and the project actions.

4.5.3.2 San Francisco HWC Converter Station

4.5.3.2.1 Construction-related Impacts. The San Francisco HWC Converter Station site and ancillary facilities are Disturbed/Developed properties in industrial/commercial areas on artificial fill soils. No significant impacts to onshore natural communities, wildlife habitat, wetlands or special-status species are expected from construction or operations of the proposed Project at this site.

4.5.3.2.2 Operations-related Impacts. No impacts to terrestrial biological resources are expected from operation of the San Francisco HWC Converter Station.

4.5.3.3 Pittsburg Standard Oil Converter Station

4.5.3.3.1 Construction-related Impacts. Construction of the Pittsburg Standard Oil Converter Station, including onshore cable route and project facilities, proposed access road, bridge construction and use of construction laydown areas, has the potential to impact wetlands and waters of the United States as well as special-status species and the habitats that support them.

***Potential Impacts to Natural Communities and Wildlife Habitat*.** Continued loss of undeveloped and cultivated open space in and around the City of Pittsburg over the last decade has significantly increased the need to preserve existing wildlife habitats and open areas. The regional approach to this issue has resulted in the creation of the East Contra Costa Habitat Conservation Plan and Natural Communities Conservation Plan (HCP/NCCP) (Contra Costa County, 2005), which has not yet been implemented. This draft plan will likely be implemented and active by June or July 2006 (John Kopchik, 2005). However, an informal process is currently available through the USFWS and CDFG to purchase credits and obtain species-take coverage before formal implementation is complete.

Portions of the Pittsburg Standard Oil Converter Station onshore cable route contain wetlands, and potential special-status species habitat. Additionally, known extant populations of special-status species occur adjacent to the proposed onshore cable route near Arcy Lane (Delta Diablo Sanitation District outflow access road). In order to avoid and/or minimize impacts to these species and communities to the greatest extent possible, the DC cable would be trenched into an existing roadway, Arcy Lane, while the AC line would be routed aboveground on poles over the roadway. Additionally, since vernal pool crustaceans are known to be present near the Pittsburg Standard Oil Converter Station onshore cable route, impacts to all vernal pools and depressions ponding seasonal water (seasonal pools) would be avoided by keeping cable construction and trenching within existing roadways and previously developed lands within the Project area.

***Upland Communities*.**

***California Annual Grassland Series*.** Portions of the grasslands associated with the Pittsburg Standard Oil Converter Station onshore cable route have the potential to be impacted by trenching and equipment during construction. Though this plant community is dominated by non-native species and is regionally abundant, the impacts to this community would represent a temporary incremental loss of potential foraging and nesting habitat for numerous birds, reptiles, and small mammals and a potential temporary reduction in prey for predatory mammals, birds and reptiles. Due to the fact that the majority of the cable route follows an existing roadway and other paved or previously developed properties, this impact is considered less than significant.

***Wetland Communities*.**

***Northern Claypan Vernal Pool Series*.** The proposed Project has the potential to directly and indirectly impact this community. Indirect impacts are often considered by the USFWS as any ground-disturbing activities within 250 feet of the hydrologic edge of a pool. One natural vernal pool occurs immediately adjacent to the southern end of the Arcy Lane portion of the Pittsburg Standard Oil Converter Station cable route. As the USFWS often considers direct impacts as those that occur within 50 feet of the hydrologic edge of a pool, this Project would likely be considered by the USFWS to have a direct impact on this pool. The edge of the existing dirt roadway where trenching or construction would occur is approximately 5 feet from the edge of the pool at this location.

***Vernal Pool Fairy Shrimp, Vernal Pool Tadpole Shrimp, California Linderiella*.** The proposed Project may have potentially significant adverse impacts, either directly or through habitat modifications, to terrestrial endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12). Where the route parallels the south side of the BNSF ROW within an existing paved access road, another long seasonal pool occurs within the railroad ROW adjacent to the southern side of the tracks less than 0.25 mile from the first pool. Populations of vernal pool fairy shrimp, a federally listed vernal pool crustacean, as well as California linderiella fairy shrimp, a federal species of concern, have recently been documented as occurring within the pool within the railroad ROW (CDFG, 2005). Other invertebrate species with potential to occur in these habitats include Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*), curve-footed hygrotus diving beetle (*Hygrotus curvipes*), and vernal pool tadpole shrimp (*Lepidurus packardi*). This impact is considered potentially significant. Adults, larvae, or cysts may be incidentally harmed or harassed by construction activities within the Project area adjacent to these seasonally inundated habitats.

Impact TBIO-1: Trenching Near Pools Providing Habitat for Special-status Species. This is a potentially significant impact.

Mitigation Measure TBIO-1a: Avoidance and Prevention Measures for Work Near Vernal Pool Habitat. Cable construction along Arcy Lane shall be placed a minimum of 8 feet away from the vernal pool edge of the roadway and all construction activities shall maintain a 15-foot buffer to the hydrologic edge of the pool. The vernal pool edge of the roadway pool shall be fenced with a silt fence with hay bundles placed at the outside base of the fence to avoid impacts to this wetland. All construction personnel, work crews, and project staff shall be restricted from entering the vernal pool areas, staging equipment or depositing any waste disposal soils, littering in or otherwise in any way entering these sensitive habitats. Due to the fact that this portion of the Project area is relatively flat, significant erosion or soil movement is not expected from trenching activities within the adjacent roadway.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: At least one week (seven days) prior to construction a contractor shall install the silt fence and other preventive measures specified; during construction a biological monitor shall ensure compliance with the 15-foot buffer to the hydrological edge of the pool.

A qualified biological monitor shall be required to be present during all Project-related activities that may impact special-status species. This includes staging, construction of the cable route, use of laydown areas and implementation of Horizontal Directional Drilling (HDD) or comparable technology or overhead techniques for crossing wetlands, stream channels, vegetated canals or ditches. Effectively this shall include a monitor being present during construction of the proposed Pittsburg Standard Oil Converter Station cable route, access road and laydown area.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-1b: Awareness Training for Workers. Prior to construction, all construction workers shall take part in a USFWS-approved worker environmental awareness program on vernal pool crustaceans given by a USFWS-approved biologist.

Implementation Responsibility: Project proponent

Requirements and Timing: All construction personnel shall receive training from a qualified biologist prior to beginning construction activities in the project area. The awareness program will be given at the start of construction and thereafter as required for new construction personnel.

A qualified biological monitor shall be required to be present during all Project-related activities that may impact special-status species or their habitats. This monitor shall ensure the Mitigation Measure TBIO-1b is enforced.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-1c: Biological Monitoring Requirement. A USFWS-approved biologist shall be present on site during any construction activities adjacent to vernal pool crustacean habitat.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: The biological monitor shall provide status communications of Project activities to the lead agency and regulatory agencies.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Resulting Level of Significance. Mitigation Measures TBIO-1a through TBIO-1c would reduce Impact TBIO-1 to a less-than-significant level.

***Bulrush Series*.** Bulrush stands have the potential to be impacted within the northeast corner of the proposed construction laydown property for the Pittsburg Standard Oil Converter Station. This stand, within the Project area, totals less than 0.05 acre and Project impacts within this stand could be avoided through appropriate placement of the laydown area. This community is considered optimal habitat for California clapper rail (*Rallus longirostris obsoletus*) and California black rail (*Laterallus jamaicensis coturniculus*), as well as giant garter snake (*Thamnophis gigas*).

***Cattail Series*.** The Project has the potential to directly impact this community. This community occurs in ditches and wetlands associated with Kirker Creek along the Pittsburg Standard Oil Converter Station onshore cable route. Dust and noise from heavy equipment use during construction activities adjacent to this community have the potential to discourage wildlife activity. Additionally, certain endangered wildlife such as giant garter snake that may forage in these wetlands have the potential to be impacted by habitat removal. This impact is considered potentially significant.

***Pickleweed Series*.** Project impacts along the Pittsburg Standard Oil Converter Station cable route would largely occur adjacent to and outside of this community. This community is considered optimal habitat for species such as salt marsh harvest mouse and the species is known to occur adjacent to Arcy Lane near the Project area. This impact is considered potentially significant.

***Salt Marsh Harvest Mouse*.** Impacts or take of this species could occur during trenching of at least one cable in 0.5 mile of existing dirt road at Arcy Lane immediately adjacent to pickleweed salt marsh known to support the species (CDFG, 2005).

Based on the habitats present in the Project area, the following additional special-status species may be impacted by the proposed Project.

***California Clapper Rail, California Black Rail, Northern Harrier, Short-eared Owl, Salt Marsh Yellowthroat and White-Tailed Kite*.** These species of birds could potentially be impacted by trenching of the onshore cable route to the Pittsburg Standard Oil Converter Station site. The corridor contains potential foraging and nesting habitat for the above species. In the case of the northern harrier, white-tailed kite and short-eared owl potential nesting habitat would also be impacted through the construction of the laydown area and access road for the Pittsburg Standard Oil Converter Station site. These impacts are considered potentially significant.

Impact TBIO-2: Trenching Near Saltmarsh and Wetland Habitats (Pickleweed, Bulrush and Cattail). The proposed Project has the potential to significantly impact, either directly or through habitat modifications, terrestrial endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12).

Mitigation Measure TBIO-2a: Marking Habitat and Implementing Physical Avoidance Measures. In order to protect wildlife habitat and prevent disturbance or take of salt marsh harvest mouse, black rail, or California clapper rail, a silt fence with hay bundles placed at the outside base of the fence shall be installed by a qualified biologist along the entire Arcy Lane portion (0.5 mile) of the proposed onshore cable route. All construction personnel, work crews, and project staff shall be restricted from crossing this fence at the edge of the dirt road, staging equipment or depositing any waste disposal soils, littering in or otherwise in any way entering these sensitive habitats. Due to the fact that this portion of the Project area is relatively flat, significant erosion or soil movement is not expected from trenching activities within the adjacent roadway. The fencing shall not be removed until all construction and clean-up activities were completed in the area.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: The silt fence and hay bundles shall be installed by a contractor at least 15 days prior to the initiation of any construction activities in this area. The silt fence and other barriers shall be monitored daily by the biological monitor and construction personnel during construction in order to identify, adjust, or repair the fence as needed to ensure the feature remains intact and functional.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-2b: Monitoring Requirements for Salt Marsh Species. In order to protect wildlife habitat and prevent disturbance or take of salt marsh harvest mouse, black rail, or California clapper rail, a qualified biological monitor familiar with the species shall be present during each day of construction and site preparation adjacent to these species potential habitats (i.e., salt marsh, grassland near salt marsh, pickleweed). As applicable, the biological monitor shall be authorized to require remedial protective measures in the field.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: A biological monitor familiar with these saltmarsh species, shall be present during all project related activities within the approximately 0.5 mile section of the onshore cable route from the splice box to the Delta Energy Center property.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-2c: Awareness Training for Construction Personnel. Prior to construction, all construction workers shall take part in a USFWS-approved worker environmental awareness program concerning these species given by a USFWS-approved biologist. The biological monitor shall train work crews in standard procedures for identifying and avoiding impacts to these species prior to the start of construction activities.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: All construction personnel shall receive training from a qualified biologist prior to beginning construction activities in the Project area. The awareness program will be given at the start of construction and thereafter as required for new construction personnel.

A qualified biological monitor shall be required to be present during all Project-related activities that may impact special-status species or their habitats. This monitor shall ensure the Mitigation Measure TBIO-2c is enforced.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-2d: Halting Work to Remove Endangered Species from Job Site. If a salt marsh harvest mouse, black rail, or California clapper rail is observed in or near the Project area, all construction shall cease until the mouse or bird moves out of the project area or, in the case of salt marsh harvest mouse, is captured by a qualified biologist and removed from the Project area for relocation.

Implementation Responsibility: Project proponent/ construction contractor

Requirements and Timing: All work in the Project area shall cease immediately when any of these species is observed by any employee or the biological monitor within the Project area.

A qualified biological monitor shall be required to be present during all Project-related activities that may impact special-status species or their habitats. This monitor shall ensure the Mitigation Measure TBIO-2d is enforced.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-2e: Check Under Parked Vehicles. The area beneath vehicles or equipment parked in the Project area shall be checked for the presence of salt marsh harvest mouse before being moved, during construction in the roadway and staging activities within the entire Arcy Lane habitat unit. Vehicle speed limits in this area shall not exceed 10 miles per hour.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: This measure shall be implemented each time a vehicle or equipment that is parked in the Arcy Lane portion of the project area is moved.

A qualified biological monitor shall be required to be present during all Project-related activities that may impact special-status species or their habitats. This monitor shall ensure the Mitigation Measure TBIO-2e is enforced.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-2f: Pre-construction Nesting Surveys. A qualified wildlife biologist shall perform pre-construction nesting surveys for all bird and raptor species within the Project area and immediate vicinity a maximum of 30 days before construction begins. If an active raptor nest is located, no activities shall occur within 0.25 mile of the nest until young are fledged and the nest is abandoned. If construction activities occur outside of the nesting period (nesting period is typically between February and August) no nesting surveys shall be required.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Pre-construction nesting surveys shall be performed a maximum of 30 days prior to the beginning of construction activities.

A qualified biological monitor shall be required to be present during all Project-related activities that may impact special-status species or their habitats. This monitor shall ensure the Mitigation Measure TBIO-2f is enforced.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Resulting Level of Significance. Mitigation Measures TBIO-2a through TBIO-2f would reduce Impact TBIO-2 to a less-than-significant level.

***Impacts to Wetlands*.**

***Red Willow Series*.** This community has the potential to be impacted from the proposed Project within the Pittsburg Standard Oil Converter Station proposed construction laydown site. This vegetation occurs adjacent to the BNSF ROW in the northeast corner of the proposed laydown area. Potential impacts to this wetland community could occur in the form of tree removal or alterations to wetland hydrology and habitat.

***Saltgrass Series*.** This community has the potential to be impacted within the Pittsburg Standard Oil Converter Site onshore cable route. This vegetation occurs adjacent to the BNSF ROW on the both sides of the tracks. Wildlife use is similar to that of California annual grasslands, but wetland-associated wildlife is more likely to occur in these habitats. Due to the fact that the cable route follows an existing roadway and a previously disturbed railroad easement this impact is considered less than significant and would not require mitigation.

***Perennial Emergent and Seasonal Wetlands*.** Impacts to seasonal wetland, perennial emergent wetlands and waters of the U.S. along the Standard Oil Pittsburg Converter Station onshore cable route could occur from project activities. Wetlands occur adjacent to and within significant portions of this route and are also associated with the reaches of Kirker Creek within the Project area (i.e., crossings). These activities have the potential to fill wetlands which may fall under the jurisdiction of USACE, and destroy habitat for special-status species. This impact is considered potentially significant.

Impact TBIO-3: Disturbance or Fill of Wetlands and Streams. Potential jurisdictional wetlands and streams exist in the project area that may be filled or altered during construction, due to project trenching for onshore cables associated with the Pittsburg

Standard Oil Converter Station site. Other temporary and permanent impacts would occur from proposed bridge construction activities for the access road from the Pittsburg-Antioch Highway to the converter station site. Other wetlands occur in portions of proposed laydown area. This is a potentially significant impact.

Mitigation Measure TBIO-3a: Implement HDD or Comparable Technology Techniques to Avoid Impacts to Kirker Creek and Associated Floodplain Wetlands. As stated in the project description of this document (Section 3.0 and Appendix A), onshore cable route for the proposed site would incorporate HDD or comparable technology techniques from the west end of the paved road on the Delta Energy Center property all the way to the northeast corner of the Pittsburg Standard Oil Converter Station site. The HDD shall be drilled at a minimum of 15 feet below the bottom of the Kirker Creek streambed in order to avoid a "frac-out" (i.e., release of drilling mud). The temperatures associated with the buried AC cable are expected to be warmer than ambient soil temperatures over a limited area (refer to Appendix F for more information). The required minimum HDD depth shall also remove any potential for impacts to these wetlands or streams due to potential heating from the buried cable. Implementation of the HDD or comparable technology techniques will avoid impacts to wetlands and streams within this portion of the onshore cable route.

Implementation Responsibility:	Project proponent/construction contractor.
Requirements and Timing:	HDD operations shall be conducted as discussed above during the applicable portion of the construction phase. Qualified biological monitors shall be required to be present during Project-related ground disturbance in this area.
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-3b: Wetland and Jurisdictional Waters Delineation Survey. Prior to construction, the Applicant shall hire a qualified wetland delineator (i.e., biologist) familiar with the wetland types in the east Bay Area to survey the proposed onshore cable route, laydown areas and other portions of the Project area. The biologist shall mark the outer upland edges of potential wetlands and streams in the Project area and oversee installation of silt fences around the edges of these features in order to avoid Project impacts.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	The informal wetland and waters delineation, survey and marking and fencing of features to be avoided shall be conducted at least 15 days prior to initiation of

construction activities within any portion of the project area.

Fenced and marked wetlands shall be monitored by a biological monitor weekly to ensure that wetland boundaries and fences remain intact.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-3c: Wetland and Pool Avoidance. Wetlands and a seasonal pool, representing vernal pool crustacean habitat for endangered species, shall be avoided by all construction activities in order to avoid fill or alteration of wetlands and streams in the project area and to avoid impacts to sensitive species or their habitats. No trenching or equipment shall enter within a minimum of 15 feet from the edge of the target seasonal pool boundaries and areas of hydrologic influence. In addition, no construction personnel shall be allowed to enter or disturb the seasonal pool or vegetated habitat immediately surrounding it. A trained biological monitor shall be present during all trenching activities occurring adjacent to vernal pool wetlands in the Project area. If disturbance occurs in any such feature during Project construction then the biological monitor shall immediately notify the USFWS and inform them of potential "take" of these federally endangered species. Any impacts to these habitats shall be considered "take" of these species and will require agency consultation to develop appropriate mitigation measures.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: If any disturbance occurs to the vernal pool habitat or other sensitive wetland habitats identified within this report or occurring adjacent to the Project area, then the USFWS will be contacted immediately to initiate consultation and determine appropriate mitigation.

As noted in the mitigation measures above, a qualified biological monitor shall be required to be present during the full duration of all Project and Project-related activities. This includes staging, construction of the cable route, use of laydown areas and implementation of HDD or comparable technology techniques beneath wetlands and stream channels or vegetated canals or ditches. Effectively this would include a monitor being present during construction of the entire Standard Oil Converter Station cable route, access road and laydown area.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-3d: Obtain Streambed Alteration Agreement. Potential impacts or alteration of streambeds from bridge construction over and HDD or comparable technology drilling beneath Kirker Creek at two locations would require a Streambed Alteration Agreement (Section 1600-1616) through CDFG.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Consultation with CDFG shall occur at least nine months prior to the start of construction.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Resulting Level of Significance. Mitigation Measures TBIO-3a through TBIO-3d would reduce Impact TBIO-3 to a less-than-significant level.

***Impacts to Potentially Occurring Special-status Species*.**

***Wildlife*.** Salt marsh harvest mouse (*Reithrodontomys raviventris*) is known to occur in the salt marsh habitats adjacent to, and east of, Arcy Lane (near New York Slough). These areas also have the potential to support California black rail, and California clapper rail. Construction would occur in close proximity to these habitats, within the roadway of Arcy Lane. These habitats would be avoided by project activities if all construction equipment, personnel and activities remained in the existing roadway.

Western pond turtle (*Actinemys marmorta pallida*) has the potential to be impacted by placement of the cable route, access road and bridge construction near wetlands and Kirker Creek during construction of the onshore cable route and construction of facilities for the Standard Oil Pittsburg Converter Station.

Giant garter snake historically ranged throughout the Sacramento and San Joaquin valleys but is very scarce throughout its range due to the elimination of natural sloughs and marshy areas. This federally listed threatened species is an active diurnal snake rarely found away from water. It is likely to feed upon introduced species such as mosquito fish (*Gambusia attinis*), carp (*Cyprinus carpio*), and minnows (Family Cyprinidae), as native historic food sources are often unavailable. Potential habitat within the Project area is located within the open brackish marshes within portions of the Pittsburg Standard Oil Converter Station onshore cable route including bulrush, cattail and red willow wetlands. Vegetated and wetland habitats associated with Kirker Creek also represent potential habitat for this species.

***Giant Garter Snake and Western Pond Turtle*.** The proposed Project may affect these species if they are present in the vegetated marshes and ditches adjacent to the Pittsburg Standard Oil Converter Station onshore cable route. These adjacent wetlands and ditches provide potential habitat for these species, because they contain a continuous water supply and sufficient emergent vegetation. Western pond turtles are known from the immediate vicinity of the Project area while giant garter snake is expected from the region in these habitat types. Snakes and turtles may be incidentally harmed or harassed by construction activities if they are foraging within the Project area adjacent to the marsh or streams. This is a potentially significant impact.

Impact TBIO-4: Potential Impacts to Giant Garter Snake and Western Pond Turtle. The proposed Project has the potential to significantly impact, either directly or through habitat modifications, terrestrial endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12).

Mitigation Measure TBIO-4a: Avoidance of Habitat and Timing of Construction. No grading, excavating, or filling may take place in or within 50 feet of the marsh, wetland or stream edges within the Project area between October 1 and May 1 unless otherwise authorized by the USFWS and CDFG.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: No activity within 50 feet of the marsh, wetland or stream edges between October 1 and May 1, unless otherwise authorized by the USFWS and CDFG.

A qualified biological monitor shall be required to be present and ensure that the mitigation measure is enforced during all Project-related activities that may impact special-status species or their habitats.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-4b: Worker Training for Giant Garter Snake and Western Pond Turtle. Prior to construction, all construction workers shall take part in a Service-approved worker environmental awareness program given by a USFWS-approved biologist.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Prior to initial start of work and thereafter as needed for new workers entering the Project area, all construction workers and employees shall receive training on avoidance and awareness of these species prior to the start of work in the Project area.

A qualified biological monitor shall be required to be present and ensure that the mitigation measure is enforced during all Project-related activities that may impact special-status species or their habitats.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-4c: Biological Monitoring for Giant Garter Snake and Western Pond Turtle. A USFWS-approved biologist shall be present on site during any construction activities within western pond turtle or giant garter snake habitat. If a giant garter snake or western pond turtle is found in the work area, all work shall cease until the snake or turtle leaves the work area. Monitoring and avoidance measures shall follow protocols established by the USFWS (see Appendix F for details).

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: A qualified biological monitor shall be required to be present and ensure that the mitigation measure is enforced during all Project-related activities that may impact special-status species or their habitats.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Resulting Level of Significance. Mitigation Measures TBIO-4a through TBIO-4c would reduce Impact TBIO-4 to a less-than-significant level.

***Special-status Birds and Raptors*.** Salt marsh yellowthroat (*Geothlypis trichas sinuosa*) occupies fresh and saltwater marshes with abundant vegetative cover, including bulrush, cattails and willows. These habitats occur adjacent to Arcy Lane and on either side of portions of the BNSF ROW.

Northern harrier (*Circus cyaneus*) inhabits areas of tall, dense grasses, moist or dry shrubs, and the edges of row crops for nesting, cover, and feeding. Common food items are voles, frogs, small reptiles, crustaceans, and insects. Nests are built on ground with shrubby vegetation. These birds could nest in grasslands or adjacent to marshes associated with the Project area.

Short-eared owl (*Asio flammeus*) hunts in open grasslands, dunes, fresh and saltwater marshes and other open country. The species nests on the ground in a grass-lined depression that is often concealed in weeds or beneath shrubs. The species typically hunts for small mammals during the late afternoon onwards through the night. This species is covered under the East Contra Costa County HCP (Contra Costa County, 2005). The project area contains open grassland and salt marshes that represent both nesting and foraging habitat for the species.

White-tailed kite (*Elanus leucurus*) inhabits areas of tall, dense grasses, shrubs, farmlands and open country. The species mainly feeds on rodents and insects. Nests are typically built in tall trees near a water source. These birds forage in grasslands and grain fields associated with the project area. Several individuals of this species were observed near the grassland berms around the perimeter of the Pittsburg Standard Oil Converter Station site during the survey, and foraging behavior was observed.

***Northern Harrier, Short-eared Owl, Salt Marsh Yellowthroat and White-Tailed Kite*.** These species of birds may be impacted by use of this area for construction laydown. The area constitutes potential foraging and nesting habitat for the above species. In the case of the northern harrier, white-tailed kite, and short-eared owl, potential nesting habitat could also be impacted through the use of the construction laydown area. These impacts are considered to be potentially significant.

Impact TBIO-5: Potential Impacts to Special-status Raptors and Birds in Construction Laydown Area. The proposed Project has the potential to significantly impact, either directly or through habitat modifications, terrestrial endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12).

Mitigation Measure TBIO-5: Pre-construction Nesting Surveys at Construction Laydown Area. A qualified wildlife biologist shall perform pre-construction nesting surveys for all bird and raptor species within the construction laydown area and immediate vicinity at least 30 days prior to start of construction. If an active raptor nest is located no activities will occur within 0.25 mile of the nest until young are fledged and the nest is abandoned. If construction activities occur outside of the nesting period (nesting period is typically between February and August), no nesting surveys would be required.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Pre-construction nesting surveys for all bird and raptor species within the Project area and immediate vicinity shall be performed at least 30 days prior to start of construction.

A qualified biological monitor shall be required to be present and ensure that the mitigation measure is enforced during all Project-related activities that may impact special-status species.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Resulting Level of Significance. Mitigation Measure TBIO-5 would reduce Impact TBIO-5 to a less-than-significant level.

Vernal Pool Invertebrates. Vernal pool invertebrates include: vernal pool fairy shrimp, California linderiella, vernal pool tadpole shrimp, Ricksecker's water scavenger beetle and the curve-footed hygrotus diving beetle. These species occur during the wet winter and spring months in vernal pools and seasonal freshwater wetlands. Vernal pool fairy shrimp and California linderiella fairy shrimp are known to occur in a long seasonal pool along the BNSF ROW west of Arcy Lane (CDFG, 2005). A large natural vernal pool also occurs at the southern end of Arcy Lane near the intersection with the BNSF ROW near the Pittsburg Standard Oil Converter Station onshore cable route. Due to the adjacency of these two pools, vernal pool crustaceans are likely to occur in the Arcy Lane pool. Impacts to these species are identified in TBIO-1 and Mitigation Measures TBIO-1a-1c.

Plants. Because initial plant surveys for this Project occurred outside the common blooming period, plants that may occur at the Project site may not have been observed. Mitigation Measures TBIO-6a and TBIO-7a ensure surveys for rare plants would be conducted in spring.

Alkali Milk-vetch (Astragalus tener* var. *tener). This diminutive herbaceous annual member of the pea family (Fabaceae) occurs on alkaline flats and in seasonally moist alkaline meadows at elevations typically below 200 feet. The species is rare and endemic to California. It is known to occur in the southern Sacramento Valley, northern San Joaquin Valley and the eastern San Francisco Bay Area. Twenty-three of the 35 known occurrences of this species have been extirpated (made locally extinct) by habitat destruction. The only protected population of this species occurs at the Jepson Prairie Preserve in Solano County. The seasonally saturated alkaline habitats in the eastern grassland portion of the Project area may provide habitat for this species.

Bent-flowered Fiddleneck (Amsinckia lunaris). This annual member of the forget-me-not family (Boraginaceae) occurs rarely in a broad range of coastal grassland and scrub habitats. The plants have golden yellow flowers in a coiled inflorescence and hairy herbage. This species has the potential to occur in less disturbed grasslands within the Project area, including portions of the BNSF ROW and grasslands adjacent to Arcy Lane.

Big Tarplant (Blepharizonia plumosa **ssp.** ***plumosa).*** This annual member of the sunflower family (Asteraceae) is known to occur in grasslands. The species is known in Contra Costa County and was previously documented within the area of the proposed access road from the Antioch-Pittsburg Highway to the Pittsburg Standard Oil Converter Station site. However this site currently has only a previously graded dirt road without vegetation. The species is also known to occur southwest of the project area on private lands. This species was not located during rare plant surveys conducted for the project that occurred within the species' bloom period. Only a broad polygon is depicted on the CNDDB map of the species previous occurrence near the proposed access road parcel, and this occurrence was last documented in 1916. Therefore, it is likely this population has been extirpated (i.e., made locally extinct). This species has the potential to occur in grasslands along the Pittsburg Standard Oil Converter Station site and access road.

Delta Mudwort (Limosella subulata). This perennial, herbaceous member of the figwort family (Scrophulariaceae) occurs in saltwater marshes and along shorelines. The species is known from the immediate Project vicinity along the shores and sloughs adjacent to New York Slough. Project activities in this area would occur within Arcy Lane, an existing road, and no habitat for this species occurs in this road.

Diamond-petaled Poppy (Eschscholzia rhombipetala). This species occurs very rarely on alkaline clay soils in open grasslands and fallow fields and is an annual member of the poppy family (Papaveraceae). The species is characterized by having a barrel shaped receptacle with no rim and small yellow petals (less than 1.5 centimeter). This species was presumed extinct until being rediscovered in 1992 on the Carrizo Plain. The occurrence from the Antioch Dunes, 2.3 miles east of the Project area, is considered extirpated.

Dwarf Downingia (Downingia pusilla). This annual member of the bellflower family (Campanulaceae) occurs rarely in vernal pools and roadside wetlands or ditches. Both of these wetland habitat types occur within and immediately adjacent to the project area. The flowers are low-growing and are blue to white with two small yellow spots near the throat.

Hoover's Cryptantha (Cryptantha hooveri). This annual member of the forget-me-not family occurs rarely in a broad range of coastal grassland habitats. The plants have white flowers in a coiled inflorescence and hairy herbage. This species has the potential to occur in less disturbed grasslands within the Project area, including grasslands adjacent to Arcy Lane.

***Round-leaved Filaree (Erodium macrophyllum)*.** This annual, herbaceous member of the geranium family (Geraniaceae) is known to occur in woodlands and grasslands, often on clay. The species is characterized by having undivided, basal, shallowly lobed leaves with white petals that are sometimes tinged red to purple. The species was historically known from the Antioch Dunes, approximately 2.3 miles east of the project area.

***Showy Madia (Madia radiata)*.** This annual member of the sunflower family occurs in grasslands and woodlands and is known in Contra Costa and historically in the Pittsburg area. The species is characterized by showy golden ligulate flowers and sticky (glandular) herbage. Portions of the annual grassland habitats in the Project area represent potential habitat for the species.

***Suisun Marsh Aster (Aster lentus)*.** This perennial, herbaceous member of the sunflower family occurs in brackish and salt marsh habitats of the eastern Bay Area. The plants are characterized by white to purple ray flowers. This species occurs within the project area at the edge of New York Slough at the base of a boat ramp. Impacts to these plants would be avoided near the shoreline through HDD techniques for cable construction.

Impact TBIO-6: Potential Impacts to Special-status Plants. The undeveloped grasslands, seasonal wetlands (e.g., saltgrass and seasonal pool) and marshes adjacent to and within the onshore cable route for the Pittsburg Standard Oil Converter Station site would require trenching, drilling, and related construction activities. These areas contain native soils that provide potential habitat for numerous special-status plant species. This is a potentially significant impact.

Mitigation Measure TBIO-6a: Rare Plant Surveys. Because spring surveys have not yet been conducted in the Project area, prior to construction the entire Pittsburg Standard Oil Converter Station onshore cable route and undeveloped laydown areas, not including the developed and disturbed proposed converter station site or other roads or developed areas along the route, shall be surveyed by qualified botanist(s) for special-status plants at the appropriate flowering period using established CNPS and CDFG protocols (Appendix F).

Implementation Responsibility:	Project proponent
Requirements and Timing:	A qualified botanist shall conduct surveys during the appropriate flowering period using CNPS and CDFG protocols, which include up to three visits to this portion of the onshore cable route during different early-, mid- and late-bloom periods.
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-6b: Avoidance of Rare Plant Populations or Compensation for Loss. If special-status plants are detected within the construction zone, or the immediate vicinity, mitigation to avoid impacts within 50 feet of these plants or to compensate for unavoidable impacts or degradation of suitable habitat for these plants shall be identified in coordination with CDFG in accordance with Section 1913(c) of the California Fish and Game Code. Mitigation includes protection of existing rare plant occurrences and habitats by rerouting alignments, as practical, to avoid impacts to special-status plant species, and protecting other grassland and seasonal wetland habitats in the areas where the plants occur. This shall be accomplished through the purchase of credits (at a 1:1 ratio) in an existing service-approved mitigation bank.

Avoidance can also be managed by narrowing the construction ROW at the plant population location and rerouting the cable to the other side of the easement. As a least-desired option, salvage of plants and potential seed bank soils and placement of these plants and materials in adjacent potential habitat that will remain undisturbed may also be considered. Any such salvage process should be planned and coordinated through oversight from a qualified plant ecologist or botanist.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: The rare plant survey report prepared for the Project shall be submitted to the City of Pittsburg upon completion.

Construction ROW shall be narrowed or rerouted as necessary to avoid rare plant populations during the construction phase of the Project.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Resulting Level of Significance. Mitigation Measures TBIO-6a and TBIO-6b would reduce Impact TBIO-6 to a less-than-significant level.

<u>Impacts to Potentially Occurring Special-status Plants in Laydown Areas</u>**.** Both the proposed and alternative laydown areas for the Pittsburg Standard Oil Converter Station site appear to be a previously disturbed annual grassland habitat. However, no field survey or reconnaissance of these sites was conducted for this study. Native soils and vegetation may exist at these sites. These areas are also within mapped polygons of known historical occurrences of Big Tarplant and Showy Madia, rare plants that have the potential to still occupy these properties. Other special-status plants also have the potential to occur in these grasslands and could be destroyed or removed through use of these areas for construction laydown.

Impact TBIO-7: Potential Impacts to Special-status Plants from Laydown Areas. Use of the proposed and alternative Pittsburg Standard Oil Converter Station laydown areas has the potential to cause disturbance to existing plants and surface soils from construction activities and equipment, and alteration of the sites. These areas may contain native soils that provide potential habitat for special-status plant species. This is a potentially significant impact.

Mitigation Measure TBIO-7a: Rare Plant Surveys in Laydown Areas. Prior to construction, undeveloped portions of the proposed and alternative laydown areas (e.g., grassland) shall be surveyed by a qualified botanist for special-status plants at the appropriate flowering period using established CNPS and CDFG protocols (Appendix F). These portions of the Project area shall receive both early season (March-May) and late season (July-September) rare plant surveys by a qualified botanist.

Implementation Responsibility: Project proponent

Requirements and Timing: A qualified botanist shall conduct surveys during the appropriate flowering period using CNPS and CDFG protocols, and submit the survey report to the City of Pittsburg upon its completion before construction begins.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Mitigation Measure TBIO-7b: Avoidance of Special-status Plants. If special-status plants are detected within the laydown areas, or the immediate vicinity, mitigation to avoid impacts within 30 feet of these plants will be implemented. Mitigation includes protection of existing rare plant occurrences and habitats by preventing equipment, materials or other project related activities from disturbing the plants in order to avoid impacts to special-status plant species. Any special-status plant populations located during surveys shall be clearly identified, marked and fenced in order to adjust the extent of the laydown area to avoid the plants. Additionally, following surveys and identification of any sensitive resources, the perimeter of all laydown areas utilized will be fenced with a silt fence in order to prevent disturbances (e.g., soil disturbance, soil compaction, spills) outside of the designated laydown area.

Implementation Responsibility: Project proponent/construction contractor.

Requirements and Timing: If special-status plants are located in a laydown area then the plants and a 30 foot buffer around the plants will be clearly marked and fenced at least 15 days prior to any use of the laydown area for construction purposes. Regardless of whether special-status plants are located, a silt fence shall be placed around the perimeter of the laydown area at least 15 days prior to the beginning of construction.

A qualified biological monitor shall be required to be present and ensure that the mitigation measure is enforced during all Project-related activities that may impact special-status species.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance.

Resulting Level of Significance. Mitigation Measures TBIO-7a and 7b would reduce Impact TBIO-7 to a less-than-significant level.

4.5.3.3.2 <u>Operations-related Impacts</u>. No operations-related impacts are expected from the Pittsburg Standard Oil Converter Station, including ancillary facilities.

4.5.4 References

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4.6 MARINE BIOLOGICAL RESOURCES

The following sections describe the regulatory framework and the biological resources and natural communities occurring within the marine segment of the Project area, and provide an assessment of potential Project impacts. This evaluation of biological resources includes a review of special-status species with the potential to occur in the Project area. The results of this assessment are based upon literature searches and data base queries. The sources of reference data reviewed for this section included the following:

- *Antioch North, Honker Bay, Vine Hill, Benicia, Mare Island, Petaluma Point, San Quentin, Richmond, Oakland West, San Leandro, Hunters Point, Point Bonita, and San Francisco North*, California, USGS 7.5-minute topographic quadrangles
- California Natural Diversity Database (CNDDB) queries of the *Antioch North, Honker Bay, Vine Hill, Benicia, Mare Island, Petaluma Point, San Quentin, Richmond, Oakland West, San Leandro, Hunters Point, Point Bonita, and San Francisco North* USGS 7.5 minute quadrangles (California Department of Fish and Game [CDFG], 2005)
- Baylands Ecosystem Species and Community Profiles, Life Histories and Environmental Requirements of Key Plants, Fish, and Wildlife. (San Francisco Bay Area Wetlands Ecosystem Goals Project [Goals Project, 2000])
- U.S. Fish and Wildlife Service Species List for Antioch North, Honker Bay, Vine Hill, Benicia, Mare Island, Petaluma Point, San Quentin, Richmond, Oakland West, San Leandro, Hunters Point, Point Bonita, and San Francisco North, California USGS 7.5 minute quadrangles (U.S. Fish and Wildlife Service[USFWS], 2005a)
- Review of the literature and other published reports relevant to the Project area

This section first describes the general nearshore and tidal habitat types found around the relevant portions of San Francisco Bay, and provides general locations of these habitat types and the species commonly found in them. The open water community of the Bay is described based on the following broad categories:

- Benthos (bottom-dwelling organisms)
- Fish
- Birds
- Marine mammals
- Aquatic plants

Species and habitats (e.g., eelgrass beds, etc.) protected under the state and federal endangered species acts and other regulations are also described.

4.6.1 Environmental Setting

The following description of the marine environment covers only the offshore DC and AC cable routes in San Francisco Bay. Biological resources for onshore components of the proposed Project are discussed in Section 4.5, Terrestrial Biological Resources. The biological resources in San Francisco Bay are discussed in the following sections by location and type. For purposes of this section, San Francisco Bay is categorized into two subregions, which are defined as the following:

- North Bay – North of the Richmond Bridge extending to Suisun Bay and the west delta
- Central Bay – Richmond Bridge to the southern most portion of the proposed cable route in San Francisco

4.6.1.1 Marine Habitat Types

Marine habitats around San Francisco Bay include those that fringe the Bay such as Bay flats as well as the open Bay itself. The habitats types around the Bay often blend with one another in transition zones called ecotones. Species found in these areas often occur in more than one habitat type. The habitats and common species associated with those habitat types have the potential to occur within the Project boundaries.

4.6.1.1.1 Bay Flats. Bay flats are sparsely vegetated intertidal areas that occur from approximately mean lower low water (MLLW) to mean tide level (MTL). They provide protection to banks and upland shoreline from wave energy and sediment. Bay flats around San Francisco Bay provide habitat for many types of invertebrates, including diatoms (microscopic algae), polychaetes (marine bristleworms), oligochaetes (earthworms and relatives), amphipods (shrimp-like organisms), isopods (sow bugs and relatives), and crustaceans (shrimps, crabs, barnacles, etc.).

During low tide, Bay flats provide crucial foraging and roosting areas for almost one million shorebirds that utilize the Bay during the spring migration. Shorebirds frequently found on Bay flats in the Bay include western sandpiper (*Calidris mauri*), least sandpiper (*Calidris minutilla*), dunlin (*Calidris alpina*), long- and short-billed dowitcher (*Limnodromus griseus*, and *L. scolopaceus*, respectively), long-billed curlews (*Numenius americanus*), whimbrels (*Numenius phaeopus*), and American avocet (*Recurvirostra americana*).

During high tide, Bay flats provide foraging habitat for fish, including longfin smelt (*Spirinchus thaleichthys*), staghorn sculpin (*Leptocottus armatus*), starry flounder (*Platichthys stellatus*), and leopard shark (*Triakis semifasciata*). One of the few mammals occasionally present on Bay flats is the Pacific harbor seal (*Phoca vitulina*).

4.6.1.1.2 Open Bay. The Goals Report (Goals Project, 1999) subdivides the open Bay into two habitat subunits: deep Bay/channel and shallow Bay. Deep Bay/channel habitat, which accounts for approximately one-third of the area of San Francisco Bay, is defined as those portions of the Bay deeper than 18 feet below MLLW, including the deepest portions of the Bay and the largest tidal channels. Shallow Bay is defined as that portion of the Bay between MLLW and 18 feet below MLLW. The shallow Bay habitat accounts for two-thirds of the Bay's area (Goals Project, 1999).

Species that use the deep Bay habitat include several species of free-swimming invertebrates such as California Bay shrimp (*Crangon fransicorum*), and fishes such as brown rockfish (*Sebastes auriculatus*), halibut (*Paralichthys californicus*), and sturgeon (*Asipenser* sp.). This habitat provides important roosting and "loafing" habitat for waterbirds, especially in areas protected from intense wind fetch or wave action. Waterbirds, such as surf scoter (*Melanitta perspicillata*), scaups (*Aythya* spp.), brown pelican (*Pelecanus occidentalis*), and terns (*Sterna* spp.), and marine mammals, such as harbor seal and California sea lion (*Zalophus californianus*), can be found utilizing this habitat type. Anadromous fish, such as Chinook salmon, use the deep Bay habitat as a migratory pathway to and from upstream spawning areas.

The shallow Bay habitat is a feeding area for Pacific herring (*Clupea harengus*), northern anchovy (*Engraulis mordax*), bat ray (*Myliobatis californica*), and jacksmelt (*Catherinops californiensis*), as well as at least 40 other species of fish, crabs, and shrimp. Pacific herring spawn on hard substrates and eelgrass along the shallow margins of the Central Bay (refer to Figure 4.6-1). Shallow Bay habitat is also a nursery area for juvenile halibut and sanddabs (*Citharichthys stigmaeus*), leopard shark, shiner perch (*Cymatogaster aggregata*), herring, and other fishes. Anadromous fish use the shallow Bay area as migratory pathways to and from upstream spawning areas. This habitat is within the depth range of many diving birds and therefore provides important avian foraging habitat. Marine mammals such as harbor seals also forage in this habitat type (refer to Figure 4.6-2). Eelgrass (*Zostera marina L.*), San Francisco Bay's only rooted seagrass, is present in some areas of this habitat type. Eelgrass is particularly important to many species of fish such as Pacific herring, which deposit eggs on the blades of this plant, and the endangered least tern (*Sterna antillarum browni*), which can forage on small fishes associated with the eelgrass.

4.6.1.2 Biological Resources

4.6.1.2.1 Benthos. Benthos are bottom-dwelling organisms that generally live non-mobile lifestyles, though some mobile species such as crabs do exist. In the Bay Area, many benthic invertebrates live within sedimentary or soft-bottom habitats, usually within the top 2 to 3 centimeters of the soft sediment. Some benthic invertebrates also live on hard substrates, which are much less common in the Bay compared to sedimentary habitats.

Three major benthic species assemblages (groups of organisms that inhabit a location or locations at a certain time or over a period of time) are present in the Bay Area: fresh-brackish, estuarine, and marine assemblages. Fresh-brackish assemblages are found in the delta, with a transition assemblage extending into Suisun Bay. Estuarine assemblages are prevalent in San Pablo Bay. The Central Bay harbors marine assemblages. Assemblage characteristics, such as species composition and abundance, are affected by many physical factors, including salinity and sediment grain size, or by biological factors such as competition and predation (Thompson et al., 2000). Changes in these factors can influence individual benthic species differently.

Many of the more common benthic species in San Francisco Bay today are accidentally or intentionally introduced species (SFEP, 1992). Most of these non-native species were transported here in ballast water of ships or on the oyster shells brought from the east coast for commercial farming purposes in the late 19th century (Carlton, 1979). Some of these nonindigenous species serve ecological functions similar to those of the native species that they have displaced. Examples of these include the eastern oyster (*Crassostrea virginica*), the Japanese littleneck clam (*Tapes philippinarum*), and the soft-shelled clam (*Mya arenaria*), all of which have supported commercial or sport fisheries. However, other species, such as one of the so-called Asian clam species (*Potamocorbula amurensis*), have a negative effect on phytoplankton and zooplankton populations and organisms that depend on them. Though *P. amurensis* may serve as a food source for diving ducks and sturgeon, their high feeding rates can remove much of the phytoplankton from the water column and may have an adverse effect on zooplankton and other organisms that in the food chain that feed on them (SFEP, 1992).

In Suisun Bay and the western part of the delta, the benthos found are mostly fresh-brackish assemblages, with a transition assemblage extending into Suisun Bay. Fresh-brackish water species include oligochaetes, chironomids (midges), soft-shelled clams, so-called Asian clam species in the genus *Corbicula*, and amphipods (SFEP, 1992; Thompson et al., 2000). Further west into San Pablo Bay, more estuarine conditions exist and intertidal bay flats and marshes are extensive. Here, estuarine assemblages are prevalent. Common benthic species include ribbed mussels (*Ischadium demissum*), Baltic clams (*Macoma balthica*), *P. amurensis*, California hornsnails (*Cerithidea californica*), yellow shore crabs (*Hemigrapsus oregonensis*), amphipods, polychaete worms, and Bay mussels (*Mytilus* spp.).

In the Central Bay marine conditions exist. Benthic species common in these areas consist of clams (including *P. amurensis*), amphipods such as *Monocorophium* and *Ampelisca*, polychaete worms, and Bay mussels (SFEP, 1992).

4.6.1.2.2 Fish. More than 100 species of fish inhabit the San Francisco Bay system. The majority of species are native, but there are also many introduced species. A large portion complete all life stages within the Bay. A smaller portion, anadromous fish, migrate from ocean waters, through the estuary, and into a series of freshwater streams where they spawn. Common fish species found in the Bay are listed in Table 4.6-1, and include northern anchovy, topsmelt (*Atherinops affinis*), jacksmelt, striped bass, white croaker (*Genyonemus lineatus*), Pacific herring, and English sole (*Parophrys vetulus*).

Fish population trends can be determined by analyzing the data resulting from the monitoring efforts of CDFG. An analysis of these data from a monitoring study between 1980 and 1995 suggests a general distribution of fishes in the Bay as follows (Baxter 1999, SFEP 1992):

- North Bay – Fish species typically found in the North Bay include sharks, rays, longfin smelt, staghorn sculpin, starry flounder, topsmelt, arrow goby (*Clevelandia ios*), yellowfin goby (*Acanthogobius flavimanus*), stickleback (*Gasterosteus* sp.), mosquitofish (*Gambusia affinis*), green sunfish (*Lepomis cyanellus*), Pacific herring, Chinook salmon (*Oncorhynchus tshawytscha*), and steelhead (*Oncorhynchus mykiss*).
- Central Bay – Typical fish species occurring in the Central Bay include Chinook salmon, striped bass (*Morone saxatillis*), white croaker, Pacific herring, and northern anchovy.

Because of the large number of fish species that could potentially be present, not all are discussed in detail. The more ecologically, commercially, and/or recreationally important species are included in Appendix F. A discussion of fish species with either federal or state protection status is included in Section 4.6.1.3 (Special Status Species).

***Federally Managed Fish Species*.** Under the Magnuson-Stevens Fisheries Conservation and Management Act, the Pacific Fisheries Management Council (PFMC) is responsible for managing commercial fisheries resources along the coasts of Washington, Oregon, and California. Managed species are covered under three fisheries management plans:

- Coastal Pelagic Fishery Management Plan (includes species such as sardines and anchovy)
- Pacific Groundfish Fishery Management Plan (includes species groups such as flatfish and rockfish)
- Pacific Salmon Fishery Management Plan (includes Chinook and other salmon)

Most of the federally managed species in these plans are not found in San Francisco Bay. Federally managed species found in the Bay are listed in Table 4.6-2.

4.6.1.2.3 Birds. San Francisco Bay provides diverse habitat for many species of waterfowl and shorebirds. Open water, Bay flats, and tidal marsh are just some of these habitats.

TABLE 4.6-1
COMMON SAN FRANCISCO BAY FISH SPECIES, CALIFORNIA DEPARTMENT OF FISH AND GAME SAMPLING[1]

Scientific Name	Common Name
Acanthogobius flavimanus	Yellowfin goby
Allosmerus elongatus	Whitebait smelt
Alosa sapidissima	American shad
Amphistichus argenteus	Barred surfperch
Amphistichus koelzi	Calico surfperch
Atherinops affinis	Topsmelt
Atherinopsis californiensis	Jacksmelt
Citharichthys stigmaeus	Speckled sanddab
Clevelandia ios	Arrow goby
Clupea pallasi	Pacific herring
Cymatogaster aggregata	Shiner surfperch
Dorosoma petenense	Threadfin shad
Embiotoca jacksoni	Black surfperch
Engraulis mordax	Northern anchovy
Gasterosteus aculeatus	Threespine stickleback
Genyonemus lineatus	White croaker
Hyperprosopon argenteum	Walleye surfperch
Hypomesus pretiosus	Surf smelt
Hypsopsetta guttulata	Diamond turbot
Ilypnus gilberti	Cheekspot goby
Lepidogobius lepidus	Bay goby
Leptocottus armatus	Pacific staghorn sculpin
Menidia beryllina	Inland silverside
Micrometrus minimus	Dwarf surfperch
Morone saxatilis	Striped bass
Mustelus henlei	Brown smoothhound
Myliobatis californica	Bat ray
Oncorhynchus tshawytscha	Chinook salmon
Ophiodon elongatus	Lingcod
Paralichthys californicus	California halibut
Parophrys vetulus	English sole
Peprilus simillimus	Pacific pompano
Phanerodon furcatus	White seaperch
Platichthys stellatus	Starry flounder
Pleuronichthys decurrens	Curlfin turbot
Porichthys notatus	Plainfin midshipman

TABLE 4.6-1 (CONTINUED)
COMMON SAN FRANCISCO BAY FISH SPECIES, CALIFORNIA DEPARTMENT OF FISH AND GAME SAMPLING[1]

Scientific Name	Common Name
Psettichthys melanostictus	Sand sole
Raja binoculata	Big skate
Rhacochilus toxotes	Rubberlip seaperch
Rhacochilus vacca	Pile perch
Sardinops sagax	Pacific sardine
Sebastes auriculatus	Brown rockfish
Spirinchus thaleichthys	Longfin smelt
Squalus acanthias	Spiny dogfish shark
Symphurus atricauda	California tonguefish
Syngnathus leptorhynchus	Bay pipefish
Triakis semifasciata	Leopard shark
Tridentiger trigonocephalus	Chameleon goby

[1] Source: California Department of Fish and Game, Bay-Delta Monitoring Project, unpublished data. Species lists also reported in Baxter et al., 1999.

TABLE 4.6-2
FEDERALLY MANAGED FISH SPECIES OCCURRING IN THE BAY

Name	Scientific Name	Notes
Big skate	*Raja binoculata*	Rare
Brown rockfish	*Sebastes auriculatus*	Common around bottom structures
Chinook salmon	*Oncorhynchus tshawytscha*	Migrate through Project area
Curlfin sole	*Pleuronichthys decurrens*	Rare
English sole	*Pleuronectes vetulus*	Common in shallow subtidal habitat
Leopard shark	*Triakis semifasciata*	Common year-around
Lingcod	*Ophiodon elongates*	Rare
Market squid	*Loligo opalescens*	Rare
Northern anchovy	*Engraulis mordax*	Most abundant species in Project area
Pacific sanddab	*Citharichthys sordidus*	Rare
Pacific sardine	*Sardinops sagax*	Increasingly abundant
Sand sole	*Psettichthys melanostictus*	Rare
Spiny dogfish	*Squalus acanthias*	Rare
Starry flounder	*Platichthys stellatus*	Common in shallow subtidal habitat

Roughly 120 species from 16 avian families occur in the Bay. Of these birds, approximately two-thirds are represented by three families: Anatidae (waterfowl), Laridae (gulls and terns), and Scolopacidae (sandpipers and phalaropes).

The Bay serves as an important staging and wintering ground on the Pacific Flyway for numerous species of waterbirds. The Pacific Flyway is a bird migration corridor along the Pacific Coast that stretches as far north as northern Canada and Alaska, and as far south as the southern tip of South America (SFEP, 1992). In the Bay, the greatest waterbird abundance and species diversity is seen in winter, as birds migrate along the flyway. Each year, nearly one million waterfowl and more than one million shorebirds pass through this area. San Francisco Bay is also recognized as a site of hemispheric importance for shorebirds by the Western Hemisphere Shorebird Reserve Network (2005) (a site is designated of hemispheric importance if it is utilized by at least 500,000 shorebirds annually). Between 1988 and 1995, the Bay supported 24 to 96 percent of the key species of shorebirds surveyed along the Pacific Flyway. No other site within the Pacific Flyway supported more than 16 to 32 percent of these species (Page et al., 1999). Tidal Bay flats in particular offer important habitat and a migratory staging area for shorebirds.

The most predominant birds in the open Bay are diving ducks, including scaup, scoter, and canvasback. A comprehensive survey and analysis of waterbirds in the Bay was conducted between 1988 and 1990 (Accurso, 1992). During this time, diving ducks consisted of up to 75 percent of the Bay's waterfowl, depending on the month. Greater and lesser scaup were the most abundant species, accounting for nearly 47 percent of all species. Surf scoter was the second most abundant species making up about 20 percent of all waterfowl in the Bay. Canvasback, another diving bird, accounted for 7 percent of all waterfowl species in the Bay (Accurso, 1992). Similar results were obtained in more recent mid-winter surveys from 1998 to 2000 where scaup comprise about 43 percent of all waterfowl in the entire Bay and 67 percent of waterfowl in the Central Bay open water. Scoters, the second most abundant waterfowl in the Bay, accounted for 29 percent of total waterfowl in the Central Bay (USFWS, 2005b).

Tidal flats are a primary foraging habitat for shorebirds within the Bay. The North Bay supports approximately 20 percent of shorebirds in San Francisco Bay, while the South Bay (south of the proposed Project cable route) supports the majority of shorebirds due to the extensive tidal flats and salt ponds present there (SFEP, 1992). Western sandpipers and dunlins comprise the majority of shorebirds in the Bay, but also occurring in large numbers are dowitchers, marbled godwits, willets, and American avocets.

4.6.1.2.4 Marine Mammals. The waters off California support an abundance and diversity of marine mammals, primarily because of the numerous upwelling centers that stimulate primary production, the central location between arctic and subtropical areas, and the diversity of habitats (Harvey, 1998). Some species migrate through the area on their way to summer feeding or winter breeding areas; others reside in the area year-round. San Francisco Bay, like many estuaries, serves as a nursery for some species of marine mammals (e.g., harbor seals), provides protected waters for resting ashore and in the water (e.g., California sea lions and harbor seals), and is used as a foraging area (e.g., harbor seals and, occasionally, gray whales).

Several marine mammal species can be found in San Francisco Bay including the harbor seal (*Phoca vitulina*), California sea lion (*Zalophus californianus*), and more recently, the gray whale (*Eschrichtius robustus*). Characteristics of these species are included in Appendix F.

Harbor seals are the most common and abundant marine mammal in the Bay and are the only marine mammals that are permanent residents in the Bay. All harbor seals use resting areas (called haul-out sites) that are free from frequent disturbance and near channels or open water. Habitats used as haul-out sites include tidal rocks, mudflats, sandbars, and sandy beaches (Zeiner et al., 1990). These haul-out sites are critical habitats for harbor seals and are used consistently from year to year. Haul-out sites in the Project area are shown on Figure 4.6-2.

Other marine mammal species that have been seen very rarely in the Bay include the humpback whale (*Megaptera novaeangliae*), harbor porpoise (*Phocoena phocoena*), northern elephant seal (*Mirounga angustirostris*), Steller sea lion (*Eumetopius jubatus*), northern fur seal (*Callorhinus ursinus*), and the southern sea otter (*Enhydra lutris*). The species occur frequently off the California coast and occasionally enter the Bay either mistakenly, or while searching for food.

The Marine Mammal Protection Act (MMPA) of 1972 protects all marine mammals, with additional laws, including the Federal Endangered Species Act of 1973 (FESA), and the California Endangered Species Act of 1984 (CESA), protecting certain species because their populations are at very low levels (e.g., sea otter).

4.6.1.2.5 Aquatic Plants. Substrate in much of the Bay consists of soft mud, making it difficult for many macroalgal species to colonize. Some types can initially attach to a hard substrate such as a small rock or piece of shell, and, as they become larger, move with the small attachment (Josselyn and West, 1985). Common Bay species include the green algae *Enteromorpha clathrata*, *E. intestinalis*, *U. lactuca*, and *Cladophora sericea* and the aquatic plant eelgrass (*Zostera marina*).

***Eelgrass (Zostera marina)*.** Eelgrass is a native marine vascular plant indigenous to the soft-bottom bays and estuaries of the Northern Hemisphere. The species is found from middle Baja California and the Sea of Cortez to northern Alaska along the west coast of North

America and is common in healthy shallow bays and estuaries. Eelgrass serves as a food source for a number of invertebrates, fish, and some migratory birds. It also provides habitat for many commercially and recreationally important finfish and shellfish species. Pacific herring regularly spawn on eelgrass leaves, and juvenile salmonid and smelt often spend extensive amounts of time within eelgrass habitats prior to heading for the open ocean (Wyllie-Echeverria and Rutten, 1989).

Distribution of eelgrass in the Bay is limited by sediment in the water (turbidity) and the depth to which light can penetrate at levels high enough to sustain eelgrass growth. In San Francisco Bay, eelgrass is limited to depths of about 10 feet or less along the shoreline. Locations of eelgrass beds are shown on Figure 4.6-2.

Eelgrass is protected under the Clean Water Act of 1972 (as amended), Section 404(b) (1) "Guidelines for Specification of Disposal Sites for Dredged or Fill Material," Subpart E, "Potential Impacts on Special Aquatic Sites."

4.6.1.3 Special-status Species

Special-status plant and animal species are those that are recognized as rare and vulnerable to habitat loss or population decline. A list of special-status plant and animal species reported to occur within or in the vicinity of the project area was compiled using data in the CNDDB and consultation with the CDFG and USFWS (CDFG, 2005; USFWS, 2005a). These species and their potential to be impacted by the Project activities are summarized in a table included in Appendix F of this EIR. The table indicates each species' potential to occur in suitable habitat that is located in the immediate vicinity of the Project. Of the special-status plants and animals listed in the table, three fish species with federal and/or state listing have a medium or higher potential to occur within portions of the Project area. The "Potential for Impact" determination in this table is made based on locations of known occurrences of the species, the presence of preferred habitats and the potential for project activities to affect a species or associated habitats. The marine species occurring in the Project area with the potential to be affected include the fish species discussed in the following sections.

4.6.1.3.1 Delta Smelt. The delta smelt *(Hypomesus transpacificus)* is a federal- and state-listed threatened species. It is endemic to Suisun Bay upstream of San Francisco Bay through the delta estuary in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. It is a euryhaline (capable of tolerating a wide range of water salinity) species, but for a large part of its life span it is associated with the freshwater edge of the mixing zone (saltwater-freshwater interface). In the San Francisco Bay Area, the mixing zone has been estimated, during a normal water runoff year, to be in the Carquinez Strait during April and to move upstream to approximately Chipps Island in eastern Suisun Bay in August.

During spawning activities, the smelt prefers freshwater habitats. Delta smelt begin a diffuse, gradual migration to upstream spawning areas in September or October (Moyle, 2002). Delta smelt spawn from February to July in side channels and sloughs in the upper delta and in the Sacramento River north of Rio Vista (Moyle, 2002). In addition, spawning has been documented in the lower San Joaquin River, Georgiana, Barker, Lindsey, Cache, Prospect, Beaver, Hog, and Sycamore sloughs; and in sloughs of the Suisun Marsh, including Montezuma Slough and potentially Suisun Slough (Goals Project, 2000; Moyle, 2002). Adhesive, demersal eggs attach on submerged and inshore plants, primarily in sandy and hard-bottom substrates (Wang, 1986). Newly hatched larvae drift downstream to the freshwater/saltwater interface in nearshore and channel areas. Downstream distribution of adult and juvenile delta smelt appears to be generally limited to western Suisun Bay, although populations do occur in San Pablo Bay and the Napa River (Goals Project, 2000). The delta smelt is generally a pelagic species, filter feeding within the open waters of the San Francisco Bay estuary system (Wang, 1986).

Breeding habitat for the delta smelt is designated as federally-listed threatened critical habitat. Their critical habitat is defined as *"…all water and submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker Bays); the length of Montezuma Slough; and the existing contiguous waters contained within the Delta, as defined by section 12220, of the State of California's Water Code of 1969 (a complex of bays, dead-end sloughs, channels typically less than 4 meters deep, marshlands, etc.)."*

4.6.1.3.2 <u>Central Valley Steelhead</u>. The National Marine Fisheries Service (NMFS) classifies and lists steelhead as an Evolutionarily Significant Unit (ESU). "To be considered an ESU, a population or group of populations must: 1) be substantially reproductively isolated from other populations; and 2) contribute substantially to the ecological or genetic diversity of the biological species" (Myers et al., 1998). Factors used in determining ESUs include spatial, temporal, and genetic isolation, maturation rates, and other life history traits.

The Central Valley steelhead ESU (*Oncorhynchus mykiss*) is federally listed as threatened and a state species of special concern. This ESU occurs in the Sacramento and San Joaquin rivers and their tributaries. Steelhead migrate from fresh water to the ocean and return to spawn in fresh water. Steelhead spend most of their adult life in the open ocean. The Central Valley steelhead ESU migrate upstream through the Carquinez Strait from the ocean between August and May to spawn in freshwater streams. Spawning occurs between December and April, with most spawning activity occurring between January and March. Steelhead remain in freshwater for one to four years before they out-migrate through the Strait into the open ocean during spring and early summer (Goals Project, 2000). The population, based on Red Bluff Diversion Dam counts, hatchery counts, and past natural spawning escapement estimates for some tributaries, was estimated to be no greater than 10,000 adult fish (McEwan and Jackson, 1996).

4.6.1.3.3 Chinook Salmon. Chinook salmon (*Oncorhynchus tshawytscha*) historically ranged from the Ventura River in California to Point Hope, Alaska. The general life history of the anadromous Chinook salmon includes both fresh water and oceanic phases of development. Incubation of the eggs, hatching, and emergence occur in freshwater, followed by migration to the ocean. Once in the ocean the fish mature and return to freshwater habitats to spawn. Adult chinook migrate through San Francisco Bay on their way to upstream spawning grounds as part of four distinct “runs”: winter, spring, fall, and late-fall, defined by the timing of the adult spawning migration.

The NMFS classifies and lists salmon by ESU. Three Chinook salmon ESUs are known to occur in the study area, and they all receive some federal protection.

- Central Valley Fall/Late Fall-Run ESU is a candidate for federal listing. This ESU spawns in the Sacramento and San Joaquin river basins. This ESU may enter fresh water anytime between August and March, with spawning occurring between October and March (Goals Project, 2000). Juveniles may emigrate from freshwater between November and May.
- Sacramento River Winter-Run ESU is designated as a federal- and state-listed endangered species. The ESU spawns in the Upper Sacramento River below Keswick Dam. This ESU typically enters fresh water between January and May, with spawning occurring May through July. Juvenile emigration occurs during February and March (Goals Project, 2000). Critical habitat for the Central Valley Winter Run ESU includes the Sacramento River from Keswick Dam downstream to Chipps Island in the Sacramento – San Joaquin Delta and from Chipps Island west to the Benicia Bridge.
- Central Valley Spring-Run ESU is designated as a federal- and state-listed threatened species. The ESU spawns in the Sacramento River basin. This ESU typically enters fresh water between April and June, with spawning occurring between August and October (Goals Project, 2000). Juvenile out-migration typically occurs between October and December.

4.6.2 Regulatory Setting

The regulatory setting for marine resources is presented below. Additional regulations pertaining to marine resources are also summarized in Section 4.5, Terrestrial Biological Resources.

4.6.2.1 Federal

4.6.2.1.1 Federal Endangered Species Act (FESA) (16 USC 1531-1544). The federal endangered species act is described in Section 4.5.2.1.1.

4.6.2.1.2 Section 404/10 Jurisdiction (33 USC 1251-1376). Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (USACE) regulates the disposal of dredged and fill materials into "waters of the U.S.," which include intrastate lakes, rivers, streams (including intermittent streams), bay flats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, and wetlands adjacent to any water of the U.S. (CFR 33 Part 328). In areas subject to tidal influence, Section 404 jurisdiction extends to the high tide line.

The USACE also regulates navigable waters under Section 10 of the Rivers and Harbors Act. Navigable waters are defined as "those waters of the United States that are subject to the ebb and flow of the tide shoreward to the mean high water mark and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce" (33 CFR Part 322.2).

In San Francisco Bay, waters of the U.S. include open waters of the Bay, seasonal and tidal wetlands, and intertidal habitats. Any dredge or fill activities required as a part of Project implementation and/or operation would require a permit from the USACE.

4.6.2.1.3 Estuary Protection Act (16 United States Code [USC] 1221-1226). This act requires the Secretary of the Interior to review all project plans and reports for land and water resource development affecting estuaries and to make recommendations for conservation, protection, and enhancement.

4.6.2.1.4 Magnuson-Stevens Fisheries Act (16 USC 1801-1882). The Amended Magnuson-Stevens Fishery Conservation and Management Act, also known as the Sustainable Fisheries Act (Public Law 104-297), requires all federal agencies to consult with the Secretary of Commerce on activities, or proposed activities authorized, funded, or undertaken by that agency that may adversely affect Essential Fish Habitat (EFH) (Office of Habitat Conservation, 1999). The EFH provisions of the Sustainable Fisheries Act are designed to protect fisheries habitat from being lost due to disturbance and degradation.

4.6.2.1.5 Marine Mammal Protection Act (16 USC 1361-1421h). Under the MMPA of 1972 (16 USC 1371), it is unlawful to take or import marine mammals and marine mammal products. Under Section 101(a)(5)(D), an incidental harassment permit may be issued for activities other than commercial fishing which may impact small numbers of marine mammals. An incidental harassment permit covers activities that extend for periods of not more than 1 year and that will have a negligible impact on the impacted species.

4.6.2.1.6 Executive Order 13112: Invasive Species. In 1999, Executive Order 13112 was issued to prevent the introduction of invasive species and provide for their control. Under this order, the federal government may "not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has prescribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions."

Additionally, federal agencies must consult with the Invasive Species Council, consistent with the Invasive Species Management Plan.

4.6.2.2 State

4.6.2.2.1 California Endangered Species Act (CESA) (California Fish and Game Code 2050-2116). The California Endangered Species Act is discussed in Section 4.5.2.2.

4.6.2.3 Local

No local regulations apply to marine biology.

4.6.3 Environmental Impacts

The following section describes the potential impacts that the Project would have on the biological environment. The discussion focuses on the offshore cable route. Impacts to biological resources for the onshore components of the Project are discussed in Section 4.5, Terrestrial Biological Resources.

Impacts are categorized as construction-related or operations-related impacts and are further organized by impact type, since a particular type of impact may affect more than one species or habitat type (e.g., overall Bay habitat, benthic environment, fish, marine mammals, etc.). This analysis addresses the potential for impacts and, where applicable, the mitigation measures that can be adopted to avoid or minimize these effects.

4.6.3.1 Thresholds of Significance

California Environmental Quality Act (CEQA) Guidelines Section 15206 specifies that a project shall be deemed to be of statewide, regional, or area-wide significance if it would substantially affect sensitive wildlife habitats including, but not limited to, riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species as defined by State Fish and Game Code Section 903.

The following thresholds of significance are based on the CEQA Guidelines (Appendix G), and resource agency concerns. Impacts would be considered significant if they would:

- Substantially affect threatened, endangered species, or protected species
- Alter or diminish critical habitat or a special aquatic site, including eelgrass beds, mudflats, and wetlands
- Cause substantial spread of invasive nonnative plants or wildlife
- Interfere substantially with the movement of resident or migratory fish or wildlife species
- Cause substantial or sustained impact to spawning habitat of commercially important species (e.g., Pacific herring)

The proposed offshore cable route was selected to avoid shipping channels, anchorages, dredge disposal areas, other known obstacles as well as known sensitive biological resources. For example, as depicted on Figure 4.6-2, eelgrass beds and known harbor seal haul-out sites have been specifically avoided in developing the cable route to avoid impacts to these sensitive areas.

4.6.3.2 <u>Construction-related Impacts</u>

Offshore cable installation is expected to require approximately 4 to 5 months to complete and would take place 24 hours a day, seven days a week. Cable installation from the Carquinez Strait eastward is planned (to the extent possible) to take place between June 1 and November 30, a period of time that NMFS suggests that sensitive life stages of ESA-listed salmonids (Chinook and steelhead) are not likely to be present within the San Francisco Bay region.

4.6.3.2.1 <u>Installation Vessel Operation</u>. Installation from San Francisco to the Carquinez Straits would likely be accomplished by cable ship. This ship would operate much like any other large merchant ship in the Bay, subject to state and federal regulations regarding pollutant discharges. No significant impacts to marine life are expected from the operation of the Cable Ship (C/S) Giulio Verne (or comparable vessel).

From approximately the Carquinez Straits to Pittsburg installation would likely be done from a cable installation barge. This barge would be moored to deployed anchors. Disturbance to the benthos at the anchor sites would result. This disturbance would be temporary and minor at these locations. No significant impacts are expected from the deployed anchors.

4.6.3.2.2 <u>Introduction of Non-native Species from Ballast Water</u>. The C/S Giulio Verne ship would travel from elsewhere to San Francisco Bay, with the cable for installation in the Bay. Since this ship would come from a foreign port, there is the potential that non-native species could be introduced to the Bay. Larval forms of non-native species can be carried in the ballast water of ships, and if ballast water is released in the Bay, larvae can be introduced into the Bay ecosystem. The benthic clam *P. amurensis* is an example of an introduced non-native species. The U.S. Coast Guard currently has mandatory regulations in effect that require ships carrying ballast water to have a ballast water management and reporting program in place and, without jeopardizing the safety of the crew, exchange ballast water with mid-ocean water or use an approved form of ballast water treatment, prior to releasing any ballast water within a U.S. port. Since the Giulio Verne would be transiting carrying a full load of cable, it is unlikely ballast water would be needed. No impact is expected.

4.6.3.2.3 Cable Installation Using the Hydroplow or Equivalent Technology. The Hydroplow (or other equivalent cable-laying technology whose sediment disturbances are similar to those of the Hydroplow) works by fluidizing the seabed material in a narrow path, at a predetermined depth, without displacing the majority of the material, and minimizing the suspension of sediment in the surrounding water. In this case, the Hydroplow would cut a trench approximately 1 foot wide and would lay the cable at a typical target burial depth of approximately 3 to 6 feet, with the potential for local burial to greater depths if required. The actual burial depth would be determined by the marine survey and Risk Analysis to be conducted, and Insurance Company requirements. The Hydroplow straddles the cable, creates a trench below the cable, and guides the cable into the trench. The trench then partially collapses after the passage of the burial machine and the remaining part of the trench is generally filled by natural sediment deposition. The operation would move along the route at approximately 1 to 2 miles per day, so time of construction disturbance in any given area would be limited.

Potential impacts from the Hydroplow or equivalent technology would include temporary disturbance of the seabed at the trench site and a localized increase in turbidity due to suspended sediment in the water column from the fluidization of the seabed, which would not be considered significant impacts. No long-term or permanent impacts from cable installation are expected.

4.6.3.2.4 Impacts to Mobile Animals. Mobile animals, such as fish, crustaceans, and marine mammals, may be temporarily displaced in the immediate vicinity of the operation by cable installation equipment or by exposure to short-term changes in suspended sediments and turbidity. The temporary displacement would primarily be limited to demersal (bottom dwelling) fish species. Species that primarily inhabit the mid-and upper water column, such as anchovies and salmon, are expected to continue using the water column, though these might avoid a small portion of the active cable installation area. Fish migration routes, such as through the Carquinez Strait, would not be blocked by the installation activities. Pelagic larval and egg life stages with limited mobility would be carried through the active installation area with minimal exposure to the operations. The effects of these temporary disturbances are considered adverse, but less than significant.

4.6.3.2.5 Impacts to Benthic Organisms. Sessile benthic organisms in the path of the Hydroplow or equivalent technology would be impacted as the Hydroplow moves through an area, potentially resulting in the loss or displacement of most if not all of the organisms in the immediate path of the Hydroplow. Some organisms immediately adjacent to the installation may be also be lost due to smothering or burial from sediments resuspended in the water column during the installation. Following sediment disturbing activities, disturbed areas are usually recolonized quickly by benthic organisms (Newell et al., 1998). The species that recolonize first are usually characterized by rapid growth and reproduction rates. Marine benthic invertebrates often colonize disturbed sedimentary habitats via pelagic larvae that settle from the water column. Crustaceans, such as amphipods that are abundant in the Bay, brood young to much more advanced stages than pelagic larvae, releasing what are essentially miniature adults into the sediment, and can rapidly colonize adjacent disturbed areas. Studies have indicated that even relatively large areas disturbed by dredging activities are usually recolonized within 1 month to 1 year, with original levels of biomass and abundance developing within a few months to between 1 and 3 years (MMS, 1999; Newell et al., 1998). Areas disturbed by the proposed Project may be expected to begin to develop benthic assemblages shortly after the Hydroplow moves through a given area, and could be mostly recovered in terms of biomass and abundance a few months to a year later.

Because of the small area disturbed by the installation process, and the rapid recovery and recolonization by benthic organisms, this disturbance to bottom habitat is considered adverse, but less than significant.

4.6.3.2.6 Dredging. There are two locations in USACE dredged shipping channels (MP 52.4 – 52.5 and 55.9 – 56.0) where dredging would be required to bury the cable at a depth adequate to ensure that potential future dredging of the channel would not encounter the cable (refer to Map A.2-1, Sheet 10 of 10 in Appendix A). It would be necessary to dredge approximately 38,000 cubic yards at each location. The dredged area would be approximately 400 feet long by 30 feet wide at the bottom of the channel, dredged to a depth of approximately 15 – 20 feet. Dredging would be done before cable laying began. This dredging applies only to the offshore AC/DC cable route associated with the proposed Standard Oil site in Pittsburg.

Dredging is the process of excavating and relocating sediment. Sediment may be injected into the water column at the site of the dredging operation. Impacts from dredging would include the disturbance of the seabed at the trench site and near-field effects of potential sediment deposition from the dredging activity with effects similar to those described above for the Hydroplow or equivalent technology cable installation operation. This may result in the loss of benthic organisms located in the dredge path and potential smothering of nearby organisms. As described above, adult and juvenile fish and crustaceans temporarily move away from this type of disturbance (Wilber and Clarke, 2001; Berry et. al. 2003) and recovery of the benthos in disturbed areas is rapid. Temporary impacts would include increase in the amount of suspended sediment in the water column from the dredging activity. The dredging would occur in areas located within shipping channels which are currently dredged on a periodic basis and disturbance from this operation is considered adverse, but less than significant.

4.6.3.2.7 Horizontal Directional Drilling in the Bay. Horizontal directional drilling (HDD) would be used at each end (San Francisco and Pittsburg) of the cable installation to transition between the onshore portion of the installation and the Bay bottom. The operation would be mainly land-based, drilling a hole for cable installation from the land to an exit some distance offshore. The directional drilling avoids direct disturbance to nearshore habitat. Bottom habitat disturbance would be limited to the area surrounding the exit hole in the Bay. This type of drilling uses a chemically inert bentonite clay drilling fluid. Standard practices which would minimize the impact for drilling fluid spills include careful monitoring of the drilling fluid volume and development and implementation of a drilling fluid loss response plan. Refer to Section 4.4, Water Resources and Quality for more information. Typically, if bentonite drilling fluid is spilled into saltwater, it flocculates or aggregates into small lumps. The bentonite-water solution has a higher specific gravity than salt or freshwater alone. Consequently, it has a tendency to settle to the Bay bottom, thereby decreasing the complexity of any needed cleanup operations. Potential impacts to fish species at the two directional drill sites are considered adverse, but less than significant and would potentially include temporary localized displacement of fish due to disturbance during drilling.

4.6.3.2.8 Impact from Use of Protective Mattresses. At several locations the cable would either cross existing cable or pipelines, or pass through rocky substrate. Because trenching machines cannot be used in these locations, protective concrete mattresses or comparable materials would be used to provide cable cover. Where an existing cable or pipeline is exposed, protective mattresses would be placed on the Bay floor on top of the existing pipe or cable before the cable is laid in order to provide a physical separation between the utility to be crossed and the Project cable bundle.

Placement of protective mattresses would bury the benthic community beneath the mattress. New communities would be expected to recolonize over time. However, the type of organisms recolonizing over the mattresses may differ from the original benthic community if portions of the original substrate were soft sediment. In general, however, protective mattresses would only be used in areas where the substrate already consists of hard bottom (and sometimes at existing utility crossings) and the communities recolonizing the new hard bottom created by the mattresses would be expected to be similar to what had occurred previously. This impact is considered adverse, but less than significant.

4.6.3.3 Operations-related Impacts

4.6.3.3.1 Electromagnetic Fields. Operation of the proposed Project would involve transmission of current through both the HVDC and HVAC cable systems between the PG&E Pittsburg substation and the Pittsburg Standard Oil Converter Station site. In this proposed design, external electric fields for both HVDC and HVAC submarine cable systems are practically absent due to their shielded design. The electric field is confined within the insulation. The cable shields (metallic sheath and armor) are directly grounded at both ends. Continuous grounding along the entire length of the cable is achieved due to direct contact with water. Therefore, the cable would be at zero potential with respect to the surrounding earth.

The HVDC and MVDC cables proposed to be buried in the floor of the Bay and for short onshore sections in San Francisco and Pittsburg would develop low-intensity, static magnetic fields approximately equal to the earth's natural magnetic fields. The magnetic fields of the main and return cables would be substantially cancelled due to the fact that the two cables would be bundled closely together. The current flowing in the two cables would be equal, but flow in opposite directions. As a result, the total magnetic field on the Bay floor would be within or near background levels.

Because electrosensitive Elasmobranch fishes (sharks, skates, and rays) can detect the earth's magnetic field and the weak electrical fields produced by biological organisms, they have the potential to detect and respond to the weak electromagnetic fields produced by submarine cables (Gill and Taylor, 2001). A study performed by Gill and Taylor (2001) indicated that the lesser spotted dogfish (*Scyliorhinus canicula*), a benthic shark, was attracted to electric fields as small as 0.1 micro volt per centimeter (μV/cm), but avoided electric fields at 10 μV/cm.

Model simulations of cable with metallic shielding indicate that the cable does not generate an electric field directly. However, a magnetic field is generated in the local environment. This in turn can generate an induced electric field close to the cable within the range detectable by electrosensitive fish (CMACS, 2003). Burial of the cable does not shield the magnetic field. However the strongest electric and magnetic fields occur within millimeters of the cable (CMACS, 2003). Burying the cable or covering it with protective mattresses provides a physical barrier and keeps organisms at a distance.

Whitehead (2002) conducted field measurements of the electrical characteristics of coastal waters of the Cook Strait (New Zealand) in the immediate vicinity of the Transpower Te Hikowhenua HVDC Cable System. A second element of the study was to document the presence of sharks and rays in the vicinity of the submarine cable to determine the potential effects of the cable system on distribution of these species. The study concluded that the operational multi-cable system did not disturb the general ecology and behavior of sharks and rays in the waters surrounding the system. The Basslink Project was laid between Victoria and Tasmania, in Australia and is similar to the proposed Trans Bay Cable Project. Studies cited in the Basslink Project environmental report (Basslink, 2002) conclude that impacts from magnetic fields from existing buried HVDC cable systems had no significant impacts on marine invertebrates, or fish, including electrosensitive species such as sharks, skates, and rays.

The shielding is designed so that the cable shall emit no electric field. The cable would be buried to a target depth of 1 to 2 meters (3 to 6 feet) below the Bay floor, which would provide an additional physical barrier and distance between organisms and any field produced. Effects from the potential EMF fields produced by the submarine cable are considered potentially adverse, but less than significant.

4.6.3.3.2 Heat Generation Cable During Cable Operation. Operation of the HVDC transmission cable would produce heating of the cable. The temperature at the surface of the cable is expected to operate at about 40°C. The external temperature drop in the area surrounding the cable is logarithmic, and the temperature in the sediments would dissipate rapidly with distance from the cable bundle. Appendix F includes an analysis of potential heating of the Bay sediment overlying the cable. This analysis shows that for the DC cable, heating in the top 20 centimeters of sediment would be minimal, with no temperature increase near the surface, increasing to approximately 0.5°C above ambient at a depth of 20 centimeters (Appendix F). The top 10 to 20 centimeters of sediment is usually considered the zone where most benthic organisms reside. This small increase in sediment temperature is not expected to significantly impact benthic communities in the sediments overlying the cable. The temperature of the cable bundle buried to 1 meter in the seabed would not influence overlying Bay water temperature.

Appendix F also provides calculations for potential warming of concrete pillows, in areas where those need to be used to armor the cable. The calculations show that heating of the surface of the concrete pillows would be less than 1°C over the ambient temperature and no warming of Bay water would occur.

Marine growths around similar HVDC cables have been studied. Boffa Miskell Partners (1998) examined the marine growths that developed near submarine HDVC cables in Cook Strait, New Zealand. The cables were found to be colonized with the same species that occurred in nearby areas. No enhancement of growth over the cables was recorded, though it had been thought that the slight temperature increases associated with the cables might have encouraged growth.

The HVAC line would operate at a higher temperature than the HVDC cable. As discussed in Appendix F, sediment temperature in the area of the HVAC cable would average less than 1°C above ambient in the top 10 centimeters and would be as much as 3°C above ambient at 20 centimeters (Appendix F). The temperature increase would occur over a small area above the cable, a strip of approximately 1 meter in width or less. Ambient water temperatures for the Bay range from about 11°C to 17°C and surficial sediment temperatures are assumed to be roughly the same. The slight increase in temperature would not approach upper tolerable temperatures for benthic organisms which, according to the literature, range from about 25°C to 35°C depending on the species (Stantec Consulting Ltd., 2003). The slight increase in temperature of the surficial sediments may cause either an increase or decrease in the abundance of benthic organisms or may result in a slight change in the species composition in the sediments overlying the HVAC cable. As discussed, temperature changes would be limited to the immediate vicinity of the cable (an area of approximately 1 meter or less). Changes to the benthos, if any, from sediment warming due to operation of the HVAC cable are expected to be adverse, but less than significant. The HVAC cable would not cause warming of Bay water due to the large mass of moving water overlying the cable.

4.6.3.3.3 <u>Maintenance Activities</u>. The transmission cable is not expected to require scheduled maintenance over the anticipated 40-year life of the Project. The bundled cable would be monitored by computer and inspected periodically for any signs that would indicate external damage. If damage to the cable occurs, that section would be removed and a new, spare piece of the original cable would be spliced into the existing cable. Impacts from the repair would be similar to those of original construction, though over a much smaller area. Impacts from cable repair are considered adverse, but less than significant.

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4.7 CULTURAL RESOURCES

This section evaluates the effects of the proposed Project on cultural resources. Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. Numerous laws, regulations, and statutes, on both the federal and state levels, affect the management of cultural resources.

4.7.1 Environmental Setting

Detailed discussions on the archaeological, ethnographical, and historical setting of the TBC Project area are presented in the technical reports on which this section is based. The reader is referred to Appendix G (Cultural Resources) of this EIR for this information.

4.7.1.2 Affected Environment

As a means to determine the potential effects of the proposed Project on cultural resources, a number of tasks were completed, including archival research, Native American consultation, and both architectural and archaeological field inventory efforts. Archival research consisted of a literature review and record search of ethnographic and historic literature and maps, federal, state, and local inventories of historic properties, archaeological base maps and site records, and survey reports on file at the Northwest Information Center (NWIC) at Sonoma State University. The purpose of the record search was to ascertain whether any cultural resources had been previously identified within or adjacent to the Project area as well as to identify previous cultural resources investigations. In addition, archival research was also conducted in various repositories and online resources, including the Contra Costa County property records; City of Pittsburg; San Francisco Planning Department; the San Francisco Public Library; the California State Library in Sacramento; Shields Library at the University of California, Davis; and Bancroft Library at the University of California, Berkeley. Lastly, given the extent of the Project to be constructed beneath the waters of San Francisco Bay and the adjoining waters of the Sacramento-San Joaquin River Delta, the shipwreck database maintained by the California State Lands Commission (SLC) was utilized to augment the data obtained for these unique resources.

The record search revealed that the terrestrial (onshore) Project components have been previously inventoried for cultural resources on a number of occasions and that a number of cultural resources (archaeological and historic architectural) have been identified within and adjacent to the Project area. These previously identified resources and potential effects to these resources from Project implementation are discussed below.

To assist in securing information regarding potential important resources to the local Native American community, a request for a review of the Sacred Lands File was submitted to the

Native American Heritage Commission (NAHC). In addition, the NAHC provided a list of contacts, all of whom were notified about the Project and questioned about their concerns and/or knowledge of resources in the area.

A review of the Sacred Lands File by the staff of the NAHC failed to identify specific information concerning lands on which the proposed Project is to be constructed. A single response was received from the Native American community concerning the applicability of Senate Bill 18 to the proposed Project. As the Project under consideration neither proposes new specific or general plans nor requires changes to existing specific and/or general plans, Senate Bill 18 does not apply. No responses have been received from the Native American community concerning cultural resources within the Project area or Project alternatives.

Finally, both an archaeological pedestrian reconnaissance and a historic architectural survey of the terrestrial portions of the proposed Project and alternatives were completed.

The archaeological reconnaissance included the visual inspection of exposed ground surfaces of the various Project components in both San Francisco and Pittsburg. The study areas were confined to those areas where ground-disturbing (e.g., trenching, grading) activities are proposed. In nearly all instances, the lands on which the proposed Project is to be constructed are either highly disturbed by past industrial development or covered by asphalt and/or concrete. No new archaeological resources were identified during these efforts.

A geophysical inventory of the underwater portion of the project has yet to be conducted. A hazard/archaeological survey incorporating the use of both a magnetometer and side-scan sonar shall be completed as engineering plans move beyond the conceptual phase. The results of this geophysical survey shall be incorporated as an addendum to the Cultural Resources Technical Report (Appendix G of this EIR).

The historic architectural inventory included Project sites in San Francisco and Pittsburg. For the purposes of defining the study areas for historic architectural resources, the inventory included the legal parcels where construction of aboveground facilities would take place and where potential historic architectural resources existed. Vacant land along the onshore cable routes, or parcels containing non-historic architectural resources did not require further investigation for historic architectural resources and were not studied. No additional historic architectural resources were identified (beyond those identified in the archival phase of the investigation).

4.7.1.2.1 <u>San Francisco HWC Converter Station</u>. The following is an overview of the archaeological resources and historic architectural resources for the proposed San Francisco HWC Converter Station site.

***Archaeological Resources*.** Archival research revealed that Wirth Associates conducted an archaeological investigation of the Mirant Potrero Power Plant site for an earlier expansion of the facility (1979a, 1979b). Within a trench excavated in the central portion of the facility, remnants of a mid-nineteenth century powder magazine were exposed. No site number was ever assigned to these materials. No other archaeological resources have been identified within the San Francisco HWC Converter Station, onshore cable routes, or the proposed and alternative construction laydown areas.

***Historic Architectural Resources*.** Two former sugar warehouses at 435 23rd Street (HWC site), San Francisco, on parcel 4232-10, are located on the proposed San Francisco HWC Converter Station site. As part of the Application for Certification (AFC) process for the Potrero Unit 7 power plant the HWC warehouses were found to be potentially eligible under Criterion 1, at the local level of significance for listing on the California Register of Historic Resources (CRHR). During the 2001 evidentiary hearing before the California Energy Commission as a part of the AFC process, representatives and expert witnesses from the City and County of San Francisco testified that the warehouses were eligible for listing on the CRHR. While these structures are not currently listed on the CRHR, or other local, state or federal listings, they are considered to be historical resources under the California Environmental Quality Act (CEQA) for the purposes of analysis in this EIR. The warehouses are the last remaining structures of the Western Sugar Refinery complex on 23rd Street, along the waterfront. These two warehouses are representative of the historically important sugar industry in San Francisco and the only sugar company with San Francisco refinery operations.

The proposed period of significance for the warehouses begins with their respective dates of construction (1923 and 1929) and runs through 1948 when the Western Sugar Refinery ceased its operations in San Francisco. The sugar company complex once consisted of numerous nineteenth- and twentieth-century buildings located on more than 4 blocks east to west on either side of 23rd Street. The complex included at least 16 buildings, two water tanks, a fuel tank, wharves, railroad spurs, and roadways. The buildings of the refinery were connected by abutting walls, passages, overhead bridges and conveyors. Before 1914 the complex included a nine-story brick structure, a seven-story brick melt wash house (for melting unrefined sugar “bricks”), a five-story brick melt filter house, seven large one-story wood raw sugar warehouses, the covered East Wharf and Raw Sugar Dock, and a two-story brick warehouse for refined sugar. Later additions included a 10-story reinforced-concrete building (1915), and the two steel- and concrete-warehouses built in 1923 and 1929 which remain. The warehouses are located on the proposed San Francisco HWC Converter Station site, but nearly all of the other sugar refinery buildings were demolished in 1950.

The warehouses at 435 23rd Street were evaluated in 2001 by a qualified architectural historian who concluded that they were eligible for the California Register as the last remaining structures associated with the Western Sugar Refinery (Criterion 1). The historical setting, feeling and association of the buildings have been substantially changed since the end of their period of significance, but the buildings themselves retain integrity of materials, design, workmanship, and location. The warehouses did not appear in the California Historic Records Information System (CHRIS) Historic Property Datafile for San Francisco as of August 2005; however, as noted above the warehouses are considered to be historical resources by the City and County of San Francisco, and they are, therefore, considered historical resources for the purposes of CEQA.

The former power plant complex, also known as Station A, is located on parcel 4232-06 and 4175-06 at 1201 Illinois Street, San Francisco. The complex is north of 23rd Street, immediately adjacent to and north of the proposed San Francisco HWC Converter Station site. Four buildings of the Station A complex are considered to be historical resources for the purposes of CEQA. The Meter House and Compressor House are considered historical resources because they meet at least one of the criteria for listing in the CRHR. The Station A building and Gate House are considered historical resources for the purposes of CEQA because they are treated as historical resources by the City and County of San Francisco as set forth in the evidentiary hearings for the aforementioned AFC. It should be noted that Mirant in accordance with an unreinforced masonry ordinance is seeking a demolition permit in order to remove the structures associated with the Station A complex. For the purposes of this EIR, it is assumed that the Trans Bay Cable Project would potentially need to demolish these same structures in the event that this site was approved and selected and Mirant did not proceed with the demolition activities.

San Francisco Gas and Electric Company built the first component of the Station A building in 1901 and it was remodeled in 1930. The Station A building consists of a 65-foot-tall turbine room that is 121-feet wide and 435-feet long. A large boiler room with roughly the same dimensions as the turbine room and located along the turbine room east wall, was demolished in 1983. The Station A turbine room was connected via underground conduits to the Pump House (built in 1930 and demolished about 2004) which pumped water from the Bay for use in the power plant condensers. Sea water was discharged after use into Warm Water Cove via a tunnel, which was probably installed to replace an earlier discharge pipe as part of the 1930 remodeling project. The Gate House (1901) is a small brick building with a rectangular plan and modest classical details at the façade. The Meter House and Compressor House are the last examples of facilities used in the gas manufacturing process in San Francisco dating to before 1930. The Meter House (1914) has load-bearing brick walls, segmental-arch windows, and steel roof trusses and the Compressor House (1924) is L-shaped in plan, with a steel frame, brick exterior walls with Renaissance/Baroque details, and a gable roof with a ridge monitor.

The Station A complex has undergone numerous changes that have diminished the historic integrity of the resources within the complex that date to the historic period. About half of the Station A building itself, the boiler room, was demolished for the construction of a modern switchyard in 1983. This demolition substantially reduced the historic integrity of Station A by removing at least 50 percent of the building. The integrity of the complex as a whole was further compromised by the demolition of a row of shop buildings that extended all along the east side of the boiler room, including the Boiler Shop, Pattern Shop, Pipe Shop, Tin and Copper Shop, and storage buildings. The Pump House was demolished in about 2004. The late-nineteenth century and early-twentieth century setting of the Station A complex has also changed dramatically over the last several decades. The large gas tanks west of Station A built in the early 1900s have been removed and the area is now occupied by an electrical switchyard. Various steam plant and gas manufacturing support buildings located near the Station A complex were also demolished in the decades between the 1950s and 1980s. PG&E built a 305-foot-tall stack and a multi-story generation unit east of Station A in the 1960s. These changes have compromised the integrity of setting, feeling, and association of the remaining buildings.

As part of the environmental review of the Potrero Power Plant Unit 7 project by the California Energy Commission (CEC Docket #00-AFC-4), qualified architectural historians evaluated the buildings of the Station A complex between 1999 and 2003. The evaluation of the buildings concluded that the main Station A building (turbine hall) had undergone substantial changes and the resulting loss of integrity rendered it ineligible for the CRHR. This evaluation found that the Pump House (since demolished) and Gate House were not architecturally or historically significant. The evaluation concluded that the Meter House and Compressor House met Criterion 1 (significance for association with important trends or patterns in history) of the CRHR.

In 2002 cultural resources staff and consulting experts for the City of San Francisco testifying in hearings related to the Potrero Power Plant Unit 7 project stated that the historic era buildings of the Station A complex appeared eligible for the CRHR and that the City and County of San Francisco treated the complex as a historical resource for the purposes of CEQA. These experts were also of the opinion that the Station A complex could contribute to a larger, potential historic district known as the Union Iron Works/Pier 70 historic district. This district has not been formally listed on the CRHR. The CHRIS Historic Property Datafile for San Francisco currently lists the remaining extant buildings of the Station A complex (Station A building, the Meter House, the Compressor House, and the Gate House) as status “7.” This status indicates that the Office of Historic Preservation has received information on the resources, but has not made a determination.

Because the City of San Francisco considers the Station A building (turbine hall), the Meter House, the Compressor House, and the Gate House to be historically significant – either as a separate resource complex, or as a contributor to a potential district – these resources are considered historical resources for the purposes of CEQA.

4.7.1.2.2 Pittsburg Standard Oil Converter Station. The following is an overview of the archaeological resources and historic architectural resources for the proposed Pittsburg Standard Oil Converter Station site.

***Archaeological Resources*.** No archaeological resources were identified within the Pittsburg Standard Oil Converter Station site, onshore AC/DC cable routes, proposed and alternative construction laydown areas, or proposed and alternative access roads during any phase of the investigation.

***Historic Architectural Resources*.** The Standard Oil site consists of a single parcel, 073-230-007, east of Loveridge Road and north of the Pittsburg-Antioch Highway. The west boundary of the site is adjacent to spur lines of the Burlington Northern Santa Fe (BNSF) railroad and the alignment of the former Pittsburg Railroad. Buildings and structures on this parcel include tanks that once served as part of the sewage treatment plant for Camp Stoneman, as well as more modern buildings that date to the decades after World War II. The modern buildings were probably constructed during the period when this site was used as an automotive salvage yard. The remains of the sewage treatment facility do not appear to be significant within the context of the development of military infrastructure during World War II, nor does the facility retain historic integrity. The former Pittsburg Railroad line is inactive (it once ran north to Pittsburg Landing) and the BNSF railroad spur is an active line that has been extensively refurbished and upgraded since the alignment was originally established. Neither railroad retains historic integrity adjacent to the Project site.

This inventory and evaluation determined that no historic architectural resources are present within this portion of the Project.

4.7.1.2.3 Offshore DC Cable Route. The following is an overview of the archaeological resources and historic architectural resources for the proposed offshore DC cable route between the proposed Pittsburg Standard Oil Converter Station site and the landfall near Potrero in San Francisco.

***Archaeological Resources*.** As discussed previously, the cultural resources inventory for the offshore DC (and AC) cable routes was limited to a record search. In addition to materials on file at the NWIC, the record search for the offshore segment also included a review of shipwreck data compiled by the SLC.

The online SLC Shipwreck Database (http://shipwrecks.slc.ca.gov/ShipwrecksDatabase/Shipwrecks_Database.asp) lists shipwrecks by county and is based primarily on historical accounts of these incidents. It should be noted that most of the location data thus refer to where the ship went down as opposed to where it came to rest. As such, a ship may have gone down well beyond the Project corridor but ultimately have come to rest within or immediately adjacent to the proposed cable route. Given the uncertainty of where a potential shipwreck may be located, the cultural resources study corridor for the offshore segment was expanded an additional 250 meters either side of centerline (1,000 meters total width). At the crossing of the BART Transbay Tube, the Project study area was expanded westward to allow for design flexibility in this crossing area. As such, the 1,000-meter-wide shipwreck study area was correspondingly widened in this particular location (see Figure 4.7-1, Sheet 1).

In addition to the records of the NWIC and the SLC, shipwreck locations taken directly from the applicable topographic maps were utilized. These unnamed and undated wrecks are mapped along many of the region's waterways. It is unknown whether any of these mapped wrecks correspond to those listed in the SLC database. Figure 4.7-1, sheets 1 and 2, depict the geographic relationship between the proposed AC and DC cable routes and the various reported shipwrecks. Table 4.7-1 below lists the potential and known shipwrecks within the Project study area and indicates the geographic relationship between each and the proposed AC and DC cable routes.

***Sagamore*.** The files of the NWIC included one archaeologically identified shipwreck within the Project study corridor. Listed in Table 4.7-1 as the "Baldwin Channel Wreck," these remains were discovered during a geophysical survey of the Pinole Shoal Channel (Sullivan and Allan, 1996). The identified remains consist of seven acoustic targets that have been interpreted to be various-sized portions of the cargo and ballast of the schooner *Sagamore*. The *Sagamore* was lost off Point Pinole, San Pablo Bay during a storm in 1864. The schooner was transporting a load of granite for Grant & Co., a San Francisco stone cutting firm. One of the crew drowned during the gale; the remaining crew clung to the rigging until rescued by the *Julia* out of Stockton.

It is worth noting that this wreck, if it indeed is the remains of the *Sagamore*, is situated more than 7.5 miles downstream from its reported wreck location as listed in the SLC shipwreck database. This is thus a clear example of the discrepancy between where a wreck reportedly went down (as listed on the SLC database) and where the vessel rests today.

***Historic Architectural Resources*.** Given the submarine nature of this segment of the proposed Project, impacts to historic architectural resources are not anticipated.

4.7.2 Regulatory Setting

Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance. Numerous

TABLE 4.7-1
SHIPWRECK DATA FOR OFFSHORE DC AND AC CABLE ROUTES

Ship's Name (Year of Wreck)	Latitude	Longitude	Descriptive Location from the Cable Route Centerline	DC Cable Milepost[1]	Data Source
Alice Garrett (1888)[2]	37° 47' 50"	122° 23' 30"	860 meters WSW of DC cable	3.5	SLC
Amelia (1889)	38° 02' 54"	122° 10' 50"	52 meters SW of DC cable	33.4	SLC
Armenia (1899)	38° 02' 54"	122° 10' 50"	52 meters SW of DC cable	33.4	SLC
Baldwin Channel Wreck (1864)[3]	37° 59' 54"	122° 25' 13"	41 meters SE of DC cable	18.8	NWIC
Baldwin Channel Wreck (1864)[3]	37° 59' 48"	122° 25' 04"	320 meters SE of DC cable	18.8	NWIC
Goddess (1865)	37° 49' 01"	122° 24' 01"	484 meters WSW of DC cable	4.9	SLC
Harry (1904)	38° 03' 20"	122° 15' 20"	435 meters SSE of DC cable	29.0	SLC
Helen Hensley (1854)*	37° 47' 56"	122° 23' 30"	777 meters WSW of DC cable	3.6	SLC
Honauwar (1889)	38° 02' 54"	122° 10' 50"	52 meters SW of DC cable	33.49	SLC
Monarch (1915)	38° 03' 30"	122° 14' 36"	322 meters S of DC cable	29.8	SLC
Ringleader (1869)	38° 01' 30"	122° 21' 54"	365 meters SE of DC cable	22.5	SLC
San Carlos (1797)[2]	37° 48' 10"	122° 23' 40"	752 meters WSW of DC cable	3.9	SLC
West Wind (1876)[2]	37° 47' 40"	122° 23' 30"	995 meters WSW of DC cable	3.4	SLC
Wreck #1 (no date)	38° 01' 43"	122° 09' 58"	348 meters SW of DC cable	34.9	USGS
Wreck #2 (no date)[4]	38° 02' 31"	121° 53' 44"	148 meters S of DC cable	52.1	USGS
Wreck #2 (no date)[4]	38° 02' 31"	121° 53' 44"	17 meters SE of AC Cable	0.5	USGS

[1] Refer to Map A.2-1 in Appendix A for milepost locations.

[2] Wrecks beyond 500 m of centerline but within vicinity of expanded study area at BART crossing.

[3] Two sets of coordinates were provided by the NWIC for this archaeologically identified wreck believed to be the *Sagamore.*

[4] This particular wreck falls within the study areas of both the DC and AC cable routes near Pittsburg.

laws, regulations, and statutes, on both the federal and state levels, seek to protect and manage cultural resources. These include:

4.7.2.1 Federal Regulations

- Antiquities Act of 1906
- Historic Sites Act of 1935
- Submerged Lands Act of 1953
- Reservoir Salvage Act of 1960
- National Historic Preservation Act of 1966

- National Environmental Policy Act of 1969
- Executive Order 11593 (Projection and Enhancement of the Cultural Environment, 5/13/1971)
- 36 CFR 800 and CFR 60 (Advisory Council on Historic Preservation: Protection of Historic and Cultural Properties, Amendments to Existing Regulations, 1/30/1979, National Register of Historic Places, Nominations by States and Federal Agencies, Rules and Regulations, 1/9/1976)
- Revisions to 36 CFR 800 (Protection of Historic Properties, 1/10/1986)
- Archaeological and Historical Preservation Act of 1974
- American Indian Religious Freedom Joint Resolution of 1978
- Archaeological Resources Protection Act of 1979
- Abandoned Shipwreck Act of 1987
- Native American Graves and Reparation Act of 1990

4.7.2.2 State Regulations

- California Environmental Quality Act of 1970
- California Native American Graves Protection and Repatriation Act of 2001
- California Public Resources Code, Section 5020 et seq.
- California Public Resources Code, Section 5097.9 et seq.
- Administrative Code, Title 14, Section 4307

Collectively, these regulations and guidelines establish a comprehensive program for the identification, evaluation, and treatment of cultural resources.

For detailed discussions of these federal and state regulations as well as applicable local ordinances, the reader should refer to the technical reports appended to this document in Appendix G.

4.7.3 Environmental Impacts

This Draft EIR affords notice to the State Historic Preservation Officer, pursuant to California Public Resources Code 5024.5(a), of a project potentially affecting resources listed in, or eligible for, the California Register of Historic Resources.

4.7.3.1 Thresholds of Significance

4.7.3.1.1 <u>Federal Significance Criteria</u>. The four evaluation criteria to determine a resource's eligibility to the National Register of Historic Places (NRHP), in accordance with the regulations outlined in 36 CFR 800, are identified at 36 CFR 60.4. These evaluation criteria, listed below, are used to help determine what properties should be considered for protection from destruction or impairment resulting from project-related activities (36 CFR 60.2).

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- Resources that are associated with events that have made a significant contribution to the broad patterns of our history
- Resources that are associated with the lives of persons significant in our past
- Resources that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction
- Resources that have yielded, or may be likely to yield, information important in prehistory or history (36 CFR 60.4)

4.7.3.1.2 <u>State Significance Criteria</u>. In considering impact significance under CEQA, the significance of the resource itself must first be determined. At the state level, consideration of significance as an "important archaeological resource" is measured by cultural resource provisions considered under CEQA Sections 15064.5 and 15126.4, and the draft criteria regarding resource eligibility to the California Register of Historic Resources (CRHR).

Generally under CEQA, a historical resource (these include built-environment historic and prehistoric archaeological resources) is considered significant if it meets the criteria for listing on the CRHR. These criteria are set forth in CEQA Section 15064.5 and defined as any resource that:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage
- Is associated with lives of persons important in our past

- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values
- Has yielded, or may be likely to yield, information important in prehistory or history

Section 15064.5 of CEQA also assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under California PRC Section 5097.98.

Impacts to "unique archaeological resources" are also considered under CEQA, as described under PRC 21083.2. A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that – without merely adding to the current body of knowledge – there is a high probability that it meets one of the following criteria:

- The archaeological artifact, object, or site contains information needed to answer important scientific questions, and there is a demonstrable public interest in that information
- The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type

A non-unique archaeological resource indicates an archaeological artifact, object, or site that does not meet the above criteria. Impacts to non-unique archaeological resources and resources which do not qualify for listing on the CRHR receive no further consideration under CEQA.

Under CEQA Section 15064.5, a project potentially would have significant impacts if it would cause substantial adverse change in the significance of one of the following:

- A historical resource (i.e., a cultural resource eligible for the CRHR)
- An archaeological resource (defined as a unique archaeological resource which does not meet CRHR criteria)
- A unique paleontological resource or unique geologic feature (i.e., where the project would directly or indirectly destroy a site or resources)
- Human remains (i.e., where the project would disturb or destroy burials)

A non-unique archaeological or paleontological resource is given no further consideration, other than the simple recording of its existence, by the lead agency.

4.7.3.1.3 Conformity of Federal and State Evaluation Criteria. The criteria for eligibility for the CRHR are very similar to those that qualify a property for the NRHP, which is the significance assessment tool used under the National Historic Preservation Act (NHPA). The criteria of the NRHP apply when a project has federal involvement. State cultural resources significance criteria apply when resources fall under the jurisdiction of a state and/or local agency.

A property that is eligible for the NRHP is also eligible to the CRHR. All potential impacts to significant resources under a federal agency must be assessed and addressed under the procedures of Section 106 of the NHPA, set forth at 36 CFR 800. All resources encountered during the Project, with the exception of isolate artifacts and isolate features that appear to lack integrity or data potential, will be evaluated for significance vis-à-vis Section 106.

4.7.3.2 San Francisco HWC Converter Station

4.7.3.2.1 Construction-related Impacts.

Archaeological Resources**.** Although no archaeological resources were identified on the surface of the Project's study area, the findings of the Wirth Associates (1979a, 1979b) study indicate that the Mirant Potrero Power Plant has a high potential for buried historical resources. Given the increased archaeological sensitivity within the confines of the Mirant Potrero Power Plant, it is possible that with Project implementation, in particular the route of the onshore AC cable across the Mirant property, archaeological resources may be exposed during construction activities.

Impact CUL-1: Disturbance of Archaeological Resources. Buried historical resources may exist on the Mirant Potrero Power Plant site. Construction of the AC cable route from the converter station across the power plant property to the PG&E Potrero substation may disturb these resources. This is considered a potentially significant impact.

Mitigation Measure CUL-1a: Archaeological Resource Testing. Due to the potential for buried cultural resources within the Mirant Potrero Power Plant portion of the Project area, it is recommended that subsurface survey (i.e., testing) of the cable route across the plant utilizing mechanical exploratory borings be initiated prior to construction activities. The subsurface survey should be implemented as a means to determine the presence and extent of buried archaeological resources within the plant area as well as to evaluate the potential significance of any resources encountered. Identified remains would be evaluated against the NRHP/CRHR significance criteria. If the resources are not eligible for the NRHP/CRHR, then no further consideration of these resources would be required. If the resources are eligible for the NRHP/CRHR, additional mitigation measures may be required.

The testing program would be documented within a technical report. The report would include the aforementioned resource evaluations, if any, and provide recommendations for the further management of cultural resources. Such recommendations could include data recovery excavations as well as the monitoring of all ground-disturbing activities associated with the project.

Implementation Responsibility: Project proponent

Requirements and Timing: A professional archaeologist, in consultation with the State Historic Preservation Office (SHPO), shall conduct testing prior to project implementation

Monitoring Requirements: The City of Pittsburg, in consultation with the City and County of San Francisco and SHPO, to monitor and ensure compliance

Mitigation Measure CUL-1b: Archaeological Resource Data Recovery. Based upon the results of the testing program, it may be necessary that a data recovery excavation be implemented. CEQA stipulates that if avoidance of the important archaeological resource is not feasible, a data recovery excavation may be warranted. When data recovery through excavation is the only feasible mitigation, a data recovery plan, which makes provisions for adequately recovering the scientifically consequential information from and about the resource, shall be prepared and adopted prior to any excavation being undertaken. The development of this plan as well as the implementation of field work, would be conducted in consultation with the SHPO, and, if the site is of aboriginal association, with the NAHC and local Native American community as well.

Implementation Responsibility: Project proponent will engage the services of a qualified professional archaeologist to implement, as necessary, this mitigation measure

Requirements and Timing: A professional archaeologist, in consultation with SHPO shall conduct data recovery as applicable prior to Project implementation

Monitoring Requirements: The City of Pittsburg, in consultation with the City and County of San Francisco and SHPO, to monitor and ensure compliance

Mitigation Measure CUL-1c: Archaeological Resource Construction Monitoring. Following completion of the archaeological testing efforts, it may be determined that construction monitoring is necessary to prevent significant impacts to important cultural resources. In the event monitoring is warranted, a qualified professional archaeologist shall be retained to observe all ground-disturbing activities associated with the Project. If archaeological materials are observed by the monitoring archaeologist, he/she would have the authority to halt all ground-disturbing activities within the vicinity of the exposed materials until the nature and significance of the find could be evaluated and mitigation measures implemented, if needed. The development of mitigation measures would be conducted in consultation with SHPO and, if the site is of aboriginal association, with the NAHC and local Native American community as well.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	A professional archaeologist shall conduct monitoring, if necessary, during ground disturbing phases of the specific area of concern
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measures CUL-1a through CUL-1c would reduce Impact CUL-1 to a less-than-significant level.

***Historical Architectural Resources*.** The construction of the San Francisco HWC Converter Station would require demolition of historical resources. This action would cause a significant adverse change to these historical resources under CEQA.

Impact CUL-2: Disturbance of Historical Architectural Resources. The construction of the converter station would require demolition of historical resources. This action would cause a significant adverse change to these historical resources under CEQA. This is considered a significant impact.

Mitigation Measure CUL-2a: Recording Architectural Resources. Recording would ensure a permanent record of the present appearance and context of the historical resources. Under this mitigation proposal, the Project proponent would ensure that the historical resources to be demolished would be recorded to Historic American Buildings Survey (HABS) or Historic American Engineering Record (HAER) standards prior to any construction activities. The HABS/HAER documentation would be filed with the SHPO, the HABS/HAER collection in the Library of Congress, the University of California Bancroft Library, the San Francisco Landmarks Preservation Advisory Board files at the San Francisco Planning Department, the Foundation for San Francisco's Architectural Heritage (FSFAH), and the San Francisco Public Library.

It is possible the discharge tunnel associated with Station A would be exposed during construction activities. If the tunnel were sufficiently exposed during such activity, work would be halted until a qualified architectural historian could record a representative cross section of the tunnel to HAER standards. Recordation would include appropriate photographs and drawings as well as archival documentation, if available. Although recording eliminates one adverse impact of demolition (the loss of historical information) it does not prevent the physical loss of historically significant resources.

Implementation Responsibility: Project proponent

Requirements and Timing: Recording shall be completed prior to the issuance of a demolition permit

Monitoring Requirements: City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Mitigation Measure CUL-2b: Architectural Resource Interpretive Display and/or Interpretive Material. The Project proponent would develop a display or interpretive material for public exhibition and dispersal. The display or interpretive material, such as a printed brochure, could be based on the photographs produced in the HABS/HAER documentation, and the historic archival research previously prepared for the resources in and near the project. This display and/or interpretive material would be provided to the City of San Francisco.

Implementation Responsibility: Project proponent

Requirements and Timing: Prior to operation of proposed Project

Monitoring Requirements: City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Mitigation Measure CUL-2c: Architectural Resource Salvage Opportunities. After recording and at least 30 days prior to demolition, the interested parties would have the opportunity to salvage architectural elements for re-use or curation. Items selected would be removed in a manner that minimizes damage to those items.

Implementation Responsibility: Project proponent

Requirements and Timing: Prior to demolition of architectural resources

Monitoring Requirements: City of Pittsburg, in consultation with City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measures CUL-2a through 2c are intended to be part of the overall consideration of impacts to historical resources as part of this Project. While implementation of Mitigation Measures CUL-2a through CUL-2cd would lessen project impacts, demolition of historical resources is a significant adverse impact that cannot be mitigated to a less-than-significant level.

4.7.3.2.2 <u>Operations-related Impacts</u>. Lacking additional ground-disturbing activities, demolition, and/or the construction of new structures, the operation of the proposed Project would not result in impacts to cultural resources.

4.7.3.3 <u>Pittsburg Standard Oil Converter Station</u>

4.7.3.3.1 <u>Construction-related Impacts</u>.

***<u>Archaeological Resources</u>*.** No archaeological resources have been identified within the Pittsburg Standard Oil Converter Station site, onshore AC/DC cable route, proposed and alternative construction laydown areas, or proposed and alternative access roads. As such, significant impacts to archaeological resources would not be expected with implementation of this proposed Project component.

***<u>Historic Architectural Resources</u>*.** No historic architectural resources have been identified within the Pittsburg Standard Oil Converter Station site, onshore AC/DC cable route, proposed and alternative construction laydown areas, or proposed and alternative access roads. As such, significant impacts to historic architectural resources would not occur with implementation of this Project component.

4.7.3.3.2 <u>Operations-related Impacts</u>. Lacking additional ground-disturbing activities, demolition, and/or the construction of new structures, the operation of the proposed Project would not result in impacts to cultural resources.

4.7.3.4 <u>Offshore Cable Routes</u>

This section pertains to both the offshore DC and AC cable routes.

4.7.3.4.1 <u>Construction-related Impacts</u>.

***<u>Archaeological Resources</u>*.** Archaeological resources are known to be submerged and buried under the Bay floor within San Francisco Bay and the Sacramento-San Joaquin River Delta submarine environments. Submerged archaeological resources (shipwrecks) have been identified in the immediate vicinity of the offshore portion of the AC cable route associated with the proposed Pittsburg Standard Oil Converter Station site. In addition, it has been reported that several ships went down within the offshore 500-meter-wide cable route study area. Although unlikely, prehistoric resources, such as submerged shell mounds, or settlement sites, could exist in these settings. Known historic resources in these environs include maritime vessels and materials related to these or other historical activities. Implementation of the proposed Project, in particular the installation of the AC and DC cables through boring and dredging, could encounter submerged and/or buried archaeological resources. Unless properly evaluated and managed, Project activities could result in a potentially significant impact to cultural resources.

Impact CUL-3: Offshore Cable Route Archaeological Resources. Submerged and buried archaeological resources have been identified along the offshore AC cable route associated with the Pittsburg Standard Oil Converter Station and the entire offshore DC cable route. Disturbance of these historical resources is considered a potentially significant impact.

Mitigation Measure CUL-3a: Archaeological Resources Geophysical Survey. A geophysical remote-sensing survey shall be conducted along the offshore cable route to detect any potential submerged or sub-bottom archaeological resources. Depending on the geographic or bathymetric setting, an appropriate remote-sensing field survey could include deployment of a side scan sonar, sub-bottom profiler, and magnetometer to help detect these resources. The results of the geophysical survey will be reviewed by a qualified marine archaeologist and a report documenting these efforts and interpreting the results shall be produced.

Implementation Responsibility:	The Project proponent shall engage the services of a qualified professional marine archaeologist to implement this mitigation measure
Requirements and Timing:	A qualified professional marine archaeologist, in consultation with SHPO, shall review the results of a marine geophysical survey prior to project construction
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Mitigation Measure CUL-3b: Archaeological Resources Avoidance. Potential submerged and/or buried archaeological resources detected through the geophysical survey shall be avoided unless they can satisfactorily be determined to not represent archaeological resources (e.g., modern debris, existing infrastructure) as documented in the technical report.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	The final alignment including the avoidance of potential submerged and sub-bottom archaeological resources shall be determined prior to project implementation

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Mitigation Measure CUL-3c: Archaeological Resources Supplemental Underwater Investigation. If it is infeasible to avoid potential submerged and/or buried archaeological resources, follow-up diver survey or Remote Operated Vehicle investigations might be required to positively identify the targets. If targets are determined to be archaeological resources, they should be evaluated against the NRHP/CRHR significance criteria. If the resources are not eligible for the NRHP/CRHR, then no further consideration of these resources is required. If the resources are eligible for the NRHP/CRHR, Data Recovery (Mitigation Measure CUL-1b) may be required.

Implementation Responsibility: Project proponent shall engage the services of a qualified professional marine archaeologist to implement, as necessary, this mitigation measure

Requirements and Timing: A qualified marine archaeologist, in consultation with SHPO, shall review the results of any supplemental archaeological resources underwater investigation to determine what route would avoid any submerged archaeological resources prior to Project construction

Monitoring Requirements: The City of Pittsburg, in consultation with SHPO to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measures CUL-3a through 3c would reduce Impact CUL-3 to a less-than-significant level.

***Historic Architectural Resources*.** No known historic architectural resources occur within the routes of the offshore AC and DC Cables. As such, significant impacts to historic architectural resources would not be expected to occur with implementation of this Project component.

4.7.3.4.2 Operations-related Impacts. Lacking additional ground-disturbing activities, demolition, and/or the construction of new structures, the operation of the proposed offshore cable Project would not result in impacts to cultural resources.

4.7.4 References

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4.8 LAND USE AND RECREATION

This section describes land and recreational uses adjacent to the proposed converter stations and associated ancillary facilities as well as within the 500-meter-wide submarine cable study corridor. Existing uses within each applicable jurisdiction (local, state, and federal) were identified for potential Project impacts. Available existing plans, policies, laws, and regulations along with future planned development and land use trends in the area of the proposed converter stations and cable study corridor were reviewed. A goal of this analysis is to determine the potential for nonconformance of the proposed Project with local and state plans and regulations in order to estimate compatibility with land and recreational uses in the vicinity. Where appropriate, mitigation measures are proposed to reduce potential Project-related impacts on land and recreational uses to acceptable levels.

Recreational activities in the vicinity of the proposed Project are identified, including land recreation near the proposed converter stations and water-oriented recreation along the cable route. Land recreation includes biking, hiking, and sightseeing opportunities. Water-oriented recreation includes recreational boating, recreational fishing, windsurfing, swimming, canoeing/kayaking, etc. Additional water activities in the form of vessel traffic that occur along the cable route, including commercial fishing and commercial fleet traffic, are discussed in Section 4.9, Marine Transportation and Commercial Fishing.

Land and recreational use issues for the proposed Project site were identified based on the following:

- Site reconnaissance surveys
- Review of current U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps
- Aerial photography
- Communication with city, county, and public agency personnel
- Review of local land use ordinances and general plans

In particular, the San Francisco General and Area Plans and the City of Pittsburg General Plan were closely examined.

4.8.1 Environmental Setting

Based on the distinct land use settings of the two proposed converter stations and the submarine cable route, the following are presented for each of these three primary Project components:

- Existing Land and Recreational Uses

- Potentially Sensitive Land and Recreational Uses
- Zoning and General Plan Designations
- Projected New Development Activities

Existing Land Uses and Potentially Sensitive Land Uses of the converter station sites and surrounding area are shown on Figure 4.8-1 for San Francisco and Figure 4.8-3 for Pittsburg. Potentially sensitive land uses include residential areas, schools, parks, churches and libraries. Zoning designations of the San Francisco HWC Converter Station site and surrounding area are shown on Figure 4.8-2. Zoning designations of the Pittsburg Standard Oil Converter Station site and surrounding area are shown on Figure 4.8-4.

4.8.1.1 San Francisco HWC Converter Station

The proposed San Francisco HWC Converter Station, onshore AC/DC cable routes, and proposed laydown area (Western Pacific) are collectively called "HWC site" herein, unless otherwise noted. The alternative laydown area (Pier 94/96) is discussed independently because it is located within a different planning area of San Francisco than the HWC site.

4.8.1.1.1 Existing Land Uses. The HWC site is located along San Francisco's southeastern waterfront in an area known as the Central Waterfront. The Central Waterfront is dominated by light and heavy industry and commercial business. Residential and commercial uses are located to the west of the industrial area that parallels the waterfront. Businesses in the vicinity include shipping piers and dry dock facilities along the waterfront, vehicle storage and impoundment yards, gas stations, warehouses, factories, small commercial businesses, and railroad yard and trucking companies.

The San Francisco HWC Converter Station site is located within the southeastern block of the 23rd Street and Illinois Street intersection. The site is currently occupied by existing businesses. The site is bounded to the north, west, and southwest by industrial properties. The Mirant Potrero Power Plant and adjacent PG&E substation are directly north of Illinois Street and lie northwest of the proposed converter station site. The proposed AC cable would traverse the Mirant Potrero Power Plant site to the PG&E Potrero substation and the DC cable would run east-west along 23rd Street. The site is bounded on the east by San Francisco Bay and on the southeast by a water inlet and Warm Water Cove Park. Warm Water Cove Park is located at the terminus of 24th Street and is surrounded by industrial uses on the north, west, and south. Pier 70 to the north of the HWC site is used as a dry dock facility. Pier 80 to the south is used as a container terminal.

The San Francisco Bay Trail is situated west of the proposed site along Illinois Street. The Bay Trail is a planned recreational corridor that, when complete, will encircle San Francisco and San Pablo Bays with a continuous 400-mile network of bicycling and hiking trails. It will connect the shoreline of all nine Bay Area counties, link 47 cities, and cross the major toll bridges in the region. To date, approximately 240 miles of the alignment—over half the Bay Trail's ultimate length—have been completed.

In 2000, the Central Waterfront consisted of a population of approximately 850 people and approximately 457 housing units. These figures are expected to be slightly higher now based on projects completed since 2000. Residential areas within the Central Waterfront area are primarily located on Tennessee and Minnesota Streets and consist of houses built in the 1900s. A number of production, distribution, and repair businesses are intermingled with the residences. Other mixed use development has infilled in the area including recent live/work housing units (San Francisco Planning Department [SFPD], 2002).

The alternative San Francisco construction laydown area is located south of Islais Creek at Pier 94/96 within the South Bay shore area of San Francisco. The site is situated northeast of Cargo Way and 100 feet west of San Francisco Bay. The site is bounded by industrial properties to the north, west, and south. The site is paved and used for waterfront/industrial-commerce uses.

4.8.1.1.2 Potentially Sensitive Land Uses. Warm Water Cove Park is located directly southeast of the HWC site. The nearest residences are located approximately 900 feet west of the edge of the San Francisco HWC Converter Station site. A church is located about 1,200 feet northwest of the San Francisco HWC Converter Station site. Additional potentially sensitive land uses within the area include four schools, six churches, eight parks, and a library. These land uses are shown on Figure 4.8-1 and listed in Table 4.8-1. Recreational areas in the Central Waterfront area include China Basin Channel, Warm Water Cove Park, Aqua Vista Park, and Islais Creek located on the shoreline where public access points to the Bay have been established.

The nearest potentially sensitive land use to the alternative construction laydown area is India Basin Shoreline Park located 800 feet to the south. Additional potentially sensitive land uses near this alternative laydown area are shown on Figure 4.8-1 and listed in Table 4.8-1.

4.8.1.1.3 Zoning Designations. The HWC site and the alternative construction laydown area are zoned "M-2" Heavy Industrial. A utility installation is a permitted use in an area zoned Heavy Industrial provided that operating requirements necessitate location within the zoning district (SF Planning Code, Article 2 Section 227). In addition to regulating land use types, the San Francisco Planning Code also regulates the intensity of development in each district. A Floor Area Ratio of 5.0:1 is permitted in zones designated Heavy Industrial. The Project site is in a 40-foot height and unlimited bulk district. The proposed Project is exempted from the height requirement by Section 260(b) of the Planning Code, which

TABLE 4.8-1
POTENTIALLY SENSITIVE LAND USES NEAR
THE SAN FRANCISCO HWC CONVERTER STATION

		Approximate Distance From (Feet)		
Land Use	Location	HWC Converter Station	Proposed Construction Laydown Area (Western Pacific)	Alternative Construction Laydown Area (Pier 94/96)
Residential	West of Third Street	900	1,900	2,200
Warm Water Cove Park	East terminus of 23rd Street	Adjacent	Adjacent	3,700
St. Stephen Baptist Church	800 22nd Street	1,200	2,200	6,000
Irving M Scott School	1060 Tennessee Street	1,300	2,300	6,100
Daniel Webster Elementary	465 Missouri Street	3,500	4,400	8,000
Aquatic Vista Park and Public Viewing Area	East Terminus of 17th Street	3,300	4,200	8,000
Potrero Hill Recreation Center (Park)	801 Arkansas Street	3,000	3,800	6,700
St. Teresa's Church	390 Missouri Street	2,700	3,800	7,300
Potrero Library	1616 20th Street	3,400	4,400	8,000
King Starr Elementary	1215 Carolina Street	3,800	4,400	7,000
India Basin Shoreline Park	East terminus of Cargo Way	6,000	4,700	800
Bay Trail	Along Illinois & 3rd Street	400	1,300	3,000

exempts structures and equipment necessary for industrial plants and public utilities where such structures and equipment do not contain separate floors (Badiner, 2005).

4.8.1.1.4 <u>Land Use Trends</u>. San Francisco's population is expected to increase by an estimated one percent between 2000 and 2020 (ABAG, 2000). A deficit of housing in the city has led to increased development pressure in traditionally industrial sectors. However, businesses located on industrially zoned land are acknowledged for contributing an important part of the local economy. With anticipated growth of the production, distribution, and repair (PDR) sector, the City has proposed to rezone much of the Central Waterfront. The new zoning would replace the existing M-1 and M-2 designations to ensure an adequate amount of space for PDR services.

Ongoing redevelopment near the HWC site includes the Mission Bay and Hunters Point Redevelopment areas. A few hundred residential units are currently being constructed on Indiana Street near 25th Street. Additional residential units have also been proposed along 3rd Street between Mariposa and 21st Street (Rubin, 2005). In addition, San Francisco Municipal Railway's (Muni) Third Street Light Rail is being constructed and will run along 3rd Street through Mission Bay, the Central Waterfront, Bayview/Hunters Point and farther south (SFPD, 2002). Muni is also constructing their Metro East Facility at 25th Street and Illinois Street. This facility will be used as a maintenance and storage yard serving light rail. Additional planned projects near the HWC site are discussed in Section 7.0, Cumulative Impacts.

The alternative temporary construction laydown area is within the Port of San Francisco's Southern Waterfront area and subject to the Port's Land Use Plan. The plan indicates that the Southern Waterfront will remain home to most of the Port's cargo and ship repair operations, and the plan promotes expansion of cargo and maritime support uses. The plan states that until further long-term maritime uses have been expanded, interim uses are allowed to generate revenues needed to subsidize Port operations until the sites are needed for expansion of cargo operations (Port of SF, 2005).

4.8.1.2 Pittsburg Standard Oil Converter Station

The proposed Pittsburg Standard Oil Converter Station, laydown area, proposed and alternative access road, and AC/DC cable route to the converter station are collectively called "Standard Oil site herein, unless otherwise noted. This name reflects the site's proximity to the former Standard Oil Avenue; no portion of this site was connected with previous oil processing or storage. The onshore AC cable route to the PG&E substation on the Mirant Pittsburg Power Plant site is discussed independently from these components, where appropriate, based on the distance and different land use setting from the Standard Oil site.

4.8.1.2.1 Existing Land Uses. Pittsburg is known for its steel and chemical industries. Industrial uses are primarily situated along the waterfront based on proximity to New York Slough. The Mirant Pittsburg Power Plant dominates the western waterfront, while major manufacturing operations are located along the eastern waterfront, including USS-POSCO, Dow Chemical, and the Delta Diablo Wastewater Treatment Plant. Wetlands comprise a small portion of the northeastern corner where Kirker Creek meets New York Slough. Browns Island is a Regional Shoreline Preserve, which encompasses parks and open space acreage in Pittsburg's planning area. The proposed Pittsburg Standard Oil Converter Station site is situated at the northeastern corner of the Loveridge planning subarea in the City's General Plan. The majority of uses in this subarea consist of large industrial and vacant sites (CPPD, 2004).

The Standard Oil site is located northeast of the intersection of Loveridge Road and the Pittsburg-Antioch Highway. The site currently contains two abandoned concrete wastewater storage tanks and a small dilapidated building, and the remaining areas of the site are vacant. Currently, there is road access to the site from Loveridge Road about 1,700 feet west of the site. The proposed Project includes construction of a new access road to the Pittsburg-

Antioch Highway to the south. The proposed access road would cross over Kirker Creek just north of the Pittsburg-Antioch Highway. The site is bounded by industrial properties, vacant land, the BNSF railroad line, and the Delta Energy Center. The Dow Chemical property is located directly north of the railroad tracks.

The alternative Standard Oil construction laydown area is located northwest of the Arcy Lane and Pittsburg-Antioch Highway intersection. The site is currently vacant and lies adjacent to the Delta Energy Center. This alternative construction laydown area was previously used for laydown when the Delta Energy Center was built. The site is bounded by industrial properties to the north and east and vacant land to the south and west.

The alternative access road provides the existing access to Standard Oil site. The land use setting for this access road is generally consistent with the proposed access road, with the noteworthy distinction that the alternative access road would not cross over Kirker Creek, as would the proposed access road.

4.8.1.2.2 Potentially Sensitive Land Uses. No potentially sensitive land uses exist within 3,050 feet of the Pittsburg Standard Oil Converter Station site. The nearest residential development to the site is 3,050 feet to the southwest (across from State Route 4 [SR 4]). A park and school are located approximately 1,000 feet and 1,600 feet, respectively, east of the onshore cable route to New York Slough. The nearest residential development to the alternative construction laydown area is approximately 3,680 feet to the southwest (across SR 4). Potentially sensitive land uses nearest to the site are listed in Table 4.8-2.

4.8.1.2.3 Zoning and General Plan Designations. The Pittsburg General Plan designation for the Standard Oil site and proposed and alternative construction laydown areas is Industrial. The onshore AC/DC cable route to the Standard Oil site transects both the Industrial designated area and an Open Space designated area. The Standard Oil site, proposed and alternative construction laydown areas, and the entire onshore AC/DC route to New York Slough are zoned IG (General Industrial) in the City of Pittsburg. This IG district includes the area designated as Open Space in the General Plan. Major Utility is a permitted use in the IG district.

Development standards for the IG district are outlined in Section 18.54.025 of the Pittsburg Zoning Ordinance. The maximum height allowance in the IG zoning district is 50 feet. However, under Section 18.54.100, additional height is allowed equivalent to the number of additional feet the structure is set back beyond minimum yard (setback) requirements, up to 25 additional feet (for a maximum of 75 feet). To be entitled to additional height, the building or structure setback must exceed the minimum on all sides. Further, Section 18.80.020 allows for height limit exceptions for transmission towers and similar structures, but only if they encompass no more than 10 percent of the ground area covered by the

TABLE 4.8-2
POTENTIALLY SENSITIVE LAND USES NEAR THE PITTSBURG STANDARD OIL CONVERTER STATION

		Approximate Distance From (Feet)		
Land Use	Location	Proposed Pittsburg Standard Oil Converter Station and Construction Laydown Area	Standard Oil Alternative Construction Laydown Area	Onshore AC/DC Route to New York Slough
Residential (closest to Standard Oil site)	South of Highway 4	3,050	3,680	Over 2 miles
Residential (closest to the onshore cable)	West side of the Pittsburg Marina	Over 2 miles	Over 2 miles	1,450
St. Peter Martyr School	425 West FourthStreet	Over 2 miles	Over 2 miles	1,595
Marina Park	425 West FourthStreet	Over 2 miles	Over 2 miles	1,000
(Future) First Baptist Church	550 West Tenth Street	Over 2 miles	Over 2 miles	1,885
Stewart Memorial Church	580 Front Street	Over 2 miles	Over 2 miles	2,175

structure to which they are accessory. Such structures may exceed the district height limit by 20 feet; this would allow towers up to 95 feet high if the setbacks as cited in Section 18.54.100 are met. The Floor Area Ratio in IG districts is 0.75 and the maximum lot coverage is 75 percent.

The onshore cable to the Mirant Pittsburg Power Plant is located within an unincorporated area of Contra Costa County. This area is within the City of Pittsburg's Sphere of Influence and is included in the Planning Area of the City's General Plan. The General Plan designation of the onshore AC/DC cable on the Mirant Pittsburg property is Industrial. This portion of the cable route is zoned Heavy Industrial (HI) by Contra Costa County. The Pittsburg City Council has initiated the process to pre-zone an area which includes this segment of the onshore cable route. This new zoning would be consistent with the current General Plan designation of Industrial for that area. A Mitigated Negative Declaration is in preparation for the pre-zoning and an application for annexation has been submitted to the Contra Costa Local Agency Formation Commission (LAFCO). Upon annexation, the Laws, Ordinances, Regulations, and Standards (LORS) of the City of Pittsburg would be applicable to this portion of the onshore cable route as well.

4.8.1.2.4 <u>Land Use Trends</u>. In 2004, the City of Pittsburg had an estimated population of 57,710 and 19,600 housing units. Nearly 11,450 housing units are currently proposed within the city limits in addition to 1,300 units approved as of 1999. Buildout of the Pittsburg General Plan would include a total of 31,690 housing units and an estimated population of 93,340 within the city limits (CPPD, 2004).

Pittsburg currently has approximately 3,735,620 square feet of industrial space. Up to 491,180 square feet have been approved and another 2,193,060 square feet have been proposed for industrial uses. Buildout would include 14.9 million square feet of commercial space and 6.4 million square feet of industrial space. Heavy industry and business commercial parks are planned between the BNSF railroad tracks and SR 4 (CPPD, 2004). No housing is proposed near the Standard Oil site (Strelo, 2005).

4.8.1.3 <u>Offshore DC Cable Route</u>

4.8.1.3.1 <u>Existing Uses</u>. San Francisco Bay is used for recreational purposes, as well as transportation (e.g., ferries and Bay Area Rapid Transit tunnel), commercial, and military uses. Eight ports and 21 marine terminals are located along the Bay shoreline, as well as facilities at Concord Naval Weapons Station and Moffett Field. Bay Area residents also enjoy using the Bay for numerous waterborne recreational activities and water contact sports, including windsurfing, canoeing, recreational boating, and recreational fishing.

Figure 4.8-5 shows the locations of marinas along the San Francisco Bay shoreline in Marin, San Francisco, San Mateo, Alameda, Contra Costa, Napa, and Sonoma Counties. All of these marinas have permanent berths, and many also have trailered boat storage facilities and public ramps that can be used to launch small sailboats, kayaks, rowboats, personal watercraft, jet skis, etc. Once these vessels are launched, they can be used to travel virtually anywhere in San Francisco Bay, San Pablo Bay, or even the Sacramento River delta depending on the capabilities of the vessel and operator. Table 4.8-3 lists the number of berths at each of the 52 marinas identified. These marinas have a total of more than 16,000 berths, with approximately half of the berths located on each side of the Bay (URS Corporation, 2003).

Popular areas for offshore recreational fishing in the Bay include Richmond, Berkeley, Alameda, Sausalito, and the northern part of San Francisco. Fish typically caught in the Bay include sturgeon, striped bass, salmon, halibut, rockfish, or occasionally shark. Many fish types come into the Bay through the Golden Gate, congregate around Alcatraz or Angel islands, and then move up through San Pablo Bay and the delta. Although there are popular fishing areas, recreational fishing occurs throughout all parts of the Bay. Recreational fishing within the Bay also occurs at various times of the year, depending on fish type. For example, winter months and early spring are typical sturgeon and striped bass fishing season, while

TABLE 4.8-3
SAN FRANCISCO BAY AREA MARINAS

County	Marina Numbers Coinciding with Figure 4.8-6	Number of Berths
Marin	1. Loch Lomond Marina, San Rafael	505
	2. Marin Yacht Club, San Rafael	116
	3. Lowries Y. Harbor, San Rafael	100
	4. San Francisco Yacht Club, Belvedere	189
	5. Kappas Yacht Harbor, Sausalito	220
	6. Clipper Yacht Harbor, Sausalito	650
	7. Schoonmaker Point Marina, Sausalito	161
	8. Marina Plaza Harbor, Sausalito	103
	9. Pelican Harbor, Sausalito	90
	10. Paradise Cay Harbor, Tiburon	*
	11. Presidio Yacht Club, Sausalito	190
	12. San Rafael Yacht Harbor, San Rafael	*
	13. Sausalito Yacht Harbor, Sausalito	*
San Francisco	14. San Francisco Marina - East Harbor (Gashouse Cove), San Francisco	*
	15. San Francisco Marina - West Harbor, San Francisco	700
	16. Pier 39 Marina, San Francisco	300
	17. South Beach Harbor, San Francisco	700
	18. Treasure Isle Harbor, San Francisco	117
San Mateo	19. Brisbane Marina, Brisbane	570
	20. Oyster Cove Marina, South San Francisco	235
	21. Oyster Point Marina, South San Francisco	570
	22. Coyote Point Marina, San Mateo	580
	23. Peninsula Marina, Redwood City	420
	24. Pete's Harbor, Redwood City	280
	25. Port of Redwood City Yacht Harbor, Redwood City	183
	26. Pillar Point Harbor, Half Moon Bay	400
Alameda	27. San Leandro Marina, San Leandro	455
	28. Alameda Marina, Alameda	530
	29. Grand Marina, Alameda	402
	30. Fortman Marina, Alameda	486
	31. Ballena Isle Marina, Alameda	455
	32. Marina Village Yacht Harbor, Alameda	750
	33. Embarcadero Cove Marina, Oakland	152
	34. Oakland Yacht Club, Oakland	226
	35. Oakland Harbor - Union Point, Oakland	92
	36. Jack London Square Marina, Oakland	124
	37. Oakland Harbor – North Basin, Oakland	113
	38. Emery Cove Yacht Harbor, Emeryville	430
	39. Emeryville City Marina, Emeryville	409
	40. Berkeley Marina, Berkeley	1,100
	41. Fifth Ave. Marina, Oakland	107
	42. Aeolian Yacht Club, Alameda	90

TABLE 4.8-3 (CONTINUED)
SAN FRANCISCO BAY AREA MARINAS

County	Marina Numbers Coinciding with Figure 4.8-6	Number of Berths
Contra Costa	43. Richmond Marina Bay, Richmond	750
	44. Richmond Yacht Club, Richmond	250
	45. Brickyard Cove, Richmond	250
	46. Point San Pablo Yacht Harbor, Richmond	210
	47. Antioch Marina, Antioch	310
	48. Pittsburg Marina, Pittsburg	573
	49. McAvoy Harbor Bay Point	300
Napa	50. Benicia Marina, Benicia	321
	51. Glen Cove Marina, Benicia	209
Sonoma	52. Petaluma Marina, Petaluma	190

* No Data Available.

May to September is typical halibut fishing season, and late fall to November is typical salmon season. In addition, recreational boats for salmon fishing may also be active within the Bay as early as April, while in transit to the ocean. Most of other fishing in the Bay is done off land, piers, and jetties (Phillips, 2005).

Recreational interest groups in the Bay Area include the Yacht Racing Association of San Francisco Bay, United Anglers, San Francisco Bay Swimming Association, Bay Area Sea Kayakers, and the San Francisco Boardsailing Association. Many dive clubs also exist in the Bay Area, but they do not normally dive in San Francisco Bay because the Bay's turbidity inhibits visibility. Many of these groups organize specific events such as races on the Bay or festivals. Organized events are required to obtain a permit from the U.S. Coast Guard Sector San Francisco Waterways Safety Branch. More than 950 permitted events occurred in the Bay in 2005, including sailing, swimming, rowing, waterskiing, kayaking, canoeing, fishing, and firework events (USCG, 2005).

Along the shore of the Bay, recreational activities also include picnicking, nature walks, and waterfowl hunting. In particular, Suisun Marsh is well known for waterfowl hunting, which occurs from late October until late January each year (BCDC, 1976). Windsurfing launch sites are also located along the shore of the Bay, separate from the marinas because of the need for particular site amenities for that sport, such as shore accessibility, parking, and particular wind and water conditions. The desire to avoid conflicts with other user groups also plays a role in the selection of launch sites. Table 4.8-4 presents currently used launch sites, their locations, the season with best conditions, and the rating level of their users. Figure 4.8-6 shows the approximate locations of the launch sites.

TABLE 4.8-4
BAY AREA WINDSURF LAUNCH SITES

Launch Site	Location	Best Season	Rating
South Bay			
Candlestick Point	San Francisco	May - August	Beginner - Intermediate
Oyster Point	South San Francisco	March - October	Intermediate - Advanced
Genentech	South San Francisco	March - October	Intermediate - Advanced
Flying Tigers at Haskins Way	South San Francisco	March - October	Intermediate - Advanced
Embassy Suites	Burlingame	March - October	Intermediate - Advanced
Coyote Point	San Mateo	March - October	Beginner - Advanced
Seal Point	San Mateo	March - October	Intermediate - Advanced
Third Avenue	Foster City	April - September	Beginner - Advanced
Central Bay			
Point Isabel	Richmond	June - August	Intermediate
Berkeley Marina	Berkeley/Emeryville	Late June – Mid-August	Beginner - Advanced
Marine Park	Emeryville	Late June – Mid-August	Beginner - Advanced
Crissy Field	San Francisco	April - October	Intermediate - Advanced
Crown Beach	Alameda	June - August	Beginner - Intermediate
Larkspur Landing	San Rafael	Mid-June to Mid-August	Beginner - Intermediate
Rod and Gun	San Rafael	Late April - June	Intermediate - Advanced
North Bay			
Benicia	Benicia	June - August	Beginner - Intermediate
Sherman Island (This location has several launch sites along the levees)	Near Antioch	June - August	Beginner - Advanced

4.8.1.3.2 <u>Potentially Sensitive Land Uses</u>. Potentially sensitive land uses near the offshore cable route would include Brown's Island Regional Shoreline Preserve, Angel Island State Park, and nearshore tidal marshes and wetlands. Potentially sensitive biological resources near the cable route are discussed in Sections 4.5 and 4.6.

4.8.1.3.3 <u>Zoning and General Plan Designations</u>. The submarine cable route transects numerous jurisdictions. Table 4.8-5 lists Zoning and General Plan designations of the proposed cable route along the various jurisdictions. The proposed offshore cable route between Browns Island and Winter Island is partially within the City of Pittsburg and partially within the unincorporated area of Contra Costa County. The town of Tiburon, City of San Rafael, Contra Costa County, City of Martinez, and Solano County have zoned the

TABLE 4.8-5
ZONING AND GENERAL PLAN DESIGNATIONS

Jurisdiction	Project Component	Zoning Designation	General Plan Designation
City and County of San Francisco	Proposed San Francisco HWC Converter Station/Onshore AC Cable Route/Laydown Areas	M-2: Heavy Industrial	Not designated
	San Francisco Mirant Converter Station/Onshore DC/AC Cable Routes	M-2: Heavy Industrial	Not designated
	San Francisco Sheedy Converter Station/ Onshore DC/AC Cable Routes	M-2: Heavy Industrial	Not designated
	Offshore Cable Route	Not zoned	Not designated
Town of Tiburon	Offshore Cable Route	M: Marine	Not designated
Marin County	Offshore Cable Route	Not zoned	Not designated
City of San Rafael	Offshore Cable Route	W: Water District	Not designated
City of Pinole	Offshore Cable Route	Not zoned	Not designated
City of Hercules	Offshore Cable Route	Not zoned	Not designated
Contra Costa County	Onshore AC/DC Cables to Pittsburg Substation and West Tenth Street site	HI: Heavy Industrial	General Industrial
	Pittsburg Mirant Converter Station/Onshore DC/AC Cable Routes/Laydown Area	HI: Heavy Industrial	General Industrial
	Offshore Cable Route	U: Unrestricted	Not designated
City of Martinez	Offshore Cable Route	ECD-H-1: Environmental Conservation District - Heavy Industrial OS-P, Open Space - Prezoned District M OS/RF, Mixed Use District - Open Space/ Recreational Facility	Not designated
Solano County	Offshore Cable Route	MP: Marsh Preservation	Not designated
City of Pittsburg	Proposed Pittsburg Standard Oil Converter Station/Onshore AC/DC Cable Routes/Laydown Area/Access Road	IG: General Industrial	Industrial
	Standard Oil Alternative Construction Laydown Area (Delta Energy Center)	IG: General Industrial	Open Space
	Pittsburg West Tenth Street Converter Station/Onshore DC/AC Cable Routes/Laydown Areas	CS-O: Service Commercial with Limited Overlay, Ordinance No. 00-1171	Service Commercial
	Offshore Cable Route (AC/DC)	Not zoned	Not designated

area of the proposed offshore cable route. The remaining jurisdictions have not zoned areas transected by the offshore cable route.

The town of Tiburon, City of San Rafael, and Contra Costa County do not require a permit for cable installation. However, Contra Costa County has indicated that they act as the Local Sponsor for navigation projects, and in this capacity, they "would incur some level of responsibility and could require relocation of utilities where necessary" (Osborne, 2005). The City of Martinez would require a Conditional Use Permit. In Solano County, the cable route (mileposts 38.6 to 40; refer to Map A.2-1, Sheet 8 of 10 in Appendix A) is within the Marsh Preservation zone. The Marsh Preservation zone has primary and secondary management areas. The entire cable route in the Marsh Preservation zone falls within the primary management area. A permit from the San Francisco Bay Conservation and Development Commission (BCDC) is required for cable installation in the primary management area. A Marsh Development Permit is also required from Solano County for areas within the secondary management area. However, since no part of the cable route falls within the secondary management area, a permit by the County is not required (Englebright, 2006).

4.8.1.3.4 Land and Marine Use Trends. The San Francisco Bay Area consists of nine counties that cover roughly 4.5 million acres. Approximately 17 percent of this total acreage was developed by the year 2000. Most of the Bay Area's population and economy is situated along the perimeter of the Bay in the older, larger cities such as San Francisco, Oakland, and San Jose. However, the majority of new residential and commercial land use development is occurring in more peripheral cities such as Santa Rosa, Fairfield, and Livermore (ABAG, 2001).

The communities in the Bay Area situated along the waterfront, such as those that could be involved with the proposed Project, were historically focused on industrial and commercial land use. Many of the rail lines that serviced these areas still run along large stretches of Bay shoreline, and large areas of cities still have active industrial areas on the waterfront. More recently, portions of the Bay shoreline have been the focus of redevelopment projects and recreational projects to renew people's connection to the Bay. Several agencies are working on the San Francisco Bay Trail, intended to one day provide a continuous recreational trail around the Bay. Industrial and commercial land uses have also continued to develop, but in more select areas around the Bay.

The San Francisco Bay Plan states that as the population of the Bay region increases, more people are expected to use their leisure time in water-oriented recreational activities. The Bay Plan predicts that many more water-oriented recreational facilities will be needed to accommodate the needs of Bay Area residents and visitors.

4.8.2 Regulatory Setting

4.8.2.1 Federal

Some of the proposed Project activities would occur in the Bay and would involve the use of construction vessels such as a cable ship (C/S) Giulio Verne and a barge with tugboats. Use of these vessels would require informing and coordinating with the U.S. Coast Guard (USCG) and would be accomplished on a regular basis through publication of the U.S. Coast Guard's Local Notice to Mariners. Applicable navigation rules would be enforced including the Cable Act of 1992 (47 CFR Section 76), which states that other vessels must maintain a 1.15-mile (1-nautical mile [nm]) separation from a vessel laying or repairing an undersea cable.

No other applicable federal plans or policies are anticipated to have an effect on land use and recreation.

4.8.2.2 State

The State Lands Commission (SLC) has authority over part of San Francisco Bay, San Pablo Bay, and Suisun Bay. The cable route would be situated on property leased by the SLC, but still within the jurisdiction of local cities, counties, and other organizations such as the Port of San Francisco and the BCDC. The primary applicable state regulation is CEQA, Public Resources Code (Sections 21000-211781) and CEQA Guidelines Code of Regulations (Sections 15000-15387). No other applicable state land use plans or policies have been identified.

4.8.2.3 Local

4.8.2.3.1 City and County Zoning and General Plan Designations. The California State Legislature, pursuant to Government Code Section 65300, requires each city and county jurisdiction in the state to prepare a local general plan. The general plan is the primary planning document that establishes policies to regulate the development, function, and use of land within the boundaries and planning area of each city or county. General plans are required to contain the following seven elements or chapters: land use, circulation, housing, conservation, open space, noise, and safety. Although all elements carry equal weight, the land use element designates the pattern and scope of development. Land use designations are one of the primary tools cities and counties use to establish a comprehensive plan for guiding development. Typical land use designations are Residential, Commercial, Agricultural, Industrial, and Open Space, with subcategories based on densities or uses. Land use designations are supported by general plan policies that generally define how land can and cannot be used.

General plan policies are supported by local ordinances, such as zoning, which describe the specific requirements for developing a parcel within an identified land use designation. Zoning ordinances define the specific allowable uses for each type of land use designation. Land uses may be classified in the zoning ordinance as principally permitted, conditionally permitted, or permitted under other special circumstances. Under most zoning ordinances, principally permitted land uses require a simplified land use permitting process, whereas Conditional Use Permits and other special-circumstance use permits have additional criteria for being considered allowable.

Table 4.8-5 lists the Zoning and General Plan designations of each county, city and town that involves a project component. In some cases, a Use Permit, Conditional Use Permit, Marsh Development Permit, and/or Design Review would be required to implement the Project. San Francisco does not have General Plan designations (Rubin, 2005).

4.8.2.3.2 San Francisco General Plan. The San Francisco General Plan is designed as a guide to attain specified general goals. The method by which these general goals are to be achieved is identified through a statement of objectives and policies within a series of elements, each dealing with a particular issue. The General Plan currently contains the following elements:

- Air Quality
- Arts
- Commerce and Industry
- Community Facilities
- Community Safety
- Environmental Protection
- Housing
- Recreation and Open Space
- Transportation
- Urban Design

Each element outlines goals, objectives and policies within the respective category. A Land Use index provides an inventory of the land use–related policies presented throughout the General Plan. Pertinent policies outlined in the San Francisco General Plan are listed in Table 4.8-6.

TABLE 4.8-6
LAND USE AND RECREATION POLICIES PERTINENT TO THE SAN FRANCISCO CONVERTER STATION (PROPOSED AND ALTERNATIVE SITES)

Policy Document	Section	Policy Number	Policy Statement
San Francisco General Plan	Recreation and Open Space	2.2	Preserve existing public open space.
		2.3	Preserve sunlight in public open spaces.
		2.8	Develop a recreational trail system that links city parks and public open space, ridge lines and hilltops, the Bay and ocean, and neighborhoods, and ties into the regional hiking trail system.
	Commerce and Industry	1.1	Encourage development which provides substantial net benefits and minimizes undesirable consequences.
	Air Quality	3.6	Link land use decision-making policies to the availability of transit and consider the impacts of these policies on the local and regional transportation system.
	Environmental Protection	3.2	Promote the use and development of shoreline areas consistent with the Master Plan and the best interest of San Francisco.
		7.2	Protect land from changes that would make it unsafe or unsightly.
Central Waterfront Area Plan	Land Use	1.1	Encourage the intensification and expansion of industrial and maritime uses.
		1.2	Preserve and protect the subareas as a land base for San Francisco industry. Prevent the conversion of land needed for industrial or maritime activity to non-industrial use.
		2.3	Improve, expand, and develop recreational areas at established public access points along the waterfront enabling public use and enjoyment of the shoreline.
	Industry	3.1	Promote industrial expansion through maximizing and intensifying the use of existing facilities and properties, rehabilitating older industrial structures, and developing vacant land with industrial uses.
	Maritime	4.4	Reserve land adjacent to the waterfront as required for maritime support use.
	Recreation and Open Space	9.1	Maintain and improve the quality of the existing shoreline recreational areas at Warm Water Cove.
	Central Basin Subarea	17.1	Maintain and improve existing recreational improvements at Warm Water Cove and expand to the north side of the Cove as opportunities arise. Develop a waterfront picnic area and fishing pier at 24th Street. Provide public access along the north side of the Cove and construct a fishing quay at the Bay. Improve enjoyment of the area by providing attractive landscaping and maximizing Bay views.

TABLE 4.8-6 (CONTINUED)
LAND USE AND RECREATION POLICIES PERTINENT TO THE SAN FRANCISCO CONVERTER STATION (PROPOSED AND ALTERNATIVE SITES)

Policy Document	Section	Policy Number	Policy Statement
Draft Central Waterfront Neighborhood Plan	Land Use	2.11	Prohibit residential development adjacent to the power plant. (Mirant Potrero)
		3.3	Promote redevelopment or infill of PDR uses at underutilized sites in PDR and Heavy PDR districts.
		3.5	Prohibit construction of new housing and office in PDR and Heavy PDR districts.
		3.6	Enhance the infrastructure and working environment within areas designed for PDR and Heavy PDR to serve business and industry.
		6.3	Require new development to incorporate design features that support pedestrians, bicyclists, and transit users.
	Parks and Open Space	1.3	Enhance public access to the waterfront through the use of pedestrian and bicycle paths.

4.8.2.3.3 Central Waterfront Area Plan. The San Francisco General Plan also contains Area Plans that cover geographic areas of the city. Area Plans apply more precise policies as they relate to specific areas. The Area Plan pertinent to the proposed Project is the Central Waterfront Area Plan. The Central Waterfront Area Plan's primary goal is to "create a physical and economic environment conducive to the retention and expansion of San Francisco's industrial and maritime activities." The Area Plan's policies are designed to increase employment opportunities, enhance the working environment to stimulate business growth, and improve the area's appearance and attractiveness. Pertinent policies outlined in the Central Waterfront Area Plan are listed in Table 4.8-6.

4.8.2.3.4 Central Waterfront Neighborhood Plan (Draft). The Draft Central Waterfront Neighborhood Plan (SFPD, 2002) was released for public review in January 2003 and has not yet been formally adopted. This plan will be an implementing document of the General Plan, and it provides a policy framework that will be the basis of new zoning and planning code controls for the area. Once the plan is reviewed and refined, the Planning Commission will be asked to adopt the plan and the Board of Supervisors to approve it. Specific proposals for rezoning, planning code changes, and public improvements will follow the plan's adoption. The Neighborhood Plan includes chapters on Land Use and Parks and Open Spaces.

Goals and land use objectives outlined in the Neighborhood Plan include the following:

- Encourage development that builds on the Central Waterfront's established character as a mixed use, working neighborhood
- Foster the Central Waterfront's role in the city's economy by supporting existing and future production, distribution, repair, and maritime activities
- Increase housing in the Central Waterfront without impinging on or creating conflicts with identified existing or planned areas of production, distribution, and repair activities
- Establish a land use pattern that supports and encourages transit use, walking, and biking
- Better integrate the Central Waterfront with the surrounding neighborhoods and improve its connections to Port land and the water's edge

The Draft Plan proposes to change the existing M-2 zoning of the proposed and alternative San Francisco Converter Station sites as follows:

- Proposed San Francisco HWC Converter Station and alternative San Francisco Sheedy Converter Station sites from M-2 (Heavy Industrial) to PDR (Production, Distribution, and Repair)
- Alternative San Francisco Mirant Converter Station site from M-2 to Heavy PDR

The PDR district would be designed to protect existing activities and encourage new production, distribution, and repair activities. The PDR district would not allow the wide range of activities in the current M-2 district, and would prohibit new housing (even as a conditional use, including planned unit developments) and offices other than as an accessory use. The PDR district would not allow "heavier and more noxious activities" and would serve as a buffer between more intensive industrial uses. The Heavy PDR district would encompass the areas that contain the most intensive industrial use. Pertinent policies outlined in the Draft Central Waterfront Neighborhood Plan are listed in Table 4.8-6.

The Draft Plan does not propose any housing east of Illinois Street, but indicates that this area, including the proposed and alternative converter station sites, may eventually support new residential units if the existing Potrero Power Plant was ever phased out and replaced.

4.8.2.3.5 City of Pittsburg General Plan. Pittsburg's General Plan outlines a vision of a long-range physical and economic development as well as conservation. The General Plan describes Pittsburg's land use pattern as reflective of its history as an industrial center of Contra Costa County. The General Plan currently contains the following elements:

- Land Use
- Growth Management

- Urban Design
- Downtown
- Economic Development
- Transportation
- Youth and Recreation
- Resource Conservation
- Health and Safety
- Public Facilities
- Noise
- Housing

The General Plan identifies policies specific to designated areas within the city. The Land Use policies are categorized according to subarea. Relevant subareas for the project are the Northeast River subarea (proposed Standard Oil site), West Central subarea (alternative Pittsburg West Tenth Street site), and the Northwest River subarea (alternative Pittsburg Mirant site). Pertinent policies outlined in the Pittsburg General Plan for these three subareas are listed in Table 4.8-7.

4.8.2.3.6 San Francisco Bay Plan. The California Legislature of 1965 created BCDC. BCDC has overlapping jurisdiction with the cities and counties for specific areas of the project. BCDC has jurisdiction over open water, marshes and mudflats of greater San Francisco Bay, including Suisun and San Pablo Bays and Carquinez Strait. BCDC also has jurisdiction over the first 100 feet inland from the shoreline around San Francisco Bay. BCDC's responsibilities include: 1) regulating all filling and dredging in San Francisco Bay; 2) protecting the Suisun Marsh by administering the Suisun Marsh Preservation Act; and 3) regulating new development within the first 100 feet inland from the Bay to ensure that maximum feasible public access to the Bay is provided (BCDC, 2001).

The goals and policies of BCDC are described in the San Francisco Bay Plan, which was adopted in 1968 and incorporated by the California Legislature into the McAteer-Petris Act in 1969 (BCDC, 2003). The Bay Plan contains findings about the value of the Bay, policies to guide future uses of the Bay, and maps that apply these policies to the Bay and its shoreline. Part Four of the Bay Plan contains findings and policies pertinent to development of the Bay and shoreline. Policies from "Recreation" and "Public Access" are described below.

TABLE 4.8-7
LAND USE AND RECREATION POLICIES PERTINENT TO THE PITTSBURG CONVERTER STATION (PROPOSED AND ALTERNATIVE SITES)

Policy Document	Section	Policy Number	Policy Statement
Pittsburg General Plan	Land Use	2-P-7	During development review, consider project compatibility with existing surrounding land uses. Ensure that sensitive uses – such as residences, schools, and parks – are not subject to hazardous or unhealthy conditions.
		2-P-8	Allow development of residential uses in transition areas where real estate interest in industrial land adjacent to existing or planned residential areas has diminished. However, ensure project design avoids potential activity conflicts.
		2-P-13	Ensure that buffers – including landscaping, berms, parking areas, and storage facilities – are used to separate potentially incompatible activities.
		2-P-37	Ensure that development in Northeast River is limited to industrial activities and supporting business and service.
		2-P-41	Support the reclamation and reuse of contaminated industrial sites within the Northeast River subarea.
		2-P-42	Amend the City's Zoning Ordinance to ensure that land uses progress from heavier industrial uses inland to lighter industrial uses directly facing the New York Slough waterfront, as feasible during redevelopment of industrial activities not dependent on docking access.
		2-P-43	Pursue opportunities for a multi-use trail along the waterfront as industrial properties are redeveloped and remediated.
		2-P-46	Support the permanent preservation of the wetlands and salt marsh habitats along New York Slough, including Browns Island Regional Shoreline.
		2-P-96	Maintain the Mirant power plant site in the Industrial designation. Pursue annexation of the power plant and adjacent PG&E properties to ensure land use control of these areas.
		2-P-98	Pursue opportunities for a linear park/trail along the waterfront, connecting to Downtown. Cooperate with the BCDC to provide public access along Suisun Bay.
	Open Space, Youth and Recreation	8-P-17	Work with East Bay Regional Parks District to explore the possibility of developing passive recreation uses and educational programs on Browns Island, such as boating excursions to view waterfowl nesting areas.
		8-P-20	The Kirker Creek easement could be developed as a creekside trail connecting other trails and open spaces throughout the City with the hiking trails in the Black Diamond Mines Regional Preserve.
		8-P-25	Emphasize the importance of public views of the shoreline (from public spaces and rights-of-way) when reviewing new development projects along the water.
		8-P-26	Explore all potential improvement to fully integrate the City's shoreline into the urban fabric, including a linear park along the shoreline, featuring a path for both walking and biking.

***Recreation*.** The Bay Plan includes 5,800 acres of potential new parks along the approximately 1,000-mile shoreline, as well as 4,400 acres of parkland that could be created if military use of the properties ceases. The Bay Plan states that water-oriented recreational facilities should be well distributed around the shores of the Bay, to the extent consistent with criteria specified elsewhere in the Bay Plan. The Bay Plan states that recreational facilities should not, however, preempt sites needed for ports, waterfront industry, or airports, though efforts should be made to integrate recreational uses into these facilities to the extent that they may be compatible.

The Bay Plan discusses expanding the San Francisco Bay Trail and linking this regional trail system to allow better access to the Bay and to parks along the Bay shoreline. The Bay Plan states that trails that can be used as components of the San Francisco Bay Trail, the Bay Area Ridge Trail, or links between them should be developed in waterfront parks. San Francisco Bay Trail sections should be located near the shoreline unless that alignment would have significant effects on Bay resources; in this case, an alignment as near to the shore as possible should be provided consistent with Bay resource protection. The BayPlan also advises that waterfront land needed for parks and beaches by the year 2020 should be reserved now to preserve them from being used for other purposes.

***Public Access*.** This section of the Bay Plan states that although public access to the Bay shoreline has increased since the plan was adopted in 1968, additional public access is still needed. Public agencies have limited funds for providing or improving shoreline access, but private capital can provide public access in association with a wide variety of shoreline developments. Any proposed fill project should enhance public access to the Bay to the maximum extent feasible in accordance with Bay Plan policies. In addition to the public access provided by waterfront parks, beaches, marinas, and fishing piers, maximum feasible access to and along the waterfront and on any permitted fills should be provided in and through every new development in the Bay or on the shoreline, including industry and public facility development. In those cases where public access is inconsistent with a project because of public safety considerations or significant use conflicts (such as significant adverse effects on wildlife), in-lieu public access should be provided, preferably near a project site.

The Bay Plan indicates that public access as a condition of development should be permanently guaranteed and should be consistent with the development project, as well as with the physical environment of the Bay and shoreline. Access to and along the waterfront should be provided by walkways or trails and should be convenient to parking and/or public transit. In addition, BCDC, special district, federal, state, regional, and local jurisdictions should cooperate to provide new public access areas, especially to link the entire series of shoreline parks, regional trail systems, and existing public access areas to the extent feasible, without additional Bay filling or adversely affecting natural resources. BCDC's *Public*

Access Design Guidelines (BCDC, 2001) should be used in siting and designing public access associated with a proposed Project. The Design Review Board should advise the BCDC on the adequacy of the public access proposed.

4.8.2.3.7 Suisun Marsh Protection Plan. BCDC also published Special Area Plans to apply Bay Plan policies in greater detail to specific shoreline areas. Special Area Plans exist for sections of the San Francisco Bay, including the Suisun Marsh Protection Plan (1976). The Suisun Marsh encompasses approximately 85,000 acres of tidal marsh, managed wetlands, and waterways in southern Solano County. Areas of Solano County transected by the offshore cable which are zoned "Marsh Preservation" are subject to the Suisun Marsh Protection Plan. BCDC serves as the land use-permitting agency for major projects in the primary management area, which also includes portions of the proposed offshore cable route.

The Suisun Marsh Protection Plan stipulates that urban utilities should be allowed to extend into the Suisun Marsh and the adjacent upland area necessary to protect the marsh, only to serve existing uses and other uses consistent with protection of the marsh. Within the marsh, the Plan states that new electric lines for local distribution should be installed underground unless underground placement would have a greater adverse environmental effect on the marsh than aboveground construction, or the cost of underground installation would be so expensive as to preclude service. The Plan also states that underground pipelines, wires, and cables should be permitted in the Suisun Marsh if no alternative route is feasible and they are designed and constructed to meet specified standards outlined in the Plan, such as minimizing trenching when installing cables.

4.8.2.3.8 Port of San Francisco Waterfront Land Use Plan. In 1968 the Burton Act transferred public lands along the San Francisco Bay waterfront from the state to the city. These lands include current and former tidelands that were filled to form the city's edge. The Port of San Francisco, as trustee, is required under the Burton Act to manage and develop these lands in conformance with "the public trust doctrine" to benefit the citizens of California. The basic principle of the public trust doctrine is that public trust lands are to be used to promote navigation, fisheries, waterborne commerce, natural resource protection, and uses that attract the public to use and appreciate the waterfront, including recreation and assembly. The Port determines whether a given lease or development is consistent with the public trust.

In 1997, the Port Commission adopted San Francisco's Waterfront Land Use Plan, which governs land use policy for waterfront lands under the jurisdiction of the Port of San Francisco. The Port has jurisdiction over much of the shoreline of the proposed Project area, including Pier 70 to the north of the Mirant Power Plant, Warm Water Cove Park situated adjacent to both the proposed HWC site and the alternative Sheedy site, and including the proposed and alternative construction laydown areas. Waterfront Land Use goals include: 1) providing access along the waterfront; 2) urban design worthy of waterfront setting; 3) revitalizing of the waterfront; and 4) an evolving waterfront that is mindful of its past and future.

4.8.3 Environmental Impacts

Environmental impacts are discussed in this section relative to the areas adjacent to the converter station sites and within the 500-meter-wide cable study corridor. Potential land use and recreational impacts relate to construction and operation of the converter stations, AC/DC cable lines, submarine cable route, offsite pipelines (e.g., water and sewer interconnections, as applicable), and vehicle access routes.

Potential short-term construction impacts are discussed with respect to each Project component, in terms of the land and recreational use characteristics in the area of disturbance. Potential long-term land and recreational use impacts relate to such issues as compatibility of the proposed facilities with existing and proposed land uses in the surrounding area (e.g., changes in land use, land use conflicts, and effects on potentially sensitive land uses) and conformity with governmental land use and recreation plans, policies, and regulations.

4.8.3.1 Thresholds of Significance

This impact analysis uses the significance criteria identified in CEQA Guidelines (CEQA Appendix G) as well as those established by the City of Pittsburg and City and County of San Francisco. Impacts are considered potentially significant if the project would:

- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project
- Disrupt or divide the physical arrangement of an established community
- Conflict with established or proposed land uses, including potentially sensitive land uses

4.8.3.2 San Francisco HWC Converter Station

4.8.3.2.1 Construction-related Impacts. Construction activities would be designed and undertaken to minimize interference with surrounding land uses. Once grading of the converter station site commenced, development of the site itself would disturb currently developed land. Although some short-term construction-related impacts on adjacent land uses are anticipated, these impacts are not expected to be significant because of the distance between the HWC site and the nearest residential or other sensitive receptor. Overall, the impact of construction activities would be less than significant, due to compatibility with existing land uses that are closest to the site and the temporary onsite construction period.

4.8.3.2.2 <u>Operations-related Impacts</u>. The San Francisco HWC Converter Station site is currently used and surrounded by primarily industrial uses, with the exception of Warm Water Cove Park situated directly south of the site. The San Francisco HWC Converter Station represents further development of an area committed to industrial use rather than the introduction of industry to a non-industrial area.

***<u>Consistency with Land Use Plans, Policies, and Regulations</u>*.** Land use plans and regulations applicable to the HWC site include the San Francisco General Plan, Central Waterfront Area Plan, San Francisco Planning Code and Zoning Maps, and San Francisco Bay Plan. In the event that the Draft Central Waterfront Neighborhood Plan is completed and adopted, it may also be applicable. San Francisco land use plans emphasize public access to the shoreline and public open space. The Bay Trail is located approximately 400 feet west of the HWC site along Illinois Street. Public access to the shoreline is provided by Warm Water Cove Park situated directly south of the HWC site. During operations, the proposed Project would not affect public access to Warm Water Cove Park or lessen recreational opportunities along the Bay Trail.

The Central Waterfront Area Plan (Policy 17.1) stipulates that existing recreational improvements at Warm Water Cove should be maintained and improved, and expanded to the north side of the Cove as opportunities arise. The policy also stipulates that public access should be provided along the north side of the Cove and a fishing quay should be constructed at the Bay. The proposed San Francisco HWC Converter Station site is located on a site designated for possible park development. However, the site is currently zoned Heavy Industrial and the San Francisco HWC Converter Station is consistent with permitted uses within this district. The HWC site is located adjacent to the existing Potrero Power Plant and proposed future development plans outlined in the Draft Central Waterfront Neighborhood Plan would specifically prohibit residential development adjacent to this power plant (Policy 2.11 Draft Neighborhood Plan). The HWC site is surrounded by industrial properties to the north and west and is situated in a section of San Francisco dominated historically and currently by industrial uses.

Overall, the impact of operations-related impacts on existing land uses would not be significant. However, Project implementation may conflict with San Francisco and BCDC policies for future uses, which stress the importance of public access to the Bay.

Impact LU-1: Potential Conflict with Public Access Improvements. San Francisco and BCDC policies stress the importance of public access to the Bay. The proposed San Francisco HWC Converter Station site would be located directly adjacent to the waterfront and would not improve public access to the Bay. This impact is considered to be potentially significant.

Mitigation Measure LU-1: Public Access. The Project proponent shall obtain any necessary permits from applicable agencies, including BCDC, and meet requisite conditions of approval including any conditions to provide Bay access in the vicinity of the Project site.

Implementation Responsibility: Project proponent

Requirements and Timing: Approval by BCDC and San Francisco Planning Department prior to issuance of a BCDC permit

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Implementation of Mitigation Measure LU-1 would reduce Impact LU-1 to a less-than-significant level.

***Physically Disrupt or Divide a Community*.** The San Francisco HWC Converter Station and proposed and alternative laydown areas would not require displacement of housing and would not have significant land use impacts on the community. The HWC Converter Station would be consistent with the existing uses of the site and surrounding area. The nearest residential development near the HWC site is approximately 900 feet to the west.

***Consistency with Established or Proposed Land Uses*.** Established uses surrounding the HWC site as well as the proposed and alternative construction laydown areas are primarily industrial, with the exception of San Francisco Bay to the east and Warm Water Cove Park.. Additional potentially sensitive land uses in the area include a church located approximately 1,200 feet from the HWC site and residential units located about 900 feet from the site. The Potrero Power Plant and PG&E substation are within 180 feet of the HWC site. Pier 70 to the north and Pier 80 to the south are actively used for dry dock and container terminals.

Operation of the San Francisco HWC Converter Station would be consistent with uses within the existing M-2 district. The San Francisco Planning Department has proposed to rezone the site from M-2 to PDR. The PDR zoning would prohibit residential and most office developments. Utilities are described as a core use within the PDR district (SFPD, 2005). Although the allowed uses within the PDR district are still being refined, City staff have indicated that they plan on adding a broad range of industrial uses within the PDR district and that the proposed converter station would be consistent with what they intend to propose.

4.8.3.3 Pittsburg Standard Oil Converter Station

4.8.3.3.1 Construction-related Impacts. Construction activities would be designed and undertaken to minimize interference with surrounding land uses. Once grading of the Project site commenced, development of the site itself would disturb currently developed land. Although some temporary, short-term construction-related impacts on adjacent land uses are anticipated, these impacts are not expected to be significant because of the distance between the Standard Oil site and the nearest residential or other sensitive receptor. Overall, the impact of construction activities would be less than significant, due to compatibility with existing land uses that are closest to the site and the temporary construction period.

4.8.3.3.2 Operations-related Impacts. The Pittsburg Standard Oil Converter Station site is currently used and surrounded by primarily industrial and vacant properties. The Pittsburg Standard Oil Converter Station represents further development of an area committed to industrial use rather than the introduction of industry to a non-industrial area. The proposed access road to the Standard Oil site would be constructed over Kirker Creek.

Consistency with Land Use Plans, Policies, and Regulations**.** Land use plans and regulations applicable to the Standard Oil site include the Pittsburg General Plan and the Pittsburg Municipal Code. Portions of the proposed onshore cable routes to the PG&E substation on the Mirant Pittsburg property also currently fall under the jurisdiction of the Contra Costa County Zoning Ordinance.

The Standard Oil site is located approximately 3,300 feet south of the shoreline along New York Slough. The Standard Oil site is situated in the Northeast River subarea of Pittsburg. General Plan Policy 2-P-37 stipulates that development in the Northeast River is limited to industrial activities and supporting business and service.

The Standard Oil site is currently zoned IG (General Industrial) and the Pittsburg Standard Oil Converter Station is consistent with permitted uses within this district. The Standard Oil site would include a 64-foot-tall control building and up to 80-foot-high poles that make up part of the static electricity grounding grid. Development standards for IG District stipulate a maximum height allowance of 50 feet. Additional height is allowed equivalent to the number of additional feet the structure is set back beyond minimum requirements, up to 25 additional feet (for a total maximum of 75 feet). The structure setback must exceed the minimum on all sides to be entitled to additional height. The Pittsburg Planning Department has indicated that this additional setback is applicable to all sides of the property (Strelo, 2005). Section 18.80.020 allows for height limit exceptions for the grounding poles, but only if they encompass no more than 10 percent of the ground area covered by the structure to which they are accessory. If the poles that make up part of the grounding grid comply with the additional setbacks required, they would be permitted to exceed the 75-foot maximum height by 20 feet. The proposed Project would require approval of a design review application for the construction of the Standard Oil Converter Station.

Impact LU-2: Exceedance of Height Allowance. The Project structures exceed height allowances in the City of Pittsburg. This impact is considered to be potentially significant.

Mitigation Measure LU-2: Height Allowance. The Project proponent shall either: 1) apply for and be granted a height variance from the current zoning to allow for height requirements of the Project; or 2) ensure that the 64-foot-tall structure is located beyond a 14-foot setback from all sides of the property, and also ensure that the poles that make up part of the static electricity grounding grid are no more than 10 percent of the ground area covered by the structure to which they are accessory.

Implementation Responsibility: Project proponent

Requirements and Timing: Approval by Pittsburg Planning Commission prior to issuance of a Building Permit

Monitoring Requirements: City of Pittsburg to ensure that either: 1) a height variance is approved; or 2) Project improvements are constructed to comply with appropriate setbacks

Resulting Level of Significance. Implementation of Mitigation Measure LU-2 would reduce Impact LU-2 to a less-than-significant level.

The proposed access road to the Standard Oil site would be constructed over Kirker Creek. The Open Space, Youth and Recreation Element of the General Plan identifies Kirker Creek easement as a potential creekside trail. The construction of the access road could potentially conflict with this General Plan policy by precluding or minimizing trail development in this specific area.

Impact LU-3: Potential Conflict with Kirker Creek Policy. The proposed access road to the Standard Oil site could be inconsistent with the General Plan policy to use Kirker Creek easement as a creekside trail. This impact is considered to be potentially significant.

Mitigation Measure LU-3: Kirker Creek Policy. The Project proponent shall coordinate with the City of Pittsburg to ensure that the construction of the proposed access road is consistent with future planned development of Kirker Creek creekside trail, to the extent feasible.

Implementation Responsibility: Project proponent

Requirements and Timing: Approval by Pittsburg Engineering Department prior to issuance of grading permit for new road

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Implementation of Mitigation Measure LU-3 would reduce Impact LU-3 to a less-than-significant level.

The proposed onshore cable routes on the Mirant Pittsburg property are located within an unincorporated area of Contra Costa County. This portion of the cable route is currently zoned Heavy Industrial (HI) by Contra Costa County. The Pittsburg City Council has initiated pre-zoning an area which includes this segment of the onshore cable route. This new zoning would be consistent with the current General Plan designation of Industrial for that area and, therefore, cable installation would not conflict with current or proposed land use designations.

***Physically Disrupt or Divide a Community*.** The Pittsburg Standard Oil Converter Station would be consistent with the existing uses of the site and surrounding area. The residential development nearest the Standard Oil site is approximately 3,050 feet to the southwest. The Pittsburg Standard Oil Converter Station would not require displacement of housing and would not have significant impacts on the community.

***Consistency with Established or Proposed Land Uses*.** Established uses surrounding the Standard Oil site are primarily industrial, excluding adjacent vacant lots. The nearest potentially sensitive land uses are residences located south of SR 4. Heavy industry and business commercial parks are planned between the BNSF railroad tracks and SR 4. No residential housing is proposed near the Standard Oil site. The nearest potentially sensitive land use is approximately 3,000 feet from the site. The Pittsburg Standard Oil Converter Station would be consistent with established and proposed land uses of the area.

The alternative access road would not cross over Kirker Creek, and thus, would avoid Impact LU-4. The alternative access road alignment is zoned Industrial. Using this area for an access road to the Pittsburg Standard Oil Converter Station would be consistent with current and planned land uses and would not disrupt or divide a community.

The alternative Standard Oil laydown area is located in an area of Pittsburg primarily used and zoned for industrial purposes. The use of the site as a construction laydown area would be consistent with current and planned land uses and would not disrupt or divide a community. No land use or recreational impacts associated with operations would occur as a result of using this site for construction laydown.

4.8.3.4 Offshore DC Cable Route

4.8.3.4.1 Construction-related Impacts. Construction-related impacts associated with marine uses could occur by increased risk of incidents, such as collision and near misses between construction vessels and recreational water users (e.g., windsurfers or recreational boaters).

Table 4.8-4 presents the location of existing windsurfing launch sites in the Bay and the season during which these locations are likely to be most heavily used. The windsurfing launch site closest to the proposed cable route is in Benicia. Depending on wind and tide conditions, windsurfers generally sail within a 1- to 2-mile radius from their launch sites. Windsurfers require a minimum wind speed of 9 knots, and typically sail with winds ranging from 15 to 30 knots. Consequently, windsurfers may be traveling at higher speeds than the construction vessel.

Table 4.8-3 presents the locations of marinas along the San Francisco Bay shoreline, where local recreational water users berth or store their vessels. The marinas closest to the proposed cable route are in Benicia and Pittsburg. While most marinas are concentrated in the Central Bay, many vessels can travel virtually anywhere in San Francisco Bay, San Pablo Bay, and the Sacramento-San Joaquin River Delta, depending on the capability of the vessel and the operator. Boating activities in the Bay Area are well organized. Sail races are scheduled and planned well in advance of the events. USCG, the California Department of Boating and Waterways, marina associations, yacht clubs, and community-based entities such as Boat U.S. Foundation have collaborated extensively in matters of boating education and improving recreational navigation safety in northern California. Despite these precautionary measures, however, there is still a potential for interaction between the construction vessel and recreational boaters along the proposed cable route, especially for unorganized recreational events.

Impact LU-4: Increased Vessel Traffic. Project construction activities would temporarily increase vessel traffic in the Bay. Recreational users of the Bay could experience a temporary increased risk from additional vessel traffic. This impact is considered to be potentially significant.

Mitigation Measure LU-4a: Vessel Crew Procedures. Marine crews shall watch for navigational hazards (i.e., during periods of high use by recreational boaters including windsurfers within the vicinity of selected terminal locations; during periods of high recreational use, such as weekends or race events; or when weather hazards exist) to reduce the risk of incidents involving construction vessels and recreational users in the Bay.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Crew members shall follow standard navigational procedures during cable installation activities on the Bay
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Mitigation LU-4b: Coast Guard Coordination. Construction crew management shall coordinate construction activities with the USCG Safety Branch to ensure that no marine recreational events conflicts arise. The Project coordinator would include information to the USCG which would issue a Local Notice to Mariners. In addition, each affected harbor district will be made aware of the timing of water-based Project activities such as the cable laying operations. Applicable navigation rules will be enforced including the Cable Act of 1992 (47 CFR §76) which states that other vessels must maintain a 1.15-mile (1-nm) separation from a vessel laying or repairing an undersea cable.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Contact USCG prior to construction; USCG would submit Daily Notice to Mariners during construction-related vessel movement in the Bay

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Implementation of Mitigation Measure LU-4a and LU-4b would reduce Impact LU-4 to a less-than-significant level.

4.8.3.4.2 Operations-related Impacts. The cable would typically be located 3 to 6 feet below the Bay floor in areas of the Bay containing soft sediments. Depths are expected to vary in response to the geophysical makeup of the Bay floor sediments. After construction activities cease, the cable would remain buried and would not be expected to disrupt existing uses of the Bay.

Consistency with Land Use Plans, Policies, and Regulations. Applicable land use plans for the offshore cable include the San Francisco Bay Plan. In addition, the offshore cable transects more than 10 different jurisdictions, including the counties and cities listed in Table 4.8-5. Each jurisdiction has distinct zoning and general plan designations within their applicable areas. City and County General Plans for many of the affected city and counties do not address Bay uses as far offshore as the cable route.

The town of Tiburon, City of San Rafael, Contra Costa County, City of Martinez, and Solano County have zoned the Bay in their respective regulations, including the applicable areas traversed by the proposed submarine cable route. The remaining jurisdictions do not have zoning for the applicable portions of the proposed offshore cable route.

The town of Tiburon, City of San Rafael, and Contra Costa County do not require a permit for cable installation. However, Contra Costa County has indicated that they act as the Local Sponsor for navigation projects, and in this capacity, they would include some level of responsibility and could require relocation of utilities where necessary. The City of Martinez requires a Conditional Use Permit. In Solano County, the cable route is within the Marsh Preservation zone. The Marsh Preservation zone has primary and secondary management areas. The entire cable route in the Marsh Preservation zone falls within the primary management area. A permit from the BCDC is required for cable installation in the primary management area.

Based on review of zoning designations and consultations with City and County personnel, there are no conflicts between land use plans or policies for installation of the proposed submarine cable. However, further coordination is required to ensure that no potential significant conflicts with local plans and policies occur from cable installation, particularly City of Martinez and Contra Costa County.

Impact LU-5: Potential Conflict with Local Plans and Policies. Cable installation is not expected to conflict with local jurisdictions plans or policies. Based on available feedback, no apparent conflict in land use plans or policies would occur with installation of the submarine cable. However, Contra Costa County has indicated that their agency would incur some level of responsibility and could require relocation of utilities where necessary. In addition, the City of Martinez requires a Conditional Use Permit for installation of the offshore cable. Not obtaining appropriate planning permits or coordinating with local agencies would be considered a potentially significant impact.

Mitigation Measure LU-5: Local Plans and Policies Coordination. The Project proponent shall coordinate with the City of Martinez and Contra Costa County to provide adequate notification and gain the appropriate permits and authorization required for installation of the submarine cable.

Implementation Responsibility:	Project proponent
Requirements and Timing:	Approval from all local jurisdictions prior to issuance of a BCDC permit
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure LU-5 would reduce Impact LU-5 to a less-than-significant level.

***Physically Disrupt or Divide a Community*.** The submarine cable would be buried under San Francisco Bay and the cable is expected to require no scheduled maintenance for the life of the Project. The condition of the cable would be monitored offsite by computer. If significant damage occurred, the repair may require a new section of cable to be added to the cable by splicing. Repair vessels could impact recreational users in the Bay for a short period, as with construction vessels. However, this vessel activity would be limited to special circumstances if the cable needed unplanned repairs and, thus, would have negligible impacts on recreational users.

Consistency with Established or Proposed Land and Marine Uses. A portion of the offshore cable route is subject to the Suisun Marsh Protection Plan (1976). The Suisun Marsh Protection Plan states that underground cables should be permitted in the Suisun Marsh if no alternative route is feasible and they are designed and constructed to meet specified standards outlined in the Plan. As indicated in Mitigation Measure LU-1, the Project proponent would be required to obtain any necessary permits from BCDC and meet requisite conditions of approval prior to Project initiation. Obtaining the BCDC permit for the Project would ensure compliance with the Suisun Marsh Protection Plan and no additional mitigation is required to ensure consistency with established land use plans for the offshore cable.

Recreational water users may be temporarily interrupted on the Bay during installation of the offshore cable. However, operation of the cable would not interfere with existing or proposed marine uses since the cable would for the most part be buried under Bay sediments. The potential for the cable to impact existing submarine utilities crossed by the proposed cable route is discussed in Section 4.12, Public Services and Utilities.

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4.9 MARINE TRANSPORTATION AND COMMERCIAL FISHING

This section assesses the potential impacts of the proposed Project on the operation of commercial marine transportation, including commercial fishing vessels, on San Francisco Bay. Accordingly, this section focuses on commercial marine transportation, including the proposed use of vessels to install the cable in the Bay between San Francisco and Pittsburg, and does not address proposed onshore facilities. Specifically, this section deals with the navigational setting, movements of commercial marine vessels, and commercial fishing (Figure 4.9-1) (including commercial recreational fishing) within San Francisco Bay, and the potential navigational hazards related to the proposed Project. This section includes discussions about commercial vessel types and their activity in the Project area, as well as the hazards posed by the weather, current, and submarine structures.

Impacts of the Project on the fisheries natural resource are considered in Section 4.6, Marine Biological Resources, non-commercial recreational fishing is discussed in Section 4.8, Land Use and Recreation, and surface transportation is discussed in Section 4.10, Traffic and Transportation.

4.9.1 Environmental Setting

4.9.1.1 <u>Navigational Environment</u>

The following paragraphs discuss the environmental setting for marine transportation, including potential navigational hazards posed by weather, currents, submarine structures, and other vessel traffic.

The study area for marine transportation follows the proposed cable route from the Potrero Point area of San Francisco to Pittsburg. This includes the Central Bay, San Pablo Bay, Suisun Bay, the Carquinez Strait, and New York Slough. This study area contains major shipping channels and significant islands including Angel Island, Alcatraz Island, Yerba Buena Island, and Treasure Island, as well as smaller islands including Red Rock, The Brothers, and the Marin Islands. In addition, numerous shoals and reefs, as well as fixed and floating aids to navigation, are present along the proposed cable route. Vessel traffic in the entire study area is monitored 24 hours per day, 7 days per week by U.S. Coast Guard (USCG) Vessel Traffic Service San Francisco, as part of the "prevention" function of USCG Sector San Francisco.

4.9.1.1.1 <u>Navigation in the Bay</u>. The challenges to navigation on San Francisco Bay include strong tides and currents and variable depths. Most of the Bay is in fact quite shallow, constraining deep-draft vessels to narrow dredged channels and presenting the risk of grounding to vessels operated outside the channels. Navigating the Bay becomes more difficult during periods of restricted visibility due to winter storms and fog. Vessel traffic in the Bay consists of a complex variety of inbound and outbound oceangoing vessels, and wholly in-Bay vessel movements that include tugs, government vessels, passenger ferries, recreational vessels, and commercial and recreational fishing boats. Vessel operations are in fact governed by a traffic separation scheme depicted on all local navigation charts.

4.9.1.1.2 <u>Shoals and Islands</u>. There is a shoal area just west of the Golden Gate Bridge and north of the main entry channel to the Bay. This area, commonly known as the 4-fathom bank or Potato Patch Shoals, is a potential navigational hazard for any vessel with a draft greater than 24 feet. Once inside the Golden Gate, shallow areas around such islands as Alcatraz, Angel Island, Treasure Island, and Yerba Buena Island (refer to Map A.2-1 in Appendix A) are hazards to navigation and, when combined with other elements including fog, traffic, malfunctioning navigational equipment, or human error, can present hazards to vessels. Additional islands and shallow areas in the study area include the portion of the proposed cable route that passes between Browns Island in Pittsburg, and Winter Island in Antioch.

4.9.1.1.3 <u>Weather</u>. Storms in the winter and fog during the warmer months are meteorological conditions that contribute to navigational difficulties. Fog, often heavy, occurs much of the time during the summer months, entering through the Golden Gate in the late afternoon and typically burning off by early the next afternoon. Some types of commercial vessels, including tankers carrying hazardous materials such as fuel oil, have been restricted from transiting the Bay during periods of heavy fog. Fog by itself does not pose a serious problem if ship navigation equipment is functioning properly. However, when fog is combined with heavy vessel traffic, as well as the strong tides and currents in the Bay, the possibility of other vessels straying from the traffic lanes increases and navigation can be hazardous.

4.9.1.1.4 <u>Currents and Tides</u>. Daily tidal ranges on the San Francisco waterfront may be as much as 7 feet during spring tides. The tidal influence decreases with distance from the Golden Gate, with average tidal ranges in Pittsburg averaging around 3 feet. This tidal range can cause extremely strong currents, particularly in narrow passages such as the Carquinez Straits.

Currents above 2 knots are considered strong and potentially hazardous to vessels if proper corrections and allowances are not made, particularly during the slow-speed maneuvering required within most of the Bay. The greatest currents occur at the Golden Gate, with the average maximum flood being 3.3 knots and the maximum ebb being 4.5 knots. There are also strong tidal currents all along San Francisco's waterfront from the Golden Gate Bridge to the Bay Bridge, and around Treasure Island on the east and west sides. Even as far south as Hunters Point, there are currents up to 2.2 knots. These currents, combined with the strong winds, make maneuvering large vessels at slow speed hazardous without tugboat assistance. Currents are similarly strong in the Carquinez Strait, with ebbs of as much as 3.6 knots.

4.9.1.1.5 Vessel Traffic. The greatest hazard to vessel navigation on San Francisco Bay is other vessel traffic. Large commercial and naval vessels are required by USCG regulations to use designated traffic lanes when traveling in inland waterways such as San Francisco Bay. Ferry boats and other small commercial vessels (i.e., tugboats and private vessels) not constrained by their draft often do not navigate within specific traffic lanes, but instead travel via the most direct routes. These vessels can pose hazards to navigation, particularly if other circumstances such as fog are present. Private vessel traffic is heaviest during weekend days and can pose hazards to dredge scows under tow. Tugboats may have trouble controlling their tows. Sporadic incidents, such as towing bridles that break and barges that run aground, are documented in USCG vessel traffic reports.

4.9.1.2 Commercial Marine Transportation

The volume of vessel traffic in the Project area was estimated on the basis of USGS records of 2004 vessel movements in San Francisco Bay. These records, obtained from Coast Guard Vessel Traffic Service San Francisco Bay, were sorted by type of vessel (ocean-going commercial, intra-bay commercial, and ferries). To capture seasonality, a representative month for each of the four seasons was chosen for an in-depth study (January, April, July, October). The average number of vessel movements per hour of the day and per day of the week was counted for each season. It was also determined which areas of the Bay these vessels traveled through. For this the Bay was divided into three sections.

- Section 1 (Central Bay) the entire Project area south of the Tiburon peninsula
- Section 2 (North Bay) north of Tiburon and west of Point Pinole
- Section 3 (Lower Delta) east of Point Pinole

These sections are shown graphically on Figure 4.9-2.

4.9.1.2.1 Oceangoing Commercial. This includes all tankers, bulk carriers, container ships, automobile carriers, passenger cruise ships and other deep-draft commercial vessels that are either entering the Bay from the ocean or exiting the Bay to the ocean. All oceangoing commercial vessels are assumed to cross the cable route during transits into or out of the Bay. The cable route from Quarry Point on Angel Island to approximately China Basin crosses or lies within the San Francisco Bay Regulated Navigation Area (RNA). In the RNA, large vessels are required to keep within shipping lanes designated for inbound and outbound traffic. Figure 4.9-3 shows that on Sunday and Monday, an average of about 15 of these vessels transit through the Bay, increasing to 18 vessels by Wednesday and remaining above 15 vessels per day for the rest of the week. Peak hours of commercial vessel traffic (Figure 4.9-4) are in the late afternoon between 4 and 6 p.m. and in the early morning between 3 and 6 a.m. A majority of commercial vessel traffic is bound to or from the container terminal at the Port of Oakland, resulting in a much higher number of transits through the Central Bay than through the other sections of the Bay (Figure 4.9-5). There is no recognizable pattern of seasonality for oceangoing commercial vessels.

4.9.1.2.2 Intra-bay Commercial and Government Vessels. This category includes tugboats, towboats, work, military, and research vessels. Tugboats represent the majority of vessels operated in this category. The peak hours for these vessel operations (Figure 4.9-6) are between 7 a.m. and 5 p.m. During non-peak hours, there is an approximately 50 percent reduction in this vessel traffic. Sunday is the slowest day of the week with an average of 60 movements per day, increasing steadily through the week to about 120 movements per day on Thursday and Friday, as shown graphically on Figure 4.9-7. On Saturday movements tend to taper off. Fall and winter tend to have more movements than the spring and summer. Commercial and government vessels travel more in the Central Bay than in the other sections of the Bay (Figure 4.9-8).

Tugs with tows, which by their nature are less maneuverable than individual powered vessels, must stay within the designated shipping channels. However, tugs without tows are not required to stay with in the shipping lanes and generally take the shortest navigational route between two points that is allowed by their drafts. Tugs are designed for maneuverability and responsiveness, and the legal requirements for their pilotage include detailed knowledge of the Bay and its hazards.

4.9.1.2.3 Ferries. Commuter ferries constitute the largest class of commercial vessel traffic in San Francisco Bay. During the peak hours between 9 a.m. and 5 p.m. (Figure 4.9-9) there can be as many as 20 ferry movements in the course of one hour. Monday through Friday there are approximately 250 ferry movements per day, and slightly fewer on Saturday and Sunday (Figure 4.9-10). There are fewer transits during winter than any other season. The majority of current commuter ferry operations serve San Francisco via the ferry terminal at the foot of Market Street. Some commuter services also operate from piers 39 and 41, the locations of popular tour operations. The services originating at Larkspur, Alameda/Oakland, Vallejo, and Tiburon and connecting to San Francisco are the most traveled. The San Francisco waterfront is the most congested area because the major routes converge at the San Francisco Ferry Building. Figure 4.9-11 shows the relative volumes of ferry traffic in the different sections of the Bay. Ferries are not required to stay on a designated route and are typically very maneuverable, operating at speeds of up to 33 knots.

4.9.1.3 Commercial Fishing

San Francisco Bay was once host to thriving commercial salmon, striped bass, herring, sturgeon, shrimp, and Dungeness crab fisheries. Today, however, the only commercial fisheries active within San Francisco Bay are the Bay shrimp and Pacific herring fisheries. Herring and their roe are harvested after spawning. Bay shrimp are currently taken for sale as bait for other fisheries. Of the two fisheries, the Pacific herring fishery comprises a greater proportion of commercial vessel traffic, fishing activity, and market value. In 2004, the value of the total catch of Bay shrimp in San Francisco Bay was $626,777 and the value of the total catch of the Pacific herring fishery was in excess of $4 million (CDFG, 2005). The Bay also supports commercial recreational fisheries, comprised of "party" boats that operate for hire from harbors around San Francisco Bay. These operators offer paying passengers access to fishing grounds in the Bay and outside the Golden Gate where they may take sport fish in season in accordance with regulations as to species, size, and limits. Other vessels that engage in commercial fishing outside the Golden Gate in the Pacific Ocean would traverse the proposed HVDC cable area, but the principal fishing activity of these vessels occurs outside the Bay. Their movement through the Project area would primarily involve their transit across the cable route to and from offshore fishing grounds.

4.9.1.3.1 Pacific Herring. The herring season lasts from the beginning of December to mid-March. The herring fishery encompasses two techniques: fishing for live herring using purse seine or gill nets, and harvesting herring eggs from the kelp upon which they have been laid.

Fishing for live herring is only allowed 5 days per week; no fishing is allowed from noon on Friday to 5 p.m. on Sunday. The season is broken into periods during which three separate "platoons" of vessels are permitted to fish. One platoon fishes primarily in December and the other two platoons (odd and even number permits) fish alternating weeks from January through March. Table 4.9-1 shows the number of boats in each of the platoons.

TABLE 4.9-1
DISTRIBUTION OF NUMBERS OF VESSELS AMONG FLEET PLATOONS[1]

Year	December Platoon	Even Platoon	Odd Platoon
2004/2005	20	40	34
2003/2004	44	48	49
2002/2003	32	71	74

1 Source: Azat, 2005.

Pacific herring typically spawn in the inter-tidal or shallow sub-tidal areas; in San Francisco Bay the herring spawn in near-shore areas. Spawning is known to occur between Redwood City and the Richmond-San Rafael Bridge on the western side of the Bay and on the eastern side from the Berkeley Flats to Bay Farm Island (see Figure 4.9-1). The fishing fleet follows the spawning activities, so the location of vessels engaged in fishing changes continuously. In the middle of a large spawning event nearly all the boats in a seasonal platoon may crowd the spawning area, the vessels and nets effectively closing that area to any other traffic.

The season for harvesting herring eggs from kelp is from December 1 to March 31. The California Department of Fish and Game (CDFG) issues permits for operators in this fishery to place rafts of lines in likely spawning locations, from which giant kelp plants are suspended. After the spawning herring have deposited their eggs on the suspended kelp, the eggs are harvested from the plants, packaged, and transported to market. This fishing activity occurs principally in the near-shore areas of the Bay identified as herring spawning grounds. Rafts and fixed lines used in the herring egg fishery are regulated by the CDFG, and are subject to all the regulations of vessel navigation on San Francisco Bay (Azat, 2005).

4.9.1.3.2 <u>Bay Shrimp</u>. This fishery supplies Bay shrimp as live bait for sturgeon and striped bass sport fishing. A small percentage of this catch is still marketed fresh for human consumption. The commercial harvest is entirely by beam trawl. From 1989 to 2000, recorded landings were 18.3 million pounds of shrimp with over 17 million pounds recorded in the South Bay alone. Live tanks are used on all vessels and shrimp are transported to local bait shops by truck in either the tanks or iced-down wooden trays.

Key fishing areas within the Bay are shown on Figure 4.9-1. These areas include the South Bay, northwestern San Pablo Bay, the Carquinez Strait, and salt ponds in the South Bay. Fishing also occurs in waters less than 20 feet deep in the channels of the Bay's shallow reaches.

Over the last 10 years, the number of vessels harvesting shrimp has remained steady at about 14. In 1999, eight trawlers harvested shrimp in north San Francisco Bay, San Pablo Bay, Petaluma Creek, and the Carquinez Strait. Fishing occurs year round but landings usually peak from June through November. Monthly variations in landings may have as much to do with changes in salinity in the water, as with fluctuations in demand for bait shrimp by sport anglers (CDFG, 2001).

4.9.1.3.3 <u>Commercial Sport Recreational Fishing</u>. Commercial sport fishing vessels typically carry parties of paying customers to sport fishing grounds outside the Golden Gate, but occasionally pursue migratory species within the Bay. Due to the nature of their business of chartering to groups, they are commonly referred to as "party boats." Commercial charter fishermen operate from the harbors of Oakland, Emeryville, Berkeley, Richmond, Point San

Pablo, San Rafael, and Sausalito. The fleet operating in the area of the proposed Project comprises between 30 and 40 vessels. Depending on the season, the weather, and the clientele, these vessels may operate within the Bay or beyond the Golden Gate. While their activity is not aimed at harvesting fish for the commercial market, their operation is governed by the same navigation rules as all other vessels on the Bay, and their sport fishing activity is regulated by the CDFG. A number of commercial sport fishing vessels also offer San Francisco Bay tours and wildlife viewing. The latter, whale and shark observation, occurs principally in the Gulf of the Farallones, outside the Golden Gate in the Pacific Ocean.

4.9.2 Regulatory Setting

4.9.2.1 Federal

4.9.2.1.1 Applicable Regulation. Vessels navigating in and around San Francisco Bay are governed by: the Inland Navigational Rules Act of 1980 (known as the Inland Rules [Title 33, Chapter 34, Subchapter I, Part A]), and the International Regulations for Preventing Collision at Sea (known as the International Navigational Rules or 72 COLREGS), which became effective on December 24, 1981.

The Inland Rules govern domestic rivers, lakes, harbors, and inland waterways. The COLREGS govern open bodies of water in which foreign shipping traffic is possible, and comprise statutory requirements designed to promote navigational safety. The boundaries between the areas where these rules apply are shown as COLREGS Demarcation Lines on navigational charts. The COLREGS line for the San Francisco Bay Area is outside the Golden Gate.

Other applicable federal navigation rules would be enforced including the Cable Act of 1992 (47 CFR Part 76), which states that other vessels must maintain a 1.15-mile (1-nm) separation from a vessel laying or repairing an undersea cable. Statutory navigation rules define the responsibilities of vessels restricted in their ability to maneuver, such as cable-laying vessels, and of other vessels operating in their vicinity, all aimed at preventing collisions or other incidents.

4.9.2.1.2 Regulated Navigation Areas. The USCG has established RNAs within San Francisco Bay (Figure 4.9-12). RNAs increase navigational safety by organizing traffic flow patterns; reducing meeting, crossing, and overtaking situations between large vessels in constricted channels; and limiting vessel speed. RNAs apply to "large vessels" (defined as power-driven vessels of 1,600 or more gross tons, or tugs with a tow of 1,600 or more gross tons). When navigating within RNAs, large vessels must have their engines ready for immediate maneuvering, operate their engines in a control mode and on fuel that allows for an immediate response to any engine order, and not exceed a speed of 15 knots.

The following paragraphs describe RNAs that correspond to the proposed cable route.

***San Francisco Bay RNA*.** The San Francisco Bay RNA extends from the precautionary zone east of the Golden Gate Bridge to Alcatraz Island. Because of the large number of vessels entering and departing San Francisco Bay, traffic lanes were established under the Golden Gate Bridge and in the Central Bay to separate opposing traffic and reduce vessel congestion. The lanes are located where voluntary traffic lanes previously existed. Use of these lanes and adherence to the indicated direction of travel is required by the USCG for large vessels, and recommended for all other vessels.

Because vessels converge and cross in such a manner that one-way traffic flow patterns are not possible, two precautionary areas were established in this RNA. The Golden Gate Precautionary Area encompasses the waters around the Golden Gate Bridge between the Golden Gate and the Central Traffic Lanes. The Central Bay Precautionary Area encompasses the large portion of the Central Bay and part of the South Bay.

***North Ship Channel RNA and San Pablo Strait Channel RNA*.** The North Ship Channel and San Pablo Strait Channel RNAs consist of the existing charted channels and delineate the only areas where the depths of water are sufficient to allow the safe transit of large vessels. The strong tidal currents in these channels severely restrict the ability of large vessels to safely maneuver to avoid smaller vessels.

***Pinole Shoal Channel RNA*.** The Pinole Shoal Channel RNA is a constricted waterway that extends from approximately Light 7 to Light 13 of the Pinole Shoal Channel. Its use is restricted to vessels with a draft greater than 20 feet, or towboats with tows drawing more than 20 feet.

***Benicia-Martinez Railroad Bridge RNA*.** The Benicia-Martinez Railroad Bridge RNA is a small, circular area 200 yards in radius, centered on the middle of the channel under the Union Pacific Railroad Bridge between Benicia and Martinez (shown on Figure 4.9-12). The limited horizontal clearance results in a greater chance of vessel collisions with the bridge, especially when visibility is poor. Large vessels are precluded from transiting this RNA when visibility is less than 1,000 yards.

4.9.2.1.3 Vessel Traffic Service in San Francisco Bay. In accordance with the Ports and Waterways Safety Act of 1972 (33 U.S.C. § 1221 et seq.), the USCG operates a Vessel Traffic Service (VTS) for San Francisco Bay. Located on Yerba Buena Island, VTS San Francisco Bay controls marine traffic throughout the Bay Area. The VTS is a mandatory system that applies to all vessels of 40 meters or more in length, all vessels certified to carry 50 or more passengers, and all commercial vessels 8 meters or more in length engaged in towing another vessel. Although some small and private vessels are not required to coordinate their movements by contacting the VTS, the USCG monitors all commercial, military, government, and private marine traffic within San Francisco Bay and local coastal waters.

The VTS may issue directions to enhance navigation and vessel safety and protect the marine environment. During conditions of vessel traffic congestion, restricted visibility, adverse weather, or other dangerous conditions, the VTS may manage vessel traffic by specifying times of entry, movement, or departure to, from, or within the VTS area. The San Francisco VTS area "begins" at the outer limit of the Offshore Sector, a 38.7-nautical-mile radius around Mt. Tamalpais. To the north and east, it extends to the entrance to the Petaluma River, into the Napa River as far as the Mare Island Causeway Bridge, and upriver to Sacramento and Stockton.

Construction operations on the scale of the proposed Project are required to contact VTS daily so that construction activities are included in navigational advisories. VTS may also choose to include construction activities in a Local Notice to Mariners. The data used for the vessel traffic study mentioned earlier in this section was provided by the VTS.

4.9.2.1.4 Local Notice to Mariners. Each USCG district is responsible for developing and issuing Local Notices to Mariners (LNMs). LNMs are developed from information received from USCG field units, the general public, the U.S. Army Corps of Engineers, U.S. Merchant Fleet, National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), and other sources, concerning the establishment of, changes to, and deficiencies in aids to navigation and any other information pertaining to the safety of the waterways within each USCG district. This information includes reports of channel conditions, obstructions, hazards to navigation, dangers, anchorages, restricted areas, regattas, information on bridges such as proposed construction or modification, the establishment or removal of drill rigs and vessels, and similar items.

4.9.2.1.5 Other Federal Agencies. Other federal agencies with authority to regulate development and ensure protection of aquatic and marine resources include the EPA and USFWS.

4.9.2.2 State

4.9.2.2.1 The California Harbors and Navigation Code. The California Harbors and Navigation Code vests authority with the Department of Boating and Waterways to regulate matters of navigational safety for the state's boating public. California boating accident statistics are compiled under state law, Section 656 of the California Harbors and Navigation Code, which requires a boater who is involved in an accident to file a written report with the Department of Boating and Waterways when:

- A person dies, disappears, or is injured requiring medical attention beyond first aid
- Damage to a vessel or other property exceeds $500, or there is complete loss of a vessel

4.9.2.2.2 State Water Resources Control Board (SWRCB). The SWRCB has authority to regulate development and ensure protection of aquatic resources.

4.9.2.3 Local

4.9.2.3.1 Harbor Safety Committee of the San Francisco Bay Region. In 1990, the California legislature enacted the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act (OSPRA) (California Government Code Chapter 7.4). OSPRA created Harbor Safety committees for the major harbors of California to prepare Harbor Safety Plans, encompassing all vessel traffic, for the safe navigation and operation of tankers, barges, and other vessels within each harbor. OSPRA also mandates that each Harbor Safety committee annually review its previously adopted Harbor Safety Plan and recommendations and submit the annual review to the Oil Spill Prevention and Response Administrator for comment. The most recent available San Francisco Bay Region Harbor Safety Plan is for 2001.

4.9.2.3.2 Bar Pilots. At all times and in all weather pilots are stationed on pilot boats at the San Francisco sea buoy, approximately 12 miles west of the Golden Gate. These pilots navigate the sand bar just west of the Golden Gate, and help navigate the waters, hazards, and currents in the San Francisco Bay, San Pablo Bay, and Suisun Bay . San Francisco Bar Pilots provide these services for vessel movements to and from all terminals in the Bay and tributaries to the Bay, including the Carquinez Strait.

4.9.2.3.3 Commercial Fishing. The San Francisco Bay Conservation and Development Commission (BCDC) develops and implements plans for the conservation and development of San Francisco Bay waters and regulates shoreline development, including commercial fishing facilities. The California State Lands Commission (SLC) manages and protects important natural resources and uses on public lands, including tidelands. Commercial and recreational fishing, kelp harvesting, and aquaculture are all considered important uses by the SLC. Permits are issued for development on tidelands, and mitigation is often required to help protect natural resources and access to those resources. Fisheries, aquaculture, and kelp harvesting are overseen by several state and federal agencies, including the CDFG, federal Secretary of Commerce, the Pacific Fisheries Management Council, and NOAA's National Marine Fisheries Service (NMFS).

4.9.2.3.4 Regional Water Quality Control Board (RWQCB). The RWQCB has authority to regulate development and ensure protection of aquatic resources.

4.9.3 Environmental Impacts

This impact discussion evaluates the proposed Project's potential impacts to vessel traffic, including commercial maritime and commercial fishing operations. The proposed onshore converter station sites, laydown areas, and access roads would not involve interaction with vessel traffic, and thus, are not relevant to this analysis. Any materials delivered to the Port of Oakland for proposed onshore converter station construction would be a part of normal shipping traffic and would not be significant. For this assessment of impacts on vessel traffic, the proposed submarine cable is the focus, primarily during the construction phase, since routine cable operations are not expected to require any marine activity that could affect marine vessel traffic.

4.9.3.1 Thresholds of Significance

There are no specific California Environmental Quality Act (CEQA) Guidelines or regulations for analyzing impact significance associated with vessel traffic. The following significance criteria were determined to be a reasonable approach for assessing impacts for the Project. Construction and operation of the Project would be considered to impose an impact on vessel traffic if it would result in:

- Interference with vessel traffic which is substantial in relation to the existing traffic, causing delays or displacement to other watercraft in the area
- Substantial increase in traffic hazards (unsafe conditions) or incompatible uses
- Decrease in response time to emergencies

4.9.3.2 Construction-related Impacts

The effects of submarine cable installation on vessel traffic are assessed considering various types and numbers of commercial and passenger vessels that would be anticipated to operate in the Bay during cable laying activities.

4.9.3.2.1 Commercial Vessel Traffic. The proposed Project has been designed to minimize interruption of known vessel traffic, and to address potential safety risks to construction crews and other water users. This is principally a function of the cable's location relative to vessel traffic routes, although in some locations geography requires cable and cable-laying operations within navigational channels. The physical presence of vessels and equipment on the Bay would be primarily limited to the 4- to 5-month-long cable installation phase, which would progress 24 hours a day, 7 days per week. During the construction phase, the vessels engaged in and supporting the cable installation would operate in a limited area of the Bay, and would not remain in one location for an extended period. Exposure to vessel traffic would therefore be minimal. The cable-laying ship (C/S Giulio Verne) and barge and support or supply vessels would have limited interaction with other vessels in the vicinity.

The Project would be required to comply with applicable navigational codes and standards, and would be continuously monitored as a local navigational hazard. Vessel operations in the study area are governed and overseen by the USCG, via continuous monitoring, the provision of information to local marine operators, and the established rules of safe and prudent vessel operations. The entire cable-laying operation would be monitored throughout by USCG VTS San Francisco Bay. The USCG's Notice to Mariners continuously advises vessel operators of potential navigational hazards, such as cable-laying operations. The vessels involved in cable laying would be required to identify themselves and operate in accordance with the 72 COLREGS.

Impact MTRANS-1: Vessel Navigation Hazards. For the duration of construction, the vessels engaged in cable laying would present a potential hazard to navigation on the Bay. The cable-laying vessels themselves would be "restricted in their ability to maneuver." This means that the nature of the vessels themselves or of their operations limits their ability to take actions to avoid collisions that would be expected of otherwise fully maneuverable vessels. Vessels are by definition restricted in their ability to maneuver when engaged in laying, servicing, or picking up a navigational mark, submarine cable, or pipeline. Statutory navigation rules define the responsibilities of vessels restricted in their ability to maneuver, and of other vessels operating in their vicinity, all aimed at preventing collisions or other incidents. Non-compliance with these rules would be considered to result in a potentially significant impact.

Mitigation Measure MTRANS-1a: Project Registration, Information and Pilotage. Large construction vessels like the C/S Giulio Verne and any support vessels shall be required to notify the VTS at the beginning and end of each transit, and would be monitored continuously. The USCG would also notify operators of vessels in the area of the construction activities via Notices to Mariners. To ensure safe entrance into the Bay, all ships operating under foreign registry, like the Giulio Verne, are required to have a San Francisco Bar Pilot navigate the ship into the Bay.

Implementation Responsibility:	Project proponent/construction contractor (Prysmian)
Requirements and Timing:	Coordinate construction activities prior to and during submarine cable installation activities
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Mitigation MTRANS-1b: Compliance with Navigation Rules. The vessels involved in cable laying shall be required to identify themselves and operate in accordance with the

COLREGS. The applicable navigation rules for San Francisco Bay shall regulate the cable laying operations and are designed to prevent collisions. Within the Bay, the operators of all vessels engaged in the Project shall have the legal responsibility to preclude hazardous situations, according to the applicable navigation rules.

Implementation Responsibility: Project proponent/construction contractor (Prysmian)

Requirements and Timing: Coordinate construction activities prior to and during submarine cable installation activities

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Mitigation Measure MTRANS-1c: Precautionary Area. A safety precautionary area shall be established around the construction vessels, and will be identified via the USCG Notice to Mariners to make vessels operating in the area aware of Project activities. All cable-laying vessels shall also operate in accordance with the applicable navigation rules including the Cable Act of 1992.

Implementation Responsibility: Project proponent/construction contractor (Prysmian)

Requirements and Timing: Coordinate construction activities prior to and during submarine cable installation activities

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measures MTRANS-1a, 1b, and 1c would reduce Impact MTRANS-1 to a less-than-significant level.

4.9.3.2.2 <u>Commercial Fishing Operations</u>. Commercial fishing vessels share their use of San Francisco Bay with other maritime uses, including construction and dredging similar to the construction activities of the proposed Project. The cable-laying operation and its attendant vessel traffic would not be an unusual presence, and would be transitory and temporary in nature. For the majority of its length, the proposed cable route does not traverse marine habitat used for commercial fishing of Pacific herring and Bay shrimp. However, in their migrations, pelagic Pacific herring may traverse the proposed route of the cable and the location of the cable-laying vessels. Commercial fishing vessels following these fish would be required under statutory navigation rules to change course to avoid cable-laying operations.

Impact MTRANS-2: Interference with Commercial Fishing Operations. The cable-laying operation could cross the paths of Pacific herring commercially taken in San Francisco

Bay. Commercial fishing vessels following these fish could potentially be required to change course by cable-laying operations. This impact is considered potentially significant.

Mitigation Measure MTRANS-2a: Commercial Fishing Avoidance. As practical, cable-laying operations shall be conducted outside the herring fishing season, which occurs annually from December to March. If this is not practical, the cable-laying operations shall be coordinated with USCG and Vessel Traffic Management to minimize potential conflicts.

Implementation Responsibility: Project proponent/construction contractor (Prysmian)

Requirements and Timing: Coordinate construction activities prior to and during submarine cable installation activities; Prysmian report any potential conflicts to USCG and Vessel Traffic Management

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Mitigation Measure MTRANS-2b: Project Information. The USCG should notify operators of all vessels in the area, including commercial fishermen, of Project construction activities via Notices to Mariners.

Implementation Responsibility: Project proponent/construction contractor (Prysmian)/USCG

Requirements and Timing: Coordinate construction activities prior to and during submarine cable installation activities

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure MTRANS-2a and 2b would reduce Impact MTRANS-2 to a less-than-significant level.

4.9.3.2.3 <u>Commercial Sport Fishing Operations</u>. While the majority of their sport fishing takes place outside the Golden Gate, commercial sport fishing vessels may operate on the Bay during the construction phase of the Project. The cable-laying operation would cross the migratory paths of sport fishing species (e.g., salmon, striped bass, and steelhead) followed by commercial recreational fishing vessels. During their migration seasons, these species may traverse the proposed route of the cable and the location of the cable-laying vessels. Commercial sport fishing vessels following these fish would be required under statutory navigation rules to change course to avoid cable-laying operations.

Impact MTRANS-3: Interference with Commercial Sport Fishing Operations. The cable-laying operation would cross the migratory paths of sport fishing species taken by commercial sport fishermen in San Francisco Bay. Commercial sport fishing vessels following these fish could be required to change course to avoid cable-laying operations. This impact is considered potentially significant.

Mitigation Measure MTRANS-3a: Commercial Sport Fishing Avoidance. As practical, cable-laying operations shall be conducted outside the primary seasons of commercial sport fishing on San Francisco Bay. If this is not practical, the cable-laying operations shall be coordinated with USCG and Vessel Traffic Management to minimize potential conflicts.

Implementation Responsibility:	Project proponent/construction contractor (Prysmian)
Requirements and Timing:	Coordinate construction activities prior to and during submarine cable installation activities; Prysmian report any potential conflicts to USCG and Vessel Traffic Management
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Mitigation Measure MTRANS-3b: Project Information. The USCG should notify operators of all vessels in the area, including commercial sport fishermen, of the construction activities via Notices to Mariners.

Implementation Responsibility:	Project proponent/construction contractor (Prysmian)
Requirements and Timing:	Coordinate construction activities prior to and during sub marine cable installation activities
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure MTRANS-3a and 3b would reduce Impact MTRANS-3 to a less-than-significant level.

4.9.3.3 Operations-related Impacts

During operations the cable would typically be buried in 3 to 6 feet of sediment below the Bay floor. In locations where the geophysical makeup of the Bay floor makes burial impossible, the cable would be protected by concrete mattresses or similar protective materials. The entire cable length would be heavily insulated, which would help protect it from damage by anchors. Vessel traffic would pass over the top of the cable corridor uninterrupted and unaffected. The cable would be identified on navigational maps to ensure that vessels using the area are aware of its location, which could help prevent a vessel from inadvertently dropping a large anchor on the cable. Normal operation of the cable would not add to vessel traffic, cause hazards to existing traffic, or substantially change the marine transportation environment.

The physical presence of Project-related vessels and equipment on the Bay would be limited to the 4- to 5-month-long submarine cable installation phase. The only operational case in which potential impacts to vessel traffic would arise would be the unlikely event of a cable break or malfunction, requiring diving or cable repair operations. The impacts and mitigations in this case would be similar to those presented for the construction phase in Section 4.9.3.2, but would only occur over an estimated 10-day to 2-week timeframe while repairs were being made.

The cable route has been designed to avoid designated anchorage areas. However, in an emergency situation, if a large commercial vessel loses power, it may drop anchor to avoid grounding or collision with fixed objects or other vessels. Therefore, there is a remote possibility that a large ship could be forced to drop anchor in a non-designated anchorage area for emergency or precautionary reasons. If such a vessel dropped anchor directly on top of the cable, the cable could be damaged. The condition of the cable would be monitored offsite by computer. In the event of substantial damage or a break in the cable, power transmission would be shut down immediately and the cable would be repaired as described in Section A.5.2.2.

4.9.4 References

Azat, Sara. 2005. California Department of Fish and Game Herring Biologist. Personal communication with Joe Quartini, URS Corporation. October 27, 2005.

CDFG (California Department of Fish and Game). 2001. California’s Living Marine Resources: A Status Report.

2005. California Commercial Landings For 2004.

CSLC (California State Lands Commission). 2005. Shore Terminals, LLC, Marine Oil Terminals Lease Renewal Environmental Impact Report.

4.10 TRAFFIC AND TRANSPORTATION

This section assesses potential surface traffic and transportation-related impacts associated with the proposed Project. Proposed converter station sites in San Francisco and Pittsburg are examined and compared with respect to their potential impacts on surface transportation in the study area. The descriptions for transportation facilities and transportation impacts distinguish between the San Francisco and Pittsburg study areas since each jurisdiction is geographically separated.

This assessment addresses the potential impacts of additional truck traffic associated with the proposed Project to roadway and intersection levels of service on the likely delivery routes. Additional transportation factors examined in this section include transit, pedestrian and bicyclist impacts, safety, goods movement, and any potential impacts to rail transportation networks. This assessment includes consideration of transportation facilities such as highways, local roads, public transportation facilities, and bicycle and pedestrian circulation in the study areas and whether these facilities potentially would be affected by the Project locally or region-wide.

The analysis of regional transportation systems uses a more qualitative method than the analysis for the local transportation network due to the nominal increase in traffic expected to be associated with operations of the proposed Project. The quantitative analysis focuses on the local roadway network in the immediate vicinity of the converter station sites (and temporary laydown areas) and evaluates the resulting additional average daily truck and car trips on the existing local road network.

Level of Service (LOS) is a qualitative description of traffic congestion according to volume-to-capacity ratios calculated for road segments or intersections. A ratio of 1:1 means the roadway is operating at capacity during a specific time period. The ratios are converted into letters that indicate the degree of congestion – A (free flowing traffic) through F (over-saturated conditions with severe delays).

The roadway analysis compares existing traffic volumes, supplemented with LOS data, on roads providing access to the proposed Project sites with the additional traffic anticipated from Project site preparation and construction (all of which should last 27 to 30 months including site demolition and preparation, construction, and cable laying), and then from operation of the facilities. It also identifies potential routes for transporting construction materials to the converter station sites and for hauling demolition debris and excavated soil and the associated potential effects on the local and regional road network. Cumulative impacts are addressed, particularly on the regional roadway system. Additional impacts on transit and any impacts on local bicycle and pedestrian circulation are also evaluated.

Applicable state laws and city ordinances relevant to performing the transportation analysis for this Project are considered in the potential impacts. Information sources include the following:

- Traffic counts, truck regulations, and other data provided by the California Department of Transportation (Caltrans)
- Traffic counts and data from the San Francisco County Transportation Authority, San Francisco Department of Parking and Traffic, and San Francisco Planning Department
- Data from the City of Pittsburg Department of Engineering, Contra Costa County Transportation Authority Congestion Management Program Update (2005), Contra Costa County East County Action Plan (2000), and the Contra Costa County Expenditure Plan (2004)
- Data from the San Francisco Potrero Power Plant Unit 7 Project (URS, 2000) and the Pittsburg District Energy Facility (URS, 1998); field observations
- General Plans and relevant specific plans for the City and County of San Francisco and the City of Pittsburg, including communication with agency staff

This section addresses surface transportation associated with onshore activities and does not address the offshore submarine DC cable route. The cable route and associated marine traffic are discussed in Section 4.9, Marine Transportation and Commercial Fishing.

4.10.1 Environmental Setting

4.10.1.1 Regional Roadway Facilities

The proposed Project converter station sites lie near primary transportation corridors that traverse the southern and eastern sections of San Francisco and the northern portion of Pittsburg in Contra Costa County. Major freeways in the vicinity of the study areas, described below, are Interstate 80, Interstate 280, and U.S. 101 in San Francisco and State Route 4 (SR 4) in Pittsburg (Figure 4.10-1). Current traffic volumes on these highways and local roads in the study area are presented on Figures 4.10-2A and 4.10-2B. The descriptions include specific improvement projects indicated in the San Francisco County Transportation Authority Expenditure Plans and the Contra Costa County Transportation Authority Plan.

4.10.1.1.1 Interstate 280 (Regional Access to San Francisco). Interstate 280 (I-280) begins in the South of Market district of San Francisco, extends southwest through Daly City, then proceeds south adjacent to suburban Peninsula communities such as Woodside, Palo Alto, and Los Altos before heading into downtown San Jose. I-280 is comprised of six to eight lanes of mixed flow traffic in the area near the proposed Project in San Francisco. Access to the San Francisco Converter Station sites from I-280 southbound is by the 25th Street exit, while the Cesar Chavez Street exit provides access from I-280 northbound. At Cesar Chavez, average daily traffic volumes range from 90,000 to 111,000 in each direction (Caltrans, 2004).

4.10.1.1.2 <u>U.S. Highway 101 (Regional Access to San Francisco)</u>. U.S. Highway 101 (U.S. 101) serves as one of California's primary western arteries, linking San Francisco to Marin County in the north and to the Peninsula in the south. Access for the San Francisco Project sites to and from U.S. 101 is via the Cesar Chavez Street interchange for both northbound and southbound traffic. In the vicinity of the proposed Project, U.S. 101 is an eight-lane, limited-access freeway that connects to Interstate 80 (I-80) west of the San Francisco-Oakland Bay Bridge. Between I-80 and the Golden Gate Bridge, U.S. 101 continues through San Francisco as a six-lane surface roadway along Van Ness Avenue, Lombard Street, and Doyle Drive. At Cesar Chavez, U.S. 101 carries more than 240,000 vehicles per day in each direction (Caltrans, 2004).

4.10.1.1.3 <u>Interstate 80 (Regional Access to San Francisco and the East Bay)</u>. I-80, which merges with U.S. 101 southwest of downtown San Francisco, is generally an east-west freeway, extending from downtown San Francisco in the west to Sacramento and beyond in the east. The San Francisco-Oakland Bay Bridge is located along this freeway, connecting San Francisco with the East Bay, eventually linking with SR 4 in Hercules. Access to the Bay Bridge from the Project Converter Station sites is via U.S. 101. Daily traffic volumes on the 10-lane bridge average 286,000 vehicles per day in each direction. North and east of the Bridge, I-80 provides six to eight travel lanes, including high-occupancy vehicle (HOV) facilities. In Emeryville, average daily traffic volumes can reach 300,000 vehicles in each direction (Caltrans, 2004).

4.10.1.1.4 <u>SR 4 (Regional Access to Pittsburg)</u>. SR 4 connects I-80 in Hercules with State Route 160 in Antioch before continuing on through Oakley and Brentwood to Stockton and the Central Valley. As it traverses Pittsburg, SR 4 is a limited-access highway providing four to six travel lanes with standard paved shoulders and security fencing. The speed limit along SR 4 varies between 65 and 45 miles per hour (m.p.h.) as the road transitions between urban and rural settings. The Loveridge Road exit is used to access the proposed Standard Oil Converter Station site. The Railroad Avenue exit connects SR 4 to the onshore portion of the proposed cable route to the Pittsburg PG&E Substation. The City of Pittsburg General Plan 2020 (2000) indicates that traffic volumes on SR 4 will double between 2000 and 2025. Currently, average daily volumes range from 109,000 to 122,000 in each direction between Railroad Avenue and Loveridge Road (Caltrans, 2004). The maximum volumes are at the confluence of State Route 242 in Concord, where 120,000 vehicles can pass in each direction.

The Contra Costa County Transportation Authority Expenditure Plan identifies widening of SR 4 in Pittsburg as a priority project. The project, to be completed in 2007, will widen the freeway to six lanes and add HOV lanes and a median to allow a continuation of the Bay Area Rapid Transit (BART) track from Bay Point Station to Loveridge Road. This project is currently under construction and is expected to be completed prior to construction of the proposed Trans Bay Cable Project.

4.10.1.2 Local Roadway Facilities

The local roadway network connects the proposed Project sites to the major freeways described above. This network is categorized into arterial roadways and local streets. Arterial roadways that provide access to and from the proposed converter station sites as well as alternative and proposed construction laydown areas in San Francisco include Third Street, Illinois Street, 25th Street (for the proposed laydown area [Western Pacific]), and Cesar Chavez Street, and Cargo Way (for the alternate laydown area at Pier 94/96). Arterial roadways to and from the proposed Pittsburg Converter Station sites as well as the associated onshore portion of the cable route to the PG&E substation, proposed and alternative construction laydown areas, and proposed and alternative access roads include the Pittsburg-Antioch Highway, Railroad Avenue, and Loveridge Road in Pittsburg. Major arterials and local streets are shown on Figures 4.10-2A and 4.10-2B and are briefly described below.

4.10.1.2.1 San Francisco HWC Converter Station.

***Third Street*.** Third Street functions as the principal north-south arterial within the study area, extending north from its interchange with U.S. 101 and Bayshore Boulevard to its intersection with Market Street. It serves as the main commercial street, as well as a primary access route to industrial development along San Francisco’s southern waterfront, carrying approximately 11,000 vehicles per day in each direction at 22nd Street (San Francisco Department of Parking and Traffic, 2001). The intersection is operating at LOS B during the afternoon peak and at LOS C further south at Cesar Chavez (SFRA, 2004). The Transportation Element of the San Francisco General Plan designates Third Street as a Major Arterial and Primary Transit Route (San Francisco Planning Department, 1995). The plan also names Third Street as a Neighborhood Commercial Street and a Citywide Bicycle Route. The proposed HWC Converter Station site is located a block to the east of Third Street and east of Illinois Street between 23rd and 24th streets.

In terms of physical design, south of Mission Creek, Third Street has been converted from a six-lane arterial to a four-lane road with light rail in the median. Parking is generally prohibited on both sides of the street.

***Illinois Street*.** Illinois Street, which parallels Third Street to the east and terminates at Islais Creek, is a two-lane industrial street with curb parking and a freight rail track in the middle. It carries approximately 5,000 vehicles per day in both directions (San Francisco Department of Parking and Traffic, 2001). During the afternoon peak, Illinois Street is currently operating at LOS A in the study (Bayview Hunters Point Redevelopment Projects and Rezoning EIR 2004). To facilitate the movement of goods and materials along the Central Waterfront, the Port of San Francisco is constructing a new bridge linking Illinois Street with the road network and rail spur serving Piers 90/96 south of Islais Creek. The two-lane, one-track lift bridge is designed to accommodate all truck and freight rail traffic. It will be open in mid-2006.

***Cesar Chavez Street*.** Cesar Chavez Street is a major arterial and a Citywide Bicycle Route carrying approximately 11,000 vehicles per day in both directions at Pennsylvania Avenue, which is west of and parallel to Third Street (San Francisco Department of Parking and Traffic, 2004). At Evans Avenue, Cesar Chavez is currently operating at LOS D during the afternoon peak. West of Evans, the four-lane street continues through the Mission District until terminating at Guerrero Avenue. Cesar Chavez Street provides direct access to both I-280 and U.S. 101 and to the proposed Project converter station sites via Illinois Street.

***Cargo Way*.** Cargo Way is a four-lane road connecting Third Street with the Port of San Francisco's Piers 90 through 96. It provides access to the alternative San Francisco construction laydown area at Pier 94/96. It carries approximately 8,000 vehicles daily in both directions (San Francisco Department of Parking and Traffic, 2001) and, during the afternoon peak, is currently operating at LOS C at Third Street (Bayview Hunters Point Redevelopment Projects and Rezoning EIR, 2004).

***Other Local Streets*.** Other local streets that serve the San Francisco HWC Converter Station site and the proposed construction laydown area include: Illinois Street, 22nd, 23rd, 24th, and 25th Streets. The 22nd Street connects Potrero Hill with the Central Waterfront, terminating east of Illinois Street. This two-lane local street has parking on both sides. More industrial in character are parallel east-west streets (22nd, 23rd, 24th, and 25th Streets), all of which provide access to the proposed HWC converter station site and the proposed construction laydown area at the end of 25th Street. Traffic signals are located at the intersections of Third Street with all cross streets between 22nd Street and Cargo Way.

4.10.1.2.2 Pittsburg Standard Oil Converter Station.

***Pittsburg-Antioch Highway*.** This two-lane, east-west arterial extending from North Parkside Drive in Pittsburg to Antioch has the character of a semi-rural road with two 14-foot travel lanes and two 8-foot paved shoulders but no sidewalks. East of the signalized intersection at Loveridge Road near the proposed Standard Oil Converter Station site and adjacent construction laydown area, the character of the road becomes an intercity highway allowing 50 m.p.h. travel. East of Loveridge Road, average daily traffic volumes are currently at 9,500 and are expected to triple to 28,900 by 2025 (City of Pittsburg, 2000). The current peak period LOS at Loveridge Road is C, which is within acceptable standards (CCCMP, 2003). The proposed access road for the Standard Oil Converter Station would connect to the Pittsburg-Antioch Highway.

***Loveridge Road*.** Loveridge Road is a primary north-south arterial connecting SR 4 with the industrial district in east Pittsburg. North of the intersection with the Pittsburg-Antioch Highway, which is signalized, Loveridge Road is a five-lane street with the middle lane used for left turns. This segment serves surrounding industries and does not offer curb parking. The City of Pittsburg General Plan 2020 Draft Environmental Impact Report indicates average daily traffic volumes on Loveridge Road will increase from approximately 17,000 vehicles per day to over 20,000 by 2025.

***Railroad Avenue*.** Railroad Avenue is one of the primary north-south arterials in Pittsburg, distributing traffic from SR 4 north to the center of the city and south to residential areas. North of SR 4, the arterial has four lanes with median and left-turn pockets and some curb parking. In this segment, the street is grade-separated at rail crossings over the Union Pacific Railroad (UPRR) and under the Burlington Northern Santa Fe Railroad (BNSF), and at-grade at Central Avenue. North of Tenth Street, the street narrows and becomes part of the historic center grid. Average daily traffic volumes on Railroad Avenue are expected to increase from approximately 30,000 currently to 40,600 in 2025.

***Other Local Streets*.** Other local streets in Pittsburg include West Tenth Street (access to the onshore portion of the cable route to the PG&E substation) and Arcy Lane (access to the northern portion of the onshore AC/DC cable route between the Standard Oil site and New York Slough and the alternative construction laydown area at Delta Energy Center). In general, the streets are two-lane and have 25 m.p.h. speed limits. West Tenth Street, which connects Pittsburg with Bay Point along Willow Pass Road, accommodates approximately 12,500 vehicles per day (City of Pittsburg, 2000). It is a three-lane, east-west city street with the middle lane used for left turns. Parking is allowed on both sides of the street. The character of the street changes west of the entrance to the Mirant Pittsburg Power Plant where the right-of-way (ROW) narrows and parking and sidewalks are eliminated. At the intersection of West Tenth Street and Herb White Way, a two-lane residential street, peak period LOS is C, which is within acceptable standards (CCCMP, 2003). Arcy Lane is a dead-end, two-lane street with limited shoulders and no parking near the Pittsburg-Antioch border. It extends from its intersection with the Pittsburg-Antioch Highway to the gates of the Calpine Delta Energy Center and Delta Diablo Sanitation District sites.

4.10.1.3 Designated Truck Routes from the Port of Oakland

Shipments of equipment and materials that are off-loaded at the Port of Oakland would be transported by truck on designated truck routes that allow the height and weight of these deliveries. Caltrans determines height and weight restrictions for truck deliveries on state and federal routes, whereas local roadways are governed by the codes of respective local jurisdictions. The information for state and federal roadways is compiled on a map of truck networks on California State Highways. The map for Caltrans District 4 (San Francisco Bay Area) is illustrated on Figure 4.10-3. The expected local truck routes to the San Francisco and Pittsburg sites are shown on Figure 4.10-4A and 4.10-4B, respectively.

4.10.1.4 Rail Facilities

4.10.1.4.1 Passenger and Freight Rail in San Francisco. The Peninsula Commuter Service (Caltrain), which provides commuter rail service between Santa Clara, San Mateo, and San Francisco counties, has a station at 22nd Street and Pennsylvania Avenue near the Project sites, served by the San Francisco Municipal Railway's (MUNI) Bus Route 48. Not all trains stop at 22nd Street but, during the peak, service frequencies can be at 10- to 15-minute intervals. Union Pacific has access for freight to the Port of San Francisco via the Caltrain alignment using a spur track to access Piers 90 through 96 in India Basin. The Caltrain alignment links with the UPRR network in San Jose. Rail access to the Port is constrained by two 16-foot rail tunnels that prohibit double-stacked container shipments, the poor condition of the existing spur track south of Islais Creek, and the need for a bridge over Islais Creek to provide freight access to the Central Waterfront (study area). These constraints will be reduced in 2006 when the Port completes a combined motor vehicle-freight rail lift bridge on Illinois Street spanning Islais Creek.

4.10.1.4.2 Passenger and Freight Rail in Pittsburg. Amtrak operates 4 passenger trains per day in each direction on the BNSF track between Oakland and the San Joaquin Valley via Pittsburg. The nearest passenger station to Pittsburg is in Antioch. Amtrak service shares the track with BNSF freight rail service, which operates in the vicinity of the Pittsburg Standard Oil Converter Station site (refer to Figure 4.10-2B).

4.10.1.5 Other Transportation Elements

4.10.1.5.1 Parking. Curb parking near the San Francisco HWC Converter Station is allowed on both sides of the streets adjacent to the site except at designated locations on Illinois Street and on 23rd, 24th, 25th, and Cesar Chavez Streets between Third Street and the waterfront. Curb parking on the numbered, east-west streets is often perpendicular to the street, including parking in front of businesses that line the streets.

No on-street parking is available on the roads immediately adjacent to the proposed Pittsburg Standard Oil site.

4.10.1.5.2 Public Transportation. The site areas in San Francisco are served by MUNI lines that connect the Project site with downtown, Caltrain, Potrero Hill, and the Mission District. Principal MUNI routes serving the study area are:

- Route 15 – Third Street connects Fisherman's Wharf with Visitacion Valley, passing through North Beach, Downtown, Mission Bay, Central Waterfront, and Bayview. Route 15 provides frequent service with articulated buses, running on 5- to 6-minute intervals during peak hours and 10- to 15-minute intervals during off-peak hours. Light rail will substitute for much of the 15-line south of the Caltrain Station (King Street) in 2006.
- Route 22 – Fillmore travels from the Marina District south through Pacific Heights, the Mission District, and Potrero Hill before terminating at Third Street in the study area. Route 22 provides 6- to 11-minute intervals during peak periods.
- Route 48 – Quintara/24th Street provides crosstown service from the West Portal community to Potrero Hill, terminating at Third Street in the study area. Route 48 passes near Caltrain's 22nd Street depot and offers 10- to 15-minute intervals during peak periods.

Ferry services also operate to and from San Francisco.

The Pittsburg Standard Oil site is not served by public transit.

4.10.1.5.3 Bicycle and Pedestrian Circulation. In San Francisco, Illinois Street is a primary link through the Central Waterfront for the Bay Trail and bike path. Upgraded lighting, sidewalks, and streetscapes have recently been constructed in the study area as elements of the Third Street Light Rail Project. In contrast, several of the cross streets close to the proposed converter station site and proposed construction laydown area, such as 23rd and 25th streets, are without sidewalks, forcing pedestrians to walk within vehicle travel lanes.

In Pittsburg, the General Plan identifies bicycle routes planned for the study area including Railroad Avenue, Third Street, North Parkside, West Tenth Street, Loveridge Road, and Herb White Way. Loveridge Road improvements are near the Standard Oil Project site. Land uses in the study area are auto-oriented and not conducive to pedestrian circulation.

4.10.1.6 Planned San Francisco Roadway and Public Transportation Improvements

The San Francisco County Transportation Authority New Expenditure Plan is fiscally constrained to the total funding expected to be available for each category of transportation improvements. The financial constraint is further detailed within each category through the specification of funding priority levels (Priorities 1, 2, and 3). Adoption of an ordinance to continue the existing half-cent sales tax is necessary in order to fund the projects and programs. If the ordinance is adopted, the tax shall be continued for the period of implementation of the New Expenditure Plan and its updates. The improvements, identified in the bulleted Project list below, will improve traffic circulation, pedestrian and bicycle circulation, and transit service throughout the City of San Francisco. Third Street Light Rail, which will become operational by the end of 2006, and the Port's Illinois Street Bridge project are the specific Expenditure Plan projects located in the study area.

4.10.1.6.1 Transit.

***MUNI*.**

- Implementation of Bus Rapid Transit, including along Geary Street
- Third Street Light Rail (Phase 1)
- Central Subway (Third Street Light Rail Phase 2)

***Caltrain*.**

- Downtown Extension from current Fourth and Townsend Station to a rebuilt Transbay Terminal at First and Mission
- Electrification
- Capital Improvement Program elements

4.10.1.6.2 Streets and Traffic Safety.

- Golden Gate Bridge South Access (Doyle Drive redesign and reconstruction)
- Street signage and signal improvements
- Advanced Technology and Information Systems for roads and transit
- Street resurfacing, rehabilitation, and maintenance
- Bicycle and pedestrian improvements and safety measures
- Traffic calming
- Curb ramps for wheelchair users
- Tree planting and maintenance

4.10.1.6.3 Transportation System Management/Strategic Initiatives.

- Transportation demand management/parking management
- Transportation/Land Use coordination

4.10.1.7 Planned Roadway Improvements in Pittsburg and Vicinity

The City of Pittsburg and regional transportation authorities have several planned transportation improvements within the planning area (indicated below) that are expected to meet Pittsburg's transportation needs to 2020.

4.10.1.7.1 1995 CMP Capital Improvement Program (Committed Funding).

- Widen SR 4 to six lanes plus two HOV lanes between Bailey Road and Railroad Avenue
- Provide a transit corridor for future BART extensions

4.10.1.7.2 1995 CCTA Countywide Comprehensive Transportation Plan and East County.

- Construct a Park and Ride Lot near the SR 4/Railroad Avenue interchange (already built at Harbor Street and Bliss Avenue)
- Modify SR 4/Loveridge Road interchange and construct parallel truck facility (MTC Track 1)
- Widen SR 4 to six lanes plus HOV lanes between Railroad Avenue and SR 4 Bypass at Antioch (Candidate Track 2)
- Construct two-lane Buchanan Bypass (Candidate Track 2)
- Construct truck-climbing lanes on Kirker Pass Road between Clearbrook Road and Buchanan Road (Candidate Track 2)
- Extend BART to Hillcrest Avenue in Antioch (Candidate Track 2)

4.10.1.7.3 Caltrans-approved Project Study Report (PSR).

- Modify SR 4/Railroad Avenue interchange to increase the interchange's capacity and improve operations of the existing closely spaced ramp intersections
- Widen existing median on SR 4 to accommodate future travel lanes, the BART extension, and a BART Station at Railroad Avenue

4.10.1.7.4 <u>CTA Major Investment Study</u>.

- Continue preliminary engineering work on SR 4 East, between Railroad Avenue and Route 160
- Investigate in greater detail the issues surrounding future BART Stations

4.10.1.7.5 <u>1997 Pittsburg Traffic Mitigation Fee Study – Traffic Mitigation Fee Study</u>.

- Widen California Avenue to four lanes from Railroad Avenue to Loveridge Road
- Extend West Leland Road (four lanes) from terminus to Avila Road
- Widen Avila Road to four lanes from Willow Pass Road to West Leland Road
- Widen Willow Pass Road to four lanes from Loftus Road to Range Road
- Improve East Third Street
- Connect North Park Plaza to Century Boulevard
- Construct the Bailey Bypass (San Marco Boulevard) from SR 4 to Bailey Road
- Construct four-lane Buchanan Bypass
- Construct an interchange at Range Road/SR 4
- Implement signal interconnection (synchronization of intersection signals to improve traffic flow) on Leland and Buchanan roads
- Install traffic signals and construct intersection improvements, as needed

4.10.1.7.6 <u>Regional Traffic Mitigation Fee (TRANSPLAN) – Regional Traffic Mitigation</u>.

- Widen SR 4 to six lanes plus two HOV lanes between Bailey Road and Railroad Avenue
- Construct two-lane Buchanan Bypass
- Construct the SR 4 Bypass from Antioch to Brentwood

4.10.2 Regulatory Setting

4.10.2.1 <u>Federal</u>

The state operates and maintains federal highways including interstate roadways in California. State regulations apply to these roads.

4.10.2.2 State

Caltrans District 4 governs state and federal highways throughout the San Francisco Bay Area. Regulations for vehicle restrictions have been developed for the regional highway network. The regulations restrict type of cargo, height and weight of vehicles on the regional highway system as designated in Truck Networks on California State Highways (Caltrans Traffic Operations Program, Office of Truck Services, December 27, 2005.)

4.10.2.3 Local

Local jurisdictions may also impose height and weight restrictions on local roadways. The San Francisco Department of Parking and Traffic, the City of Pittsburg Engineering Department, and local municipalities designate vehicle restrictions on local roads. The local jurisdictions also establish guidelines and permit procedures for using or encroaching on the public ROW to facilitate construction activities. In addition, transportation plans and policies that are identified in the General Plan Transportation Elements for the City and County of San Francisco and the City of Pittsburg are used as guidance for the transportation analysis. The policies denote classification of local roads and standards for traffic circulation and delay, bicycle and pedestrian circulation, and transit service that become thresholds for determining the significance of Project impacts on transportation. Improvements to the transportation network are compiled in the Congestion Management Program and the Expenditure Plans for the region's counties, including San Francisco and Contra Costa (Pittsburg).

4.10.3 Environmental Impacts

Among the Project's basic attributes is the fact that once installed, the proposed converter stations would be minimally staffed and/or remotely operated. Principal transportation impacts are, therefore, associated with construction and installation, and would be temporary. It is assumed that the majority of converter station equipment would be delivered as containerized marine cargo to the Port of Oakland. The resultant impacts of the Project on surface transportation would affect regional highways and surface routes between the Port of Oakland and the delivery sites in San Francisco and Pittsburg.

4.10.3.1 Thresholds of Significance

Under City and County of San Francisco guidelines, an adverse effect on transportation would occur if an intersection or roadway were degraded to LOS E or F, would cause a major traffic or safety hazard, or contribute considerably to cumulative traffic increases. Impacts on transit service—in terms of delay or service modifications—preventing access or hazards to pedestrian or bicycle circulation, and producing delays to goods movement, including rail freight, or passenger rail movement, would also be considered adverse effects. In addition, transportation impacts include temporary disruption of circulation, encroachment on public ROWs, or impeding access to land uses because of construction activities. In San Francisco, impacts resulting from the loss of parking are not considered to be significant due to the City's Transit First policy.

Additional significance criteria utilized in this transportation assessment for non-San Francisco components follow; these criteria are adapted from CEQA, Appendix G.

For this analysis, the impact would be considered to be potentially significant if any of the following were to occur:

- The addition of Project traffic to an intersection significantly increases the volume-to-capacity (V/C) ratio
- The Project's access to a major road or arterial road would require access that would create an unsafe situation, a new traffic signal, or major revisions to an existing traffic signal
- The Project adds traffic to a roadway that has design features (e.g., narrow width, road-side ditches, sharp curves, poor sight distance, inadequate pavement structure) that would become a potential safety problem with the addition of Project traffic
- Project traffic would utilize a substantial portion of an intersection's capacity where the intersection is currently operating at acceptable levels of service but with cumulative traffic would degrade to or approach level of service (LOS) D or lower
- Result in inadequate emergency access
- Result in inadequate parking capacity
- Conflict with adopted policies, plans, or programs supporting alternative transportation

4.10.3.2 San Francisco HWC Converter Station Site

4.10.3.2.1 Construction-related Impacts. Regarding truck shipments and deliveries, it is estimated that 700 Project-related container shipments (refer to Table A.4-4 in Appendix A of this EIR) from overseas would arrive at the Port of Oakland and would be shipped by truck to the converter station site in San Francisco. Trucks would travel from the Port north on I-880, west across the Bay Bridge on I-80, and south along Highway 101 to the Cesar Chavez exit. One possible exception involves oversized loads (e.g., transformers, cable reels), which due to their weight and size might be rerouted on a different land route or offloaded in San Francisco. Trucks would continue on local streets, traveling eastbound on Cesar Chavez Street and turning left onto Illinois Street to reach the proposed converter station site (Figure 4.10-4A). Shipments that needed to be temporarily stored would be unloaded either at the proposed construction laydown area at the eastern end of 25th Street (Western Pacific site) or at the alternative laydown area (Pier 94/96) east of Cargo Way. To access the Western Pacific site, trucks would turn left from Cesar Chavez onto Illinois Street and then right onto 25th Street. To access the alternative laydown area (Pier 94/96), trucks would turn right onto Illinois Street, cross the new Islais Creek bridge, and turn left onto Cargo Way. At a later time, the equipment or material would be reloaded on trucks to travel the short distance between the laydown area and the converter station site, using the same streets to reach Illinois Street and the converter station site. Local truck shipments for the Project (not originating at the Port of Oakland) would follow the same routing in the study area. For hauling demolition debris and potentially contaminated soil, the most probable truck route to landfills would be over Cesar Chavez Street to nearby I-280 via Pennsylvania Street and then south along I-280 and U.S. 101.

The total number of deliveries to the HWC site would approximate 3,578 container shipments as well as local suppliers' shipments dispersed over an estimated 27-30 month period during the Project's site preparation and construction phases. This number includes truck trips for hauling demolition debris, contaminated soil, and equipment from the HWC site during the first 3 months. The number of truck trips to the San Francisco Project site would be expected to peak between the 10th and 12th months of construction, with an estimated maximum of 22 deliveries per day (based on an average of 22 work days per month) and decline thereafter.

Average daily traffic volumes are approximately 5,000, 8,000, and 11,000 on Illinois, Cargo Way, and Cesar Chavez, respectively. Typical peak period LOSs for these streets range from LOS B to C, well within acceptable San Francisco traffic circulation standards (San Francisco County Transportation Authority, 2004). The local streets are not expected to operate below City of San Francisco standards during the construction period. As a result, the cumulative effect of these trips on local streets would be a less-than-significant impact. Although traffic levels on these streets may increase in 2006 after the new Illinois Street bridge and Third Street light rail improvements are completed, the maximum number of 22 daily trips to and from the Project site over a short period of time would not adversely affect traffic operations or reduce LOSs on Illinois, Cargo Way, or Cesar Chavez Streets or other local streets in the Central Waterfront area to a level below the City of San Francisco standard. As a result, there would be a less-than-significant impact to local roads in the study area.

***Cumulative Traffic Impacts*.** The portions of I-280 and U.S. 101 that Project delivery trucks would follow operate at LOS D or E during peak periods (San Francisco County Transportation Authority, 2004). The LOS on I-280 outbound in the p.m. peak has deteriorated to LOS F. The additional daily truck trips and construction worker auto commute trips have the potential to contribute to peak period delay on these roadways.

According to the 2235 Third Street Transportation Study (Wilbur Smith Associates, 2005), traffic will increase on local streets in the study area over the next 10 years. The converter station would be constructed within the next 5 years when the local streets used for truck shipments and worker auto trips are expected to continue to operate within City standards.

Impact TRAFFIC-1: Cumulative Traffic Impacts. Project-related trips to and from the HWC Converter Station site would contribute to delays on the regional roadway system, a potentially significant impact.

Mitigation Measure TRAFFIC-1: Coordination to Reduce Cumulative Traffic Impacts. Truck shipments on the regional roadway shall be scheduled for non-peak periods when delays are less prevalent, as practical. The construction contractor shall coordinate with Caltrans to identify appropriate routings and times for site deliveries and comply with Caltrans recommendations. This mitigation measure would successfully mitigate the Project's contribution to cumulative impacts occurring on the regional roadway system.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Work with truck shipment and delivery company and Caltrans to schedule truck delivery times; negotiations with truck company to occur prior to actual delivery
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure TRAFFIC-1 would reduce Impact TRAFFIC-1 to a less-than-significant level.

Oversized Loads**.** Oversized shipments would require a permit from Caltrans that identifies the permitted hours of operation and the size of the truck to transport the shipment on the regional roadway network. Coordination with Caltrans would be required as part of Project implementation. Each converter station would receive a total of six oversized loads (four transformers and two smoothing reactors), beginning in month 12 of the Project schedule (refer to Table A.4-4 in Appendix A). The transformers would each be approximately 31.3 feet by 12.9 feet by 16.5 feet (9.55 meters by 3.94 meters by 5 meters), weighing approximately 192 tons. The smoothing reactors would be approximately 12.9 feet by 16.5 feet (3.94 meters by 5 meters) and weigh approximately 17 tons. In San Francisco, there are no weight restrictions to trucking on the aforementioned local streets (San Francisco Department of Parking and Traffic, 2003). However, height restrictions ranging from 13.5 feet to 17 feet have been imposed on streets traveling under U.S. 101 and I-280 in the study area and on Third Street at Islais Creek. Oversized loads, such as transformers, that require clearances over 13.5 feet would have to travel on streets that are not designated with severe clearance restrictions. For example, Cesar Chavez Street has restricted clearances under U.S. 101 and I-280 that would preclude transformer shipments using this street. Accordingly, Third Street and Illinois Street would be utilized instead.

The transition from the Bay Bridge to local streets to reach Third Street in San Francisco would have to be coordinated with Caltrans, which is conducting seismic work on the Bay Bridge approach structure and ramps, and with the Department of Parking and Traffic and the San Francisco Police Department, which may be required to escort the oversized loads on City of San Francisco streets. It is possible that the transformers, due to their weight and size, might be rerouted on a different land route or offloaded in San Francisco, thus avoiding the Bay Bridge altogether.

Impact TRAFFIC-2: Oversized Loads. Oversized shipments would require a permit from Caltrans that identifies the permitted hours of operation and the size of the truck to transport the shipment on the regional roadway network. If the permit conditions were not followed adequately, this would constitute a potentially significant adverse impact.

Mitigation Measure TRAFFIC-2: Coordination of Oversized Loads. Coordination with Caltrans and local jurisdictions shall be conducted to ensure proper permitting for oversized loads, which shall be required in advance of construction.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Obtain permit from Caltrans and coordinate with Caltrans and applicable local jurisdictions, prior to and during construction, as appropriate
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure TRAFFIC-2 would reduce Impact TRAFFIC-2 to a less-than-significant level.

***Construction Worker Trips*.** Between the 12^{th} and 19^{th} months of the construction period, an estimated maximum of 45 daily employee auto trips is expected at the construction site, for a possible maximum of 67 truck and commute trips during the workday. The additional temporary work trips in combination with truck shipment trips are not expected to produce local traffic impacts in the study area since temporary construction delivery trips are typically not considered to be potentially significant cumulative impacts under the San Francisco Planning Code. The cumulative effect of these additional trips on the regional roadway system is described under Cumulative Impacts above. Mitigation Measure TRAFFIC-1 would also reduce cumulative regional roadway impacts to a less-than-significant level.

***Vehicular Safety*.** An adverse impact would occur if temporary street closures were necessary due to Project-related deliveries of equipment or materials or from cumulative impacts resulting from construction work on other nearby projects, the timing for which is undetermined and is part of larger planning efforts (see Section 7.0 for the cumulative impacts project list). In addition**,** construction activities may require the temporary closure of Illinois Street, which serves as the route for the Bay Trail through the Central Waterfront area. Illinois Street is being redesigned with bike lanes, which could be affected by street closures as well, which would result in a potentially significant impact.

Impact TRAFFIC-3: Temporary Street Closures Affecting Traffic, Bicycle, and Pedestrian Circulation. The temporary closure of streets for Project-related construction would affect traffic circulation in the study area and may impede the delivery and access to businesses in the area and the use of the Bay Trail and bicycle circulation for short intervals. This impact is considered to be potentially significant.

Mitigation Measure TRAFFIC-3: Signage for Temporary Street Closures. Any needed temporary closure of local streets in San Francisco will be mitigated by coordinating street closures with the San Francisco Department of Parking and Traffic (DPT) and, if appropriate, erecting signage that reroutes traffic onto neighboring streets. The coordination would account for providing continued access for emergency vehicles in the study area and ensure that the City of San Francisco's Emergency Operations Plan could be activated without impediment. With these mitigation measures, temporary construction impacts on traffic circulation would be mitigated to a less-than-significant level.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Approval from and coordination with San Francisco Department of Parking and Traffic (DPT) before construction starts and during construction, as applicable
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure TRAFFIC-3 would reduce Impact TRAFFIC-3 to a less-than-significant level.

***Transit Service Impacts*.** MUNI will begin operating the Third Street light rail in 2006, most likely as an extension of the J-line, extending from the Market Street subway and The Embarcadero along Third Street to Visitacion Valley and connecting with crosstown bus routes along the way. The peak and midday service will be comparable to the existing J-line frequencies, which would provide sufficient capacity and service to accommodate the work trips of construction workers at the San Francisco Converter Station site if they chose to commute by public transportation. In addition, Route 48 provides crosstown service over Potrero Hill to the Project site along 22nd Street. Although construction activities would be one block removed from these transit services, truck shipments that accessed the proposed construction laydown area (Western Pacific site) would have to pass the new MUNI light rail facility on 25th Street, which will be used for light rail pull-ins and pull-outs once the facility is operational in the fall of 2008.

Impact TRAFFIC-4: Impacts on Metro East Light Rail Facility. If truck shipments were destined for the proposed laydown area (Western Pacific site) at the same time MUNI begins using 25th Street to dispatch light rail vehicles to Third Street, they could conflict with the most active light rail dispatch and return hours at the beginning and end of the peak periods. This is considered to be a potentially significant impact.

Mitigation Measure TRAFFIC-4: Reducing Impact on the Movement of MUNI Light Rail Vehicles into and out of the Metro East Maintenance Facility. Construction contractor will coordinate with MUNI to define times for scheduling of truck deliveries to the proposed laydown area (Western Pacific site) if the truck deliveries were to occur during the peak period. Alternatively, particularly if the peaker project is implemented at the Western Pacific site at the same time as the Trans Bay Cable Project is under construction, the Project laydown area could be located at Pier 94/96. As indicated in Section 4.10.3.2.1, Construction-related Impacts, truck deliveries to the Pier 94/96 laydown area would not produce significant impacts along Cargo Way and would avoid a potential conflict with the movement of MUNI light rail vehicles along 25th Street.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Coordinate and schedule truck deliveries with San Francisco MUNI and DPT, prior to and during construction
Monitoring Requirements:	City of Pittsburg, in consultation with City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure TRAFFIC-4 would reduce Impact TRAFFIC-4 to a less-than-significant level.

***Parking*.** In the San Francisco study area, most streets have curb parking on both sides of the street. However, parking is often pre-empted by construction projects that temporarily restrict parking on the surrounding streets. By 9 a.m. on weekdays, most available curb parking in the area is taken. However, given the frequent transit service offered throughout the City of San Francisco and the City's Transit First policy, the City of San Francisco does not consider limited parking availability to be a significant impact.

***Rail*.** Construction of the converter station would not affect rail operation in the study area. Truck deliveries and construction activities would occur on site to avoid blocking rail spur tracks that will be operational on Illinois Street after completion of bridge construction across Islais Creek by the Port of San Francisco in 2006. This is considered to be a less-than-significant impact to rail operations in the study area.

4.10.3.2.2 Operations-related Impacts. The converter stations would operate with minimal staff and/or be remotely operated. Therefore, there would be very few or no daily commute trips or truck delivery or hauling trips to the San Francisco Converter Station site after on-going operation was established. No transportation impacts, including transit, bicycle, and pedestrian circulation impacts, would occur after operation commenced. Because there are no long-term traffic impacts associated with the proposed Project, no plans or policies of the San Francisco General Plan, nor capital projects, nor improvements identified in the San Francisco County Transportation Authority Expenditure Plan would be affected by the proposed Project.

4.10.3.3 Pittsburg Standard Oil Converter Station Site

4.10.3.3.1 Construction-related Impacts.

***Truck Shipments and Deliveries*.** Large equipment, including 192-ton transformers, would be delivered directly to the converter station site. Equipment and materials would be delivered either directly to the converter station site or the adjacent laydown area. Truck routes for these shipments and the frequency of truck trips are described below. In addition, an assessment of work trips to the Project site for construction activities is provided.

From the Port of Oakland, truck shipments would travel from I-880 northbound to I-80 (Eastshore Freeway), diverting eastward onto SR 4 in Hercules (Figure 4.10-1). Trucks would exit SR 4 in Pittsburg, traveling north on Loveridge Road (City of Pittsburg Ordinance 05-1238, Section 3, 2005, identifies specific arterials as truck routes). The Standard Oil site would have access from the Pittsburg-Antioch Highway east of Loveridge Road. A new two-lane road would be constructed off the Pittsburg-Antioch Highway north across Kirker Creek into the Project site. However, heavy loads such as the 192-ton transformers would access the site via the alternative access road off Loveridge Road since they would exceed the capacity of the proposed bridge over Kirker Creek. Use of the alternative access road would involve trucks continuing north on Loveridge Road across the Pittsburg-Antioch Highway to an existing narrow unpaved road that parallels the south side of the BNSF railroad tracks and enters the Standard Oil site from the north. This is the existing access to the Standard Oil site. This existing access road would be upgraded prior to use.

The proposed construction laydown area immediately to the north of the Standard Oil site would have access from the new access road, which extends north from the Pittsburg-Antioch Highway, or from the north along the existing road that parallels the BNSF tracks. Since the proposed laydown area and converter station sites are next to one another, transshipment from the laydown area to the Project site would occur over internal roads on the Standard Oil property that would not affect local circulation.

An alternative construction laydown area off Arcy Lane on the Delta Energy Center facility property is also under consideration. Access between this alternative laydown area and the Standard Oil site would be via Arcy Lane, the Pittsburg-Antioch Highway, and the proposed new access road or Loveridge Road to the site.

Local shipments that do not originate from the Port of Oakland would most likely use SR 4 and the local street network to access the Standard Oil site as described above.

The number of daily truck deliveries to the Standard Oil Converter Station site would vary according to the phase of the construction work. The total number of deliveries would be approximately 2,522 shipments (container and local suppliers) dispersed over a 27- to 30-month period during the Project's site preparation and construction phase. The number of deliveries would increase over the first year of construction, peaking in the 11th and 12th months, and then would decline over the remaining months of construction. An estimated total of 364 truck round trips, or a maximum of 17 deliveries per day, would occur in the 11th month of construction.

The few additional daily truck trips would not deteriorate LOS conditions along Loveridge Road. North of SR 4, Loveridge Road operates at LOS A and B (unimpeded circulation) throughout the day with the exception of the Loveridge Road/Pittsburg-Antioch Highway intersection, where p.m. peak conditions are LOS E (City of Pittsburg, 2003; Reinders, 2005).

***Cumulative Traffic Impacts*.** The City of Pittsburg has approved several commercial and industrial development projects along Loveridge Road (see Section 7.0 for cumulative impacts discussion). The cumulative traffic generated from the other projects and the proposed Project would likely increase the average daily traffic volumes on Loveridge Road. Given the current traffic volumes and unimpeded level of service on Loveridge Road, the road has capacity to absorb the expected cumulative traffic increases, except at the Loveridge Road/Pittsburg-Antioch Highway intersection, where LOS E occurs during the p.m. peak.

In contrast, the regional highway network to be used by project-related truck deliveries has substantial traffic volumes and persistent peak period delays (Caltrans, 2004). The greatest average daily traffic volumes on I-80 along the Eastshore Freeway would be at Powell Street in Emeryville, where approximately 300,000 vehicles pass in each direction. On SR 4, the maximum daily volumes would be at Highway 242 in Concord (approximately 120,000 vehicles in each direction). According to Caltrans, these volumes produce substantial delays, particularly during peak periods. The additional Project-related truck trips – 17 per day during the peak month and declining thereafter – would add to the cumulative effect of existing and forecasted traffic volumes on I-80 and SR 4.

Impact TRAFFIC-1: Cumulative Traffic Impacts. The Cumulative Traffic Impacts (Impact TRAFFIC-1) on the regional roadway system described in Section 4.10.3.2.1 applies to the Pittsburg Standard Oil Converter Station site. Project-related traffic passing through the congested Loveridge Road/Pittsburg-Antioch Highway intersection during the p.m. peak would contribute a maximum of 62 trips per day during the peak month, tapering off as Project construction is completed. The 62 trips do not represent a significant cumulative effect because the City of Pittsburg standard requires a project to contribute more than one percent of the volume to an existing intersection with inadequate capacity to meet cumulative demand (General Plan, Pittsburg 2020, 2004).

Mitigation Measure TRAFFIC-1: Coordination to Reduce Cumulative Traffic Impacts. Mitigation Measure TRAFFIC-1 described in Section 4.10.3.2.1 shall be applied at the Pittsburg Standard Oil Converter Station site. No other significant cumulative transportation-related impacts would be expected to occur on local roads.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Work with truck shipment and delivery company and Caltrans to schedule truck delivery times; negotiations with truck company to occur prior to actual delivery
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure TRAFFIC-1 would reduce Impact TRAFFIC-1 to a less-than-significant level.

***Oversized Loads*.** Oversized shipments would require a permit from Caltrans that identifies the permitted hours of operation and the size of the truck to transport the shipment on the regional roadway network. Coordination with Caltrans would be required as part of project implementation

Impact TRAFFIC-2: Oversized Loads. The Oversized Loads impact (Impact TRAFFIC-2) described in Section 4.10.3.2.1 applies to the Pittsburg Standard Oil Converter Station site.

Mitigation Measure TRAFFIC-2: Coordination of Oversized Loads. Mitigation Measure TRAFFIC-2 described in Section 4.10.3.2.1 shall be applied at the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Obtain permit from Caltrans and coordinate with Caltrans and applicable local jurisdictions, prior to and during construction, as appropriate
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure TRAFFIC-2 would reduce Impact TRAFFIC-2 to a less-than-significant level.

***Construction Worker Trips*.** Between the 12th and 19th months of the construction period, an estimated maximum of 45 daily employee auto trips is expected at the construction site, for a maximum total of 62 daily truck and commute trips. The additional temporary work trips in combination with truck shipment trips are not expected to produce local traffic impacts in the study area given the acceptable LOS on local roads (see Truck Shipments and Deliveries above). This would be considered a less-than-significant impact to local roads in the study area. The cumulative effect of Project-related vehicle work trips on regional roadways is discussed under Cumulative Traffic Impacts above. As stated, Mitigation Measure TRAFFIC-1 would reduce these cumulative impacts to a less-than-significant level.

***Access Road Encroachment on Pittsburg-Antioch Highway*.** Coordination with the City of Pittsburg and acquisition of the appropriate permit would occur prior to construction of the proposed new road and its encroachment onto the Pittsburg-Antioch Highway. This would be done as part of the Project and does not represent a significant impact.

***Vehicular Safety*.** The intersection of Loveridge Road/Pittsburg-Antioch Highway is signalized, facilitating the turning movement of trucks through the intersection. The proposed new access to the Standard Oil site is off the Pittsburg-Antioch Highway approximately 0.5 mile to the east of this intersection. A new road built as part of the project to provide access to this site would have no traffic controls. As part of Project implementation, the sponsor would coordinate with the City of Pittsburg to ensure that all access roads remain open to emergency vehicle access during construction activities and the movement of Project-related shipments would not impede the activation of the City's Emergency Operations Plan or the movement of emergency vehicles.

Impact TRAFFIC-5: Traffic Impacts During Construction. The new road providing access to the Standard Oil site from the Pittsburg-Antioch Highway would have no traffic controls. At maximum allowable speeds of 50 miles per hour, truck left-turn movements from the Pittsburg-Antioch Highway onto the proposed access road would not be safe without traffic controls, and would result in a potentially significant impact.

If the alternate laydown area (Delta Energy Center) were utilized, a similar impact would occur 0.5-mile farther east at Arcy Lane, where trucks would turn left from the Pittsburg-Antioch Highway north onto Arcy Lane to access the nearby alternative construction laydown area. This also would be a potentially significant impact.

Mitigation Measure TRAFFIC-5: Improve Vehicular Safety. A Traffic Control Plan that identifies measures to improve vehicular safety in this location shall be developed and submitted to the City of Pittsburg for approval prior to project implementation.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Submit Traffic Control Plan and obtain approval from Pittsburg and implement, prior to and during construction
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure TRAFFIC-5 would reduce Impact TRAFFIC-5 to a less-than-significant level.

***Transit Service and Bicycle and Pedestrian Impacts*.** There is no direct transit service access to the Standard Oil site. The surrounding roadways do not have designated bicycle lanes nor are they part of an established pedestrian circulation network. As a result, Project construction would not adversely affect existing public transportation facilities and services. No circulation impacts to existing transit, bicycle, or pedestrian circulation would result from Project implementation.

***Parking*.** Construction employee parking would be accommodated on site or at the designated laydown area since curb parking on area streets near the Standard Oil site is negligible. Therefore, it is expected that no parking impacts would occur.

***Rail Facilities*.** The BNSF railroad operations, although close to the project site and access roads, would not be disrupted by construction activities since truck deliveries and construction activity would not cross over or use the BNSF ROW. It is proposed that the onshore cable route between the Standard Oil Converter Station site and New York Slough be bored (Horizontal Directional Drill) under the BNSF ROW, therefore, no impacts on rail operations would be expected to occur. No railroad impacts would be expected to result from project implementation.

4.10.3.3.2 Operations-related Impacts. There would be very few if any daily commute trips or truck deliveries to the Standard Oil Converter Station site after on-going operation was established. As a result, there would be no adverse impact to the plans and policies in the City of Pittsburg General Plan or to the Contra Costa County Congestion Management Agency Expenditure Plan. Therefore, no transportation impacts would occur after operation of the Pittsburg Converter Station site commenced. It is expected that a security gate would be installed on the proposed access road at the intersection with the Pittsburg-Antioch Highway to prevent unauthorized access to the converter station and along the roadway.

4.10.4 References

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4.11 NOISE AND VIBRATION

This section describes the existing noise environment for the proposed Project. Potential noise impacts associated with the Project are assessed and noise-sensitive receptors are identified, as well as the laws, ordinances, regulations, and standards that regulate noise levels at those receptors. The following discussion describes the fundamentals of acoustics, the results of a detailed site reconnaissance, sound level measurements, and acoustical calculations.

4.11.1 Environmental Setting

4.11.1.1 Fundamentals of Acoustics

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that disrupts or interferes with normal human activities. Although exposure to high noise levels over an extended period has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise, and its appropriateness in the setting, the time of day, the type of activity during which the noise occurs, and the sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations which travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by a number of variables including frequency and intensity. Frequency describes the sound's pitch and is measured in Hertz (Hz), while intensity (or sound level) describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and eventually pain at still higher levels. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. An increase (or decrease) in sound level of about 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness, and this relationship holds true for loud sounds and for quieter sounds.

Sound level is usually expressed referenced to a known standard. This report refers to three acoustical quantities: 1) sound pressure level in air, 2) sound pressure level in water, 3) and sound power level. Although the units of each quantity are decibels, these terms are different and should not be confused. In expressing sound pressure on a logarithmic scale, the sound pressure is compared to a reference pressure value (discussed further below). In expressing sound power level, the standard reference sound power is 1 pico Watt. Sound pressure level depends not only on the power of the source, but also on the distance from the source and on the acoustical characteristics of the space surrounding the source; while sound power level is a measure of the acoustic power radiated by the source.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example: 60 dB + 60 dB = 63 dB, and 80 dB + 80 dB = 83 dB. Sound intensity in air uses a standard of 20 micropascals (μPa), while sound intensity measured in water uses a standard level of 1 μPa. The distinction between in-air and in-water reference levels is important since sound intensity in water would appear extremely high compared to values in air. In other words, 120 dB in the air is not the same as 120 dB in the water. There is a difference of 26 dB when converting air to water sound pressure levels. For example, if a jet engine has a sound pressure level of 140 dB in air, the equivalent underwater sound pressure level would be 166 dB; or a supertanker that emits 164 dB in air would sound more like 190 dB in water.

Hz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. A particular tone which makes the drum vibrate 100 times per second generates a sound pressure wave that is oscillating at 100 Hz; this pressure oscillation is perceived as a tonal pitch of 100 Hz. Sound frequencies between 20 Hz and 20,000 Hz are within the range of sensitivity of the best human ear.

Sound from a tuning fork (a pure tone) contains a single frequency. In contrast, most sounds one hears in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound according to a weighting system that reflects that human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve. Underwater noise measurements typically do not have frequency weighting applied. In addition, underwater noise levels are reported only for limited frequency bands, while airborne noise is reported as an integrated value over a very wide range of frequencies.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources that creates a relatively steady background noise in which no particular source is identifiable. A single descriptor called the equivalent sound level (L_{eq}) is used. L_{eq} is the mean A-weighted sound level during a measured time interval. It is the "equivalent" constant sound level that would have to be produced by a given source to equal the fluctuating level measured. In addition, it is often desirable to know the acoustic range of the noise source being measured. This is accomplished through the L_{max} and L_{min} indicators. They represent the Root mean-square (RMS) maximum and minimum obtainable noise levels during the monitoring interval. The L_{min} value obtained for a particular monitoring location is often called the acoustic floor for that location.

To describe time-varying character of environmental noise, the statistical noise descriptors L_5, L_{10}, L_{50}, and L_{90} are commonly used. They are the noise levels equaled or exceeded during 5 percent, 10 percent, 50 percent, and 90 percent of a stated time. Sound levels associated with the L_{10} typically describe transient or short-term events, while levels associated with the L_{90} describe the steady-state (or most prevalent) noise conditions.

Another sound measure known as the Day-Night Average Noise Level (L_{dn}) is defined as the A-weighted average sound level for a 24-hour day. It is calculated by adding a 10 dBA penalty to sound levels in the night (10:00 p.m. to 7:00 a.m.) to compensate for the increased sensitivity to noise during the quieter evening and nighttime hours. The L_{dn} is used by agencies such as the U.S. Environmental Protection Agency (EPA), the U.S. Department of Housing and Urban Development (HUD), and the Federal Aviation, Railroad, and Transit Administrations (FAA, FRA, FTA) to define acceptable land use compatibility with respect to noise. The L_{dn} is recommended by the State of California to be used by local agencies to define acceptable land use compatibility with respect to noise. Due to the time-of-day penalty associated with the L_{dn} descriptor, the L_{eq} for a continuously operating sound source during a 24-hour period will be numerically less. Thus, for a noise source operating continuously for periods of 24 hours, the L_{dn} level produced will be 6 dBA higher than the L_{eq} value. Sound levels of typical noise sources and environments are listed in Table 4.11-1 to provide a frame of reference.

4.11.1.2 Fundamentals of Vibration

Vibration consists of waves transmitted through solid material (Beranek and Ver, 1992). Unlike in air, there are several types of wave motion in solids including compressional, shear, torsional, and bending. The solid medium can be excited by forces, moments or pressure fields. This leads to the terminology "air-borne" (pressure fields) or "structureborne/ groundborne" (forces and moments) vibration.

Ground-borne vibration propagates from the source through the ground to adjacent buildings by surface waves. Vibration may be comprised of a single pulse, a series of pulses, or a continuous oscillatory motion. The frequency of a vibrating object describes how rapidly it is

TABLE 4.11-1
SOUND LEVELS OF TYPICAL NOISE SOURCES AND NOISE ENVIRONMENTS
(A-WEIGHTED SOUND LEVELS)

Example Noise Source (at a Given Distance)	Scale of A-Weighted Sound Level in Decibels	Example Noise Environment	Human Judgment of Noise Loudness* (Relative to a Reference Loudness of 70 Decibels)
Military Jet Take-off with Afterburner (50 ft)	140	Carrier Flight Deck	
Civil Defense Siren (100 ft)	130		
Commercial Jet Take-off (200 ft)	120		Threshold of Pain
			*32 times as loud
Pile Driver (50 ft)	110	Rock Music Concert	*16 times as loud
Ambulance Siren (100 ft)	100		Very Loud
Newspaper Press (5 ft)			*8 times as loud
Power Lawn Mower (3 ft)			
Motorcycle (25 ft)	90	Boiler Room	*4 times as loud
Propeller Plane Flyover (1,000 ft)		Printing Press Plant	
Diesel Truck, 40 mph (50 ft)			
Garbage Disposal (3 ft)	80	High Urban Ambient Sound	*2 times as loud
Passenger Car, 65 mph (25 ft)			Moderately Loud
Living Room Stereo (15 ft)			*70 decibels
Vacuum Cleaner (3 ft)	70		(Reference Loudness)
Normal Conversation (5 ft)	60	Data Processing Center	*1/2 as loud
Air Conditioning Unit (100 ft)		Department Store	
Light Traffic (100 ft)	50	Private Business Office	*1/4 as loud
Bird Calls (distant)	40	Lower Limit of Urban	Quiet
		Ambient Sound	*1/8 as loud
Soft Whisper (5 ft)	30	Quiet Bedroom	
	20	Recording Studio	Just Audible
	0		Threshold of Hearing

* Source: Compiled by URS Corporation.

oscillating, measured in Hz. Most environmental vibrations consist of a composite, or "spectrum" of many frequencies, and are generally classified as broadband or random vibrations. The normal frequency range of most ground-borne vibration which can be felt generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz.

Vibration energy spreads out as it travels through the ground, causing the vibration amplitude to decrease with distance away from the source. High frequency vibrations reduce much more rapidly than low frequencies, so that in the far-field from a source the low frequencies tend to dominate. Soil properties also affect the propagation of vibration. When ground-borne vibration interacts with a building there is usually a ground-to-foundation coupling loss but the vibration can also be amplified by the structural resonances of the walls and floors. Vibration in buildings is typically perceived as rattling of windows or items on shelves or the motion of building surfaces. The vibration of building surfaces can also be radiated as sound and heard as a low-frequency rumbling noise, known as ground-borne noise.

Perceptible ground-borne vibration is generally limited to areas within a few hundred feet of railway systems, certain types of industrial operations, and construction activities, especially pile driving. Road vehicles rarely create enough ground-borne vibration to be perceptible to humans unless the road surface is poorly maintained and there are potholes or bumps. If traffic, typically heavy trucks, does induce perceptible vibration in buildings such as window rattling or shaking of small loose items, then it is most likely an effect of low-frequency air-borne noise or ground characteristics.

Building structural components can also be excited by high levels of low-frequency noise (typically less than 100 Hz). The many structural components of a building, excited by low-frequency noise, can be coupled together to create complex vibrating systems. The low frequency vibration of the structural components can cause smaller items such as ornaments, pictures, and shelves to rattle which can cause annoyance to building occupants. Human sensitivity to vibration varies by frequency and by person, but generally people are more sensitive to low-frequency vibration. Human annoyance is also related to the number and duration of events. The more events or the greater the duration, the more annoying it will be to humans.

Construction activities can also produce varying degrees of ground vibration, depending on the equipment and methods employed. Ground vibrations from construction activities very rarely reach levels high enough to cause damage to structures, although special consideration must be made in cases where fragile historical buildings are near the construction site. The construction activities that typically generate the highest levels of vibration are blasting and impact pile driving.

Vibration from construction can be evaluated for potential impacts at sensitive receptors. Typical activities evaluated for potential building damage due to construction vibration include demolition, pile driving, and drilling or excavation in close proximity to structures.

The ground-borne vibration can also be evaluated for perception to eliminate annoyance. Vibration propagates according to the following expression, based on point sources with normal propagation conditions:

$$PPV_{equip} = PPV_{ref}\left(\frac{D_{ref}}{D}\right)^{1.5}$$

where:

PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for distance

PPV_{ref} = the reference vibration level in in/sec at 25 feet

D_{ref} = the reference distance (typically 25 feet)

D = the distance from the equipment to the receiver

The peak particle velocity (PPV) is defined as the maximum instantaneous positive or negative peak of the vibration and is often used in monitoring of blasting vibration because it is related to the stresses experienced by structures. Although PPV is appropriate for evaluating the potential of building damage, it is not suitable for evaluating human response. The human body responds to an average vibration amplitude. Because the net average of a vibration signal is zero, the root mean square (rms) amplitude is used to describe the "smoothed" signal. The root mean square of a signal is the average of the squared amplitude of the signal typically calculated over a 1 second period. Decibel notation acts to compress the range of numbers used to describe vibration, defined as VdB. The background vibration velocity level in residential areas is usually 50 VdB or lower, well below the threshold of perception for humans which is approximately 65 VdB. Human response to vibration is usually not significant until it exceeds 70 VdB.

4.11.1.3 Local Noise Setting

4.11.1.3.1 San Francisco HWC Converter Station. A series of sound level measurements was conducted on September 12 through 13, 2005 to quantify the existing acoustical environment at the proposed Project location in San Francisco as well as at sensitive receptors near the proposed Project. Table 4.11-2 summarizes the results of the measurements. The measurement locations are shown on Figure 4.11-1.

The sound level data were gathered using a Larson Davis Model 820 ANSI (American National Standards Institute) Type 1 Integrating Sound Level Meter (Serial Number 1323).

TABLE 4.11-2
SOUND LEVEL MEASUREMENTS OF EXISTING CONDITIONS IN SAN FRANCISCO (dBA)

Measurement Identification	Location Description	Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}
ST1	South Property Line of Proposed HWC Converter Station	12:30-13:00	56.0	52.3	70.3	57.3	54.9	53.5
		01:20-01:50	49.5	46.0	60.5	50.8	49.2	47.8
ST2	North Property Line of Proposed HWC Converter Station/South Property Line of Mirant Potrero Converter Station Alternative	13:12-13:42	63.8	55.0	92.9	60.6	57.3	56.2
		00:42-01:12	52.9	50.4	68.1	53.7	52.7	51.8
ST3	Intersection of 25th and Minnesota Streets (representative of 2nd closest residences)	13:54-14:24	66.6	55.3	84.7	69.1	62.4	58.9
		21:15-21:45	61.7	53.3	75.4	64.4	59.1	56.3
		01:57-02:27	58.9	41.9	83.5	60.3	50.8	45.7
ST4	2638 3rd Street (closest residence)	14:34-15:04	68.1	57.3	88.3	70.9	63.8	59.7
		20:37-21:07	62.8	53.2	82.0	65.5	58.3	55.4
		02:34-03:04	57.9	41.9	83.5	59.0	49.2	45.5

The meter was field-calibrated before and after each measurement period with a Larson Davis Model CAL150B acoustic calibrator (Serial Number 2233). The meter was mounted on a tripod 5 feet above the ground to simulate the average height of the human ear. All instruments were set to the slow time response and A-weighted decibel scale for all of the measurements in accordance with International Standards Organization (ISO) 1996a, b, and c. Details of the four measurement locations are provided below.

ST1 Thirty-minute measurements were conducted during the daytime and nighttime near the south property line of the proposed San Francisco HWC Converter Station. The actual property line was inaccessible at the time of the measurements; therefore, the measurement was taken at the eastern entrance to Warm Water Cove Park at the western termination of 24th Street and is considered to be acoustically equivalent. The daytime measurement was taken between 12:30 p.m. and 1:00 p.m. on September 12 and the nighttime measurement was taken between 1:20 a.m. and 1:50 a.m. on September 13. The Mirant Potrero power plant was audible during both the daytime and nighttime, becoming more pronounced at night when other noise sources were reduced. Daytime noise sources included heavy-truck traffic from the Sheedy property to the south, general industrial noise, and occasional aircraft overflights. During the night, heavy-truck traffic from the Sheedy property was no longer present. Back-up beepers and intermittent vehicular traffic to the park also contributed to the ambient noise environment. The daytime one-hour L_{eq} was 56.0 dBA and the nighttime one-hour L_{eq} was 49.5 dBA.

ST2 Thirty-minute measurements were conducted during the daytime and nighttime on 23rd Street near the north property line of the proposed San Francisco HWC Converter Station adjacent to the HMR Group Building parking lot. The daytime measurement was taken between 1:12 p.m. and 1:42 p.m. on September 12 and the nighttime measurement was taken between 12:42 a.m. and 1:12 a.m. on September 13. The Mirant Potrero power plant was audible during both the daytime and nighttime measurements, becoming more pronounced at night when other noise sources were reduced. Noise sources during the daytime included general industrial operation, background drilling or jackhammer use, highway and surface street vehicular traffic, and occasional aircraft overflights. The nighttime noise source was predominantly the Mirant Potrero power plant, with some distant vehicular traffic. The daytime one-hour L_{eq} was 63.8 dBA and the nighttime one-hour L_{eq} was 52.9 dBA.

Some land uses are considered sensitive to noise. Noise-sensitive receptors are land uses associated with indoor and outdoor activities that may be subject to stress or significant interference from noise. They often include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, educational facilities, churches, and libraries.

Sensitive receptors in the Project area consist of multi-family residences approximately 900 feet west at 2638 Third Street and multi-family residences approximately 1,400 feet west at 1423 Indiana Street. No residences have a direct line-of-sight to the Project due to intervening three- and four-story commercial buildings in between the residences and the Project site. In addition, both residences are within 500 feet of Interstate 280 (I-280) to the east. The following summarizes the measurements that were conducted at the two receptors nearest to the proposed Project site.

ST3 Thirty-minute measurements were conducted during the daytime, evening, and nighttime at the intersection of 25th Street and Minnesota Street. This location represents the noise environment at the multi-family residences on Minnesota Street. The residential units and measurement site are elevated approximately 30 feet above the Mirant Potrero power plant. Surrounding land uses were a mix of commercial and residential to the south and north and commercial to the east and west. The daytime measurement was taken between 1:54 p.m. and 2:24 p.m. on September 12, the evening measurement between 9:15 p.m. and 9:45 p.m. on September 12, and the nighttime measurement between 1:57 a.m. and 2:27 a.m. on September 13. The noise sources during the measurements were surface street vehicular traffic along 25th Street, with a high number of buses traveling this route during the evening and nighttime measurements, and vehicular traffic on I-280. The visible portion of the highway from the measurement location was approximately 30 feet above the measurement height and was approximately 400 feet east of the measurement site. The daytime one-hour L_{eq} was 66.6 dBA, the evening one-hour L_{eq} was 61.7 dBA, and the nighttime one-hour L_{eq} was 58.9 dBA. The calculated L_{dn} was 67.6 dBA.

ST4 Thirty-minute measurements were conducted during the daytime, evening, and nighttime in front of residential units at 2638 Third Street approximately 900 feet west of the proposed Project. These receptors are the closest to the proposed San Francisco HWC Converter Station. Surrounding land uses were a mix of commercial and residential. The daytime measurement was taken between 2:34 p.m. and 3:04 p.m. on September 12, the evening measurement between 8:37 p.m. and 9:07 p.m. on September 12, and the nighttime measurement between 2:34 a.m. and 3:04 a.m. on September 13. The dominant noise sources for all three measurements were vehicular traffic along Third Street and I-280. Similar to ST3, a high number of buses were noted for the evening and nighttime measurements. Other sources of noise included aircraft overflights and rustling leaves. The daytime one-hour L_{eq} was 68.1 dBA, the evening one-hour L_{eq} was 62.8 dBA, and the nighttime one-hour L_{eq} was 57.9 dBA. The calculated L_{dn} was 68.0 dBA.

The proposed route for the HVDC cable entry into San Francisco Bay parallels the southern fence line of the proposed San Francisco HWC Converter Station for approximately 1,070 feet from the bore pit. The proposed AC cable interconnection between the HWC site and the PG&E Potrero substation to the northwest would be located almost entirely on the Mirant Potrero Power Plant property. The existing noise environment and sensitive receptors for the proposed DC and AC cable routes would be the same as that identified for the proposed San Francisco HWC Converter Station.

The proposed construction laydown area (Western Pacific site) would be devoted to equipment and materials laydown, storage, parking of construction equipment, and office trailers. The site has no standing buildings or structures. The existing noise environment and sensitive receptors would be the same as those identified for the proposed HWC Converter Station (ST1 through ST4).

An alternative construction laydown area at Pier 94/96 is also under consideration. This site is paved and not occupied by any buildings. There are no sensitive noise receptors in proximity to this alternative laydown area.

4.11.1.3.2 Pittsburg Standard Oil Converter Station. A series of sound level measurements was conducted on September 13 through 14, 2005 to quantify the existing acoustical environment at the proposed Project location as well as at sensitive receptors near the proposed Project. The same methodology identified for the San Francisco sound level measurements was used. The results of the measurements are summarized in Table 4.11-3.

TABLE 4.11-3
SOUND LEVEL MEASUREMENTS OF EXISTING CONDITIONS IN PITTSBURG (dBA)

Measurement Identification	Location Description	Time	L_{eq}	L_{min}	L_{max}	L_{10}	L_{50}	L_{90}
ST5	West Property Line of Proposed Standard Oil Converter Station	14:51-15:21	53.8	47.2	76.5	53.1	50.6	49.2
		22:20-22:50	51.8	48.4	60.5	53.1	51.6	50.0
ST6	South Property Line of West Tenth Street Converter Station Alternative (N/S)	15:36-16:06	62.9	48.1	80.5	64.4	59.7	54.7
		00:10-00:40	63.8	43.5	79.5	67.3	53.6	47.6
ST7	SE Property Line Mirant Pittsburg Alternative	16:20-16:50	47.9	43.6	59.8	49.7	46.5	44.7
		22:56-23:26	50.6	45.9	61.4	51.9	48.7	47.1
ST8	Mirant Pittsburg Alternative Closest Receptor	10:35-11:05	44.8	39.1	62.3	46.5	42.3	40.5
		21:00-21:30	45.3	41.6	58.0	46.7	44.7	43.2
		23:30-24:00	46.9	40.2	61.7	47.4	43.6	42.1
ST9	West Tenth Street Alternative (N/S) Closest Receptor	09:55-10:25	67.6	45.8	83.7	79.0	62.4	54.5
		21:30-22:00	63.0	45.5	75.5	67.4	57.9	49.5
		00:10-00:40	66.1	42.8	82.3	69.2	59.0	46.5

The measurement locations are shown on Figure 4.11-2. The following summarizes the property line measurements.

ST5 Thirty-minute measurements were conducted during the daytime and nighttime at the west property line of the proposed Standard Oil Converter Station. The site is bounded by a steel plant and auto auction yard, a Dow Chemical plant to the north, and Delta Energy Center power plant to the east. The daytime measurement was taken between 2:51 p.m. and 3:21 p.m. on September 13 and the nighttime measurement was taken between 10:20 p.m. and 10:50 p.m. on September 13. The daytime measurement noise source was predominantly vehicular traffic from the Pittsburg-Antioch Highway and State Route 4 (SR 4). Other noise sources include aircraft overflights, railroads, excavators, birds vocalizing, leaves rustling, an unidentified industrial hum, backup beepers, and metal grinding. Nighttime noise sources consisted of industrial noise, leaves rustling, crickets, and vehicular traffic. The daytime one-hour L_{eq} was 53.8 dBA and the nighttime one-hour L_{eq} was 51.8 dBA.

Sensitive receptors in the Project area consist of single-family residences approximately 3,050 feet southwest on the south side of SR 4 and single-family residences approximately 3,200 feet south on the south side of SR 4. These residences do not have a direct line-of-sight to the Project due to intervening buildings, as well as SR 4 and the Pittsburg-Antioch Highway in between the residences and the Project site. Therefore, ambient noise measurements were not necessary at these residences.

The proposed DC/AC onshore cable routings from the Pittsburg Standard Oil Converter Station site begin at the proposed converter station, traverse northeast and stay south of the BNSF Railroad right-of-way (ROW) for approximately 0.55 mile, then turn north for approximately 0.5 mile along the Delta Diablo outflow access road, ending at a splice box 200 feet south of New York Slough on Dow Chemical property. The existing noise environment and sensitive receptors would be the same as those identified for the proposed Standard Oil Converter Station (ST5).

The proposed laydown area is located adjacent to and north of the proposed Pittsburg Standard Oil Converter Station site on vacant property. The laydown area would be devoted to equipment and materials laydown, storage, parking of construction equipment, and office trailers. The existing noise environment and sensitive receptors would be the same as those identified for the proposed Standard Oil Converter Station (ST5).

An alternative construction laydown area is also under consideration on the Delta Energy Center property to the east of the proposed Pittsburg Standard Oil Converter Station site. This alternate laydown area is located on vacant land adjacent to an existing power plant. There are no sensitive receptors in proximity to this site.

The proposed access road would be constructed between the proposed Pittsburg Standard Oil Converter Station site and the Pittsburg-Antioch Highway with a bridge crossing over Kirker Creek. The alternative access road would involve minor upgrading of the existing access road between the site and Loveridge Road. The existing noise environment and sensitive receptors for the proposed and alternative access roads would be the same as that identified for the proposed Pittsburg Standard Oil Converter Station site.

4.11.1.3.3 Offshore DC Cable Route. The proposed offshore DC cable route would run from San Francisco to Pittsburg with a length of approximately 56 miles. The cable route, beginning in San Francisco, traverses San Francisco Bay, San Pablo Bay, the Carquinez Strait, Suisun Bay, and New York Slough. The existing noise environment consists of vessel traffic on the Bay, as well as other industrial noise sources along the route. Sensitive receptors located along the cable route consist of scattered residences located near the shoreline.

4.11.2 Regulatory Setting

4.11.2.1 Federal

There are no federal laws, ordinances, or regulations that directly affect this Project with respect to noise. However, there are guidelines at the federal level that direct the consideration of a broad range of noise and vibration issues as listed below:

- National Environmental Policy Act (42 USC 4321, et. seq.) (PL-91-190) (40 CFR §1506.5)
- Noise Control Act of 1972 (42 USC 4910)

4.11.2.1.1 HUD. HUD Noise Regulations, 24 CFR Part 51, Subpart B, Noise Assessment Guidelines identify sound levels that are compatible with residential land use. Sound not exceeding 65 dBA L_{dn} is considered acceptable. Sound levels between 65 dBA L_{dn} and 75 dBA L_{dn} are normally unacceptable unless noise reduction measures are included to limit noise levels within residences (45 dBA L_{dn} or below). Sound levels exceeding 75 dBA L_{dn} are unacceptable.

4.11.2.1.2 EPA. The EPA has not promulgated standards or regulations for environmental noise generated by electrical substations/converter stations or transmission lines. However, USEPA has published a guideline that specifically addresses issues of community noise. This guideline, commonly referred to as the "EPA Levels Document" (Report No. 556/9-74-664), contains goals for noise levels affecting residential land use of $L_{dn} \leq 55$ dBA for outdoors and Ldn ≤ 45 dBA for indoors. The agency is careful to stress that the recommendations contain a factor of safety and do not consider technical or economic feasibility issues and, therefore, should not be construed as standards or regulations.

4.11.2.1.3 FTA. The Federal Transit Administration (FTA) has not promulgated standards or regulations for environmental noise by construction. However, they have published a guideline that specifically addresses issues of community noise. This guideline recommends that hourly sound levels of 90 dBA at residential uses from construction noise, including pile driving, would be considered a significant impact (FTA, 1995).

The FTA has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects (FTA, 1995). The FTA measure of the threshold of architectural damage for conventional sensitive structures is 0.2 in/sec PPV. The threshold of perception of vibration is 0.01 in/sec PPV.

4.11.2.2 State

- The following potentially relevant state noise regulations have been identified. California State Building Code (CCR Title 24) requires that indoor noise levels in habitable spaces of multi-family dwellings be less than 45 dBA L_{dn} when exposed to exterior noise sources
- California Department of Industrial Relations, Cal/OSHA (8 CCR, General Industrial Safety Orders, Article 105, Control of Noise Exposure, §5095) requires that all facility noise levels be limited to 85 dBA at 3 feet from equipment sources to protect worker safety. If workers frequent areas of the facility that exceed 85 dBA then all aspects of a hearing conservation program must be implemented by the employer
- California statutes (CCR 65302(f)) require local jurisdictions to prepare General Plans that include Land Use and Noise Elements
- State CEQA Guidelines (CCR §§15000-15387) and Appendix G (Environmental Checklist)

4.11.2.3 Local

4.11.2.3.1 San Francisco General Plan Noise Element. The City of San Francisco Noise Element of the General Plan establishes standards for land use compatibility with traffic noise levels. The maximum acceptable exterior noise level is 60 dBA L_{dn} for all residential and transient lodging uses; 65 dBA L_{dn} for school classrooms, libraries, churches, hospitals, and nursing homes; 70 dBA L_{dn} for playgrounds and parks, office buildings, commercial buildings; and 75 dBA L_{dn} for other uses. These standards are based upon accepted thresholds of significance and apply to traffic noise.

4.11.2.3.2 San Francisco Noise Ordinance. The City of San Francisco noise ordinance (San Francisco Police Code, Article 29, §2909) has established maximum noise levels for fixed sources at the boundary of various land use zones as shown in Table 4.11-4. The proposed San Francisco HWC Converter Station and adjacent properties are zoned M-2 (Heavy Industrial).

The noise ordinance limits interior noise levels inside residential units to 45 dBA between 10:00 p.m. and 7:00 a.m. or 55 dBA between the hours of 7:00 a.m. and 10:00 p.m.

TABLE 4.11-4
CITY OF SAN FRANCISCO SOUND LEVEL LIMITS FROM FIXED SOURCES[1]

Zoning District	Time Period	Hourly Sound Level (dBA L_{eq})
R-1-D, R-1, R-2	10:00 p.m. – 7:00 a.m.	50
	7:00 a.m. – 10:00 p.m.	55
R-4-C, R-5-C	10:00 p.m. – 7:00 a.m.	55
	7:00 a.m. – 10:00 p.m.	60
C-1, C-2, C-3-O, C-3-R, C-3-G	10:00 p.m. – 7:00 a.m.	60
	7:00 a.m. – 10:00 p.m.	70
M-1	Anytime	70
M-2	Anytime	75

1 Note: If the measurement location is on a boundary between two zoning districts, the lower sound level shall apply.

The noise ordinance requires that standby equipment operated only in emergency situations shall not emit noise at a level in excess of 75 dBA when measured at the property line.

The noise ordinance also establishes limits related to construction noise (Article 29, §2907). The ordinance states:

(b) It shall be unlawful to operate any powered construction equipment, regardless of age or date of acquisition, if the operation of such equipment emits noise at a level in excess of 80 dBA when measured at a distance of 100 feet from such equipment, or any equivalent sound level at some other convenient distance.

(c) The provisions of Subsection (b) shall not be applicable to impact tools and equipment provided that such impact tools and equipment shall have intake and exhaust mufflers by the manufacturers thereof and approved by the Director of Public Works as best accomplishing maximum noise attenuation, and that pavement breakers and jackhammers shall also be equipped with acoustically attenuation shields or shrouds recommended by the manufacturers thereof and approved by the Director of Public Works as best accomplishing maximum noise attenuation as he deems to be in the public interest.

The noise ordinance establishes restrictions on construction noise (Article 20, §2908). The ordinance states:

> It shall be unlawful for any person, between the hours of 8:00 p.m. of any day and 7:00 a.m. of the following day to erect, construct, demolish, excavate for, alter or repair any building or structure if the noise level created thereby is in excess of the ambient noise level by 5 dBA at the nearest property line, unless a special permit therefore has been applied for and granted by the Director of Public Works.

4.11.2.3.3 <u>Pittsburg General Plan Noise Element</u>. The City of Pittsburg Noise Element of the General Plan establishes standards for land use compatibility with various noise levels, as shown in Table 4.11-5. The maximum acceptable exterior noise level is 60 dBA L_{dn} for single-family residential uses; 65 dBA L_{dn} for multiple-family residential uses and hotels and motels; 70 dBA L_{dn} for schools, libraries, churches, hospitals, parks, playgrounds, and office buildings; and 75 dBA L_{dn} for other uses. These standards are based upon accepted thresholds of significance and apply to noise (typically long term) from any source.

The Noise Element requires that interior noise levels in noise-sensitive uses (schools, hospitals, churches, or residences) do not exceed 45 dBA L_{dn}.

The Noise Element requires that noise on construction sites adjacent to noise-sensitive uses is limited to normal business hours between 8:00 a.m. and 5:00 p.m. but does not establish sound level limits.

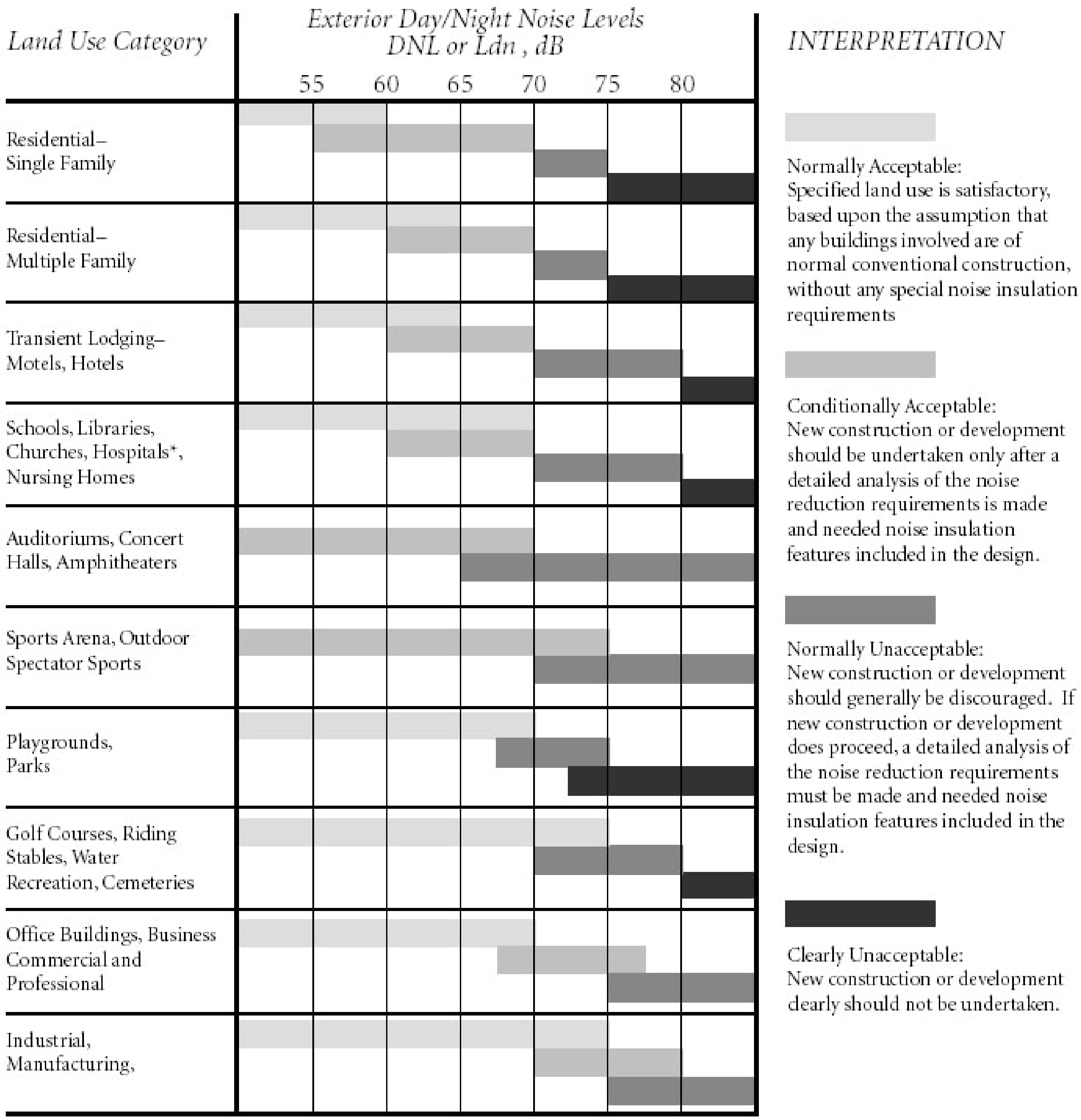
4.11.2.3.4 <u>Pittsburg Noise Ordinance</u>. The City of Pittsburg noise ordinance does not establish noise level limits related to fixed noise sources or construction noise (Title 9 Public Peace, Safety and Morals, Chapter 9.44 Noise, §9.44.010).

The noise ordinance prohibits the use of a pile driver, steam shovel, pneumatic hammer, derrick, steam or electric hoist, or other appliance between the hours of 10:00 p.m. and 7:00 a.m.

4.11.2.3.5 <u>Contra Costa County General Plan Noise Element</u>. The County of Contra Costa Noise Element of the General Plan establishes standards for land use compatibility with various noise levels, as shown in Table 4.11-6. The limits are the same as those identified for the City of Pittsburg Noise Element.

The Noise Element requires that interior noise levels in noise-sensitive uses do not exceed 45 dBA L_{dn}.

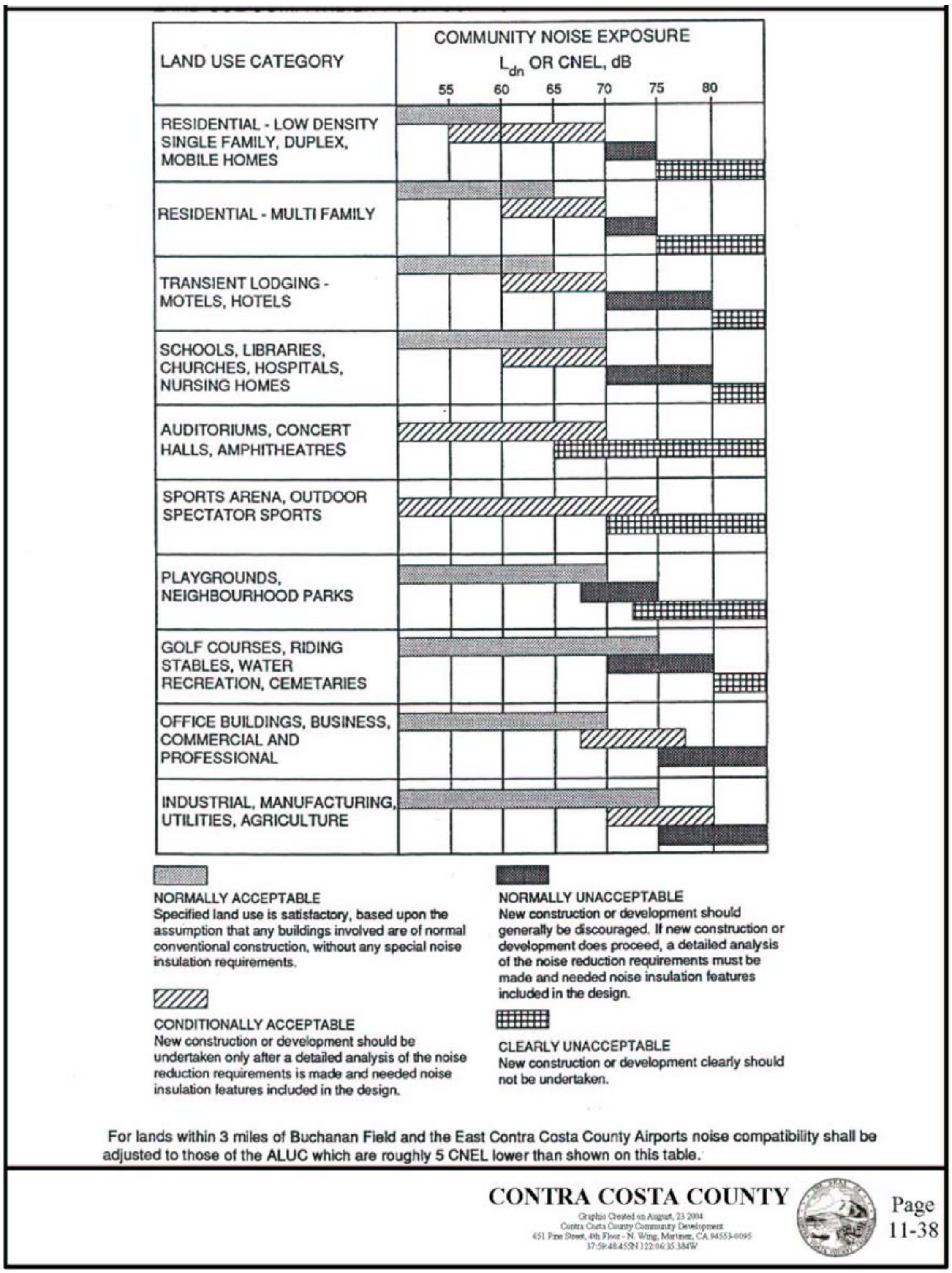
TABLE 4.11-5
CITY OF PITTSBURG LAND USE COMPATIBILITY



Source: Office of Planning and Research, State of California General Plan Guidelines, Appendix A: Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1998.

*Because hospitals are often designed and constructed with high noise insulation properties, it is possible for them to be satisfactorily located in noisier areas.

TABLE 4.11-6
COUNTY OF CONTRA COSTA LAND USE COMPATIBILITY



The Noise Element requires that:

> "*Construction activities should be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods*."

4.11.2.3.6 <u>Contra Costa County Noise Ordinance</u>. The County of Contra Costa does not have a noise ordinance.

4.11.3 Environmental Impacts

The proposed Project would result in noise from construction of the Project components as well as operation of the converter stations. The following sections assess potential noise impacts from construction and operation of the proposed Project, as well as alternatives, at the property lines and offsite sensitive receptors.

4.11.3.1 <u>Thresholds of Significance</u>

Thresholds used to evaluate potential noise and/or vibration impacts are based on applicable criteria in the State CEQA Guidelines (CCR §§15000-15387), Appendix G; and the applicable noise ordinances and elements. Noise from construction of the Project would be considered significant if:

- Noise from construction equipment would exceed 80 dBA at a distance of 100 feet, occurred between 8:00 p.m. and 7:00 a.m., or increased ambient conditions by 5 dBA at the property lines in San Francisco
- Construction occurred between 5:00 p.m. and 8:00 a.m. in Pittsburg
- Vibration from construction would exceed 0.2 inches/second peak particle velocity (PPV) at residential structures
- Noise from construction traffic exceeded 60 dBA L_{dn} at residential receptors
- Noise from construction exceeds 90 dBA Leq (hourly) at residential uses

Noise from operation of the Project would be considered significant if:

- Noise levels exceeded an hourly average of 75 dBA at any time at the property lines in San Francisco
- Maximum exterior noise levels at single-family residences exceeded 60 dBA L_{dn}, 65 dBA L_{dn} at multi-family residences, or 75 dBA L_{dn} for industrial uses in Pittsburg or Contra Costa County

4.11.3.2 San Francisco HWC Converter Station

4.11.3.2.1 Construction-related Impacts. The Project is scheduled to take approximately 27 to 30 months to construct, including demolition activities and site preparation. The construction phase is scheduled to take approximately 20 months, including approximately 4 to 5 months to install the cable systems in the floor of San Francisco Bay and onshore, followed by 5 to 6 months of startup and commissioning activities. The construction phase would be preceded by approximately 3 to 6 months of demolition of existing structures, site preparation, and remediation (as applicable). The maximum time period where construction noise impacts could be expected to occur is anticipated to be less than 30 months.

The Pittsburg and San Francisco converter stations would be constructed concurrently. Construction activities would include building the converter stations, installation and connection of the HVAC and HVDC transmission lines, switchyard, and substations. Sequential construction activities would include demolition of existing facilities, grading and site preparation, foundation construction, erection of major equipment and structures, installation of electrical systems and control systems, and startup/testing. Construction at the converter station sites would include earthwork, pile driving, building structures, trenching and pipe laying, paving, and landscaping. Construction-related activities involving generation of noise would also occur at the proposed construction laydown area, along the onshore cable routes, and local roadways due to truck traffic. Work at the sites would be restricted in accordance with the requirements of the local noise ordinances unless an exception is granted.

The demolition and remediation phases would be performed in months 1 through 6 after the notice to proceed. Equipment that would be associated with these phases is listed in Table A.4-3 in Appendix A.

The excavation, grading, and construction phase would be performed from month 6 to month 27 after the notice to proceed. The anticipated number of and type of construction equipment that would be needed is presented in Table A.4-3 in Appendix A.

Construction activities at the proposed San Francisco HWC Converter Station site, laydown area, and onshore cable route would result in temporary increases in the ambient noise levels. Noise would result from the operation of construction equipment and truck traffic. The increase in noise levels would be primarily experienced close to the noise source. The magnitude of the impact would depend on the type of construction activity, noise level generated by various pieces of construction equipment, duration of the construction phase, and distance between the noise source and receiver. Figure 4.11-3 shows maximum noise levels generated by typical construction equipment. Sound levels of typical construction equipment range from approximately 65 dBA to 95 dBA at 50 feet from the source (EPA, 1971), with an average sound level of 89 dBA at 50 feet. This analysis uses 89 dBA at 50 feet as the reference noise level for conventional construction noise.

Acoustical calculations were performed to estimate noise from construction activities at the closest residences. Noise from construction activities was assumed to have point source acoustical characteristics. Strictly speaking, a point source sound decays at a rate of 6 dB per doubling of distance from the source. This is a logarithmic relationship describing the acoustical spreading of a pure, undisturbed spherical wave in air. The rule applies to the propagation of sound waves with no ground interaction. The calculations are based on the formula below (Harris, 1998):

$$SPL_2 = SPL_1 - 20\log\left(\frac{d_2}{d_1}\right)$$ where:

SPL_1 = known sound level,

SPL_2 = desired sound level,

d_1 = known distance, and

d_2 = desired distance.

The residential uses closest to the proposed San Francisco HWC Converter Station site consist of multi-family residences approximately 900 feet northwest and 1,400 feet to the west. The loudest conventional construction activities will produce an average sound level at the closest residences of 64 and 59 dBA, respectively, as summarized in Table 4.11-7. Because of the intermittent nature of construction work and the intervening buildings, it is likely that noise from construction of the proposed HWC Converter Station would be inaudible to slightly audible at the residences, much less increase the existing noise levels by 5 dBA; therefore, there would be no potentially significant impacts. During this time period, construction activity would be required to comply with the City's noise ordinance criteria (80 dBA at 100 feet) and would not result in a potentially significant impact.

***Pile Driving*.** Portions of the project would require driven piles. Noise from pile driving activity is different in character from typical conventional "construction phase" noise and thus this potential noise impact is analyzed separately. Maximum noise levels at 50 feet from a pile driver range from 89 to 114 dBA L_{max}, depending on many factors (e.g., driver power, driver type, pile size, soil characteristics, etc.). The typical L_{eq} produced during pile driving ranges from 101 to 105 dBA at 50 feet. The higher typical noise level values of 100 dBA L_{eq} and 105 dBA L_{max} at 50 feet from the pile driver noise source were selected for calculation purposes. Calculations were performed to estimate sound levels from pile driving at the

**TABLE 4.11-7
CALCULATED SOUND LEVELS FROM CONSTRUCTION
AT PROPOSED CONVERTER STATIONS (dBA)**

Converter Station Site	Receptor Description	Distance to Receptors (Ft)	Calculated Sound Level From Construction (dBA)	Calculated Sound Level from Pile Driving Noise (dBA)	
				Lmax	Leq
San Francisco HWC	Multi-family residences (2638 3rd Street)	890	64	76	71
	Multi-family residences (1423 Indiana Street)	1,400	59	80	75
Pittsburg Standard Oil	Single-family residences (2200 Lakeview Court)	3,050	50	66	61

receptors. Worst-case direct line-of-sight sound levels at the residences were calculated to be 76 to 80 dBA L_{max} (71 to 75 dBA L_{eq}) at the closest receptors. Due to the intervening buildings, received sound levels at the receptors would be substantially less than predicted; although it is likely that noise from the pile driving would still be audible at the receptors. The use of impact tools, such as pile drivers, is not subject to sound level restrictions in San Francisco, but such tools are required to be equipped with acoustical attenuation shields or shrouds recommended by the manufacturer and approved by the San Francisco Director of Public Works. In addition, pile driving is limited to the hours of 7:00 a.m. to 8:00 p.m. Pile driving would be required to comply with these requirements and would result in a less-than-significant impact.

Calculations were performed to estimate vibration from pile driving activities at the closest residences, as detailed in Section 4.11.1.2. Vibration from pile driving was assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at residences 900 feet from the pile driving would be 0.003 in/sec, which is well below the FTA threshold of 0.20 in/sec; resulting in a less-than-significant impact.

***Construction Traffic*.** The Project assumes that project-related container shipments from overseas would arrive at the Port of Oakland and would be shipped by truck to the converter station site or laydown area in San Francisco. Trucks would travel from the Port north on I-880, west across the Bay Bridge on I-80, and south along U.S. 101 to the Cesar Chavez Street exit. Trucks would continue on local streets, traveling eastbound on Cesar Chavez Street and turning left onto Illinois Street to reach the proposed converter station site (Figure

4.10-4A). To access the proposed construction laydown area (Western Pacific site), trucks would turn left from Cesar Chavez onto Illinois Street and then right onto 25th Street. To access the alternate laydown area (Pier 94/96), trucks would turn right onto Illinois Street, cross the new Islais Creek bridge, and turn left onto Cargo Way. At a later time, the equipment or material would be reloaded on trucks to travel the short distance between the laydown area and the converter station site, using the same streets to reach Illinois Street and the converter station site. Local truck shipments for the project (not originating at the Port of Oakland) would follow the same routing in the study area. For hauling demolition debris, the most probable truck route to landfills would be over Cesar Chavez Street to nearby I-280 via Pennsylvania Street and then south along I-280 and U.S. 101.

The total number of truck round trips to the San Francisco HWC Converter Station site would approximate 3,579, including demolition hauling, remediation and site preparation, and materials deliveries. In addition, local suppliers' shipments would be dispersed over an estimated 27- to 30-month period during the Project's construction phase. This number includes truck trips for hauling demolition debris and equipment from the HWC site. The number of truck round trips to the San Francisco HWC Converter Station site would be expected to peak between the 10th and 12th months of construction, with a maximum of 22 deliveries per day (based on an average of 22 work days per month) and decline thereafter.

Between the 12th and 19th months of the construction period, an estimated maximum of 45 daily employee auto round trips is expected at the construction site, for a possible maximum of 67 truck and commute round trips during the workday.

Average daily traffic volumes are approximately 5,000, 8,000 and 11,000 on Illinois Street, Cargo Way and Cesar Chavez Street, respectively. Because the maximum number of 67 daily round trips to and from the Project site would contribute less than 1 percent to the existing daily traffic volume, there would be no change (less than 0.0005 dBA) to existing noise levels on these roadways or at sensitive receptors. As a result, there would be a less-than-significant noise or vibration impact to local roads in the study area.

4.11.3.2.2 <u>Operations-related Impacts</u>. Noise would be produced during the operation of the proposed converter stations. The primary noise sources at the proposed converter stations include transformers, filters, heating and air conditioning units, circuit breakers, and an emergency generator. A list of noise-producing equipment and noise parameters is included in Table 4.11-8.

The Cadna A Noise Prediction Model was used to estimate the sound level that would be generated by the proposed Project at the property lines and noise-sensitive receptors. The Cadna A model predicts and assesses noise levels near industrial noise sources. The model uses industry-accepted propagation algorithms and accepts sound power levels (in decibels

TABLE 4.11-8
SUMMARY OF NOISE SOURCES FROM CONVERTER STATIONS[1]

Equipment	No. of Units	Source Sound Level per Unit (dBA)	Center Height (ft)	Type of Source	Comments
Converter Transformer	3	L_W = 106	9 ft 10 in	Vertical Area Source	Installed adjacent to Valve Hall
Converter valves	1	L_W = 115	3 ft 3 in	Vertical Area Source	Installed in DC Hall
Smoothing Reactor	1	L_W = 99		Area Source	Installed in DC Hall
AC-Filter TT, C	4	L_W = 93	16 ft 4 in	Line Source	
AC-Filter TT, L	4	L_W = 99	6 ft 6 in	Area Source	
AC-Shunt Reactor	1	L_W = 95	9ft 10 in	Area Source	
Auxiliary Transformers	2	L_W = 75	5 ft 6 in	Point Source	
Valve Hall Heating and Air Conditioning	1	SPL = 85 @ 3 ft 3 in	3 ft 3 in	Area Source	
DC Hall Heating and Air Conditioning	1	SPL = 85 @ 3 ft 3 in	3 ft 3 in	Area Source	
Control Building Chiller	1	L_W = 85	3 ft 3 in	Area Source	
Valve Cooling	1	L_W = 100	6 ft 6 in	Area Source	
Circuit Breaker (AIS Filter)[2]	5	L_W = 126	22 ft 11 in	Point Source	
Circuit Breaker (AIS Converter)[2]	1	L_W = 126	22 ft 11 in	Point Source	
PLC Filter Reactor	3	L_W = 95	22 ft 11 in	Point Source	
Emergency Generator	1	SPL = 85 @ 3 ft 3 in	8 ft 6 in	Vertical Area Source	

1 Source: Siemens, 2005.
LW = sound power level (referenced to 1 pico Watt); SPL = sound pressure level (referenced to 20 цPa).

2 These pieces of equipment are expected to cause this noise only momentarily each day.

re 1 pico Watt) provided by the equipment manufacturer and other sources based on International Organization for Standardization (ISO) standards. The calculations account for classical sound wave divergence, plus attenuation factors resulting from air absorption, basic ground effects, and barrier/shielding. Air absorption was input to the model assuming "standard day" conditions of 59° Fahrenheit and 70 percent relative humidity.

The San Francisco HWC site and surrounding areas were assumed to be flat, therefore, no intervening topographical barrier effects were considered. However, major buildings, tanks, and large equipment were included as barriers.

Calculations were performed using linear octave band sound power levels as inputs from each noise source. The model outputs are in terms of octave band and overall A-weighted sound pressure levels. The modeled noise sources and source sound levels are summarized in Table 4.11-9. Results of the calculations and all source sound levels were provided by Siemens (see Appendix H). The Project site configuration was imported into Cadna A from the Project CAD files. The converter station was assumed to operate 24 hours per day, so the noise output would be constant regardless of time of day. Noise sources that would operate intermittently depending on need, such as the heating and air conditioning units, generator, or circuit breakers were assumed to operate continuously; therefore, the analysis is considered a worst-case.

**TABLE 4.11-9
CALCULATED SOUND LEVELS FROM OPERATION
OF PROPOSED CONVERTER STATIONS (dBA)[1]**

Converter Station Site	Receptor Description	Calculated Sound Level (dBA)	Calculated Sound Level (dBA) With Mitigation
San Francisco Proposed HWC Converter Station (L-configuration)	North Property Line	73 $L_{eq(1\ hr)}$	Not Applicable
	South Property Line	69 $L_{eq(1\ hr)}$	Not Applicable
	East Property Line	62 $L_{eq(1\ hr)}$	Not Applicable
	West Property Line	64 $L_{eq(1\ hr)}$	Not Applicable
Pittsburg Proposed Standard Oil Converter Station	North Property Line	79 Ldn	71 Ldn
	South Property Line	78 Ldn	74 Ldn
	East Property Line	79 Ldn	73 Ldn
	West Property Line	77 Ldn	74 Ldn
	Receptors	46 Ldn	42 Ldn

1 Not including consideration of pile driving.

As summarized in Table 4.11-9, hourly average sound levels from the proposed San Francisco HWC Converter Station would range from 62 to 73 dBA L_{eq} at the property lines. Therefore, Project generated sound levels would be below the City/County San Francisco noise impact threshold of 75 dBA L_{eq} at the property lines and would not result in a significant impact.

Construction of the onshore AC and DC cable routes would result in sound levels similar to those identified for construction of the proposed converter station. Because of the intermittent nature of construction work and the intervening buildings, it is unlikely that noise from construction of the onshore AC and DC cable routes would be audible at the residences, much less increase the existing noise levels by 5 dBA; therefore, there would be no significant impact. During this time period, construction activity would be required to comply with the City's noise ordinance criteria (80 dBA at 100 feet) and would not result in a significant impact.

No noise would be associated with operation of the proposed buried onshore cable routes.

4.11.3.3 Pittsburg Standard Oil Converter Station

4.11.3.3.1 Construction-related Impacts. Scheduled construction hours at the Standard Oil site are generally consistent with those given for the San Francisco HWC Converter Station site. Criteria are not set forth by the Pittsburg Noise Element or Noise Ordinance related to construction noise levels and times of operation. The anticipated noise sources would be identical to those outlined for the HWC site, with the exception of the following:

- Demolition of abandoned wastewater storage tanks and a small dilapidated building (duration: 3-4 months)
- Portable Generator used at Pittsburg initially for power demands

Acoustical calculations were performed to estimate noise from construction activities at the closest residences with the same methodology as described for the San Francisco HWC Converter Station site. The offsite residential uses closest to the proposed Pittsburg Standard Oil Converter Station consist of single-family residences approximately 3,050 feet to the south. Average sound levels at the residences closest to the proposed converter station site would be 50 dBA, as summarized in Table 4.11-7. Because of the intermittent nature of construction work and intervening structures and roads/highways, typical construction noise would not be expected to be audible at the receptors and would not result in a potentially significant impact.

Pile Driving. Calculations were performed to estimate sound levels from pile driving at the receptors. Direct line-of-sight sound levels at the residences were calculated to be 66 dBA L_{max} (61 dBA L_{eq}) at the closest receptors. Due to the intervening buildings, topography, and noise sources (highways), received sound levels at the receptors would be substantially less than predicted, although it is likely that noise from the pile driving would still be audible at the receptors. Pile driving is not subject to sound level restrictions in Pittsburg, but is limited to the hours of 7:00 a.m. to 10:00 p.m. Pile driving would be required to comply with these requirements. The calculated pile driving noise levels at the closest sensitive receptors to the

Pittsburg Standard Oil site are well below the FTA threshold of 90 dBA and would result in a less-than-significant impact.

Calculations were performed to estimate vibration from pile driving activities at the residences closest to the proposed Standard Oil site, as detailed in Section 4.11.1.2. Vibration from pile driving was assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at residences 3,050 feet from the pile driving would be 0.0005 in/sec, which is well below the FTA threshold of 0.20 in/sec; resulting in a less-than-significant impact.

The proposed new access road to the proposed Pittsburg Standard Oil Converter Station site would run south from the converter station site to the Pittsburg-Antioch Highway. The new road would be approximately 30 feet wide with an asphalt concrete surface. The new road would require construction of a new bridge over Kirker Creek just north of the Pittsburg-Antioch Highway (refer to Figures A.4-1 and A.4-2). Average construction-related noise levels at the closest residences to the proposed bridge construction over Kirker Creek would be 54 dBA. Pile driving would be required for construction of the bridge over an estimated period of 5 days. The closest receptors to this site are approximately 2,300 feet to the south, on the other side of SR 4. Direct-line-of-sight sound levels at the receptors were calculated to be 70 dBA L_{max} (65 dBA L_{eq}). Due to the intervening buildings, topography, and noise sources (highways), received sound levels at the receptors would be substantially less than predicted, although it is likely that noise from the pile driving would still be audible at the receptors. Pile driving is not subject to sound level restrictions in Pittsburg, but is limited to the hours of 7:00 a.m. to 10:00 p.m. Pile driving would be required to comply with these requirements. The calculated noise levels associated with pile driving are well below the FTA threshold of 90 dBA and would result in a less-than-significant impact.

Calculations were performed to estimate vibration from pile driving activities at the residences closest to the proposed Kirker Creek bridge location, as detailed in Section 4.11.1.2. Vibration from pile driving was assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at residences 2,300 feet from the pile driving would be 0.0007 in/sec, which is well below the FTA threshold of 0.20 in/sec; resulting in a less-than-significant impact.

Construction Traffic**.** From the Port of Oakland, truck shipments would travel from I-880 northbound to I-80 (Eastshore Freeway), diverting eastward onto SR 4 in Hercules (Figure 4.10-1). Trucks would exit SR 4 in Pittsburg, traveling north on Loveridge Road (City of Pittsburg Ordinance 05-1238, Section 3, 2005, identifies specific arterials as truck routes). The Pittsburg Standard Oil Converter Station site would have access from the Pittsburg-

Antioch Highway east of Loveridge Road. A new two-lane road would be constructed off the Pittsburg-Antioch Highway north across Kirker Creek into the project site. However, heavy loads such as the 196-ton transformers would access the site via the alternative access road off Loveridge Road since they would exceed the capacity of the proposed bridge over Kirker Creek associated with the proposed access road. Alternatively, trucks could continue north on Loveridge Road across the Pittsburg-Antioch Highway to a narrow unpaved road that parallels the south side of the BNSF railroad tracks and enters the Project site from the north. This is the existing access to the Project site.

Local shipments that do not originate from the Port of Oakland would most likely use SR 4 and the local street network to access the site as described above.

The number of daily truck deliveries to the Standard Oil Converter Station site would vary according to the phase of the construction work. The total number of truck round trips to the site would be approximately 2,522, including demolition hauling, remediation and site preparation, and materials deliveries. In addition, local suppliers' shipments would be dispersed over a 27-month period during the project's construction phase. The number of deliveries would increase over the first year of construction, peaking in the 11th and 12th months, and then would decline over the remaining months of construction. An estimated total of 364 truck round trips, or a maximum of 17 deliveries per day, would occur in the 11th month of construction.

Between the 12th and 19th months of the construction period, an estimated maximum of 45 daily employee auto round trips is expected at the construction site, for a maximum total of 63 truck and commute round trips during the workday. Existing average daily traffic volumes on the Pittsburg-Antioch Highway is 9,500 vehicles, 17,000 vehicles on Loveridge Road, 30,000 vehicles on Railroad Avenue, and 12,500 vehicles on West Tenth Street. Because the maximum number of 63 daily round trips to and from the Project site would contribute less than 1 percent to the existing daily traffic volume on these roadways, there would be no change (less than 0.0005 dBA) to existing noise. As a result, there would be a less-than-significant noise or vibration impact to local roads in the study area.

4.11.3.3.2 <u>Operations-related Impacts</u>. Calculations were performed using linear octave band sound power levels as inputs from each noise source with the same equipment as the proposed San Francisco HWC Converter Station. Siemens conducted the noise analysis, the results of which are summarized here and provided in Appendix H.

There are no sensitive receptors near the onshore cable routes and no standards related to noise levels associated with operations; therefore, there would be no significant impact. In addition, there are no sensitive receptors near the proposed (or alternative) access road; therefore, there would be no potentially significant impacts during the operational phase.

As summarized in Table 4.11-9, unmitigated sound levels from the proposed Standard Oil Converter Station would range from 77 to 79 dBA L_{dn} at the property lines and would be 46 L_{dn} at the closest sensitive receptor. Sound levels would not exceed the 60 dBA L_{dn} standard at the closest sensitive receptors. Therefore, sound levels would exceed the Pittsburg 75 dBA L_{dn} requirement at the property lines and would result in a potentially significant impact.

Impact NOISE-1: Converter Station Operations Sound Levels. Sound levels from the operation of the Standard Oil Converter Station would range from 77 to 79 dBA L_{dn} at the property lines, which exceeds the Pittsburg 75 dBA L_{dn} requirement. This is considered a potentially significant impact.

Mitigation Measure NOISE-1: Noise Barrier Installation for Converter Station. An acoustical barrier approximately 10 feet high would be erected around a portion of the converter station and an acoustical barrier approximately 13 feet high would be erected around a portion of the emergency generator. If final design determined that an acoustical barrier were unnecessary, it shall not be required.

Implementation Responsibility:	Project proponent
Requirements and Timing:	Submit plans and obtain approval from City of Pittsburg Planning Department during Design Review; complete barrier installation prior to facility startup Project proponent shall perform post-startup noise monitoring at property line to confirm compliance with 75 dBA L_{dn} requirement
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance.

Resulting Level of Significance. With installation of barriers outlined in Mitigation Measure NOISE-1, sound levels would range from 71 to 74 dBA L_{dn} at the property lines and 42 dBA L_{dn} at sensitive receptors. Therefore, sound levels would be reduced to below the 75 dBA L_{dn} standard at the property lines and 60 dBA L_{dn} at the receptors. Mitigation Measure NOISE-1 would reduce Impact NOISE-1 to a less-than-significant level.

4.11.3.4 Offshore DC Cable Route

4.11.3.4.1 Construction-related Impacts. Submarine installation of the proposed offshore DC cable system would result in airborne and underwater noise. The primary noise sources associated with construction along the proposed cable route would consist primarily of underwater and airborne noise from vessel traffic including the cable laying ships (Giulio Verne and barges, as applicable), tugboats, supply barges, and support vessels.

Airborne noise would result from the use of various construction equipment and limited dredging activities in New York Slough in Pittsburg. The average of 89 dBA at 50 feet from typical construction equipment was used in this analysis. Acoustical calculations were performed to estimate noise from construction activities at the closest residences with the same methodology as described for the San Francisco HWC Converter Station site. The closest sensitive receptors are approximately 200 feet from the proposed construction activities. Average sound levels at the residences closest to the proposed cable laying would be expected to be less than 77 dBA. Because of the intermittent nature of the cable laying activities, intervening structures, and existing noise sources in the Bay, construction noise would not be expected to be audible at the receptors and would not result in a significant impact.

Potential impacts from underwater noise would be limited to those affecting marine life. With regard to noise, the National Marine Fisheries Service (NMFS) currently considers, as a guideline, received underwater peak sound pressure levels at or above 160 decibels referenced to 1 micropascal (160 dB re 1 μPa) as constituting harassment of marine mammals. NMFS has suggested that sound pressure levels above 180 dB re 1 μPa could cause temporary hearing impairment in marine mammals.

The marine mammals known to frequent the area include California sea lions (*Zalophus californianus*) and harbor seals (*Phoca vitulina richardii*). Sea lions in the water tolerate close and frequent vessel approaches and sometimes congregate around fishing vessels. Hauled out on land, sea lions are more responsive, but rarely react unless a boat approaches within 100 to 200 meters (Bowles and Stewart, 1980). Small boats that approach within 100 meters often displace harbor seals from haul-out sites and less severe disturbances can cause alert reactions without displacement (Bowles and Stewart, 1980; Allen et al., 1984). In general, evidence about reactions of seals to vessels is limited, but data suggest that seals often show substantial tolerance of vessels (Richardson et al., 1995).

Calculations were performed to determine the distance from cable laying construction activities in which a marine mammal would encounter underwater sound levels of 160 dB. Typical broadband received underwater source sound levels for vessels range from 145 to 190 dB re 1 μPa (Richardson et al., 1995). As discussed in Section 4.11.1.1, the distinction between in-air and in-water reference levels is important since sound intensity in water would appear extremely high compared to values in air. In other words, 120 dB in the air is not the same as 120 dB in the water. There is a difference of 26 dB when converting air to water sound pressure levels. For example, if a jet engine has a sound pressure level of 140 dB in air, the equivalent underwater sound pressure level would be 166 dB; or a supertanker that emits 164 dB in air would sound more like 190 dB in water. Noise from the activity was assumed to have cylindrical spreading characteristics. Cylindrical spreading occurs when the medium is non-homogeneous and the sound is reflected from the surface and bottom, such as shallow water within the Bay. With cylindrical spreading, sound levels diminish by 3 dB when distance doubles. The distance to the 160 dB contour was estimated to be approximately 800 feet from the location of cable laying. Marine mammals may experience sound levels that could be considered harassment if they came within 800 feet of the proposed construction area. However, the seals and sea lions will typically avoid coming into this zone of potential harassment due to the physical disturbance of the activities (i.e., presence of vessels) and would likely not be exposed to noise levels that would have a significant impact on their behavior. In addition, as discussed above, seals and sea lions inhabiting the area near the cable-laying activities are tolerant to vessel traffic and have become habituated to the existing high amounts of vessel traffic. . Furthermore, the area already has high amounts of vessel traffic; therefore, the increase to the existing noise environment would be minimal. Therefore, there would be no adverse impact from the short-term underwater activities on marine mammals.

4.11.3.4.2 Operations-related Impacts. No potential operations-related noise impacts have been identified for the proposed offshore cable portion of the Project.

4.11.4 References

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4.12 PUBLIC SERVICES AND UTILITIES

This section describes public services and utilities in the areas associated with the proposed Project. Public services relevant to the evaluation of environmental impacts relate primarily to the converter station sites and include law enforcement, fire protection, emergency response, medical facilities, schools, water utilities, and electricity and gas. In addition, known utility crossings within the 500-meter-wide submarine cable study corridor are discussed. Solid waste generation and capacities are discussed in Section 4.14, Hazardous Materials and Waste Management. Storm drainage at the sites is discussed in Section 4.4, Water Resources and Quality.

4.12.1 Environmental Setting

4.12.1.1 San Francisco HWC Converter Station

4.12.1.1.1 Law Enforcement. The San Francisco Police Department provides law enforcement services to the HWC site, including the nearby proposed and alternative temporary construction laydown areas. The closest police station is the Bayview Station (201 Williams Street), located approximately 2 miles southwest of the site. Staffing levels fluctuate from 30 to 50 people onsite daily. On average, 10 to 20 officers are assigned to patrolling. All calls to the station are routed through the San Francisco Police Department Emergency Communication Dispatch Center. The center uses a prioritization system whereby calls are classified as A, B, or C. The response time to an emergency call depends on the call classification. Response times of law enforcement can vary depending on the call classification, with a minimum time of 2 minutes (Garrick, 2005).

4.12.1.1.2 Fire Protection and Hazardous Materials Response. The San Francisco Fire Department provides fire protection and emergency services to the HWC site. Station No. 25 (3305 Third Street) is the closest fire station, located less than 1 mile to the south. Station No. 37 (798 Wisconsin Street) is the next closest station, located less than 1 mile west of the site. Other nearby stations include Station No. 29 (299 Vermont Street), located 1.5 miles from the site, and Station No. 17 (1295 Shafter Street), located 2 miles from the site. Station No. 36 (109 Oak Street) manages the Hazardous Materials Response Unit, which consists of one primary unit (one officer and three firefighters), two secondary units (one officer and three firefighters), and two chief officers.

The San Francisco Fire Department maintains and operates an Auxiliary Water Supply System (AWSS), which is a water storage and distribution network that supplements the hydrants connected to the regular water distribution lines. The AWSS presently serves those areas of San Francisco most intensively developed; however, a recent public referendum authorized a bond issue to extend this system to the remainder of the city and modernize certain components (San Francisco Planning Department [SFPD], 2005).

Fire response time to the HWC site would be approximately 3 to 4 minutes, including dispatch. A fire response team includes: three engines (four staff per engine), two trucks (five staff per truck), one rescue squad (four staff per squad), and one medic. Hazardous Materials response time to the HWC site is 3 to 5 minutes (Glickman, 2005).

4.12.1.1.3 Medical Facilities. The San Francisco General Hospital (1001 Potrero Avenue) is the closest full-service hospital to the HWC site, located 1.5 miles to the west. Additional nearby smaller facilities include the Potrero Hill Health Center (1050 Wisconsin Street), a clinic which is part of the Community Health Network of San Francisco, located over 1 mile to the west. Services provided by the County of San Francisco include health and nutrition programs funded by the State of California and the City and County of San Francisco (CCSF). There are also several additional emergency and urgent care facilities within a 3-mile radius of the HWC site.

4.12.1.1.4 Schools. The San Francisco HWC Converter Station site is located within the boundaries of the San Francisco Unified School District. This district has a total of 119 elementary, middle, and high schools. The schools closest to the site include Potrero Hill Middle School (655 DeHaro Street), Starr King Elementary (1215 Carolina Street), and Daniel Webster Elementary (465 Missouri Street). Potrero Hill Middle School is less than 1.5 miles west of the site, while the two elementary schools are approximately 1 mile northwest of the site. The closest high school is the International Studies Academy (693 Vermont Street), located approximately 1.25 miles to the northwest of the site. Three additional high schools in the area are Leadership High School (536 Mission Street), Downtown High School (110 Bartlett Street), and Thurgood Marshall High School (45 Conkling Street). These three high schools are located approximately 1.5 miles to the northwest, west, and southwest of the site, respectively.

The San Francisco Unified School District is not currently overcrowded. The schools are operated near capacity; however, enrollment has been dropping steadily by 2 percent for the past 5 years and is predicted to continue decreasing in the future (Kline, 2005).

4.12.1.1.5 Water and Wastewater. The San Francisco Water Department supplies water to the site from the Hetch Hetchy dam and reservoir in the Sierras. The supply of fresh water generated by the Hetch Hetchy/Water Department system is currently capable of meeting water demand. Projections discussed in the City of San Francisco General Plan indicate that the present system will meet San Francisco’s needs until the year 2020 (SFPD, 2005). Potable water for drinking and fire protection would be provided by a City of San Francisco main located near the intersection of Illinois and 23rd Street. San Francisco's Department of

Public Works provides sanitary sewer service to the site. Wastewater and sanitary sewage would be discharged to the combined sewer system. Stormwater would be collected, treated, and discharged to the Bay under a National Pollutant Discharge Elimination System (NPDES) permit.

4.12.1.1.6 Electricity and Gas. The proposed Project would connect to Pacific Gas and Electric Company's (PG&E's) existing electrical distribution system. . There is no natural gas usage on the site.

4.12.1.2 Pittsburg Standard Oil Converter Station

4.12.1.2.1 Law Enforcement. The Pittsburg Police Department provides law enforcement services to the Standard Oil site. The nearest police station is located at 65 Civic Avenue, 2.5 miles to the west. The patrol division of the police department operates 24 hours a day. Typically, eight officers are on duty throughout the day. Pittsburg is broken into beats for deployment purposes and patrol officers are the first responders to the public for calls for service. Law enforcement response times for emergency calls are between 30 seconds to 3 minutes, depending on the location of the officer dispatched (Calia, 2006).

4.12.1.2.2 Fire Protection and Hazardous Materials Response. The Contra Costa County Fire Protection District (CCCFPD) provides fire protection services to the Pittsburg Planning Area, which includes the Standard Oil site. The CCCFPD operates out of 29 fire stations located throughout its jurisdictional area. The CCCFPD also maintains mutual-aid agreements with the various agencies, including the East Diablo Fire Protection District and private industrial companies located within its jurisdiction. These agreements help provide the CCCFPD with emergency response assistance when needed.

The CCCFPD fire stations nearest to the site are stations No. 84 (200 East Sixth Street), located 1.8 miles to the west of the site, and No. 85 (2555 Harbor Street), located 2.4 miles to the southwest of the site. The fire response team includes three engines (three staff per engine) and one truck (three staff per truck). Fire response times are approximately 5 minutes or less to the Standard Oil site (Grace, 2005).

The Contra Costa County Health Department's (CCCHD's) Hazardous Materials Division manages the Hazardous Materials Response Unit. A response team consists of 3 to 15 hazardous materials specialists. Response time to all Pittsburg sites during business hours is approximately 5 to 10 minutes, and after business hours is up to 45 minutes (Hardage, 2005).

4.12.1.2.3 Medical Facilities. The closest clinic to the Standard Oil site is the Pittsburg Health Center (2313 Loveridge Road), located approximately 1 mile to the southwest of the site. The closest full service hospital is Sutter Health (3901 Lone Tree Way) in Antioch, located approximately 5 miles to the southeast of the site.

4.12.1.2.4 Schools. The Standard Oil site is located within the boundaries of the Pittsburg Unified School District. This district currently operates seven elementary schools, two middle schools, and one high school. The schools closest to the Standard Oil site include Los Medanos College (2700 East Leland Road) approximately 1 mile to the southwest, Martin Luther King Preschool (950 El Pueblo Avenue) 1 mile to the west, and Stoneman Elementary (2929 Loveridge Road) 1.5 miles to the southwest.

Schools within the Pittsburg Unified School District have adequate capacity to handle additional enrollment. Student enrollment has remained stable for the past 5 years and is predicted to remain stable over the next few years (Meyers, 2005).

4.12.1.2.5 Water and Wastewater. Pittsburg obtains raw water from the Contra Costa Water District (CCWD), through the Central Valley Project. The CCWD's current contract for its entire service area is for 195,000 acre-feet per year, or 174 million gallons per day (mgd). These allocations are subject to regulatory or other temporary restrictions imposed as a result of drought or other conditions. CCWD also has water rights with a number of local districts and private entities to expand CCWD's total annual supply to 242,700 acre-feet per year. Two wells also supplement CCWD water supply with a combined yield of 1,500 acre-feet per year.

Pittsburg operates its own water treatment plant and associated facilities, which primarily serve customers within the city limits. The Pittsburg treatment plant currently operates at 16 to 18 mgd for City of Pittsburg accounts. The hydraulic capacity is 32 mgd, but is restricted to 24 mgd by State Health Department permitting and water quality regulations. The design capacity is sufficient to meet the projected 2020 maximum per-day requirements (CPPD, 2004). Stormwater is treated and discharged to the Bay under a NPDES permit (Strelo, 2005).

4.12.1.2.6 Electricity and Gas. The proposed Project would connect to a local electrical distribution system. There is no natural gas usage on the site.

4.12.1.3 Offshore DC Cable Route

The proposed submarine cable route transects numerous city and county jurisdictions within Suisun, San Pablo, and San Francisco bays, and the Carquinez Strait. A number of utility crossings have been identified based on communication by the Applicant with the State Lands Commission and San Francisco officials. The known utility crossings are listed in Tables A.2-1 and A.2-2 and are shown on Map A.2-1 included in Appendix A of this EIR.

4.12.2 Regulatory Setting

4.12.2.1 Federal

No applicable federal plans or policies regarding public services and utilities have been identified.

4.12.2.2 State

The Uniform Fire Code (UFC) contains regulations pertaining to the construction and maintenance of buildings and uses of the premises. Topics addressed in the UFC include fire hydrants, fire department access, fire alarm systems, fire and explosion hazard safety, industrial processes, and many other generalized and fire-specific safety requirements for new and existing buildings. "UFC Standards" is a companion publication to the Uniform Building Code (UBC) and contains standards of the American Society for Testing and Materials and of the National Fire Protection Association. The UBC is the primary guiding document that sets the standards for the built environment and is closely tied to the UFC to protect human life and safety. The UFC and UBC are widely accepted at the national level and adopted by individual states. California codes are nearly identical.

The School Facilities Act of 1986 (Education Code Section 17620) authorizes school districts to impose school fees to finance permanent school facilities necessitated by new development. The act sets dollar limits (calculated on a square-foot basis) on fees for residential, commercial, and industrial construction, which are adjusted every 2 years. In response to several court cases, the School Facilities Act of 1998 (SB50) sets forth absolute limits on the type and amount of school mitigation that can be imposed (while maintaining the previously existing statutory structure relating to the authority to impose a school fee). It further provides that the statutory school fees are the only mitigation that may be imposed on any type of land use approval ("full and complete mitigation," per Section 65995[a]). School development fees are typically collected when the applicant pays building permit fees.

4.12.2.3 Local

San Francisco Municipal Code follows the California and national codes as the guiding documents for applying regulations. The Community Services, Community Safety, and Environmental Protection Elements of the San Francisco General Plan as well as the Central Waterfront Area Plan outline objectives, policies, and criteria for meeting San Francisco's long-term service and public safety requirements. Table 4.12-1 lists the policies pertinent to public services and utilities for the proposed San Francisco Converter Station. In addition to these policies, the San Francisco Department of Building Inspection and the fire department have ongoing responsibility for reviewing plans for proposed buildings and inspecting

TABLE 4.12-1
PUBLIC SERVICES AND UTILITIES POLICIES PERTINENT TO THE SAN FRANCISCO CONVERTER STATION

Policy Document	Section	Policy Number	Policy Statement
San Francisco General Plan	Community Safety Element	2.1	Assure that new construction meets current structural and life safety standards.
		3.6	Maintain and expand the City of San Francisco's fire prevention and firefighting capability with adequate personnel and training. Assure the provision of adequate water for fighting fires.
	Environmental Protection Element	5.1	Maintain an adequate water distribution system within San Francisco.
		5.2	Exercise controls over development to correspond to the capabilities of the water supply and distribution system.
Central Waterfront Area Plan	Industry	3.9	Deliver key public services, including police, fire, sanitation, and transportation, at levels necessary to support and encourage industrial activity.

buildings under construction to ensure that they are built as shown on the approved plans and in accordance with all codes (SFPD, 1998).

The Public Facilities and Growth Management Elements of the Pittsburg General Plan address provisions for public services and facilities, including law enforcement, water supply, fire protection, and public utility corridors. Pertinent policies relative to the proposed Project in Pittsburg are listed in Table 4.12-2.

4.12.3 Environmental Impacts

Potential Project impacts associated with public services and utilities are discussed in this section relative to areas adjacent to the converter station sites and ancillary facilities (i.e., onshore cable routes, laydown areas, and access roads, as applicable), and within the 500-meter-wide submarine cable study corridor. Public services and utilities were assessed by reviewing existing services and determining the potential effects from proposed Project activities. Potential effects from the Project could include excessive demand on public services or utilities from construction- or operations-related activities. An example would be additional workforce requiring key services and utilities that are already overburdened, thus leading to a significant impact.

TABLE 4.12-2
PUBLIC SERVICES AND UTILITIES POLICIES PERTINENT TO THE PITTSBURG CONVERTER STATION

Policy Document	Section	Policy Number	Policy Statement
Pittsburg General Plan	Public Facilities	11-P-6	Continue water conservation efforts from industrial facilities.
		11-P-17	Require that all wastewater dischargers within the City of Pittsburg conform to the ordinances of the Delta Diablo Sanitary District.
		11-P-18	Ensure that new residential, commercial, and industrial development equitably share costs associated with providing wastewater services to areas of urban expansion within the Planning Area.
		11-P-33	As a condition of approval, ensure that all new and redevelopment projects bury utility lines on and adjacent to the site.
	Growth Management	3-P-1	Allow urban development only in areas where public facilities and infrastructure (policy, fire, water, sewer, storm drainage, and community facilities) are available or can be provided.
		3-S-1	Ensure that the Pittsburg Police Department can maintain a 3- to 5-minute response time for all emergency calls.
		3-S-12	For fire flow demands, maintain water pressure at 20 pounds per square inch.

4.12.3.1 Thresholds of Significance

This impact analysis uses the significance criteria identified in CEQA Guidelines (Appendix G) as well as those established by the City of Pittsburg and the City and County of San Francisco. Impacts are considered potentially significant if the project would:

- Result in substantial adverse impacts to levels of service for public services including schools, police protection, medical facilities, and fire response
- Require new or altered governmental facilities which could have significant physical environmental impacts
- Result in substantial adverse impacts to public utilities, including wastewater treatment, water supply, or electricity and gas

4.12.3.2 San Francisco HWC Converter Station

4.12.3.2.1 Construction-related Impacts. Site preparation and Project construction is expected to take approximately 27 to 30 months. Pre-construction activities at the converter station site would include demolition of existing structures, remediation of any contamination, grading, excavation, and site preparation activities.

Table A.4-2 in Appendix A of this EIR lists the estimated number of personnel required for the Project by month during construction. The maximum number of construction workers that would be required for construction during a given month is estimated to be 45 individuals at each of the two converter station sites. Primary trades required for the converter station construction would include carpenters, cement masons, electricians, laborers, and other traditional-type trades necessary to complete the Project.

It is anticipated that most of the workforce would be expected to come from local or regional areas and commute to the site rather than re-locate. The workforce required for construction is not excessive and would not place undue burden on the local workforce. In the event that up to 5 (10% of the San Francisco workforce) construction crew members temporarily re-located for the duration of the construction portion of the project, schools in the San Francisco Unified School District could accommodate additional students, therefore, no significant school-related impacts are anticipated. Construction is not expected to result in a substantial adverse impact on medical facilities since there are numerous medical facilities in close proximity to the site, including a full-service hospital.

The HWC Converter Station site and associated laydown area would be fenced to prevent unauthorized access. Project-funded security personnel would protect the construction sites during non-work hours, and thus, no significant impacts to police protection services are expected from construction activities. Fire station response times are between 3 to 4 minutes to the site and construction laydown area. Fire hydrants are located in accordance with city codes. The nearest fire hydrants to the site are located directly across 23rd Street from the site.

Construction activities would require water for dust control measures, and other purposes. San Francisco allows water to be supplied from the main water system as long as the applicant obtains a meter for the applicable hydrant (Lyons, 2006). Construction activities would also require the use of flammable and combustible materials (i.e., diesel fuel), and without appropriate precautionary measures, could increase the likelihood of fire events.

Impact PS-1: Construction Fire Hazards. Without appropriate precautions, construction activities requiring the use of flammable and combustible materials could create fire hazards. The potential to increase fire events could affect the level of service by the fire department to the surrounding area. This impact is considered potentially significant.

Mitigation Measure PS-1: Construction Fire Prevention. A Construction Fire Prevention and Protection Program shall be developed for the Project to be followed throughout all phases of construction. The program will specifically address:

- General requirements
- Responsibilities
- Housekeeping
- Employee alarm/communication system
- Portable fire extinguishers
- Fixed fire-fighting equipment
- Fire control
- Flammable and combustible liquid storage
- Use and handling of flammable and combustible liquids
- Dispensing and disposal of flammable and combustible liquids
- Servicing and refueling areas
- Training

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Development and submittal of Construction Fire Prevention and Protection Program to Fire Department for review and coordinate with other local fire services prior to initiating construction activities
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure PS-1 would reduce Impact PS-1 to a less-than-significant level.

Proposed installation of utility lines would occur at a depth of more than 1 foot below ground surface and, therefore, could impact existing underground utilities. Without appropriate precautions, installation of proposed underground utility lines could impact existing underground utilities.

Impact PS-2: Existing Onshore Underground Utilities. Without appropriate precautions, installation of proposed underground utility lines could impact existing underground utilities and public service connections. This impact would be considered potentially significant.

Mitigation Measure PS-2: Utility Survey. Prior to any excavation work a survey shall be conducted to identify locations of subsurface utilities.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Hire utility contractor and verify that utility survey is completed prior to commencing with excavation work
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure PS-2 would reduce Impact PS-2 to a less-than-significant level.

4.12.3.2.2 Operations-related Impacts.

***Levels of Service for Public Services*.** The converter station would be minimally staffed and/or be remotely operated, and require minimal periodic maintenance. In the event that up to 5 staff worked permanently at the site, schools in the San Francisco Unified School District could accommodate additional students, therefore, no significant school-related impacts are anticipated.

The cable would terminate within a secured area accessible only to trained, authorized personnel. Fencing and/or an enclosure wall would restrict vehicular access. Converter stations and all associated equipment would be contained within an enclosed area with a passkey-operated security gate. Additional security measures would include surveillance cameras and intrusion alarms, as necessary. Police services would be provided by the San Francisco Police Department. The nearest police station to the site is located 2 miles away and the response times are approximately 2 minutes. The proposed converter station is located in an area primarily surrounded by industrial properties. Proposed use of the site is consistent with the land uses in the surrounding area and, with the proposed security measures at the proposed facility, police protection demands are not expected to increase with Project implementation.

The converter station would have an onsite fire protection system (including emergency backup system). During the detailed design phase, potential fire protection designs and systems would be reviewed by the San Francisco Fire Department for finalization. In general, the fire protection system would consist of automatic detection and firefighting equipment. The fire-detection control panel would be located in the control room and connected to the control and protection system for remote communication. The fire alarm would be initiated automatically by smoke, heat, or flame detectors, or manually by an emergency push button.

A combination of detectors could be used including infrared and ultraviolet detectors, ionization and optical smoke detectors, and rate-of-rise temperature-sensitive detectors, depending on the equipment and/or space being monitored.

Audible alarms and flashing lights would be activated in the event of an incident. The equipment or area where the alarm was triggered would be indicated on the control panel. The firefighting equipment would initiate automatically. Fire detection and automatic firefighting equipment would be connected to a power supply within the fire-detection control panel, which would be connected to the mains via a power supply/battery charger unit with an internal battery. A pump house would be included within the facility with two diesel-driven firewater pumps. The fire protection system would include an auto-start function for the fire pumps that does not require personnel to start.

The San Francisco Fire Department would perform final inspections of the proposed Project when construction was complete. The Project design has incorporated an automatic fire response system. However, if the facility and associated equipment were not properly maintained, fire hazards could increase, which would also affect the level of service of the fire department to the surrounding area.

Impact PS-3: Operations Fire Hazards. Without appropriate precautions, operations requiring the use of flammable and combustible materials could induce fire hazards. The potential to increase fire events could affect the level of service by the fire department to the surrounding area. This impact is considered potentially significant.

Mitigation Measure PS-3: Operations Fire Prevention. An Operations Fire Prevention and Protection Program shall be developed for the Project to be followed throughout all phases of operation. The program will specifically address:

- Names and/or job titles responsible for maintaining equipment and accumulation of flammable or combustible material
- Procedures in the event of fire
- Fire alarm and protection equipment
- System and equipment maintenance
- Monthly inspections
- Annual inspections
- Fire-fighting demonstrations and training
- Housekeeping practices
- Training

Implementation Responsibility: Project proponent

Requirements and Timing: Development and submittal of an Operations Fire Prevention and Protection Program prior to commencing with operations

Monitoring Requirements: City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure PS-3 would reduce Impact PS-3 to a less-than-significant level.

***New or Altered Governmental Facilities*.** The Project would not induce a need for new or altered governmental facilities.

***Adverse Impacts on Utilities*.** Although the Project would require extension of existing utility lines, existing utilities have sufficient capacity to meet Project requirements. The converter station would generally be minimally staffed and/or remotely operated, and require minimal periodic maintenance. Normal Project operations would require water for landscaping, drinking, restrooms, and intermittent use during maintenance activities. Based on the small number of potential employees at the site (if any), nominal amounts of water would be required, and minimal amounts of wastewater would be generated at the converter station during normal operations. Further, San Francisco has water supply capacity to accommodate projected expansions up to the year 2020. Based on these factors, the Project is not expected to have significant impacts related to water supply availability or wastewater treatment capacities. In addition, the converter station would not utilize natural gas and would have beneficial impacts to electrical utilities by expanding the system and increasing system efficiency and reliability.

4.12.3.3 Pittsburg Standard Oil Converter Station

4.12.3.3.1 Construction-related Impacts. Construction requirements for the proposed Pittsburg Standard Oil Converter Station would be essentially the same as those for the HWC site, discussed above. The estimated maximum number of construction workers required for construction at the Standard Oil site during a given month would be 45. The workforce required for construction consists of traditional-type labor and, thus, can be drawn from the local and regional workforce, subject to union agreements. Schools in the Pittsburg area are currently not overcrowded. In the event that up to 5 (10% of the Pittsburg workforce) construction-associated personnel would temporarily re-locate for the duration of the construction portion of the project, schools in the Pittsburg Unified School District could accommodate additional students, therefore, no significant impacts are anticipated.

Construction is not expected to significantly impact medical facilities since there are numerous medical facilities in close proximity to the site.

As with the HWC site, the Pittsburg Standard Oil Converter Station site and associated laydown area would be fenced to prevent unauthorized access. Project-funded security personnel would provide protection of the construction sites during non-work hours and, thus, no impacts to police protection services are expected from construction activities. Fire response times to the site and construction laydown area are 5 minutes or less. Project construction would not have significant impacts on fire response. However, development of a Construction Fire Prevention and Protection Program for the project could serve as a mitigation measure to minimize fire potential and to further reduce potential to impact fire response. In addition, underground construction work could adversely affect existing underground utilities if appropriate precautions were not implemented.

Impact PS-1: Construction Fire Hazards. The construction-related fire hazards impact (Impact PS-1) discussed in Section 4.12.3.2.1 applies at the Pittsburg Standard Oil Converter Station site.

Mitigation Measure PS-1: Fire Water Service. Mitigation Measure PS-1, discussed in Section 4.12.3.2.1, shall be conducted at this site.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Development and submittal of Construction Fire Prevention and Protection Program to Fire Department for review; coordinate with other local fire services; prior to initiating construction activities
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure PS-1 would reduce Impact PS-1 to a less-than-significant level.

Impact PS-2: Existing Underground Utilities. The underground utilities impact (Impact PS-2) discussed in Section 4.12.3.2.1 applies at the Pittsburg Standard Oil Converter Station site.

Mitigation Measure PS-2: Utility Survey. Mitigation Measure PS-2, discussed in Section 4.12.3.2.1, shall be conducted at this site.

Implementation Responsibility:	Project proponent/construction contractor

Requirements and Timing: Hire utility contractor and verify that utility survey is completed prior to commencing with excavation work

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure PS-2 would reduce Impact PS-2 to a less-than-significant level.

Construction activities would require water for dust control, and other purposes. The nearest fire hydrant to the site is located at the Loveridge Road and Pittsburg/Antioch Highway intersection. Water pressure is expected to be between 70 to 75 pounds per square inch based on site elevation (Pease, 2005). The Contra Costa Fire Code Section 903.2 stipulates that a fire hydrant may need to be added if the site is located more than 150 feet off of a main public street. A fire flow test in addition to an access and water supply review are typically recommended where fire hydrants are not in the general vicinity of the site (Hardage, 2005).

Impact PS-4: Water Service. The nearest fire hydrant to the Standard Oil site is located approximately 1,500 feet from the site. Fire protection and water supply services could be impacted due to current unavailability of fire hydrants.

Mitigation Measure PS-4: Water Service. The Project proponent shall request that an access and water supply review and fire flow test be conducted by the City of Pittsburg. This shall include water supply and flow required for construction. If the water and flow are not adequate, the proponent shall supply water independent of the City's water system. If the water and flow are determined to be adequate, the proponent shall either bring in their own water during construction or obtain a meter with the City Finance Department to tie into a designated fire hydrant during construction.

Implementation Responsibility: Project proponent

Requirements and Timing: Submit request to City of Pittsburg and obtain approval by City of Pittsburg and local fire services prior to obtaining building permit

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure PS-4 would reduce Impact PS-4 to a less-than-significant level.

4.12.3.3.2 Operations-related Impacts.

***Levels of Service for Public Services*.** The Standard Oil site would be minimally staffed and/or be remotely operated and would require minimal periodic maintenance. In the event that up to 5 staff worked permanently at the site, schools in the Pittsburg Unified School District could accommodate additional students, therefore, no significant school-related impacts are anticipated.

As with the HWC site, the cable would terminate within a secured area accessible only to trained, authorized personnel. Fencing and/or an enclosure wall would restrict vehicular access. The converter station and all associated equipment would be contained within an enclosed area with a passkey-operated security gate. Additional security measures would include surveillance cameras and intrusion alarms, as necessary.

Police services are provided by the Pittsburg Police Department. The nearest station to the site is located 2.5 miles from the site and the response times are between 30 seconds and 3 minutes. The Pittsburg General Plan Policy 3-S-1 seeks to ensure that the Pittsburg Police Department can maintain a 3 to 5 minute response time for all emergency calls. The current response time to the site is adequate to meet the General Plan policy. The proposed converter station is located in an area primarily surrounded by industrial and vacant properties. Proposed uses of the site may result in negligible increases in demand for police services because the land would change from vacant to developed land. Based on the proposed security measures at the proposed facility, any increases in police protection demands would not be expected to be significant.

The Pittsburg Standard Oil Converter Station would have fire protection systems similar to that of the HWC site, discussed above. The converter station would have onsite fire protection systems (including emergency backup systems) with additional fire response provided by the CCCFPD. During the detailed design of the Project, potential fire protection systems would be reviewed by the CCCFPD for approval. However, if the facility and associated equipment were not properly maintained, fire hazards could increase, which could also affect the level of service of the fire department to the surrounding area.

Impact PS-3: Operations Fire Hazards. The operations fire hazards impact (Impact PS-3) discussed in Section 4.12.3.2.2 applies at the Pittsburg Standard Oil Converter Station site.

Mitigation Measure PS-3: Operations Fire Prevention. Mitigation Measure PS-3, discussed in Section 4.12.3.3.2, shall be conducted at the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility: Project proponent

Requirements and Timing: Development and submittal of an Operations Fire Prevention and Protection Program to Fire Department for review; coordinate with other local fire services prior to commencing with operations

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure PS-3 would reduce Impact PS-3 to a less-than-significant level.

***New or Altered Governmental Facilities*.** The Project would require extension of existing utility lines that have sufficient capacity to meet the Project demands. The Project would not create a need for new or altered governmental facilities.

***Adverse Impacts on Utilities*.** As with the HWC site, the Pittsburg Standard Oil Converter Station would be minimally staffed and/or remotely operated and Project operations would utilize nominal amounts of water. Normal Project operations would require water for landscaping, drinking, restrooms, and intermittent use during maintenance activities. Based on the small number of potential employees at the site (if any), nominal amounts of water would be required, and minimal amounts of wastewater would be generated at the converter station during normal operations. Further, Pittsburg has water supply capacity to accommodate expansion in and around the city until the year 2020. Based on these factors, the project is not expected to have significant impacts on water supply availability or wastewater treatment capacities. The converter station would not utilize natural gas. Project implementation would not be expected to have adverse impacts on electric utilities.

4.12.3.4 Offshore DC Cable Route

4.12.3.4.1 Construction-related Impacts. The offshore cable laying operation is expected to require approximately 4-5 months and would take place 24 hours a day, 7 days per week. The crew for each ship (Giulio Verne and barge) is anticipated to be approximately 60 people. The Giulio Verne has cabins and, therefore, crew would be anticipated to live on board. The barge does not have cabins and, therefore, out-of-area barge crew would be expected to stay at accommodations within the local area. Accommodations, such as hotels and other lodging facilities, are prevalent in the onshore areas along the cable route. No significant impacts to public services would be expected from installation of the cable.

Impacts could occur if the cable route crossed or coincided with existing utility lines and affected or disrupted delivery of service. Known utility and structure crossings are presented in Tables A.2-1 and A.2-2. To reduce the potential for a significant impact, a detailed survey of the Bay floor will be conducted over a study corridor centered on the proposed DC cable alignment. Sonar devices will be used to detect both natural and man-made objects.

Electromagnetic devices will be used to detect and precisely locate existing cables and pipelines that cross the cable path. The design of the Project would use research data and precise field verification measures to determine the best location, method, and protection schemes for installation of the cable. Based on the precautions incorporated within the project design for installation of the offshore cable, no significant impacts would be expected to existing utilities within the submarine cable corridor.

The discussion above also applies to the proposed submarine AC cable between the PG&E Pittsburg substation and the landfall in New York Slough associated with the Standard Oil Converter Station site.

4.12.3.4.2 Operations-related Impacts.

***Levels of Service for Public Services*.** Cable operations would increase the electrical power supply, and enhance the reliability of providing electricity, to San Francisco. Therefore, the proposed Project would be expected to have beneficial impacts to utility services.

***New or Altered Governmental Facilities*.** The cable would be buried within San Francisco Bay. No new or altered governmental facility would be required for operation of the offshore cable.

***Adverse Impacts on Utilities*.** Precautions incorporated into cable installation procedures would ensure that existing utilities (e.g., fiber optic cables and pipelines) under the Bay floor would not be adversely affected by the cable. Once buried, cable operations would not be expected to have adverse impacts on existing utilities in the area.

4.12.4 References

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4.13 VISUAL RESOURCES/AESTHETICS

This section addresses the visual resources environmental baseline conditions and the potential for the proposed Trans Bay Cable Project to cause significant impacts on those resources in the Project study area. This assessment was conducted in conformance and compliance with California Environmental Quality Act (CEQA) guidelines and documentation requirements.

4.13.1 Environmental Setting

4.13.1.1 Concepts and Terminology

The concepts and terminology that comprise this visual resources analysis for this proposed Project, as well as the essential Project elements that are evaluated, are described below.

The visual resources of a given area consist of the landforms, vegetation, water features, and cultural modifications (physical changes caused by human activities) that impart an overall visual impression of the area landscape. A number of factors are considered in the evaluation of a landscape's visual resources and of the potential for one or more visual impacts to occur, including visual quality, viewer sensitivity, landscape visibility, and viewer exposure. Each of these factors is generally expressed as low, moderate, or high as discussed below.

4.13.1.1.1 Visual Quality. Visual Quality is a measure of the overall impression or appeal of an area as determined by the particular landscape characteristics such as landforms, rock forms, water features and vegetation patterns, as well as associated public values. The attributes of variety, vividness, coherence, uniqueness, harmony, and pattern contribute to the visual quality classifications of indistinctive (low), common (moderate), and distinctive (high). Visual quality is studied as a point of reference to assess whether a given project would appear compatible with the established features of the setting or would contrast noticeably and unfavorably with them. A landscape's ability to accept alteration without diminishment of visual quality (or creation of visual contrast) is referred to as "Visual Absorption Capability."

4.13.1.1.2 Viewer Sensitivity. Viewer Sensitivity addresses the level of interest or concern of viewers regarding an area's visual resources and is closely associated with viewers' expectations for the area. Viewer sensitivity reflects the importance placed on a given landscape based on the human perceptions of the intrinsic beauty of the existing landforms, rock forms, water features, vegetation patterns, and even cultural features.

4.13.1.1.3 Landscape Visibility. Landscape Visibility describes the accessibility of the landscape to viewers, referring to one's ability to see and perceive the landscape. Landscape visibility can be a function of several interconnected considerations, including proximity to viewing point, degree of discernible detail, seasonal variations (fog and haze can obscure landscapes), time of day, and presence or absence of screening features such as landforms, vegetation, and/or built structures.

4.13.1.1.4 Viewer Exposure. Viewer Exposure describes the degree to which viewers are exposed to views of the landscape. Viewer exposure considers the number of viewers, the duration of view, and the proximity of viewers to the subject landscape. Although a landscape may have highly scenic qualities, it may be remote and receive relatively few visitors, and, thus, have a low degree of viewer exposure. The same may be true if a subject landscape or project is situated in proximity to a major road or highway utilized by a substantial number of motorists. Further, if the rate of travel speed on the roadway is high and viewing times are brief, or if the landscape is partially screened by vegetation or other features, this will also affect the exposure factor. It is the subject area's proximity to viewers or *distance zone* that is of particular importance in determining viewer exposure. Landscapes are generally subdivided into three or four distance zones based on relative visibility from travel routes or observation points. Distance zones typically include foreground, middleground and background. The actual number of zones and distance assigned to each zone is dependent on the existing terrain characteristics and public policy and is often determined on a project-by-project basis.

4.13.1.1.5 Visual Impact Susceptibility. Visual Impact Susceptibility is a concluding assessment as to the degree of probability that a given landscape will demonstrate a noticeable visual impact with project implementation. Visual impact susceptibility is derived from a comparison of existing visual quality, viewer sensitivity, landscape visibility, and viewer exposure.

4.13.1.1.6 Adverse Visual Impact. An adverse visual impact occurs within a public view when: 1) an action perceptibly changes existing features of the physical environment so that they no longer appear to be characteristic of the subject locality or region; 2) an action introduces new features to the physical environment that are perceptibly uncharacteristic of the region and/or locale; or 3) aesthetic features of the landscape become less visible (e.g., partially or totally blocked from view) or are removed. Changes that seem uncharacteristic are those that appear out of place, discordant, or distracting. The degree of the visual impact depends upon how noticeable the adverse change may be. The noticeability of a visual impact is a function of project features, context, and viewing conditions (angle of view, distance, and primary viewing directions).

The key factors for considerations in determining the degree of visual impacts or Visual Impact Severity are visual contrast, project dominance, and view impairment.

4.13.1.1.7 Visual Contrast. Visual Contrast evaluates a potential project's or activity's consistency with the visual elements of form, line, color, and texture already established in the landscape. Other elements that are considered in evaluating visual contrast include the degree of natural screening by vegetation and landforms, placement of structures relative to existing vegetation and landforms, distance from the point of observation, and relative size or scale. Generally, visual contrast inversely correlates with visual absorption capability.

4.13.1.1.8 Project Dominance. Project Dominance refers to the project's relationship to other visible landscape components in terms of vertical and horizontal extent. A project's scale and spatial relationship to the existing landscape can be categorized as subordinate, co-dominant, or dominant.

4.13.1.1.9 View Impairment. View Impairment refers to the extent to which a project's scale and position results in the blockage of higher quality visual elements by lower quality elements.

4.13.1.1.10 Key Observation Points. Key Observation Points (KOPs) are locations selected to be representative of the most critical locations from which the project will be seen. KOPs are often selected in an effort to evaluate impacts on visual resources with various levels of sensitivity, in different landscape types and terrain, and from various vantages. Typical KOP locations include: 1) along major or significant travel corridors; 2) at key vista points; 3) in proximity to residential uses; and 4) at significant recreation areas.

4.13.1.2 Methodology Overview

Baseline data collection was initiated with a review of the Project description as well as other relevant documents from the cities of San Francisco and Pittsburg. A field reconnaissance was undertaken to gain familiarity with the existing landscape setting, visual resource issues of concern, including sensitive land uses adjacent to or crossed by Project components, and the characteristics of the proposed Project sites.

The field reconnaissance was conducted to establish specific KOPs in August of 2005. KOPs are generally selected for one or two reasons: 1) the location provides representative views of the landscape along a specific route segment or in a general region of interest; and/or 2) the viewpoint effectively captures the presence or absence of a potentially significant Project impact in the location. KOPs are typically established in locations that provide high visibility to a relatively large number of viewers and/or sensitive viewing locations such as residential areas, recreation areas, and vista points. These key observation points are identified in detail under the section which assesses potential Project impacts below.

Following completion of the baseline data review, field reconnaissance, and verification of locations for specific study, photographic field studies were undertaken. These studies consisted of viewing the Project landscapes to the extent feasible from public roads and other vantage points to develop an overall assessment of the landscape characteristics and the potential for Project impacts. Photographs were taken to both record the existing context of the major Project components and provide baseline photographs, which were utilized for preparing simulations of the Project and the analysis of potential impacts. All photographs were taken with a lens that is the equivalent to the view seen by the human eye; i.e., neither telephoto nor wide angle.

A description of the existing landscape characteristics and sensitivity was compiled and included notes on the existing visual quality, known viewer sensitivities, landscape visibility, visible evidence of historical and cultural influence and the urban landscape, as well as viewer exposure. The evaluation of viewer exposure also included qualitative notations on potential numbers of viewers, distance zones, and duration of views.

Based on the above factors, an overall visual impact susceptibility rating was determined for each KOP. The proposed Project was then evaluated based upon the simulations and the potential visual resource impacts were determined.

4.13.1.2.1 Project Setting.

***San Francisco HWC Converter Station*.** The proposed San Francisco HWC Converter Station would occupy a 5.6-acre site on 23rd Street just south of the existing Mirant Power Plant. The proposed site currently has three structures that would need to be demolished for Project implementation.

The KOPs selected for this assessment in San Francisco are shown on Map 4.13-1.

The San Francisco HWC Converter Station site is generally visible from Illinois Street when viewing down either 24th or 25th Street within the context of the existing Mirant Power Plant and the adjacent PG&E substation (see Context Photo 1, Figure 4.13-1). This is an existing industrial area both in terms of the visual context and the type of traffic traversing the area. The converter station site is also visible from the Potrero housing projects approximately 0.5 mile to the west. While the facility would be visible from a more birds-eye point view, again it would be seen in the context of the larger industrial activity of the area and the primary focus of any viewer would be toward San Francisco Bay in the background (see Photo 2, Figure 4.13-1). The third viewing area is from Warm Water Cove Park which is located directly south of the San Francisco HWC Converter Station site. Existing views from this area are toward the Bay to the east and the existing industrial structures to the north and south. In this context, the existing buildings to the north would be demolished and replaced by the proposed San Francisco HWC Converter Station (see Context Photo 3, Figure 4.13-2). The onshore AC cable connections would be from the proposed converter station site to the existing PG&E Potrero substation and would not involve significant visual disturbance to this area. Similarly, the offshore HVDC cable connection would be underground from the proposed HWC site into San Francisco Bay and would not involve significant areas of additional disturbance. The proposed laydown area (Western Pacific site) is currently used for truck parking and would not require any construction that would affect the visual character of the area.

Visual Quality**.** The proposed San Francisco HWC Converter Station site lacks visual coherence and harmony. While some of the structures may be interesting as being old, the general atmosphere is visually cluttered by the juxtaposition of materials, graffiti, uneven pavement, and overhead wires. There are no immediate natural landforms except for the water of Warm Water Cove which is degraded by debris, decaying docks and industrial fences. Moreover, San Francisco Bay does not play a significant visual role when viewing the site from adjacent roads.

The visual quality of the site is classified as Low.

Viewer Sensitivity**.** This concern may also be categorized as the reason people would visit the area. In this case the area is industrial. Those that work there would have low expectations of the area in terms of its scenic content. City of San Francisco traffic counts along Illinois Street taken in September 2003 at 22^{nd} Street show an Average Daily Traffic (ADT) of 2,285 trips per day. The duration of travelers' view of the site would range in the area of 5 seconds given the distance from Illinois Street, and the view would not be in the primary cone of vision for those traveling along Illinois Street. Warm Water Cove Park users may be there in part for the view of the water. However, the converter station site does not really affect views of the cove or Bay. Given the overall context, viewer sensitivity is rated Low.

In addition to travelers, there are those that live in trailers parked along some of the streets or in homeless encampments. They may be there for reasons other than the aesthetic properties intrinsic to the area. In addition to those living and working in the immediate area, there are those residents living in the housing project on Potrero Hill. Here the view is more expansive and does include San Francisco Bay (Photo 2, Figure 4.13-1). For these residents, the sensitivity level would be Moderate, not as high as other portions of San Francisco with views of the Bay unaffected by heavy industrial structures in the foreground.

The overall viewer sensitivity level is classified as Low to Moderate.

Therefore, the visual susceptibility index (meaning the probability that a given landscape will demonstrate a noticeable visual impact with project implementation) is Low. Put another way, any proposed facility would have a low probability of disrupting the existing visual resources of the area as seen from roads and public places.

4.13.1.2.2 Pittsburg Standard Oil Converter Station. The proposed Pittsburg Standard Oil Converter Station site encompasses 7.5 acres adjacent to a developed industrial area of Pittsburg to the north and west. One quarter mile to the south is the Pittsburg-Antioch Highway, and there is intervening open space to the east before a continuation of the industrial development, including the Delta Energy Center power plant and the Delta Diablo Wastewater Treatment Facility. Immediately north of the site is a mainline of the Burlington Northern Santa Fe (BNSF) Railroad and the Dow Chemical facility. To the west of the site are several material storage/trucking sites and then a steel fabrication plant. The public views of the area are limited to those from the Pittsburg-Antioch Highway.

The KOPs selected for this assessment in Pittsburg are shown on Map 4.13-2.

The proposed onshore AC/DC transmission line connections are from the proposed Standard Oil site to New York Slough via a diagonal HDD bore to an existing paved road south of the BNSF right-of-way (ROW) until the line turns 90 degrees north along another existing access road for approximately 0.5 mile to the slough. This latter portion of the route is adjacent to vegetated lowland amid a larger open space to the east. The proposed laydown area is north of the converter station site and would not require any construction activities that would permanently affect the visual character of the area.

An alternative construction laydown area is proposed in the open area approximately 1,500 feet east of the proposed converter station and 800 feet north of the Pittsburg-Antioch Highway. While visible from the highway, the site is flat and has few distinguishing characteristics. The alternative construction laydown area was previously used as a laydown area where the Delta Energy Center was constructed.

***Visual Quality*.** While this area does contain some undeveloped land, the general surrounding context is one of heavy industry with power plants, sewage treatment facilities, railroad, and the Dow Chemical facility all visible in the area. Other than Kirker Creek/Dowest Slough, there are no significant natural features remaining adjacent to the proposed Standard Oil site. No major visible vegetation components are associated with Kirker Creek, which is essentially in a channel not readily visible from any adjacent public place or road. While there are some trees and shrubs adjacent to the proposed site, which may provide screening (see Photo 4 and 5, Figure 4.13-3), they do not change the overall visual effect of the industrial area in the background and a relatively undistinguished plane in the foreground.

The visual quality of the proposed AC/DC cable route once it leaves the existing road south of the BNSF ROW (Photo 6, Figure 4.13-4) and turns north toward New York Slough does become more defined with larger cottonwood trees and native plants in the midground (see Photo 7, Figure 4.13-4). However, this area is still predominantly industrial and relatively unremarkable in character.

The visual quality of the proposed access road from the proposed Pittsburg Standard Oil Converter Station site to the Pittsburg-Antioch Highway, including the proposed bridge over Kirker Creek, is also classified as Moderate-Low. The visual quality of the alternative access road (existing road between Standard Oil site and Loveridge Road) is classified as Low.

In summary, the visual quality for the proposed Pittsburg Standard Oil Converter Station site, the proposed laydown area, the alternative laydown area, the AC/DC transmission corridor, and the proposed and alternative access roads is classified Moderate-Low.

***Viewer Sensitivity*.** Public views of the Pittsburg Standard Oil Converter Station site are limited to those from the Pittsburg-Antioch Highway. Travelers along this portion of the route are primarily those working or doing business in the area. It is not a scenic highway. Further views of the Standard Oil site would be relatively long since the site would be visible to westbound travelers for over a mile, which converts to about 1.25 minutes at the designated speed limit of 50 mph.

View sensitivity is classified as Moderate because of the large number of viewers and the long duration of the view even though viewer expectations would be relatively low.

Therefore, the visual susceptibility index is Moderate-Low, meaning any proposed facility would have a moderate/low probability of disrupting the existing visual resources of the area as seen from roads and public places.

4.13.1.2.3 Offshore DC Cable Route. Other than the points at which the cable comes ashore, which are analyzed under the discussion of the onshore facilities, the route of the cable would be totally under water except for the construction period. There would be no landscape that needs discussion under the visual resources analysis.

4.13.2 Regulatory Setting

4.13.2.1 Federal/State

From the visual resources perspective, there are no specific regulations by federal or state agencies that apply with the exception of CEQA.

4.13.2.2 Local

Locally several zoning and height limitations may apply. The overall applicability of various visual resource-related laws, ordinances, regulations, and standards is presented in Table 4.13-1. In summary, those of relevance are summarized below.

4.13.2.2.1 City of San Francisco. The proposed San Francisco HWC Converter Station Site is zoned M-2 with certain height restrictions as outlined in the 40-X bulk district. However, the project is exempt from these restrictions under section 260 (b) (1) (M).

4.13.2.2.2 City of Pittsburg. The proposed Pittsburg Standard Oil Converter Station site is zoned IG (General Industrial) with a 50-foot height limitation. "An increase over the maximum height allowance is allowed in the IL and IG districts equal to the number of additional feet the structure is set back from each property line beyond the minimum yard requirements up to a maximum of 75 feet. To be entitled to additional height, the building or structure setback must exceed the minimum on all sides." Title 18 Zoning Ordinance, Chapter 18.54 Industrial Districts. Additionally, Pittsburg Municipal Code, Section 18.54.020 states, "All projects require Design Review" (Chapter 18.36).

4.13.3 Environmental Impacts

The proposed onshore AC/DC cable routes in San Francisco are planned to be installed underground and would not result in substantial visual impacts. An alternate overhead AC transmission line has the potential for visual impacts, and is addressed later in this section. The proposed onshore DC cable routes in Pittsburg are also planned to be installed underground. A portion of the proposed AC cable route in Pittsburg for the Standard Oil Converter Station would be installed on 75-foot-tall overhead transmission structures (refer to Figure A.3-22 in Appendix A) between the BNSF ROW and New York Slough. The segment of proposed overhead 230kV line is located approximately 0.5 to 1.0 mile north of the closest public access (Pittsburg-Antioch Highway). Due to their remote location and distance from public view, no substantial visual effects would be expected. The proposed onshore AC/DC cable routes are not assessed further in this analysis. The proposed temporary use of the proposed and/or alternative construction laydown areas in San Francisco and Pittsburg would all involve previously disturbed sites and no long-term visual effects would result from the use of these sites. Accordingly, these laydown sites are not addressed further in this analysis.

TABLE 4.13-1
POTENTIALLY APPLICABLE VISUAL RESOURCE-RELATED LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

Jurisdiction & Applicable LORS	LORS Description
San Francisco	
City and County of San Francisco General Plan	
Recreation and Open Space Element – Shoreline (Objective 3)	Assure that new development adjacent to the shoreline capitalizes on its unique waterfront location, considers shoreline land use provisions, improves visual and physical access to the water and conforms to urban design policies.
Urban Design Element	The Urban Design Element is concerned both with development and with preservation. It is a concerted effort to recognize the positive attributes of the city, to enhance and conserve those attributes, and to improve the living environment where it is less than satisfactory.
Central Waterfront Area Plan Urban Design (Objective 10)	The overall goal of this Plan is to create a physical and economic environment conducive to the retention and expansion of San Francisco's industrial and maritime activities. The purpose of this Area Plan is to guide the future development of the Central Waterfront in a manner serving the varying needs and interests of San Francisco.
San Francisco Planning Code	
M-2 (Heavy Industrial) District	This district is the least restricted as to use, and is located at the eastern edge of the City, separated from residential and commercial areas. The heavier industries are permitted, with fewer requirements as to screening and enclosure than in M-1 Districts, but many of these uses are permitted only as conditional uses or at a considerable distance from Residential Districts (Amended by Ord. 443-78, App. 10/6/78).
Pittsburg	
City of Pittsburg General Plan - Land Use Element (1988)	The provisions of the General Plan - Land Use Element, Policy 2.1S provide the means of compliance with policies and regulations regarding the protection of view corridors to the hills and waterfront
City of Pittsburg General Plan - Parks and Recreation Element (1988)	The provisions of the General Plan - Parks and Recreation Element, Policy 4.2N provide the means of compliance with policies and regulations regarding the protection of view corridors to the river.
City of Pittsburg IG (General Industrial) Zoning District	This district regulates the construction of structures: height, setback, and FAR/lot coverage. Includes discretionary approval by the Planning Commission for design review of buildings and landscaping on the site. (Pittsburg Zoning Ordinance [Title 18])

4.13.3.1 Thresholds of Significance

The Environmental Setting presented above assesses the *susceptibility* of each site to potential impacts that might be generated by a Project. In this section, the applicant-proposed design is simulated into the baseline photographs.

The Impact Severity of the project from each KOP is then determined based upon the following criteria which are based in CEQA Appendix G or local criteria. Impacts would be considered significant if they would:

- Block a scenic vista
- Dominate the view or become obtrusive in the scene
- Be out of character with the adjacent landscape whether it is urban or rural
- Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area

The response to these criteria determines the Impact Severity of a project. As with Impact Susceptibility, the Impact Severity of a project is rated Low, Medium or High. These two categories are then factored together as identified in Table 4.13-2. For example, if a particular site is very scenic and the project blocks a significant portion of this view, then both the Impact Susceptibility and the Impact Severity are classified as High. The resulting impact is significant and not mitigable under the CEQA definition. If a project design is out

TABLE 4.13-2
LEVELS OF VISUAL IMPACTS

	Impact Severity		
Impact Susceptibility	Low	Moderate	High
Low	Less than significant	Less than significant	Adverse But Less Than Significant [1]
Moderate	Less than significant	Adverse But Less Than Significant [1]	Significant [2]
High	Less than significant	Adverse But Less Than Significant [1]	Significant [2]

[1] Adverse But Less than Significant Impacts are perceived as negative, but do not exceed environmental thresholds.

[2] In some cases, Significant Impacts can be mitigated to a level that is not significant or can be avoided altogether with feasible mitigation. Without mitigation, the impact could exceed environmental thresholds. Impacts can be either Significant or Less Than Significant with Mitigation Incorporated, as applicable.

of character with the existing neighborhood (Impact Severity is High) and the Impact Susceptibility has been designated as Moderate, then the visual impact is significant but has the potential for mitigation. All possible relationships between these two components are identified in Table 4.13-2 and are utilized in the determination of visual impacts.

The additional factor of local regulations must also be considered in the analysis. For example, if a project exceeds the allowed height limitations, this is considered a potentially significant impact because it has been so defined in the zoning ordinance.

The impacts below are evaluated on a site-by-site basis from each applicable KOP. Where appropriate, relevant mitigation measures are identified and numbered in sequence.

Construction-related impacts include the process of erecting the converter station and related cable and infrastructure connections, which is projected to take 27 to 30 months. While there would be moving equipment and erecting cranes which certainly would be visible from the adjacent KOPs, these visual impacts are classified as short term and, therefore, less than significant and no mitigation is required.

Operations-related impacts are defined as those impacts that would be visible while the converter station is in operation and visible over the lifetime of the structure. The potential for impacts is discussed on a KOP-by-KOP basis.

4.13.3.2 San Francisco HWC Converter Station

The proposed San Francisco HWC Converter Station is located on a 5.6-acre site set approximately 500 feet to the east of Illinois Street adjacent to 23rd Street. Use of this site as proposed would require removal of two large existing warehouse structures adjacent to Warm Water Cove. The site is somewhat visible from Illinois Street (Photo A of Figure 4.13-5) and the Potrero Hill housing projects (Photo A of Figure 4.13-6), and would be directly visible from Warm Water Cove Park (Photo A of Figure 4.13-7). The most visible component would be the valve and DC hall structure, which has a ridgeline 64 feet in height and a building floor area of approximately 23,000 square feet. The electric switchyard includes a series of metal poles approximately 80 feet in height, which would be most visible from Warm Water Cove. In addition there are three alternative cable routings from the converter station to the PG&E Substation that would most affect views from Illinois Street and Potrero Hill (see Figure A.1-1). The westernmost of these alternatives would be either buried or above ground on 75-foot-tall, 115 kV poles. The easternmost alternative may either be buried or above ground. The middle or 45 degree angle alternative route would only be via subsurface cable. At this time, no supplemental planting or architectural design has been proposed as part of the San Francisco HWC Converter Station.

The converter station is located within an M-2 zone which allows an exemption to the 40-foot height limitation. There is also potential concern about shadows cast by Project components into Warm Water Cove. However, in this case with the demolition of a warehouse and its replacement with switch gear and poles that are more open, it appears that there would be a net reduction in shadows cast onto the water especially in the summer when the sun is farthest north of the equator.

KOP SF-1: 23rd Street at Illinois Street. From this location, the visual changes would be the replacement of the large white masonry warehouse by the converter station valve and DC hall structure, and the possible addition of the overhead 75-foot-tall transmission towers. The 80-foot-high metal poles are visible in the background (Photo B, Figure 4.13-5). From this KOP, the Project structure would be neither out of scale with the adjacent buildings nor would it unfavorably contrast with the surrounding context; no scenic vista would be obscured. The above ground transmission towers (Photo B, Figure 4.13-5) would add somewhat to the visual clutter of the scene, but not to the level of significance. From a visual aspect, the environmentally superior choice would be to place these lines underground. The Impact Severity is classified as Low.

Since the Impact Susceptibility for the area is also Low, the resulting impact per Table 4.13-2 would be less-than-significant for this KOP.

KOP SF-2: Potrero Hill. There are glimpsed views of the Project site for residents of the housing projects on Potrero Hill. However, as can be seen (Photo B, Figure 4.13-6), the view is relatively distant and the converter station would replace structures of a similar size and character. Neither the new structures nor the alternative transmission lines would project to a height that would obscure views of the San Francisco Bay. They are neither out of scale nor unfavorably contrasting. The Impact Severity is classified as Low.

Since the Impact Susceptibility for the area is Low to Moderate, the resulting impact would be less than significant.

KOP SF-3: Warm Water Cove Park. The replacement of the two large warehouse structures by the Project structures, generally of the same scale, would result in greater visual clutter since the switchyard has a great deal of complexity (Photo B, Figure 4.13-7). Further, the overhead cable and the 80-foot-high poles would both add to the complexity and sense of view blockage even though the blockage is not of a scenic vista. The Impact Severity is classified as Moderate.

The Impact Susceptibility for the area is also Moderate (given that the views are from Warm Water Cove, a public place). The resulting impact would be considered adverse but less than significant.

Impact VIS-1: Converter Station Domination of View. Since the architectural design character of the building and the general character of proposed landscaping have not been identified in detail, there is the possibility of generating potentially significant visual impacts based upon the potential of the Project to dominate the scene or become obtrusive on views from Warm Water Cove Park.

While this impact has been classified as less than significant without design controls, it may still be adverse. This adversity can be lessened through the application of Mitigation Measures VIS-1a and VIS-1b.

Mitigation Measure VIS-1a: Plan Submittal Requirements for Building Materials and Colors. All major Project features, including buildings, structures, fencing, and sign backgrounds (excluding electric switch gear and related wires and cables, etc. which shall be galvanized gray as shown in the simulations) shall be painted with neutral tan or gray colors that will minimize the size and height of the facility, blend with adjacent structures and be compatible with natural landscapes where applicable. A specific painting plan shall be developed for approval by the agency with local jurisdiction to ensure that the proposed colors do not unduly contrast with the surrounding landscape colors. All treatments shall be in non-reflective colors. The painting plan shall be submitted sufficiently early to ensure that any pre-colored buildings, structures and linear facilities shall have colors approved and included in bid specifications for such buildings or structures.

Implementation Responsibility:	Project proponent
Requirements and Timing:	Architectural design plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Mitigation Measure VIS-1b: Plan Submittal Requirements for Landscaping. A specific landscaping plan shall be prepared showing the location of proposed landscaping, the varieties and sizes of plants to be planted, and the proposed time of maturity for each species. Plants shall be selected from the approved species list prepared by the agencies with jurisdiction.

Implementation Responsibility:	Project proponent

Requirements and Timing: Landscaping plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied

Monitoring Requirements: City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Application of Mitigation Measures VIS-1a and VIS-1b would reduce Impact VIS-1 to a less-than-significant level.

Impact VIS-2: Converter Station will Create Substantial Light and Glare. There is potential for the Project to cast more ambient light into the immediate area than the existing conditions. There is also the possibility that the luminaries of some of the lighting fixtures may be seen directly by either residents of Potrero Hill or users of Warm Water Cove Park, which through the abrupt contrast of the fixtures' light with the surrounding general darkness, may create the effect of glare.

While this impact has been classified as less than significant, without design controls it may still be adverse. This adversity can be lessened through the application of Mitigation Measure VIS-2.

Mitigation Measure VIS-2: Plan Submittal Requirements for Lighting. Except as required by security and worker-safety requirements, night lighting shall be hooded to direct illumination downward and inward toward the areas to be illuminated in order to minimize nighttime light and glare, backscatter to the nighttime sky, and visibility of lighting to public viewing areas. A specific lighting plan consistent with operational and safety needs and limiting the general lighting levels to a maximum reasonable level shall be submitted to each agency with jurisdiction for approval. The plan shall include provisions for timed and/or motion detection-controlled switches.

Implementation Responsibility: Project proponent

Requirements and Timing: A lighting plan shall be prepared by professionals qualified in the designated field of expertise; Lighting plans and revised design shall be submitted prior to final planning approval

Monitoring Requirements: City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Application of Mitigation Measure VIS-2 would reduce Impact VIS-2 to a less-than-significant level.

Impact VIS-3: Creation of Visual Clutter. There is the possibility that views of the proposed HWC Converter Station from Warm Water Cove Park would be adversely affected without supplemental screening landscaping along the waterfront given the potential for the Project to be more obtrusive than the existing condition. This impact would be considered potentially significant.

Mitigation Measure VIS-3: Landscaping Plan. The view of the proposed HWC Converter Station from Warm Water Cove Park shall be improved by addition of landscaping screening. In order to improve views northward from Warm Water Cove Park, the applicant shall develop a landscape plan which provides screening foliage where consistent with facility location and safety. The landscaping plans shall be reviewed and approved by agencies with jurisdiction.

Implementation Responsibility:	Project proponent
Requirements and Timing:	Landscaping plans shall be prepared by professionals qualified in the designated field of expertise; landscaping plans and revised design shall be submitted prior to final planning approval
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Application of Mitigation Measure VIS-3 would reduce Impact VIS-3 to a less-than-significant level.

4.13.3.3 <u>Pittsburg Standard Oil Converter Station</u>

The proposed Pittsburg Standard Oil Converter Station is located on a 7.5-acre site set back approximately 0.25 mile from the Pittsburg-Antioch Highway. Use of this site as proposed would require removal of several existing structures but not the existing vegetative screening on the adjacent site which is visible in Photo A of Figure 4.13-18 The most visible component of the Converter Station would be the valve and DC hall structure, which would have a ridgeline of 64 feet in height and a building floor area of approximately 23,000 square feet. To the north of the structure would be the proposed electric switchyard, which includes a series of metal poles 80 feet in height. A 230 kV AC, transmission line on 75-foot-talltowers would be constructed between approximately the railroad ROW and New York Slough. The balance of the AC line would be underground. At this time, no supplemental planting or architectural design has been proposed as part of the Project.

The governing zoning for this site is IG (General Industrial), which has a height restriction of 50 feet. Additional height is allowed equivalent to the number of additional feet the structure is set back from minimum requirements to a maximum of 75 feet. Towers and similar type structures can exceed this limit by up to an additional 20 feet.

Design Review approval by the Pittsburg Planning Commission is required for the site plan, architectural design of the structures, and site landscaping.

KOP P-1: Pittsburg-Antioch Highway. This view is taken from approximately 0.25 mile to the southeast of the site and shows the converter station behind the existing screening of vegetation along Dowest Slough/Kirker Creek in the midground (Photo B, Figure 4.13-18. In this context, the large DC/valve hall is co-dominant with the Delta Energy Center, which is shown on the right side of the photo. However, no scenic vista would be blocked nor would the development, including the proposed bridge over Kirker Creek associated with the new access road, be out of character (contrasting) with adjacent existing development. The transmission line and towers will not be visible from this location. The Impact Severity is classified as Moderate/Low.

Since the Impact Susceptibility for the area is Low, the resulting impact would be less than significant.

KOP P-2: Pittsburg-Antioch Highway. This view is taken approximately 0.5 mile to the east of KOP P-1 and demonstrates the overall industrial character of the area with Dow Chemical shown on the right side of the photo and a steel fabrication plant visible under the high water tank (Photo B, Figure 4.13-9). However, even from this distance the DC/valve hall dominates the scene and moderately contrasts even though no scenic vista is being blocked. While the transmission line and towers may be glimpsed from this KOP, they would be seen against the industrial background of the chemical plant and would be indistinguishable to the average viewer. The Impact Severity is classified as Moderate.

Since the Impact Susceptibility for the area is Low, the resulting impact with reasonable design and control of lighting and glare would be less than significant. Even so, there is potential for visual dominance of the Project by both design and by light and glare.

Impact VIS-1: Converter Station Domination of View. The Pittsburg Standard Oil Converter Station would be visible from the Pittsburg-Antioch Highway. Since the architectural design character of the building and the general character of proposed lighting have not been identified in detail, there is the possibility of generating significant visual impacts based upon the potential of the Project to dominate the scene or become obtrusive on views from the Pittsburg-Antioch Highway.

While this impact has been classified as less than significant, without design controls it could still be adverse. This adversity can be lessened through the application of mitigation measures VIS-1a, VIS-1b and VIS1c.

Mitigation Measure VIS-1a: Plan Submittal Requirements for Building Materials and Colors. Mitigation Measure VIS-1a described in Section 4.13.3.2 shall be applied at the Pittsburg Standard Oil Converter Station site. Architectural design and site plans, plus a color and material palette, shall be reviewed and approved by the Pittsburg Planning Commission. Final architectural plans and conditions of approval shall be reviewed and signed off by the appropriate planning and building officials prior to operation of the Project.

Implementation Responsibility:	Project proponent
Requirements and Timing:	Architectural design plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Mitigation Measure VIS-1b: Plan Submittal Requirements for Landscaping. Mitigation Measure VIS-1b described in Section 4.13.3.2 shall be applied at the Pittsburg Standard Oil Converter Station site. Landscape design plans shall be reviewed and approved by the Pittsburg Planning Commission. Final landscape plans shall be reviewed and signed off by the appropriate planning and engineering officials prior to operation of the Project.

Implementation Responsibility:	Project proponent
Requirements and Timing:	Landscaping plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Mitigation Measure VIS-1c: Landscaping Plan. The Applicant shall extend the landscape screening along the eastern property line, using plants compatible with the existing vegetation screen along the Pittsburg-Antioch Highway. Such screening would be most visible from KOP P-2 along the side of the facility. In addition, several clusters of major trees from the Pittsburg planting list shall be located to help visually break up the large vertical planes of the DC/valve hall. The intent is not to completely screen the structure, but to soften its mass by providing intervening tree forms. Landscape design plans shall be reviewed and approved by the Pittsburg Planning Commission. Final landscape plans shall be reviewed and signed off by the appropriate planning and engineering officials prior to operation of the Project.

Implementation Responsibility: Project proponent

Requirements and Timing: Landscaping plan shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Application of Mitigation Measures VIS-1a, VIS-1b and VIS-1c would reduce Impact VIS-1 to a less-than-significant level when applied to the Pittsburg Standard Oil Converter Station.

Impact VIS-2: Converter Station will Create Substantial Light and Glare. There is potential for the Project to cast more ambient light into the immediate area than the existing conditions. There is also the possibility that the luminaries of some of the lighting fixtures may be seen directly by travelers along the Pittsburg-Antioch Highway which through the abrupt contrast of the fixtures' light with the surrounding general darkness, may create the effect of glare.

While this impact has been classified as less than significant, without design controls it may still be adverse. This adversity can be lessened through the application of Mitigation Measure VIS-2.

Mitigation Measure VIS-2: Plan Submittal Requirements for Lighting. Mitigation Measure VIS-2 described in Section 4.13.3.2 shall be applied at the Pittsburg Standard Oil Converter Station site. Lighting plans shall be reviewed and approved by the Pittsburg Planning Commission. Final lighting plans shall be reviewed and signed off by the appropriate planning and building officials prior to operation of the Project

Implementation Responsibility: Project proponent

Requirements and Timing: A lighting plan shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Application of Mitigation Measure VIS-2 would reduce Impact VIS-2 to a less-than-significant level when applied to the Pittsburg Standard Oil Converter Station.

4.13.3.4 Offshore DC Cable Route

Given that the cable would be buried in the bed of San Francisco Bay, there are no visual impacts associated with the operation of the proposed AC/DC cables. Temporary construction impacts would be related to the cable laying process. The primary cable laying ship (Giulio Verne) is 133 meters (approximately 440 feet) in length and is considered of medium size; it would be only one vessel among a thousand in the Bay Area each month. The Giulio Verne (or comparable vessel) is expected to be used to lay cable west and south of the Carquinez Straits while a barge/tugboat would lay cable east of the Carquinez Straits to Pittsburg. The marine construction period is expected to last about 4 to 5 months and is considered short term in terms of visual impacts. Therefore, no significant visual impacts are expected to occur and no mitigation is necessary.

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4.14 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

This section describes the anticipated hazardous materials to be handled, used, and stored and the hazardous and non-hazardous wastes to be generated, stored, or disposed of in conjunction with the construction and operation of the proposed Trans Bay Cable Project (Project). This section also discusses the procedures and engineering controls to be used to minimize the potential environmental impacts from the onsite handling, storage, and use of these hazardous materials and the generation, handling, and disposal of the hazardous wastes with respect to the onshore converter stations. The sampling and analysis of sediment along the cable route, the routing of the cable to avoid contaminated areas of San Francisco Bay, and the generation and handling of potentially contaminated dredge spoils are addressed in Section 4.4, Water Resources and Quality.

4.14.1 Environmental Setting

Table 4.14-1 summarizes the confirmed and suspected soil contamination issues at both of the proposed converter station sites. Table 4.14-2 summarizes the confirmed and suspected groundwater contamination issues at both of the proposed converter station sites.

4.14.1.1 Site Conditions: San Francisco HWC Converter Station

The proposed San Francisco HWC Converter Station site is located on 23rd Street south of the existing Mirant Potrero Power Plant. The HWC site is currently developed and occupied by several businesses. HWC owns the three buildings on the subject property. Each building has its own street address. The building at 435 23rd Street is occupied by HMR Global Recycling. This building is currently used for recycling electronic equipment such as computers, monitors, servers, and printers. The San Francisco Municipal Railway (MUNI) formerly used the building at 525 23rd Street to store engines and other parts for the MUNI bus fleet. Currently, this building is unoccupied. The proposed converter station would be located on approximately 5.5 acres at the site currently occupied by these two buildings. The proposed use of the HWC site would require the demolition of these existing buildings and facilities before construction of the proposed converter station. The building at 555 23rd Street is occupied by DHL, which uses the facility for incoming and outgoing package delivery services. This building/site is not part of the proposed HWC Converter Station site. Access to this facility was not available when the Phase I site reconnaissance and the Phase I interviews were conducted.

The proposed and alternative AC and DC cable routes associated with the proposed HWC site are shown on Figure A.3-1. The proposed underground direct current (DC) cable route to the HWC site would be installed with horizontal directional drilling (HDD) methods or similar underground drilling methods from an area near the east property line of the HWC

TABLE 4.14-1
SUMMARY OF CONFIRMED AND SUSPECTED SOIL CONTAMINATION ISSUES AT THE PROPOSED CONVERTER STATION SITES

Locations/ Proposed Site	Confirmed or Suspected Contaminants										
	Petroleum Hydrocarbons			Manufactured Gas Plant PAH Residues	Metals	Solvents/ VOCs	PCBs	ACM	LBP	RCRA Waste	CA Haz Waste
	TPH-g	TPH-d	TPH-mo								
San Francisco											
HWC Site	Minor	Heavy	Heavy	Likely	Likely	Possible	Possible	Likely[1]	Likely	Possible	Likely
Pittsburg											
Pittsburg Standard Oil Site	Likely, Minor	Likely, Minor	Likely, Minor	No	Likely, Minor	Possible	Unlikely	Likely	Likely	Unlikely	Some likely

Note: Subjective comments on the possibility of suspected contaminants are based on URS's experience on similar sites.

[1] In addition to ACM building materials these sites also have confirmed or suspected naturally occurring serpentine rock containing asbestos.

ACM = asbestos-containing materials
HWC = Harrigan Weidenmuller Company
LBP = lead-based paint
TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TPH-mo = total petroleum hydrocarbons as motor oil
PCB = polychlorinated biphenyl
VOC = volatile organic compound
PAH = polynuclear aromatic hydrocarbon

TABLE 4.14-2
SUMMARY OF CONFIRMED AND POTENTIAL CONTAMINATED GROUNDWATER ISSUES AT THE PROPOSED CONVERTER STATION SITES

Locations/ Proposed Site	Confirmed and Potential Groundwater Contamination								
	Petroleum Hydrocarbons			Manufactured Gas Plant PAH Residues	HazMat ASTs/USTs	Metals	Solvents/ VOCs	PCBs	Cyanide
	TPH-g	TPH-d	TPH-mo						
San Francisco									
HWC Site	Minor	Heavy	Heavy	Likely	Yes, both	Likely	Possible	Unlikely	Possible
Pittsburg									
Pittsburg Standard Oil Site	Likely, Minor	Likely, Minor	Likely, Minor	No	Unknown	Likely, Minor	Possible	Unlikely	Unlikely

Note: Subjective comments on the possibility of suspected contaminants are based on URS's experience on similar sites.
HWC = Harrigan Weidenmuller Company
TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TPH-mo = total petroleum hydrocarbons as motor oil
PCB = polychlorinated biphenyl
VOC = volatile organic compound
PAH = polynuclear aromatic hydrocarbon

site to a nearby area in San Francisco Bay to minimize contact with potentially contaminated Bay sediments. Recovered drilling muds and soils would be characterized and disposed of offsite in compliance with applicable regulations.

The proposed underground alternating current (AC) cable route from the HWC site to the Pacific Gas and Electric Company (PG&E) switchyard would start near the middle of the proposed HWC Converter Station site on the north side, cross 23rd Street, run west on the north side of 23rd Street for approximately 450 feet, turn north onto the Mirant Potrero site for approximately 300 feet, turn west into the PG&E substation for approximately 150 feet, and turn north for approximately 100 feet to the connection with the PG&E switchyard. Excavated soils that could not be returned to the cable trench would be characterized and disposed of offsite in compliance with applicable regulations. The detailed Project description is presented in Appendix A of this EIR.

The proposed use of the HWC site would require the demolition of the existing buildings and facilities located at 435 and 525 23rd Street before construction of the proposed converter station. According to the Environmental Data Resources, Inc. (EDR), report prepared for the Phase I Environmental Site Assessment (ESA) for the HWC site (EDR, 2005; URS, 2005a), no sensitive receptors (e.g., schools, hospitals, day-care facilities, or long-term health care facilities) are located within a 0.25-mile radius of the site. The closest park to the HWC site is Warm Water Cove Park, which is located directly south of the site.

According to the Phase I ESA, one of the buildings at the HWC site, the former Airborne Express Building (located at 435 23rd Street, and currently occupied by HMR Recycling), is listed in the Cortese database. The Cortese database identifies public drinking water wells with detectable levels of contamination, hazardous substance sites selected for remedial action, sites with known toxic materials identified through the abandoned site assessment program, sites with underground storage tanks (USTs) that have had a reportable release, and all solid waste disposal facilities that have known migration of contaminants. The Cortese Database provided no details as to why the HWC site was listed. The Phase I ESA identified the following Recognized Environmental Conditions (RECs) for the HWC site:

- REC 1: Although no records of releases related to the presence of ASTs were found for the HWC site, the previous use of the property for storage of fuel oil and crude oil may have resulted in spills and leaks that may have impacted soil and groundwater.
- REC 2: Historically, up to 11 former USTs containing petroleum products and waste oils have been present on the HWC site. Seven of the USTs and associated piping were reportedly removed. Visible petroleum staining was observed in soils at the bottom of various UST pits and piping trenches after removal, and some soils with elevated petroleum concentrations were excavated and removed from the site. Additional investigation of the former UST areas was required by the San Francisco Department of

Public Health (SFDPH). Evidence of one existing UST was observed at the HWC site (in the former MUNI warehouse) and possible evidence (i.e., pavement cuts) of the previous existence of additional USTs at the HWC site. The historical and current presence of onsite USTs on the HWC site and may have adversely impacted soil and groundwater.

- REC 3: Three monitoring wells were installed at the HWC site in 1999, and quarterly groundwater monitoring is being conducted. The maximum concentrations detected are as follows:

  - TPH-d: up to 50,000 parts per billion (ppb)
  - TPH-g: up to 3,700 ppb
  - TPH as motor oil (TPH-mo): up to 47,000 ppb
  - Total recoverable petroleum hydrocarbons (oil and grease): up to 230,000 ppb

  The groundwater monitoring results for the HWC site have indicated that the elevated concentrations of TPH have not changed significantly since the monitoring began.

- REC 4: Fill underlying the HWC site likely includes 1906 earthquake rubble and has the potential to be impacted with lead and other contaminants.
- REC 5: Weathered serpentine rock, which may contain naturally occurring asbestos, may be present on the HWC site.
- REC 6: A manufactured gas plant was once located in the area of the former MUNI warehouse on the east side of the HWC site. This facility was constructed and began operation in 1902 and was shut down in 1915, when natural gas service began in San Francisco. This manufactured gas plant is likely to have impacted soil and groundwater at the HWC site with contaminants, including polynuclear aromatic hydrocarbons (PAHs), semivolatile organic compounds (SVOCs), heavy hydrocarbons, or lampblack.
- REC 7: According to previous reports (Blymer Engineers, Inc. 1990), asbestos-containing materials were detected in two of the buildings on the HWC site. The asbestos-containing samples were collected from the floor tiles and pipe lagging (the building at 435 23rd Street) and in a wall (the building at 525 23rd Street). Given the historical presence of asbestos-containing materials in these two buildings and the age of the buildings, asbestos-containing materials are expected to exist on the site.
- REC 8: Given the age of the buildings on the HWC site, it is likely that lead-based paint was used on the buildings.

The Phase I ESA identified the following REC on surrounding properties:

- REC 9: The property immediately north of the HWC site, the Mirant (formerly PG&E) Potrero Power Plant located at 1201 Illinois Street) is potentially upgradient of the HWC and may be a source of hydrocarbon contamination to that site. The Mirant Potrero Power Plant property is listed as having entered the Voluntary Cleanup Program in 1991. Elevated concentrations of hydrocarbons in groundwater on this property (slightly lower than the concentrations identified on the HWC site) have been detected in the monitoring wells located on 23rd Street, approximately 20 feet north of the HWC site (URS, 2005b).

The DC cable route for the HWC site would come from San Francisco Bay and pass beneath the proposed converter station site. An AC cable would be linked from the proposed HWC Converter Station to the existing switchyard adjacent to the Mirant Potrero site. The proposed AC cable route would exit the HWC site, pass east under 23rd Street, turn north onto the Mirant Potrero site, and proceed to the PG&E substation. The Phase I ESA for the Mirant Potrero site identified the following RECs for the AC cable route:

- REC 10: Elevated concentrations of hydrocarbons in groundwater have been detected in monitoring wells located on 23rd Street, approximately 20 feet north of the HWC site. The proposed AC cable route travels along this portion of 23rd Street, thus the hydrocarbons in groundwater are REC for the cable route.
- REC 11: The soils that would be excavated along the AC cable route on the Mirant Potrero property would likely be impacted with hydrocarbons and metals, as noted above in the REC for surrounding properties.

4.14.1.2 Site Conditions: Pittsburg Standard Oil Converter Station

The proposed Pittsburg Standard Oil Converter Station site is located in a developed area with a mix of industrial and former industrial uses. (This name reflects the site’s proximity to the former Standard Oil Avenue; no portion of this site was connected with previous oil processing or storage.) The only structures on the Pittsburg Standard Oil site are two abandoned concrete wastewater storage tanks from the former sanitary wastewater treatment plant located at the site and a small, dilapidated wood-frame building. The remainder of the Pittsburg Standard Oil site was previously occupied by an automobile storage yard but is currently vacant. According to the EDR report (EDR, 2005) that was prepared for the Phase I ESA for the Pittsburg Standard Oil site (URS, 2005c), no sensitive receptors (e.g., schools, hospitals, day-care facilities, or long-term health care facilities) are located within a 0.25-mile radius of the Pittsburg Standard Oil site.

Onshore AC/DC cable routes are proposed between the proposed Standard Oil Converter Station site and New York Slough as well as an AC cable on the Mirant Pittsburg property. In addition, offshore submarine cables are proposed as follows: 1) AC cable between PG&E Pittsburg Substation and landfall at New York Slough; and 2) DC cable route from New

York Slough to vicinity of Potrero Point in San Francisco. Refer to Section 4.14.1.3 for information regarding the offshore cable routes. Refer to Figures A.1-1, A.1-3, and Map A.2-1 in Appendix A for the locations of these cable routes. The proposed AC/DC cable route between the Standard Oil Converter Station site and New York Slough would involve a combination of belowground and aboveground AC, and below ground AC and DC installation between the site and New York Slough. The proposed cable route leaves the converter station in a north-northeasterly direction, cuts diagonally across the former Dow ponds in a northeasterly direction to the south side of the BNSF railroad track. This portion of the route would be installed using HDD (or comparable technology). The route then follows the south side of the railroad ROW within an existing roadway in an easterly direction to the Delta Diablo Sanitary Sewage plant outfall roadway (Arcy Lane). At this location, the route then follows the outfall roadway north to New York Slough (refer to Map A.2-1, Sheet 10 of 10). The portion of the route between the BNSF railroad tracks and New York Slough would involve aboveground AC installation and belowground DC installation. Potential contaminants along the route include solvents, lead, and petroleum hydrocarbons.

The proposed Standard Oil Converter Station also includes an approximately 0.25-mile-long new access road that would be constructed between the site and the Pittsburg-Antioch Highway. No potential sources of contamination have been identified along this route.

The Phase I ESA identified the following RECs for the Pittsburg Standard Oil site:

- REC 1: Evidence of dumping and disposal of unmarked drums and buckets containing oily substances constitutes an REC for the Pittsburg Standard Oil site.
- REC 2: Oil staining of site soils, most likely caused by the storage of automobiles at the site, is an REC for the Pittsburg Standard Oil site.
- REC 3: Surrounding sites are heavily vegetated with seasonal weeds. The Pittsburg Standard Oil site has vegetation on the surrounding berms, but little vegetation occurs on the graded portion of the site. This absence of vegetation may be an indication of past or current use of herbicides. The previous wastewater treatment plant may also have used pesticides on the site. The potential use of herbicides and pesticides is an REC for the site.
- REC 4: Two groundwater monitoring or extraction wells, one near the northern boundary of the site and the other near the southwestern boundary of the site, were observed on the Pittsburg Standard Oil site at the time of the site reconnaissance. The wells are approximately 4 inches in diameter and appear to have been constructed of steel. The wells were left open, are poorly maintained, and are therefore a threat to groundwater. No information on the wells was found during the file review or interviews.

- REC 5: Given the age of the buildings on the Pittsburg Standard Oil site, asbestos-containing materials were likely used in building construction.
- REC 6: Given the age of the buildings on the Pittsburg Standard Oil site, lead-based paint was likely used in building and maintenance.

The Phase I ESA identified the following surrounding properties as RECs to the Pittsburg Standard Oil site:

- REC 7: The Dow Chemical Company, located at 901 Loveridge Road, manufactures chlorine, sodium hydroxide, hydrogen, latex, agricultural chemicals (including pesticides), fumigants, fungicides, and chlorinated solvents. Groundwater samples are collected semiannually, and benzene, chlorobenzene, 1,2-DCE, TCE, PCE, vinyl chloride, 1,2-DCP, carbon tetrachloride, dissolved mercury, and methylmercury have been detected in groundwater samples from site monitoring wells. Groundwater extraction occurs in the southern portion of the site to achieve hydraulic containment and separation of groundwater. The southern portion of the Dow facility is adjacent to a portion of the proposed onshore cable, along the ROW for the BNSF Railroad. This portion of the Dow facility consists of a Class II landfill, four former Class I solar evaporation ponds to the north of the ROW, and two former solar evaporation ponds to the south of the ROW. According to the EDR report, the facility is listed in the Toxic Pits Database, the Regional Water Quality Control Board (RWQCB) Spills, Leaks, Investigations, and Cleanup (SLIC) Database, the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) No Further Action Planned (NFAP) Database, and the California Historical UST Database. The facility is also an RCRA Large Quantity Generator of hazardous waste. The Dow Chemical Company has the potential to be an REC along the cable routes for the Pittsburg Standard Oil site because of the site's environmental history and location adjacent to the cable routes.

The Phase I ESA identified the following RECs related to both of the proposed AC/DC cable routes associated with the Pittsburg Standard Oil site.

- REC 8: The southern portion of the Dow Chemical Company facility is adjacent to a portion of the cable routes, where the proposed cable routes parallel the Burlington Northern Santa Fe (BNSF) Railroad ROW. This portion of the Dow site consists of a Class II landfill, four former Class I solar evaporation ponds (to the north of the BNSF Railroad ROW), and two former solar evaporation ponds (to the south of the ROW). Given the history of these facilities and their location adjacent to the cable routes, the Dow site is an REC to the AC and DC cable routes.

- REC 9: A portion of the proposed AC and DC cable routes parallel the south side of the BNSF Railroad ROW. Potential contaminants along this portion of the cable routes include diesel fuel, arsenic, and lead.
- REC 10: The AC cable route enters the Mirant Pittsburg Power Plant property on the northern shore of the site, travels due south, and then turns east into the west side of the PG&E substation. Potential contaminants in this area include PCBs and oil (URS, 2005e).

4.14.1.3 Site Conditions: Offshore Cable Route

The offshore DC cable route was designed to avoid RWQCB-listed toxic hot spot areas in San Francisco Bay. The concentrations of metals detected in the sediment sampling conducted along the cable route are within typical background levels for the San Francisco Bay Area. Sediment testing along New York Slough shows slightly elevated levels of nickel. Preliminary discussions between the Project proponent and the Dredged Materials Management Office (DMMO) indicated that dredged materials from the New York Slough area could likely be returned to the cable excavation after the cable laying was complete subject to verification sampling.

These issues and the sediment sampling and testing that was conducted along the offshore cable route as well as regional sampling data are described in detail in Section 4.4, Water Resources and Quality.

4.14.2 Regulatory Setting

Table 4.14-3 summarizes the federal, state and regional, and local laws and regulations that apply to the use, storage, transportation, and disposal of hazardous materials at both of the proposed converter station sites. A detailed discussion of the federal, state and regional, and local laws and regulations for hazardous materials is provided in Appendix I.

4.14.3 Environmental Impacts

This section discusses the potential environmental impacts associated with the construction and operation of the proposed San Francisco HWC and Pittsburg Standard Oil converter stations (including ancillary facilities), and the installation of the offshore cables. The San Francisco HWC site has higher levels of known and suspected soil and groundwater contamination than the Pittsburg Standard Oil site. However, the cited potential impacts to human health and the environment from contaminated soil and groundwater are similar for both sites. Consequently, the mitigation measures proposed to reduce the potential impacts to less than significant levels are similar for both sites.

TABLE 4.14-3
SUMMARY OF REGULATIONS APPLICABLE TO HAZARDOUS MATERIALS/WASTE HANDLING

Authority	Administering Agency	Requirements and Compliance	Jurisdiction
CERCLA, as amended by SARA; Title III, Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986, 42 USC 11001 et seq.; 40 CFR Parts 302, 355, 370, and 372	EPA Region IX; National Response Center; California Office of Emergency Services (OES); San Francisco Department of Public Health Environmental Health Section/ Contra Costa County Health Services Agency	Project will comply with CERCLA, release notification requirements; SARA Title III, reporting requirements for storing, handling, or producing regulated substances	Federal
29 CFR 1910 et seq. 29 CFR 1926 et seq.	Occupational Safety and Health Administration (OSHA)	Project will comply with requirements pertaining to employers whose employees handle hazardous materials and extremely hazardous chemicals	Federal
Clean Air Act Amendments of 1990, Section 112(r), Accidental Release Prevention Program, 42 USC 7412 (r), 40 CFR Part 68	EPA Region IX; California OES; San Francisco County/ Contra Costa County	Project will comply with requirements pertaining to risk management of regulated substances	Federal
Clean Water Act, Spill Prevention, Control, and Countermeasure Plan, 40 CFR 112	EPA Region IX, RWQCB, San Francisco Department of Public Health Environmental Health Section/Contra Costa County Health Services Agency	Project will comply with requirements designed to prevent the discharge of oil into navigable waters	Federal
RCRA, 42 USC 6901 et seq.; 40 CFR 260 et seq.; 49 CFR 172, 173, and 179	EPA Region IX, Department of Toxic Substances Control (DTSC)	Project will comply with RCRA pertaining to a hazardous waste generator identification number to be coordinated through the EPA and the DTSC	Federal
California Health & Safety Code, Chapter 6.95, Art. 1	San Francisco Department of Public Health Environmental Section/Contra Costa County Health Services Agency	Project requires facilities handling hazardous materials submit a Hazardous Materials Business Plan (HMBP) to the Certified Uniform Program Agency (CUPA)	State
California Health & Safety Code Section 25270	RWQCB	Project will meet requirements that all above ground petroleum storage tanks must be registered with the State Water Resources Control Board	State

TABLE 4.14-3 (CONTINUED)
SUMMARY OF REGULATIONS APPLICABLE TO HAZARDOUS MATERIALS/WASTE HANDLING

Authority	Administering Agency	Requirements and Compliance	Jurisdiction
8 CCR 5194	San Francisco Department of Public Health Environmental Health Section/Contra Costa County Health Services Agency	Project will comply with requirements pertaining to employers whose employees are exposed to dusts, fumes, mists, vapors, and gases	State
California Health & Safety Code §§ 25500–25520; 19 CCR §§ 2720–2734	San Francisco Department of Public Health Environmental Health Section/Contra Costa County Health Services Agency	Project will prepare an HMBP	State
California Accidental Release Prevention (CalARP) Program, California Health & Safety Code § 25531 et seq., 19 CCR Division 2, Chapter 4.5	California OES, San Francisco Department of Public Health Environmental Section/Contra Costa County Health Services Agency	Project will meet HMBP requirements and prepare a risk management plan	State
8 CCR § 339, § 3200 et seq., 5139 et seq., 5160 et seq., 5189 et seq.	California Occupational Safety and Health Administration (Cal-OSHA)	Project will meet requirements pertaining to the control and management of hazardous substances	State
Hazardous Waste Control Act, California Health & Safety Code; 22 CCR 66001 et seq. Chapter 6.5	DTSC, San Francisco Department of Public Health Environmental Health Section/Contra Costa County Health Services Agency	Project will comply with requirements pertaining to the management of hazardous waste	State
Health & Safety Code, 22 CCR 67100, Hazardous Waste Source Reduction and Management Review	DTSC, San Francisco Department of Public Health Environmental Health Section/Contra Costa County Health Services Agency	Project will comply with the requirements pertaining to waste generators developing a plan for reducing their hazardous wastes	State
Health and Safety Code 23CFR 2670 et seq. Underground Storage Tanks	RWQCB, San Francisco Department of Public Health, Contra Costa County Health Services Agency	Project will comply with requirements pertaining to underground storage tanks	State

TABLE 4.14-3 (CONTINUED)
SUMMARY OF REGULATIONS APPLICABLE TO HAZARDOUS MATERIALS/WASTE HANDLING

Authority	Administering Agency	Requirements and Compliance	Jurisdiction
22 CCR 66260-66270	DTSC, San Francisco Department of Public Health Environmental Health Section/Contra Costa County Health Services Agency	Project will comply with requirements pertaining to hazardous waste regulations for generators and transporters of hazardous wastes and owners of hazardous waste Treatment, Storage, and Disposal Facilities (TSDFs)	State
Porter-Cologne Water Quality Control Act	RWQCB	Project will comply with requirements for the RWQCB to establish reportable quantities of hazardous wastes and hazardous materials based on their potential to degrade the waters of the state	State
Uniform Fire Code, Article 80 and others	City and County of San Francisco/Contra Costa County Fire Protection District (CCCFPD)	Project will meet provisions regarding fire protection and neutralization systems for hazardous materials	State
State Building Standard Code	City and County of San Francisco, City of Pittsburg	Project will meet requirements pertaining to fire prevention, building safety, and other codes	State
California Vehicle Code 32100.5	Caltrans	Project will comply with requirements for transportation materials that may pose an inhalation hazard	State
Uniform Building Code	City and County of San Francisco, City of Pittsburg	Project will comply with Building Code Requirements	Local

CCR = California Code of Regulations
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR = Code of Federal Regulations
EPA = Environmental Protection Agency
SARA = Superfund Amendments and Reauthorization Act of 1986
USC = United States Code

4.14.3.1 Thresholds of Significance

The following thresholds of significance are based on CEQA Guidelines (Appendix G). For the purposes of this EIR, the implementation of the proposed Project would have a significant adverse impact with respect to hazardous materials if it would result in any of the following:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and as a result, create a significant hazard to the public or the environment

4.14.3.2 San Francisco HWC Converter Station

This section discusses the potential environmental impacts of, and associated mitigation measures for, the proposed San Francisco HWC converter station.

4.14.3.2.1 Construction-Related Impacts.

Demolition**.** The construction of the converter station would require that two existing structures on the site be removed (see Section 4.14.1.1) and that any contamination from asbestos-containing materials (ACMs) and lead-based paint (LBP) be remediated. The extent of the remediation would be based on the results of the ACM and LBP surveys and the subsequent regulatory agency-approved remediation plans. If the potentially hazardous building materials resulting from demolition were not removed and the appropriate remediation was not performed, a significant impact could result.

Impact HAZ-1: Removal of Potentially Hazardous Building Materials Resulting from Demolition. Structures on the converter station site contain or potentially contain ACMs and LBP. Improper removal or remediation of these materials could result in a potentially significant environmental impact.

Mitigation Measure HAZ-1: Complete an ACM Abatement Plan and an LBP Abatement Plan. Complete ACM and LBP investigation and characterization on the converter station site to fill data gaps and to support development of worker safety procedures, in accordance with regulatory requirements to protect construction workers and the public. The ACM and LBP Abatement Plans shall be completed in compliance with application regulations based on the historical and newly acquired ACM and LBP data. If ACM and LBP are confirmed to be present in concentrations above regulatory limits, the Project proponent shall use ACM- and LBP-certified removal contractors and trained asbestos and lead-based paint removal workers, conduct dust monitoring, and properly dispose of generated wastes offsite. The Project proponent shall also prepare a site Health and Safety Plan for this work.

Regulated ACMs (RACMs) are materials with >1.0 percent friable asbestos or material that will become friable during demolition. These materials must be removed before demolition and disposed of off-site as hazardous waste. Non-friable ACMs can be disposed of as non-hazardous waste in a landfill with the appropriate permits.

LBP with total lead content of 1,000 mg/kg and/or leachability of 5.0 mg/L by analysis of the Waste Extraction Test extract analysis would be classified as California hazardous waste, if disposed of separately. Deteriorated paints that meet the hazardous waste criteria must be removed and disposed of separately. If the paint remains firmly affixed to the building material, the building material can be disposed of as non-hazardous building debris. If the demolition disturbs paint containing detectable lead, the work would need to be conducted in accordance with Cal-OSHA's lead in construction regulation (8CCR1532.1).

San Francisco's Exterior Lead Based Paint ordinance (Building Code Section 3407 and Chapter 36 of the Municipal Code) applies to renovation of exterior lead based paint that contains >0.5 percent of lead and to materials painted with lead-based paint. The San Francisco Building Code has a number of requirements including: notification of the San Francisco Building Department 3 days before the work starts, paint removal must take place within a containment or tools equipped with HEPA filters must be used, posting of a multilingual notice when the containment is installed, and notification of the tenants and neighbors of the building 3 days before the work starts.

Implementation Responsibility: Project proponent

Requirements and Timing: Perform surveys and additional testing as needed; conduct required ACM and LBP removal prior to construction; perform dust monitoring for ACM and LBP components during demolition activities.

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-1 would reduce Impact HAZ-1 to a less-than-significant level.

***Soil Removal*.** As discussed in Appendix A, approximately 15,000 cubic yards of soil would need to be excavated and disposed of offsite during the construction of the San Francisco HWC converter station. Non-hazardous soil removed during construction activities, including grading and excavation, at the converter station site would be stockpiled on the site for onsite or offsite reuse or offsite disposal. Were hazardous soils identified in a Phase II investigation and encountered during excavation, they would be loaded directly onto trucks, covered, and hauled for offsite disposal at an appropriate landfill (Class I). Hazardous soil shipments should conducted by licensed hazardous waste transporters using hazardous waste shipping manifests. Excavated soils would be sampled and tested, as necessary, to determine their suitability for reuse. Excavated soil and rock that were not suitable as backfill would be removed from the site and disposed of at an approved landfill. If contaminated soils were not properly sampled, handled, analyzed, or characterized, transported, or disposed of, the soils could present a potentially significant impact.

Impact HAZ-2: Soil Removal. Soils removed during construction of the converter station and cable routes could be contaminated. Improper sampling, handling, analyzing, or characterizing of the soils could result in a potentially significant environmental impact. Soils at the HWC site are likely to be contaminated with metals and either TPH or PAHs, depending on location. In the middle of the site, a naturally occurring subsurface serpentinite ridge may require excavation. Serpentinite contains naturally occurring asbestos and these soils, if disposed of offsite, would likely require disposal as California hazardous waste.

Mitigation Measure HAZ-2: Soil Removal Protocols. Previously uncharacterized soils that are stained or odiferous shall be segregated on plastic, sampled, and characterized for onsite use or offsite disposal. The Soil and Groundwater Management plans (SMP, GMP) shall detail storage, transportation, and disposal options for soil and groundwater excavated/extracted during the converter station construction. They would also specify dust monitoring needs for soil excavation and management.

Previously characterized hazardous soils shall be loaded onto trucks for offsite disposal. Hazardous soil disposal requires that hazardous waste manifests accompany the waste. Hazardous waste transporters shall be required to haul hazardous soils to a Class I hazardous waste landfill. The personnel handling the hazardous soils are required to have met the OSHA hazardous work operations training requirements. A Health and Safety Plan shall be prepared for this work.

Previously characterized non-hazardous soils shall be stockpiled for onsite or offsite reuse or offsite disposal, as needed.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Implement soil removal and handling procedures as per SMP protocol during construction phase; perform dust monitoring during hazardous soils excavation, as applicable
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-2 would reduce Impact HAZ-2 to a less-than-significant level.

***Construction-phase Hazardous Materials Use, Storage, and Disposal*.** Construction activities would involve truck traffic and heavy equipment operations. During the construction phase, various hazardous materials would be used, including: gasoline, diesel fuel, motor oil, hydraulic fluid, glycol, lubricants, solvents, cleaners, sealers, paints, and paint thinner. The hazardous materials usage that is anticipated to occur at this converter station site during the construction phase is summarized in Table 4.14-4.

Impact HAZ-3: Construction-phase Hazardous Materials Use. Hazardous materials would be used during construction activities. Misuse, inadequate storage, or improper disposal of these materials could result in a potentially significant environmental impact.

Mitigation Measure HAZ-3: Reduction of Hazards During Construction Phase. The hazards presented by the use of hazardous materials during the construction phase are well understood, and the appropriate management controls to mitigate potential impacts shall be implemented. These controls include: 1) developing required management plans, e.g., a Spill Prevention, Control, and Countermeasure Plan (see HAZ-5 for more SPCC Plan details); 2) secondary containment; 3) separate storage of incompatible materials; and 4) proper training of personnel.

Additionally, construction personnel shall be trained in safety and defensive emergency response procedures. Construction personnel shall also receive hazardous-waste-related training that focuses on recognition of potentially contaminated soil and/or groundwater that may be encountered during subsurface excavations for foundations or pipeline/cable trenches. If such contaminated soil or groundwater is suspected, contingency procedures shall be followed to protect worker safety and public health. All vehicles and construction equipment shall be inspected to ensure that no fluids are leaking (e.g., oil, hydraulic fluid, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, clearly labeled containers.

Hazardous materials that must be disposed of will be disposed of as hazardous waste in accordance with the appropriate regulations for storage, transportation, and disposal of hazardous waste.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Construction contractor to implement hazard reduction measures as detailed above during construction phase

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

TABLE 4.14-4
HAZARDOUS MATERIALS USE
ANTICIPATED DURING PROJECT CONSTRUCTION

Material	Maximum Onsite Quantity	Use	Hazards[1]	Storage Type/Area
Fuels				
Unleaded gasoline	2,000 gallons	Fuel for construction equipment	Acute, chronic, fire	Equipment service vehicle tanks
Diesel fuel	2,000 gallons	Fuel for construction equipment	Acute, chronic, fire	Equipment service vehicle tanks
Lubricants				
Motor oils	20–30 gallons	Lubricating oil for construction equipment and vehicles	Acute, chronic, fire	Equipment service vehicle tanks
Hydraulic oils	40–50 gallons	Hydraulic construction equipment	Acute, chronic, fire	Equipment service vehicle tanks
Various greases	< 25 gallons	Lubricants for construction equipment and permanent plant equipment including motors, pumps, valves, etc.	Acute, chronic, fire	Original shipping containers, equipment service vehicle
Solvents				
WD-40, similar solvents	2–3 gallons	Grease remover	Acute, chronic, fire	Original shipping containers, construction warehouse
Methyl ethyl ketone	< 25 gallons	Solvent and cleaner	Acute, chronic, fire, reactive	Original shipping containers, construction warehouse
PVC pipe joint cement	5–10 gallons	Solvent based joint cement for assembly of PVC piping	Acute, chronic, fire	Original shipping containers, construction warehouse
PVC pipe cleaner	10–20 gallons	Solvent to clean PVC pipe joints prior to completing pipe joint welding (epoxy)	Acute, chronic, fire	Original shipping containers, construction warehouse
Paints				
Paint, miscellaneous	10–20 gallons	Paint for touch-up painting of construction equipment and buildings	Acute, chronic	Original shipping containers, construction warehouse
Paint	400–500 gallons	Permanent structures paint	Acute, chronic	Original shipping containers, construction warehouse

TABLE 4.14-4 (CONTINUED)
HAZARDOUS MATERIALS USE
ANTICIPATED DURING PROJECT CONSTRUCTION

Material	Maximum Onsite Quantity	Use	Hazards[1]	Storage Type/Area
Paint thinner, miscellaneous	5–10 gallons	Thinner for touch-up paint	Acute, chronic, fire, reactive	Original shipping containers, construction warehouse
Paint thinner	200–300 gallons	Thinner for structures paint	Acute, chronic, fire, reactive	Original shipping containers, construction warehouse
Aerosol paint	40–50 12-ounce cans	Touch-up paint or marking paint	Acute, chronic, fire, pressure	Original shipping containers, construction warehouse
Miscellaneous				
Concrete curing agents	25–30 gallons	Curing agent applied to surface of freshly poured concrete to aid in proper curing	Acute, chronic, fire	Original shipping containers, construction warehouse
Concrete form release agents	25–30 gallons	Agent sprayed on concrete forms prior to placement of concrete so forms can be stripped after concrete sets	Acute chronic fire	Original shipping containers, construction warehouse
Epoxy Resins				
Epoxy type grout material	5–10 gallons	Epoxy based grout material for grouting of equipment	Fire	Original shipping containers construction warehouse
Concrete anchor epoxy	100–200 epoxy-filled 4–6 ounce glass vials	Combination epoxy and hardener agents in glass vials used for bonding anchor bolts	Fire	Original shipping containers, construction warehouse

[1] Hazard categories are defined by 40 CFR 370.2. Health hazards include acute (immediate) and chronic (delayed). Physical categories include fire, sudden release of pressure, and reactive.
CFR = Code of Federal Regulations
PVC = polyvinyl chloride

Resulting Level of Significance. Mitigation Measure HAZ-3 would reduce Impact HAZ-3 to a less-than-significant level.

***Construction-phase Waste Streams*.** The following waste streams would be expected to be generated during construction: soils containing hazardous waste and soils that do not contain hazardous waste; ACMs; non-hazardous scrap wood, steel, glass, plastic, and paper; empty hazardous material containers; hazardous solvent waste; hazardous spent lead acid and alkaline batteries; sanitary waste from portable chemical toilets; and non-hazardous storm water runoff. Groundwater collected during construction dewatering is discussed further in Impact and Mitigation Measure HAZ-7 of this section.

Non-hazardous waste would consist of wood refuse, metal and glass containers, and protective plastic equipment coverings. This waste would be generated at an estimated rate of approximately 40 cubic yards per week during construction. Concrete, asphalt, steel, aluminum, and copper from building, foundation, and parking area demolition would be recycled, as practical. The California Integrated Waste Management Board website lists California construction and demolition waste recycling facilities by county. Two facilities that could be used for recycling at the San Francisco HWC Converter Station site are SF Recycling and Disposal, Inc., which is located at 501 Tunnel Avenue, San Francisco, CA, 94134, and Specialty Crushing, Inc., Lot Seawall 352, Pier 94, Cargo and Amador Roads, San Francisco, CA, 94124. Two facilities that could be used for recycling at the Pittsburg Standard Oil Converter Station site are the West Contra Costa Sanitary Landfill at 1 Parr Blvd. Richmond, CA, 94801, and Chip It Recycling at 175 Sandy Lane, Oakley, CA, 94561. Recycling centers vary as to the wastes they accept, so the demolition contractor will make the final arrangements for recycling at specific facilities.

Hazardous wastes would consist of hazardous material containers and minor spill cleanup. Drums, waste oil, and oil filters would be properly managed and recycled. The major source of hazardous waste would likely be contaminated soil.

The total amount of solid waste generated by the construction activities at the San Francisco HWC Converter Station site is expected to be similar to that for normal commercial construction and is not expected to result in significant impacts to public health or to cause adverse effects on local landfill capacity. Information on landfills serving the San Francisco area is presented in Table 4.14-5.

The potential impact associated with the storage and disposal of non-hazardous construction wastes is considered to be potentially significant if the wastes are not managed and disposed of properly.

Impact HAZ-4: Construction-phase Waste Streams. Improper storage and disposal of solid waste and hazardous construction wastes could result in a potentially significant environmental impact.

Mitigation Measure HAZ-4: Management of Construction-phase Waste Streams. The onsite management and offsite disposal procedures of solid wastes (including potentially contaminated soil) shall be in a Solid Waste Management Plan for the Project. Waste shall be stockpiled temporarily before disposal offsite. The local fire department and emergency

TABLE 4.14-5
LANDFILLS SERVING THE SAN FRANCISCO AND PITTSBURG AREAS

Landfill	Phone Number	Location	Class	Materials Accepted	Permitted Capacity	Annual Usage	Remaining Capacity (cu yd)	Estimated Closure Date	Approximate Distance from Sites
Clean Harbors Buttonwillow Landfill	(661) 762-7372	2500 Lokern Rd, Buttonwillow, CA 93206	I	Solid & Liquid	13.25 million cubic yards	352,000 tons	11,000,000	2030	260 mi (SF) 260 mi (Pitt)
Chemical Waste Management Kettleman Hills Landfill	(559) 386-9711	35251 Old Skyline Rd, Kettleman City, CA 93239	I	Solid & Liquid	15 million cubic yards	800,000 cubic yards	8,000,000	2038	220 mi (SF) 220 mi (Pitt
Allied Waste Management Keller Canyon Landfill	(925) 458-9800	901 Bailey Rd, Pittsburg, CA 94565	II and III	NA	3500 tons/day	821,000 cubic yards	35,000,000	2038	40 mi (SF) 5 mi (Pitt)
Chemical Waste Management Altamont Landfill	(800) 449-6349	10840 Altamont Pass Rd, Livermore, CA 94550	II and III	Solid & Sludge	40 million tons	2 million tons	14 million tons	2020	50 mi (SF) 50 mi (Pitt)
Chemical Waste Management Redwood Landfill Inc.	(415) 892-2851	8950 Redwood Hwy, Novato, CA 94945	II and III	NA	NA	NA	NA	2038	20 mi (SF) 30 mi (Pitt)
West Contra Costa Sanitary Landfill	(510) 233-4330	1 Parr Blvd, Richmond, CA 94801	II	NA	NA	NA	NA	NA	260 mi (SF) 260 mi (Pitt)

Sources: Personal communications between land fill representatives and URS staff. Turek, 2006; Lewis, 2005; Atkinson, 2006; Keller Canyon Landfill, 2006.
NA = Not Applicable

management team shall be provided a list of the waste material expected to be generated and stored onsite. Hazardous wastes generated during construction shall be collected in hazardous waste accumulation containers near the point of generation and moved daily to the construction contractor's 90-day hazardous waste storage area at the converter station site. The accumulated waste shall be delivered to an authorized waste management facility.

The exact volume of hazardous wastes to be generated at the San Francisco HWC Converter Station site cannot be estimated at this time, but the estimated amount of excavated soil that would need to be disposed of offsite is estimated at approximately 15,000 cubic yards for this converter station site. Even if this entire amount of excavated soil would need to be disposed of as hazardous waste, it would not exceed a significant portion of the available hazardous waste landfill capacity in California. The capacity details of various landfills for both non-hazardous and hazardous waste are detailed in Table 4.14-5. The capacity and estimates for daily volumes of waste received were verified, as detailed in the personal communications provided in the references for this section.

Management of these wastes shall be the responsibility of the construction contractor(s). Typical management practices required for contractor waste include characterization and recycling when possible, proper storage of waste and debris, including covering daily to prevent wind dispersion, and weekly pickup of waste with disposal of non-hazardous wastes at local Class III landfills.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Implement waste management procedures during construction phase
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-4 would reduce Impact HAZ-4 to a less-than-significant level.

***Construction-phase Accidental Spills*.** The most likely incident involving hazardous materials during construction would be a small spill or release of fuels, glycol, solvents, paints, or lubricants. A more serious incident could involve a service or refueling vehicle, given the larger volume of fuels normally carried on those types of vehicles. The hazardous materials to be used during the construction phase of the proposed Project are listed in Table 4.14-4. Due to the relatively small quantities of hazardous materials that would be used during construction and the regulatory requirements associated with storage and use of these materials, a spill or an accidental release is the only potentially significant impact.

Impact HAZ-5: Construction-phase Accidental Spills. An accidental spill or a release of hazardous materials could occur during construction. This impact is considered potentially significant.

Mitigation Measure HAZ-5: Construction-phase Spill Prevention, Control, and Countermeasure. The following shall be implemented both to prevent spills from occurring and to minimize impacts in the event that they do occur:

- All spills shall be cleaned up quickly and all workers shall be adequately trained to recognize the hazards associated with such spills.
- A Spill Prevention, Control, and Countermeasure (SPCC) Plan for the converter station shall be prepared in accordance with federal and state regulations. This plan must be prepared if petroleum products are stored onsite in ASTs with a capacity that equals or exceeds 55 gallons for a single tank or equals or exceeds 1,320 gallons aggregate for more than one tank. The SPCC Plan must be prepared before the delivery of petroleum products to the site. The SPCC Plan shall include information on spill response procedures and fuel storage.
- Material Safety Data Sheets (MSDSs) for each chemical used during construction shall be kept onsite. Construction employees shall be informed of the location and content of the MSDSs, as required by OSHA’s Hazard Communication Standard, Title 29 of the Code of Federal Regulations (CFR) Section 1910.1200.
- In case of an accident, the City and County of San Francisco Fire Department shall be notified as the first responder. All other federal, state, and local notification requirements shall be followed for any release that exceeds the reportable quantity or threatens to have a significant impact.
- The Project shall comply with all transportation requirements for hazardous materials on state highways. These requirements apply to both hazardous materials coming onto the site and hazardous wastes leaving the site.
- All vehicles and construction equipment shall be inspected to ensure that there are no leaking fluids (e.g., oil, hydraulic, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, labeled containers. Any observation of spills, leaking fluids, or improperly stored fluids shall trigger the issuance of a “stop work” notice until the problem is resolved, including the removal of any soil contaminated by vehicle fluids.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Establishment and compliance with SPCC and other requirements detailed above performed during construction phase

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-5 would reduce Impact HAZ-5 to a less-than-significant level.

***<u>Construction-phase Dust and Volatilization of Contaminants</u>*.** The potential for environmental and human health effects to occur in conjunction with the generation of hazardous wastes, especially the excavation of contaminated soil and the associated construction dust and volatilization of contaminants, could present a potentially significant impact to worker safety and public health.

Impact HAZ-6: Construction-phase Dust and Volatilization of Contaminants. Excavation of contaminated soil and generation of hazardous waste soils could result in construction dust and volatilization of contaminants that pose environmental and human health risks, particularly to construction workers. This impact is considered potentially significant.

Mitigation Measure HAZ-6: Reduction of Construction Dust and Volatilization of Contaminants. Dust control measures (i.e., keeping the soil wet during excavation) shall be implemented during excavation and construction activities, and dust monitoring shall be performed. Suspected contaminated soil that is stockpiled on the site shall be covered daily with plastic to prevent volatilization of contaminants and to control dust. Contaminated soil may also be loaded directly onto trucks for transport to an appropriate offsite disposal facility. The loaded soils shall be properly covered and manifested as necessary. Dust monitoring shall be performed during excavation and loading of hazardous soils. The accumulated waste will then be delivered to an authorized waste management facility. Dust monitoring shall confirm that the dust control measures are effectively protecting site workers and the public.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implement dust control measures during construction phase and conduct dust monitoring

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-6 would reduce Impact HAZ-6 to a less-than-significant level.

***Contaminated Groundwater*.** Groundwater at the San Francisco HWC Converter Station site is known to be contaminated. Upgradient Mirant Potrero site TPH contamination, the history of ASTs and USTs on the HWC site, and the monitoring of HWC site groundwater show or suggest the long-term presence of THP in the groundwater. The presence of a manufactured gas plant (MGP) on the HWC site may indicate that the HWC site is also contaminated with PAHs, and other MGP residues. The site may have metals-contaminated fill which could impact groundwater. Groundwater may be encountered during excavation or other subgrade activities. Potentially significant impacts could occur if this groundwater was not properly handled or contained.

Impact HAZ-7: Contaminated Groundwater. The San Francisco HWC Converter Station site is known to have contaminated groundwater. Groundwater may be encountered during construction and groundwater dewatering. The lead regulatory agency associated with the proposed Project may require control or remediation of the site groundwater for redevelopment of the property. Failure to control the contaminated groundwater flow could result in a potentially significant impact.

Mitigation Measure HAZ-7: Contaminated Groundwater Control. If groundwater was encountered during construction at the converter station site, the water shall be collected onsite in a tank or tanks, sampled, and analyzed. Based on the analytical data, the water shall be characterized for disposal by one of the following methods:

- Used onsite for dust control.
- Treated onsite and discharged under the authority of a general National Pollutant Discharge Elimination System (NPDES) permit. Treatment options would include, but are not limited to, filtration or filtration and treatment by granular-activated carbon [GAC]. Treatment residuals would be sampled, analyzed, characterized, and disposed of offsite in compliance with applicable regulations.
- Disposed of offsite at a commercial water treatment facility in compliance with applicable regulations.

If groundwater was encountered at the site and it was found to be contaminated, it is possible that the RWQCB would require groundwater control as part of the development plan for the Project on that site. Potential groundwater-remedial strategies would depend on a number of factors including: site contaminants, evaluation of impacts to human health and the environment, and evaluation of the technical merits of available remedial strategies. Based on these factors the final selection would be negotiated between the RWQCB and TBC. The potential remedial options provided herein are for informational purposes only. Potential groundwater control methodologies include installing a slurry wall around a portion or the entire contaminated site combined with groundwater pump and treatment and discharge of treated groundwater to a storm drain/sewer system under the authority of an NPDES permit. Other alternative technologies include in situ biological treatment and in situ oxidation or reduction, depending on the site-specific contaminants and hydrogeological conditions.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implement groundwater control measures during construction (and continue into operational phase, if necessary), and perform groundwater collection, storage, treatment, and discharge monitoring, as necessary

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-7 would reduce Impact HAZ-7 to a less-than-significant level.

4.14.3.2.2 Operations-related Impacts.

***Operations-phase Hazardous Materials Usage*.** The proposed converter station is designed to minimize the use of hazardous materials. Storage facilities and handling equipment for hazardous materials have been designed so that in the unlikely event of an accidental release of a hazardous material, the potential impact would be kept below designated thresholds of significance.

After the construction of the proposed Project, transformer oil for the electric equipment and diesel fuel for the emergency backup generator and fire pumps would be the only large-volume hazardous materials present at the converter station (other than incidental painting and janitorial supplies). The initial fill of transformer oil would be 119,600 gallons for four transformers, one of which would serve as an emergency backup. The transformer oil at the converter station would not be stored on the site before the transformers were filled; the initial fill quantities would be brought to the site when the transformers were ready to be filled.

The initial fill of diesel fuel for the backup generator at the converter station would be 10,000 gallons, based on a 900-kilowatt (kW) emergency generator and two fire water pumps that are capable of operating for 96 hours at full standby without refueling. The aboveground diesel tank for the converter station would be kept full during operation of the converter station.

The potential public health impacts associated with the operation of the converter station would be mitigated by the use of containment structures and the development and implementation of Emergency Response Plans, an SPCC Plan, safety programs, and employee training. Design features of the proposed Project that would reduce potential impacts to below the level of significance include the following:

- The fire protection system would consist of automatic detection and firefighting equipment.
- Bulk fuel would be stored in ASTs, and all other chemicals would be stored in their original shipping containers.
- Fuel and transformer areas and transfer areas would be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank, including an allowance for rainwater.
- Small-quantity chemicals used for maintenance tasks would be kept in appropriate flammable material or corrosive material storage lockers. Incompatible materials (e.g., acids and bases), if any, would be stored separately.

The smaller volume hazardous materials that would be used during the operations phase are typical of those used at other industrial facilities. They would include oils, solvents, and other products (Table 4.14-6). The characteristics of these hazardous materials are described in Table 4.14-7. Use of hazardous materials during the operations phase of the Project could result in a significant impact if not handled properly.

TABLE 4.14-6
HAZARDOUS MATERIALS USED DURING PROJECT OPERATIONS PHASE

Chemical	Application	Storage Location	Storage or Usage Quantity	
			Average	Maximum
Transformer Oil	Electric Equipment	--	119,600 gallons initial fill	Not stored onsite. Initial fill quantity is brought to site at the time of replacement
Lubricating Oil	Rotating Equipment	Throughout plant	TBD, initial fill	TBD
Insulating Oil	Capacitors	Throughout plant	77,400 liters in use, 300 liters in spare capacitors	Same
Sulfur Hexaflouride	Switchgear insulation	Spares bottles in storage buildings	550 liters in use, 120 liters spare capacity stored in bottles	Same
Diesel Fuel	Emergency Backup Generator	--	10,000 gallons initial fill	Maintain full above-ground diesel tank

TABLE 4.14-7
CHARACTERISTICS OF THE HAZARDOUS MATERIALS USED DURING PROJECT OPERATIONS AND MAINTENANCE

Material	CAS Number	Maximum Onsite Quantity	Hazards	Phase	CalARP Threshold Quantity
Diesel Fuel in Emergency Generator	6847-3-6	10,000 gallons	Fire, acute	Liquid	NA
Transformer Oil	None	119,000 gallons	Fire, acute	Liquid	NA
Insulating Oil		77,700 liters	Fire, acute	Liquid	
Sulfur Hexaflouride		670 liters	Suffocation hazard	Gas	

CAS = Chemical Abstract Service
CalARP = California Accidental Release Prevention
NA = Not applicable

Impact HAZ-8: Operations-phase Hazardous Materials Usage. Hazardous materials shall be used during operations and maintenance activities. Misuse, inadequate storage, or improper disposal of these materials could result in a potentially significant environmental impact.

Mitigation Measure HAZ-8: Control of Operations-phase Hazardous Materials. A Hazardous Materials Business Plan (HMBP) shall be developed and implemented prior to turnover of site management from the construction contractor to the operating company. All hazardous materials shall be handled and stored in accordance with applicable codes and regulations. Storage quantities of all hazardous materials shall be minimized, and non-hazardous materials shall be substituted for hazardous materials at the converter station to the extent practicable. Small-quantity chemicals used for maintenance tasks shall be kept in appropriate inflammable material or corrosive material storage lockers. Bulk chemicals shall be stored in ASTs, and all other chemicals shall be stored in their original shipping containers. Incompatible materials shall be stored in separate storage containment areas. Chemical storage areas and transfer areas shall be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank, including an allowance for rainwater. Areas susceptible to potential leaks and/or spills shall be paved and bermed or otherwise secondarily contained. Specifically, the transformers and the diesel ASTs would have secondary containment. Periodic inspections shall be conducted to ensure that all containers are secure and properly marked. Piping and tanks will be protected from potential traffic hazards by concrete or other barriers. Hazardous materials will be delivered to the converter station periodically. Transportation of these materials shall comply with all applicable regulations of the U.S. Department of Transportation, the EPA, DTSC, the

California Highway Patrol, and the State Fire Marshal. An HMBP shall be prepared prior to delivery of specified hazardous materials to the converter station in conformance with Title 19 of the California Code of Regulations (CCR) and California Health and Safety Code Section 25504. The HMBP requires facilities to develop the following information:

- Facility map showing locations of hazardous materials and emergency response equipment
- Hazardous materials inventory, including MSDSs for all hazardous materials stored and used onsite
- Emergency contact information
- Emergency response plans and procedures
- Emergency notification procedures
- Emergency response training for all employees

Implementation Responsibility: Project proponent

Requirements and Timing: Implement hazardous materials control measures throughout operations phase of Project

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-8 would reduce Impact HAZ-8 to a less-than-significant level.

Operations-phase Waste Streams**.** The proposed Project would generate a variety of wastes during operation. These wastes include replaceable parts, rags, and other waste materials and chemicals produced during maintenance activities; equipment fluids; and skimmed oil from an oil/water separator used for rainwater collected in the secondary containment structures. Inert solid waste generated at the converter station during operation would be predominantly maintenance wastes such as scrap metal, wood, and plastic from surplus and deactivated equipment and parts.

Impact HAZ-9: Operations-phase Waste Streams. Improper storage and disposal of operational wastes could result in a potentially significant environmental impact.

Mitigation Measure HAZ-9: Manage Waste Generation, Storage, and Disposal During Operations Phase. Before facility start-up, an application shall be made to DTSC for a hazardous waste generator number. The facility shall not treat, store, or dispose of hazardous waste in a manner that will cause the facility to be characterized as a treatment, storage and disposal facility (TSDF). A detailed waste management plan shall be prepared prior to start-up to ensure proper storage, labeling, packaging, record keeping, manifesting, minimization, and disposal of all hazardous materials and wastes. The waste management plan will include:

- A description of each hazardous waste stream
- Handling, transport, treatment, and disposal procedures for each waste
- Preparedness, prevention, contingency, and emergency procedures
- Personnel training

Scrap materials such as paper, packing materials, glass, metal, and plastic shall be segregated and managed for recycling. Non-recyclable inert wastes shall be stored in covered trash bins in accordance with local ordinances and picked up by an authorized local trash hauler on a regular basis for transport and disposal in suitable landfill. Skimmed oil collected from equipment drains and other liquids from equipment shall be transported by an authorized carrier to a certified recycling facility.

Implementation Responsibility: Project proponent

Requirements and Timing: Implement waste management procedures throughout operations phase of Project

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-9 would reduce Impact HAZ-9 to a less-than-significant level.

***Operations-phase Accidental Spills*.** The potential for environmental and human health effects associated with the hazardous materials used during the operations phase of the Project is minimal. The most likely incident involving hazardous materials during operation would be a small spill or release of transformer oil or diesel fuel during the refilling of the transformers or the diesel tank for the backup generator.

Impact HAZ-10: Operations-phase Accidental Spills. Non-compliance with regulatory requirements associated with storage, use, and containment of hazardous materials and/or petroleum hydrocarbons could result in accidental spills. The impact from accidental spills of these materials is considered potentially significant.

Mitigation Measure HAZ-10: Operations-phase Spill Prevention, Control, and Countermeasure. The following shall be implemented during operations:

- All workers shall be adequately trained to recognize the hazards associated with accidental spills. Training shall include ensuring that personnel who maintain the facility are adequately trained to recognize the hazards associated with such spills. Personnel who maintain the facility will be trained in the use of fire suppression equipment, evacuation, notification, and other defensive emergency response procedures. Maintenance personnel will also be trained in hazardous materials and hazardous waste awareness, handling, and management, as required for their level of responsibility.
- The proper use of safety procedures and development and implementation of a project-specific SPCC Plan will help prevent such incidents. The SPCC Plan will include information on spill response procedures and fuel storage.
- An MSDS will be kept onsite for each onsite chemical.
- The programs to be implemented to protect worker health and safety shall also benefit public safety. Facility design shall include redundant controls and monitoring systems to minimize the potential for conditions in which accidental spills could occur. Potential public health impacts associated with facilities operation will be mitigated by development and implementation of Emergency Response Plans, an SPCC Plan, secondary containment structures for oils and other hazardous materials, safety programs, and employee training.

Implementation Responsibility: Project proponent

Requirements and Timing: Implement SPCC measures throughout operations phase of Project

Monitoring Requirements: City of Pittsburg to monitor to ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-10 would reduce Impact HAZ-10 to a less-than-significant level.

***<u>Operations-phase Fire and Explosion Risk</u>*.** As shown in Tables 4.14-6 and 4.14-7, several materials (e.g., transformer oil and diesel fuel) that would be used and/or stored onsite at the converter station during the operation of the proposed Project are flammable. These materials are considered to pose a greater risk than the other flammable substances because they would be handled in large quantities. The AC and DC cables are not considered to pose a significant fire risk.

Impact HAZ-11: Operations-phase Fire and Explosion Risk. Non-compliance with regulatory requirements associated with storage, use, and containment of flammable materials could result in a fire or explosion. The impact of a fire or explosion is considered potentially significant. If the onsite fire protection equipment could not address the fire, outside agencies would need to be called. This impact is considered potentially significant.

Mitigation Measure HAZ-11: Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase. The flashpoints of transformer oil and diesel fuel are 295°F and 100°F, respectively, and the auto ignition points are 484°F and 494°F, respectively (Sax, 1992; MSDS for transformer oil; MSDS for diesel fuel). The National Fire Prevention Association (NFPA) assigns lubricating oils a fire hazard rating of 1, meaning that the materials "must be preheated before ignition can occur. Materials of these types require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur" (Siemens, 2006).

The converter station shall have onsite fire protection systems (including emergency backup systems). During the detailed design phase of the proposed Project, potential fire protection designs and systems shall be reviewed with local agencies to finalize design details.

In general, the fire protection system shall consist of automatic detection and firefighting equipment. The fire detection control panel will be located in the control room and will be connected to the control and protection system for remote annunciation. The fire alarm will be initiated automatically by smoke, heat, or flame detectors, or manually by push-button. A combination of detectors will be used, including infrared and ultraviolet detectors, ionization and optical smoke detectors, and rate-of-rise temperature-sensitive detectors, depending on the equipment and/or space being monitored.

Audible alarms and flashing lights will be activated in the event of a fire. The equipment or area where the alarm is triggered will be indicated on the control panel. The firefighting equipment would initiate automatically, using water sprays and curtains or an appropriate gas-extinguishing agent.

Fire detection and automatic firefighting equipment will be connected to a power supply within the fire-detection control panel, which will be connected to the mains via a power supply/battery charger unit with an internal 24-volt battery. A pump house shall be included within the facility with 2 diesel fire-water pumps, each 225 kW. The fire-water pump and backup emergency lighting will be electrically powered by a diesel-powered generator capable of operating at full standby without refueling for 96 hours, as required in a seismically active area.

As an additional mitigation measure, no extra transformer oil will be stored onsite other than what is in the transformers. In case of a fire that exceeded the capacity of the onsite fire control system, the local fire department would respond to control and extinguish the fire.

The closest fire stations to the proposed and alternative Converter Station sites are identified in Section 4.12, Public Services and Utilities.

The Project shall use local emergency services in case of emergency. The City and County of San Francisco Fire Department shall be informed of the layout of the converter station and the potential hazards associated with Project operations through the submission of an HMBP. On request, any of the emergency service agencies shall be given MSDSs for the chemicals used at the converter station. These sheets shall be updated as MSDSs are developed or revised, or as more information on these chemicals is made available. Table 4.14-8 identifies government agency and other organizational involvement by type of incident. Table 4.14-9 identifies organizational roles for incidents that involve hazardous materials.

Implementation Responsibility: Project proponent

Requirements and Timing: Implement fire and explosion risk reduction plan during design phase and throughout operations phase

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-11 would reduce Impact HAZ-11 to a less-than-significant level.

Flooding. The converter station site is not in a floodplain, so no hazardous materials issues related to flooding are considered significant. Therefore, these issues are not addressed further in this section.

Seismic Activity. The converter station site is located in a region known to be associated with fault zones and earthquakes. For detailed information regarding fault zones, see Section 4.3, Geologic Resources and Soils.

Impact HAZ-12: Impacts from Seismic Activity. Failure to abide by the building code for Seismic Zone 4 could lead to damage to the facility and resulting spills of hazardous materials. This impact could be potentially significant.

Mitigation HAZ-12: Manage Seismic Activity. To minimize seismic damage to the facility and the resulting hazardous materials spills, the designers and construction contractor shall follow the Uniform Building Code for Seismic Zone 4. This action would reduce Impact HAZ-12 to a less-than-significant level.

Implementation Responsibility: Project proponent/construction contractor

TABLE 4.14-8
INVOLVEMENT OF GOVERNMENT AGENCIES AND OTHER ORGANIZATIONS BY TYPE OF INCIDENT

Organization	Emergency Phone #	Fire	Spill	Security	Medical	Technical Assistance	Other
Contra Costa County Fire Protection District	911	X	X	X	X	X	X
City and County of San Francisco Fire Department	911	X	X	X	X	X	X
Emergency Medical Services	911	X	X		X		
Police Department	911			X			
California Highway Patrol	911		X[1]				
Mt. Diablo Medical Center (Concord)	911				X	X	
St. Francis Memorial Hospital (San Francisco)	911				X	X	
Bay Area Air Quality Management District (BAAQMD)	(415) 771-6000		X			X	
San Francisco Bay Regional Water Quality Control Board	(510) 226-2300		X			X	X
Contra Costa County Hazardous Materials Incident Response Team	(925) 646-1112		X			X	
San Francisco Hazardous Materials Team	(415) 335-3700		X			X	
CalEPA; Department of Toxic Substances Control	(510) 540-2122		X			X	
California Office of Emergency Services	(800) 852-7550	X	X			X	X
California Department of Fish & Game	(707) 944-5500		X[2]				
EPA National Response Center	(800) 424-8802		X[2]			X	
U.S. Department of Transportation	(510) 286-6444		X[2]			X	
U.S. Coast Guard	(415) 556-2103		X[2]			X	
Poison Control Center	(800) 876-4766		X		X	X	
PG&E	(800) 743-5000						X

[1] If spill is on highway.

[2] If spill is into waterways or sewer.

TABLE 4.14-9
ORGANIZATIONAL ROLES FOR INCIDENTS THAT INVOLVE HAZARDOUS MATERIALS

Agency	Role
Fire Department	Lead agency for all life-safety issues (e.g., fire, explosion, injury or illness, chemical release); assistance in initial care of victims.
Emergency Medical Services	Lead agency for medical operations and primary care and transport of victims.
Police Department	Lead agency for security-related emergencies (e.g., bomb threat, sabotage, civil disturbance, etc.); maintains order in emergencies involving community evacuations; expedites the movement of vehicles; California Highway Patrol must be notified of violations of hazardous materials transportation regulations or hazardous materials releases onto highways.
Water District/Sanitation District	Required to be notified in the event of a discharge of hazardous materials to the sanitary sewer system or storm drain.
Mt. Diablo Medical Center (Concord) and St. Francis Memorial Hospital (San Francisco)	Receives and treats injury and illness victims, can provide technical assistance for first aid and basic life support or other issues.
San Francisco Department of Public Health Environmental Health Section and Contra Costa County Health Services Agency	Regulates hazardous waste regulations for hazardous waste generators; must be notified of hazardous waste incidents; must be notified of any sanitary concerns (e.g., food poisoning, epidemics, etc.).
Bay Area Air Quality Management District	Must be notified of any unauthorized discharges of hazardous materials to the atmosphere.
Regional Water Quality Control Board – San Francisco Bay Region	Must be notified of any unauthorized discharges of hazardous materials into the soil, groundwater, or surface water.
California EPA Department of Toxic Substances Control	Must be notified of any unauthorized discharges of hazardous materials to the environment; can provide technical assistance for toxicology issues.
California Office of Emergency Services	Must be notified of any life threatening releases of hazardous materials into the environment; acts as the lead agency in coordinating responses to large-scale emergencies and regional disasters. Examples of regional incidents the OES would respond to are natural disasters such as floods and earthquakes and civil disasters such as large scale terrorist attacks. The OES would offer support to the EPA, the Coast Guard, and local Fire Departments for large scale environmental disasters. None of these types of incidents are likely to occur at the proposed Project sites.
California Department of Fish and Game	Must be notified of any discharges of hazardous materials into surface waters.
EPA	Overall regulation of environmental laws; must be notified about discharges of hazardous materials in excess of reportable quantities; must be notified of discharges of oil.
U.S. Department of Transportation	Regulates the transportation of hazardous materials on public roads.
U.S. Coast Guard	Must be notified of hazardous materials releases into navigable waters.
Poison Control Center	Provides information regarding the ingestion or inhalation of poisonous chemicals.

Requirements and Timing: Comply with building code requirements for Seismic Zone 4 during design, construction, and operation phases

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-12 would reduce Impact HAZ-12 to a less-than-significant level.

4.14.3.3 Pittsburg Standard Oil Converter Station

This section discusses the potential environmental impacts of, and associated mitigation measures for, the proposed Pittsburg Standard Oil Converter Station.

4.14.3.3.1 Construction-related Impacts.

Demolition**.** The construction of the converter station would require that the existing structures on the site be removed and that any contamination from ACMs and LBP be remediated. The extent of the remediation would be based on the results of the Phase I ESA and the ACM and LBP surveys and the subsequent regulatory agency-approved remediation plans. If the potentially hazardous building materials were not removed and the appropriate remediation was not performed, a significant impact could result.

Impact HAZ-1: Removal of Potentially Hazardous Building Materials Resulting from Demolition. Existing structures on the converter station site contain or potentially contain ACMs and LBP. Improper removal or remediation of these materials could result in a potentially significant environmental impact.

Mitigation Measure HAZ-1: Complete an ACM Abatement Plan and an LBP Abatement Plan. Phase II ACM and LBP surveys on the converter station site shall be conducted to fill data gaps and to support development of worker safety procedures, in accordance with regulatory requirements to protect construction workers and the public. The ACM and LBP Abatement Plans shall be completed in compliance with applicable regulations based on the historical and newly acquired ACM and LBP data. If ACM and LBP were confirmed to be present in concentrations above regulatory limits, the Project proponent shall use certified asbestos and lead-based paint removal workers, conduct dust monitoring, and dispose of generated wastes offsite. A site Health and Safety Plan shall also be prepared for this work.

RACMs are materials with >1.0 percent friable asbestos or material that would become friable during demolition. These materials must be removed before demolition and disposed of offsite as hazardous waste. Non-friable asbestos containing materials can be disposed of as non-hazardous waste in a landfill with the appropriate permits.

LBP with total lead content of 1,000 mg/kg and/or leachability of 5.0 mg/L by analysis of the Waste Extraction Test extract analysis would be classified as California hazardous waste, if disposed of separately. Deteriorated paints that meet the hazardous waste criteria must be removed and disposed of separately. If the paint remains firmly affixed to the building material, the building material can be disposed of as non-hazardous building debris. If the demolition disturbs paint containing detectable lead, the work would need to be conducted in accordance with Cal-OSHA's lead in construction regulation (8CCR1532.1).

Implementation Responsibility: Project proponent

Requirements and Timing: Perform survey and additional testing as needed and conduct required ACM and LBP removal prior to construction; perform dust monitoring for ACM and LBP components during demolition activities

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-1 would reduce Impact HAZ-1 to a less-than-significant level.

***Soil Removal*.** Approximately 15,000 cubic yards of soil would need to be excavated and disposed of offsite during the construction of the Pittsburg Standard Oil Converter Station. Non-hazardous soil removed during construction activities, including grading and excavation, at the converter station site would be stockpiled on the site for onsite or offsite reuse or offsite disposal. Hazardous soils identified in Phase II investigations or during excavation would be loaded directly onto trucks and covered for offsite disposal at an appropriate (Class I) landfill. Excavated soils would be sampled and tested, as necessary, to determine their suitability for reuse. Excess excavated soil and rock that is not suitable as backfill would be removed from the site and disposed of at an approved landfill. If contaminated soils were not properly sampled, handled, analyzed, or characterized, transported, or disposed of, the soils could present a potentially significant impact.

Impact HAZ-2: Soil Removal. Soils removed during construction of the converter station and cable routes could be contaminated. Improper sampling, handling, analyzing, or characterizing of the soils could result in a potentially significant environmental impact.

Mitigation Measure HAZ-2: Soil Removal Protocols. Previously uncharacterized soils that are stained or odiferous shall be segregated on plastic, sampled, and characterized for onsite use or offsite disposal. The Soil and Groundwater Management Plans shall detail storage, transportation, and disposal options for soil and groundwater excavated/extracted during the converter station construction. The plans shall also specify dust monitoring needs for soil excavation and management.

Previously characterized hazardous soils shall be loaded onto trucks for offsite disposal. Hazardous soil disposal requires that hazardous waste manifests accompany the waste. Hazardous waste transporters shall be required to haul hazardous soils to a hazardous waste landfill that can properly accept them. The personnel handling the hazardous soils are required to have met the OSHA hazardous work operations training requirements. A Health and Safety Plan shall be prepared for this work.

Previously characterized non-hazardous soils shall be stockpiled for onsite or offsite reuse or offsite disposal, as needed.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Implement soil removal and handling procedures as per SMP during construction phase; perform dust monitoring during hazardous soils excavation, as applicable
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-2 would reduce Impact HAZ-2 to a less-than-significant level.

Construction-phase Hazardous Materials Use, Storage, and Disposal**.** Construction activities would involve truck traffic and heavy equipment operations. During the construction phase, various hazardous materials would be used including: gasoline, diesel fuel, motor oil, hydraulic fluid, glycol, lubricants, solvents, cleaners, sealers, paints, and paint thinner. The hazardous materials usage that is anticipated to occur at the converter station site during the construction phase is summarized in Table 4.14-4, above.

Impact HAZ-3: Construction-phase Hazardous Materials Use. Hazardous materials would be used during construction activities. Misuse, inadequate storage, or improper disposal of these materials could result in a significant environmental impact.

Mitigation Measure HAZ-3: Reduction of Hazards During Construction Phase. The hazards presented by the use of hazardous materials during the construction phase are well understood, and the appropriate management controls to mitigate potential impacts shall be implemented. These controls include: 1) developing required management plans; 2) secondary containment; 3) separate storage of incompatible materials; and 4) proper training of personnel.

Additionally, construction personnel shall be trained in safety and defensive emergency response procedures. Construction personnel shall also receive hazardous waste-related training that focuses on the recognition of potentially contaminated soil and/or groundwater that may be encountered during subsurface excavations for foundations or pipeline/cable trenches. If such contaminated soil or groundwater is suspected, contingency procedures shall be followed to protect worker safety and public health. All vehicles and construction equipment shall be inspected to ensure that no fluids are leaking (e.g., oil, hydraulic fluid, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, clearly labeled containers.

Hazardous materials that must be disposed of will be disposed of as hazardous waste in accordance with the appropriate regulations for storage, transportation, and disposal of hazardous waste.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implement hazard reduction measures described above during construction phase

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-3 would reduce Impact HAZ-3 to a less-than-significant level.

***Construction-phase Waste Streams*.** The following waste streams would be expected to be generated during construction: soil containing hazardous wastes, and soils that do not contain hazardous wastes; ACMs; non-hazardous scrap wood, steel, glass, plastic, and paper; empty hazardous material containers; hazardous solvent waste; hazardous spent lead acid and alkaline batteries; sanitary waste from portable chemical toilets; and non-hazardous storm water runoff. Groundwater collected during construction dewatering is discussed further in Impact and Mitigation Measure HAZ-7 of this section.

Non-hazardous waste would consist of wood refuse, metal and glass containers, and protective plastic equipment coverings. This waste would be generated at an estimated rate of approximately 40 cubic yards per week during construction. Concrete, asphalt, steel, aluminum, and copper from building, foundation, and parking area demolition would be recycled, as practical unless contaminated. The California Integrated Waste Management Board website lists California construction and demolition waste recycling facilities by county. Two facilities that could be used for recycling at the Pittsburg Standard Oil Converter Station are the West Contra Costa Sanitary Landfill at 1 Parr Blvd. Richmond, CA, 94801, and Chip It Recycling at 175 Sandy Lane, Oakley, CA, 94561. Recycling centers vary on the wastes they accept, so the demolition contractor would make the final arrangements for recycling at specific facilities.

Hazardous wastes would consist of hazardous material containers and minor spill cleanup. Drums, waste oil, and oil filters would be properly managed and recycled. The major source of hazardous waste would likely be contaminated soil.

The total amount of solid waste generated by the construction activities at the Pittsburg Standard Oil Converter Station site would be expected to be similar to that for normal commercial construction and would not be expected to result in significant impacts to public health or to cause adverse effects on local landfill capacity. Information on landfills serving the Pittsburg area is presented in Table 4.14-5, above.

The potential impact associated with the storage and disposal of non-hazardous construction wastes is considered to be potentially significant if the wastes are not managed and disposed of properly.

Impact HAZ-4: Construction-phase Waste Streams. Improper storage and disposal of solid waste and hazardous construction wastes could result in a potentially significant environmental impact.

Mitigation Measure HAZ-4: Management of Construction-phase Waste Streams. The onsite management and offsite disposal procedures of solid wastes (including potentially contaminated soil) shall be detailed in a Solid Waste Management Plan for the Project. Waste shall be stockpiled temporarily before disposal offsite. The local fire departments and emergency management teams shall be provided a list of the waste material expected to be generated and stored onsite.

Hazardous wastes generated during construction shall be collected in hazardous waste accumulation containers near the point of generation and moved daily to the construction contractor’s 90-day hazardous waste storage area at the converter station site. The accumulated waste shall be delivered to an authorized waste management facility.

The exact volume of hazardous wastes to be generated at the converter station site cannot be estimated at this time, but the estimated amount of excavated soil that would need to be disposed of offsite is estimated at approximately 15,000 cubic yards for this converter station site. Even if this entire amount of excavated soil would need to be disposed of as hazardous waste, it would not exceed a significant portion of the available hazardous waste landfill capacity in California. The capacity details of various landfills for both non-hazardous and hazardous waste are detailed in Table 4.14-5, above. The capacity and estimates for daily volumes of waste received were verified, as detailed in the personal communications provided in the references for this section.

Management of these wastes shall be the responsibility of the construction contractor(s). Typical management practices required for contractor waste include recycling when possible, proper storage of waste and debris, including covering daily to prevent wind dispersion, and weekly pickup of waste with disposal of non-hazardous wastes at local Class III landfills.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implement waste management procedures during construction phase

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-4 would reduce Impact HAZ-4 to a less-than-significant level.

***Construction-phase Accidental Spills*.** The most likely incident involving hazardous materials during construction would be a small spill or release of fuels, glycol, solvents paints, or lubricants. A more serious incident could involve a service or refueling vehicle, given the larger volume of fuels normally carried on those types of vehicles. The hazardous materials to be used during the construction phase of the proposed Project are listed in Table 4.14-4, above. Due to the relatively small quantities of hazardous materials that would be used during construction and the regulatory requirements associated with the storage and use of these materials, a spill or an accidental release is the only potentially significant impact.

Impact HAZ-5: Construction-phase Accidental Spills. An accidental spill or a release of hazardous materials could occur during construction. This impact is considered potentially significant.

Mitigation Measure HAZ-5: Construction-phase Spill Prevention, Control, and Countermeasure. The following shall be implemented both to prevent spills from occurring and to minimize impacts in the event that they do occur:

- All spills shall be cleaned up quickly and all workers shall be adequately trained to recognize the hazards associated with such spills.
- A Spill Prevention, Control, and Countermeasure (SPCC) Plan for the converter station shall be prepared in accordance with federal and state regulations. This plan must be prepared if petroleum products are stored onsite in ASTs with a capacity that equals or exceeds 55 gallons for a single tank or equals or exceeds 1,320 gallons for more than one tank. The SPCC Plan must be prepared before the delivery of petroleum products to the site. The SPCC Plan shall include information on spill response procedures and fuel storage.

- A Hazardous Materials Business Plan shall be prepared to detail locations and volumes of hazardous materials kept on site. Copies of the HMBP shall be provided to the local Fire Department as provided by the regulations.
- Material Safety Data Sheets (MSDSs) for each chemical used during construction shall be kept onsite. Construction employees shall be informed of the location and content of the MSDSs, as required by OSHA's Hazard Communication Standard, Title 29 of the Code of Federal Regulations (CFR) Section 1910.1200.
- In case of an accident, the CCCFPD shall be notified as the first responder. All other federal, state, and local notification requirements shall be followed for any release that exceeds the reportable quantity or threatens to have a significant impact.
- The Project shall comply with all transportation requirements for hazardous materials on state highways. These requirements apply to both hazardous materials coming onto the sites and hazardous wastes leaving the sites.
- All vehicles and construction equipment shall be inspected to ensure that there are no leaking fluids (e.g., oil, hydraulic, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, labeled containers. Any observation of spills, leaking fluids, or improperly stored fluids shall trigger the issuance of "stop work" notice until the problem is resolved, including the removal of any soil contaminated by vehicle fluids.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Establishment and compliance with SPCC and other requirements detailed above performed during construction phase
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-5 would reduce Impact HAZ-5 to a less-than-significant level.

***Construction-phase Dust and Volatilization of Contaminants*.** The potential for environmental and human health effects to occur in conjunction with the generation of hazardous wastes and the associated construction dust and volatilization of contaminants, could present a potentially significant impact to worker safety and public health.

Impact HAZ-6: Construction-phase Dust and Volatilization of Contaminants. Excavation of contaminated soil and the generation of hazardous waste soils could result in construction dust and volatilization of contaminants that pose environmental and human health risks, particularly to construction workers. This impact is considered potentially significant.

Mitigation Measure HAZ-6: Reduction of Construction Dust and Volatilization of Contaminants. Dust control measures (i.e., keeping the soil wet during excavation) shall be implemented during excavation and construction activities, and dust monitoring shall be performed. Suspected contaminated soil that is stockpiled on the sites shall be covered daily with plastic to prevent volatilization of contaminants and to control dust. Contaminated soil may also be loaded directly onto trucks for transport to an appropriate offsite disposal facility. The loaded soils shall be properly covered and manifested as necessary. Dust monitoring shall be performed during excavation and loading of hazardous soils. The accumulated waste shall then be delivered to an authorized waste management facility. Dust monitoring shall confirm that the dust control measures are effectively protecting site workers and the public.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Implement dust control measures during construction phase and conduct dust monitoring
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-6 would reduce Impact HAZ-6 to a less-than-significant level.

Contaminated Groundwater. Groundwater at the converter station site could be contaminated. Potentially significant impacts could occur if this groundwater is not properly handled or contained.

Impact HAZ-7: Contaminated Groundwater. The converter station site may have contaminated groundwater. This groundwater may be encountered during excavation, construction dewatering, or other subgrade activities. Control or remediation of the site groundwater may be a requirement for redevelopment of the property by the lead regulatory agency for the proposed Project. Failure to properly treat and/or dispose of water collected during dewatering activities or to control the contaminated groundwater flow could result in a potentially significant impact to the site or to downgradient sites and/or water bodies.

Mitigation Measure HAZ-7: Contaminated Groundwater Control. If groundwater is encountered during construction at the converter station site, the water shall be collected onsite in a tank or tanks, sampled, and analyzed. Based on the analytical data, the water shall be characterized for disposal by one of the following methods:

- Used onsite for dust control.

- Treated onsite and discharged under the authority of a general National Pollutant Discharge Elimination System (NPDES) permit. (Treatment options would include, but are not limited to, filtration or filtration and treatment by granular-activated carbon [GAC]. Treatment residuals would be sampled, analyzed, characterized, and disposed of offsite in compliance with applicable regulations.)
- Disposed of offsite at a commercial water treatment facility in compliance with applicable regulations.

If groundwater was encountered at the Pittsburg Standard Oil Converter Station site and it was found to be contaminated, it is possible that the Regional Water Quality Control Board would require groundwater control as part of the development plan for the Project on the site. Contamination at the Pittsburg Standard Oil site, if any, would likely be caused by offsite sources which would probably not require onsite remedial action. Potential groundwater-remedial strategies would depend on a number of factors including: site contaminants, evaluation of impacts to human health and the environment, and evaluation of the technical merits of available remedial strategies. Based on these factors the final selection would be negotiated between the RWQCB and TBC. Potential remedial options provided herein are for informational purposes only. Potential groundwater control methodologies include installing a slurry wall around a portion or the entire contaminated site combined with groundwater pump and treatment and discharge of treated groundwater to a storm drain/sewer system under the authority of an NPDES permit. Other alternative technologies include in-situ biological treatment and in-situ oxidation or reduction, depending on the site-specific contaminants and hydrogeological conditions.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Implement groundwater control measures during construction (and continue into operational phase, if necessary), and perform groundwater collection, storage, treatment, and discharge monitoring, as necessary

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-7 would reduce Impact HAZ-7 to a less-than-significant level.

4.14.3.3.2 Operations-related Impacts.

***Operations-phase Hazardous Materials Usage*.** The proposed converter station is designed to minimize the use of hazardous materials. Storage facilities and handling equipment for hazardous materials have been designed so that in the unlikely event of an accidental release of a hazardous material, the potential impact would be kept below designated thresholds of significance.

After the construction of the proposed Project, transformer oil for the electric equipment and diesel fuel for the emergency backup generator and fire pumps would be the only large volume hazardous materials present at the converter station (other than incidental painting and janitorial supplies). The initial fill of transformer oil would be 119,600 gallons for four transformers, one of which would serve as an emergency backup. The transformer oil at the converter station would not be stored on the site before the transformers were filled; the initial fill quantities would be brought to the site when the transformers were ready to be filled.

The initial fill of diesel fuel for the backup generator at the converter station would be 10,000 gallons, based on a 900-kilowatt (kW) emergency diesel generator and two fire water pumps that are capable of operating for 96 hours at full standby without refueling. The aboveground diesel tank for the converter station would be kept full during operation of the converter station.

The potential public health impacts associated with the operation of the converter station would be mitigated by the use of containment structures and the development and implementation of Emergency Response Plans, an SPCC Plan, safety programs, and employee training. Design features of the proposed Project that would reduce potential impacts to below the level of significance include the following:

- The fire protection system would consist of automatic detection and firefighting equipment.
- Bulk fuel would be stored in ASTs, and all other chemicals would be stored in their original shipping containers.
- Fuel and transformer areas and transfer areas would be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank, including an allowance for rainwater.
- Small-quantity chemicals used for maintenance tasks would be kept in appropriate flammable material or corrosive material storage lockers. Incompatible materials (e.g., acids and bases), if any, would be stored separately.

The small quantity hazardous materials that would be used during the operations and maintenance phase are typical of those used at other industrial facilities. They would include oils, solvents, and other products (see Table 4.14-6, above). The characteristics of these hazardous materials are described in Table 4.14-7, above. Use of hazardous materials during the operations and maintenance phase of the Project could result in a potentially significant impact if not handled properly.

Impact HAZ-8: Operations-phase Hazardous Materials Usage. Hazardous materials shall be used during operations and maintenance activities. Misuse, inadequate storage, or improper disposal of these materials could result in a potentially significant environmental impact.

Mitigation Measure HAZ-8: Control of Operations-phase Hazardous Materials. A Hazardous Materials Business Plan (HMBP) shall be developed and implemented prior to turnover of site management from the construction contractor to the operating company. All hazardous materials shall be handled and stored in accordance with applicable codes and regulations. Storage quantities of all hazardous materials shall be minimized, and non-hazardous materials shall be substituted for hazardous materials at the converter station to the extent practicable. Small-quantity chemicals used for maintenance tasks shall be kept in appropriate inflammable material or corrosive material storage lockers. Bulk chemicals shall be stored in ASTs, and all other chemicals shall be stored in their original shipping containers. Incompatible materials shall be stored in separate storage containment areas. Chemical storage areas and transfer areas shall be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank, including an allowance for rainwater. Areas susceptible to potential leaks and/or spills shall be paved and bermed or otherwise secondarily contained. Specifically, the transformers and the diesel ASTs would have secondary containment. Periodic inspections shall be conducted to ensure that all containers are secure and properly marked. Piping and tanks will be protected from potential traffic hazards by concrete or other barriers. Hazardous materials will be delivered to the converter station periodically. Transportation of these materials shall comply with all applicable regulations of the U.S. Department of Transportation, the EPA, DTSC, the California Highway Patrol, and the State Fire Marshal. An HMBP shall be prepared prior to delivery of specified hazardous materials to the converter station in conformance with Title 19 of the California Code of Regulations (CCR) and California Health and Safety Code Section 25504. The HMBP requires facilities to develop the following information:

- Facility map showing locations of hazardous materials and emergency response equipment
- Hazardous materials inventory, including MSDSs for all hazardous materials stored and used onsite
- Emergency contact information
- Emergency response plans and procedures
- Emergency notification procedures

- Emergency response training for all employees

Implementation Responsibility: Project proponent

Requirements and Timing: Implement hazardous materials control measures throughout operations phase of Project

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-8 would reduce Impact HAZ-8 to a less-than-significant level.

Operations-phase Waste Streams**.** The proposed Project would generate a variety of wastes during operation. These wastes include replaceable parts, rags, and other waste materials and chemicals produced during maintenance activities; equipment fluids; and skimmed oil from an oil/water separator used for rainwater collected in the secondary containment structures. Inert solid waste generated at the converter station during operation would be predominantly maintenance wastes such as scrap metal, wood, and plastic from surplus and deactivated equipment and parts.

Impact HAZ-9: Operations-phase Waste Streams. Improper storage and disposal of operational wastes could result in a significant environmental impact. This impact is considered potentially significant.

Mitigation Measure HAZ-9: Manage Waste Generation, Storage, and Disposal During Operations Phase. Before facility start-up, an application shall be made to DTSC for a hazardous waste generator number. The facility shall not treat, store, or dispose of hazardous waste in a manner that will cause the facility to be characterized as a treatment, storage and disposal facility (TSDF). A detailed waste management plan shall be prepared prior to start-up to ensure proper storage, labeling, packaging, record keeping, manifesting, minimization, and disposal of all hazardous materials and wastes. The waste management plan will include:

- A description of each hazardous waste stream
- Handling, transport, treatment, and disposal procedures for each waste
- Preparedness, prevention, contingency, and emergency procedures
- Personnel training

Scrap materials such as paper, packing materials, glass, metal, and plastic shall be segregated and managed for recycling. Non-recyclable inert wastes shall be stored in covered trash bins in accordance with local ordinances and picked up by an authorized local trash hauler on a regular basis for transport and disposal in suitable landfill. Skimmed oil collected from equipment drains and other liquids from equipment shall be transported by an authorized carrier to a certified recycling facility.

Implementation Responsibility: Project proponent

Requirements and Timing: Implement waste management procedures throughout operations phase of Project

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-9 would reduce Impact HAZ-9 to a less-than-significant level.

***Operations-phase Accidental Spills*.** The potential for environmental and human health effects associated with the hazardous materials used during the operations phase of the Project is minimal. The most likely incident involving hazardous materials during operation and maintenance would be a small spill or release of transformer oil or diesel fuel during the refilling of the transformers or the diesel tank for the backup generator.

Impact HAZ-10: Operations-phase Accidental Spills. Non-compliance with regulatory requirements associated with storage, use, and containment of hazardous materials and/or petroleum hydrocarbons could result in accidental spills. The impact from accidental spills of these materials is considered potentially significant.

Mitigation Measure HAZ-10: Operations-phase Spill Prevention, Control, and Countermeasure. The following shall be implemented during operations:

- All workers shall be adequately trained to recognize the hazards associated with accidental spills. Training shall include ensuring that personnel who maintain the facility are adequately trained to recognize the hazards associated with such spills. Personnel who maintain the facility will be trained in the use of fire suppression equipment, evacuation, notification, and other defensive emergency response procedures. Maintenance personnel will also be trained in hazardous materials and hazardous waste awareness, handling, and management as required for their level of responsibility.
- The proper use of safety procedures and development and implementation of a project-specific SPCC Plan will help prevent such incidents. The SPCC Plan will include information on spill response procedures and fuel storage.
- An MSDS will be kept onsite for each onsite chemical.
- The programs to be implemented to protect worker health and safety shall also benefit public safety. Facility design shall include redundant controls and monitoring systems to

minimize the potential for conditions in which accidental spills could occur. Potential public health impacts associated with facilities operation will be mitigated by development and implementation of Emergency Response Plans, an SPCC Plan, secondary containment structures for oils and other hazardous materials, safety programs, and employee training.

Implementation Responsibility: Project proponent

Requirements and Timing: Implement SPCC measures throughout operations phase of Project

Monitoring Requirements: City of Pittsburg to monitor to ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-10 would reduce Impact HAZ-10 to a less-than-significant level.

***Operations-phase Fire and Explosion Risk*.** As shown in Tables 4.14-6 and 4.14-7, above, several materials (i.e., transformer oil and diesel fuel) that would be used and/or stored onsite at the converter station during the operation of the proposed Project are flammable. These materials are considered to pose a greater risk than the other flammable substances because they would be handled in large quantities. An overheated AC or DC cable is not considered to be a significant fire risk by the project engineers.

Impact HAZ-11: Operations-phase Fire and Explosion Risk. Non-compliance with regulatory requirements associated with storage, use, and containment of flammable materials could result in a fire or explosion. If the onsite fire protection equipment could not address the fire, outside agencies would need to be called. This impact is considered potentially significant. The impact of a fire or explosion is considered potentially significant.

Mitigation Measure HAZ-11: Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase. The flashpoints of transformer oil and diesel fuel are 295°F and 100°F, respectively, and the auto ignition points are 484°F and 494°F, respectively (Sax, 1992; MSDS for transformer oil; MSDS for diesel fuel). The National Fire Prevention Association (NFPA) assigns lubricating oils a fire hazard rating of 1, meaning that the materials "must be preheated before ignition can occur. Materials of these types require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur" (Siemens, 2006).

The converter station shall have onsite fire protection systems (including emergency backup systems). During the detailed design phase of the proposed Project, potential fire protection designs and systems shall be reviewed with local agencies to finalize design details.

In general, the fire protection system shall consist of automatic detection and firefighting equipment. The fire detection control panel shall be located in the control room and shall be connected to the control and protection system for remote annunciation. The fire alarm shall be initiated automatically by smoke, heat, or flame detectors; or manually by push-button. A combination of detectors shall be used, including infrared and ultraviolet detectors, ionization and optical smoke detectors, and rate-of-rise temperature-sensitive detectors, depending on the equipment and/or space being monitored.

Audible alarms and flashing lights shall be activated in the event of a fire. The equipment or area where the alarm is triggered shall be indicated on the control panel. The firefighting equipment would initiate automatically, using water sprays and curtains or an appropriate gas-extinguishing agent.

Fire detection and automatic firefighting equipment shall be connected to a power supply within the fire-detection control panel, which will be connected to the mains via a power supply/battery charger unit with an internal 24-volt battery. A pump house shall be included within the facility with 2 diesel fire-water pumps, each 225 kW. The fire-water pump and backup emergency lighting shall be electrically powered by a diesel-powered generator capable of operating at full standby without refueling for 96 hours, as required in a seismically active area.

As an additional mitigation measure, no extra transformer oil shall be stored onsite other than what is in the transformers. In case of a fire that exceeded the capacity of the onsite fire control system, the local fire department would respond to control and extinguish the fire. The closest fire stations to the proposed and alternative converter station sites are identified in Section 4.12, Public Services and Utilities.

The Project shall use local emergency services in case of emergency. The Contra Costa Fire Protection District shall be informed of the layout of the converter station and the potential hazards associated with Project operations through the submission of an HMBP. On request, any of the emergency service agencies shall be given MSDSs for the chemicals used at the converter station. These sheets shall be updated as MSDSs are developed or revised, or as more information on these chemicals is made available. Table 4.14-8 identifies government agency and other organizational involvement by type of incident. Table 4.14-9 identifies organizational roles for incidents that involve hazardous materials.

Implementation Responsibility:	Project proponent
Requirements and Timing:	Implement fire and explosion risk reduction plan during design phase and throughout operations phase
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-11 would reduce Impact HAZ-11 to a less-than-significant level.

***Flooding*.** The Pittsburg Standard Oil Converter Station site is not in a floodplain, so no hazardous materials issues related to flooding are considered significant. Therefore, these issues are not addressed further in this section.

***Seismic Activity*.** The converter station site is located in a region known to be associated with fault zones and earthquakes. For detailed information regarding fault zones, see Section 4.3, Geologic Resources and Soils.

Impact HAZ-12: Impacts from Seismic Activity. Failure to abide by the building code for Seismic Zone 4 could lead to damage to the facilities and resulting spills of hazardous materials. This impact could be potentially significant.

Mitigation HAZ-12: Manage Seismic Activity. To minimize seismic damage to the facilities with resulting hazardous materials spills, the designers and construction contractor shall follow the Uniform Building Code for Seismic Zone 4. This action would reduce Impact HAZ-12 to a less-than-significant level.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Comply with building code requirements for Seismic Zone 4 during design, construction, and operations phases
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure HAZ-12 would reduce Impact HAZ-12 to a less-than-significant level.

4.14.3.4 Offshore Cable Route

4.14.3.4.1 Construction-related Impacts. Offshore cable route construction impacts, including dredging, are addressed in Section 4.4, Water Resources and Quality.

4.14.3.4.2 Operations-related Impacts. Offshore cable route operations-related impacts are addressed in Section 4.4, Water Resources and Quality.

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2005c. *Phase I Environmental Site Assessment*, Standard Oil Site at 1301 Standard Oil Avenue, Pittsburg, California.

2005d. *Phase I Environmental Site Assessment,* Proposed West Tenth Street Converter Station Site at 610, 620, 630, 640, and 650 West Tenth Street, Pittsburg, California.

2005e. *Phase I Environmental Site Assessment*, Mirant Pittsburg Power Plant Property at 696 West 10th Street and Pacific Gas and Electric Company Substation at 696-B West 10th Street, Pittsburg, California.

2006a. *Phase I Environmental Site Assessment*, Sheedy Drayage Property at 1215 to 1275 Michigan Street, San Francisco, California.

2006b. *Phase II Soil and Groundwater Investigation Report* for Property at 564-650 West 10th Street, Pittsburg, California.

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4.15 PALEONTOLOGICAL RESOURCES

This section is based on a paleontological resources sensitivity analysis of the Project area that includes: 1) museum repository data and paleontological collection material; and 2) a published and unpublished scientific literature survey to provide relevant environmental overview data. This paleontological resources assessment summarizes the information presented in the Paleontological Resources Technical Report prepared for the Trans Bay Cable Project (Project). The Paleontological Resources Technical Report is presented in Appendix J of this EIR.

The compiled data were used to assess paleontological resource sensitivity issues in relation to proposed Project construction, operation, and maintenance activities. The assessment is based both on known paleontological sites within the Project area, as well as extrapolated biostratigraphic information derived from rock units in adjacent areas or areas of regional context which indicate the potential for a fossil resource to occur in a particular geologic unit.

The methodology used to perform the paleontological resources analysis is as follows:

- A standard "Class I" technical literature and records review was conducted to assess the paleontological resource potential at the Project sites. Some relevant data from outside of the Project footprint areas have been included in this assessment for contextual purposes.
- Geologic units (mappable rock formations) occurring within the Project area and their respective interpreted paleontological sensitivity are shown on figures included in this assessment.
- Published geologic maps served as the primary geologic data for the assessment. The most comprehensive geological reference useful in paleontological resource sensitivity was that of Weaver (1949), covering Late Cenozoic deposits of the San Francisco Bay region.
- Specific technical paleontological and detailed lithologic data were derived from local geoscientist informants at California colleges and universities, and the designated northern California museum repository at the University of California, Berkeley, Museum of Paleontology (UCMP).
- Paleontological assessment of the Project area was undertaken on the basis of information provided by existing geologic maps, paleontological and geological literature, and museum records.
- Paleontological resources are lithologically dependent; that is, deposition and preservation of paleontological resources is tied to the lithologic unit in which they occur. The potential

for paleontological resources to be present is described as the paleontological sensitivity of a particular geological unit.

4.15.1 Environmental Setting

The following discusses the regional setting as well as the settings of the proposed Project. For a detailed description of the paleontological setting, refer to the paleontological technical report (Appendix J).

4.15.1.1 Regional Setting

The San Francisco Bay region contains a diverse record of geologic and biologic history which spans more than 100 million years, dating from the Upper Cretaceous period. Under the combined influences of regional tectonic events ranging from creation of the Sacramento Basin to uplift of the Coast Range foothill region, deposition of sedimentary sequences, and fluctuating worldwide sea level changes, fossils of marine and terrestrial organisms have accumulated to produce a significant record of prehistoric life.

Much of the paleontological interest within the Project area vicinity stems from the well known discoveries of Pleistocene age (10,000 to 1 million years ago) and fossil vertebrate faunas derived from Quaternary age units (present to 1 million years ago) in other parts of the San Francisco Bay region. Identification and scientific description of both of these diverse fossil vertebrate assemblages provides one of the best known records of Pleistocene faunas in California (Stirton, 1939, 1951; Savage, 1951; Wolf, 1971; and Jefferson, 1991). Preservation of specimens buried by river sediments and other continental volcanoclastic deposits provided favorable conditions for preserving vertebrate fossil remains in these geologic units.

Surficial sedimentary units of predominantly Pleistocene and Holocene to Recent age underlie the entire Project area. These sediments include depositions that range from continental, alluvial, fluvial, estuarine, terrace, and fan-derived sediments to subaerial floodplain to marine terrace and near-shore deposits. Lithologies include sand, gravel, silt, and clay, all of which are potentially favorable to the preservation of paleontological resources.

Rock outcrops of Miocene (13 to 25 million years ago) to Pleistocene age occur as surficial and subsurface deposits along the northeast Contra Costa County delta area. These deformed and faulted sequences of sedimentary units have been described and mapped previously by such researchers as Atwater (1982), Brabb et al. (1971), Graymer and Helley (1997), Sims et al. (1973), and Weaver, (1949). Gradual, long-term erosion and previous construction activity has removed parts of the Recent age soil cover so that these Quaternary rock units and their contained fossils are now at or near the surface in portions of the Project area. These formations or parts of the formations now exist at or near the surface with varying width across the project area terrain, but are obscured in most areas by water bodies, marsh areas, soil, vegetation, or thin deposits of surficial sediment. Thus, visual detection of fossils is possible in those areas where natural erosion or man-made excavations during road, pipeline, or building site excavation or grading operations have removed this cover.

The majority of the converter station and construction laydown areas may be overlain by imported fill material. Given this fact, the potential paleontological sensitivity of a particular site within the Project area has been determined from the distribution of known nearby fossil localities, and available mapping of the Quaternary alluvium (*Qal*) and Quaternary undifferentiated (*Qu*) outcrops. The Quaternary rock units vary in type from conglomerates to sandstones to unconsolidated siltstone and clays, all of which are either fossiliferous (fossil-bearing) or potentially fossiliferous.

4.15.1.1.1 Cenozoic Rock Units (Present to 63 Million Years Ago). Over 100 years of fossil vertebrate collecting in the San Francisco Bay and delta region has produced one of the most extensive databases for understanding the fossil vertebrate record of northern California. The first record of a fossil vertebrate from the region was a fossil mammoth tooth from the San Pablo Bay area, as reported by Blake (1855). Stirton (1939 and 1951), Savage (1951), and Jefferson (1991) have extensively reported on fossil land-mammal assemblages found in this region. Vertebrate sites in the Hercules-Rodeo districts have yielded a significant quantity of microvertebrate material. This diverse microvertebrate fauna has been extensively studied most recently by Wolf (1971, 1973, and 1975) and consists of numerous small mammals including rabbits, rodents, insectivores and a variety of birds and lower vertebrates (frogs, lizards, and snakes). Many of the fossil specimens represent the best-preserved specimens of particular taxa found to date. The Paleontological Resources Technical Report prepared for the Project contains data from fossil mammal assemblages collected from the San Francisco Bay and delta region (see UCMP 1359,1363 V3719, and V79073 site records).

Sandstone, silt, and clay lithologies of both geologic units are favorable for exceptional preservation of vertebrate and microvertebrate fossil resources.

4.15.1.1.2 Quaternary Age Sediments (*Qal*) (Present to 1 Million Years Ago). Quaternary alluvium deposits of Pleistocene age occur locally within the active stream portions of the Project area. Usage of the *Qal* geologic symbol designation on available geologic maps is highly variable. Geologic units ranging from Quaternary age stream, terrace, fluvial, and alluvial fan and floodplain deposits have been lumped under this designation, particularly where geologic data have been scarce (see Helley and Harwood, 1985; and Wagner and Jennings, 1981).

Sandstone, silt, and clay lithologies of both geologic units are favorable for exceptional preservation of vertebrate and microvertebrate fossil resources. Several Pittsburg vertebrate sites outside the Project area have been assigned to the Pleistocene age Quaternary alluvium unit (*Qal*) by museum scientists and are not further differentiated geologically.

4.15.1.1.3 Holocene and Post-Holocene Age Sediments (Present to 10,000 Years Ago). Sediments of probable Holocene or post-Holocene age that form the thin, surficial cover are considered of limited paleontological interest and thus considered inconsequential.

4.15.1.2 Project Area Setting

No vertebrate paleontological sites are known to exist within the Project area. However, paleontological sites do occur in similar age rock units *outside* the specific Project area but within the San Francisco Bay - Sacramento region. These contain scientifically important vertebrate fossils of elephant, camel, sloth, bison, and rodent terrestrial mammalian taxa.

When describing the Project area setting, three categories of paleontological potential are used in this report. Rating categories are considered to be interpretive and are subject to change as new information is obtained. High potential, moderate potential, and low potential ratings are defined as follows:

4.15.1.2.1 High Potential Rating. Rock units with a high potential for significant paleontological resources are known to have yielded vertebrate fossils within the Project area or region. This does not necessarily imply that vertebrate fossils will always be recovered from high potential rated rock units, but only that there are recorded occurrences within the unit. Additional factors that are considered pertain to inferred depositional environment and lithology.

4.15.1.2.2 Moderate Potential Rating. Rock units possessing some degree of potential, such as favorable depositional environment for resource preservation or lithologically similar rock units in the region have yielded vertebrate fossils. All moderate potential-rated rock units are recommended for field survey and construction monitoring.

4.15.1.2.3 Low Potential Rating. Rock units containing lithologies that do not commonly preserve significant fossil resources (i.e., coarse conglomerates, welded or ignimbrite volcanic ash deposits) are rated as low potential. Igneous plutonic rocks, such as the granite or gabbro, are precluded from preservation of paleontological resources, due to their genesis within a magmatic environment. In addition, sediments of subHolocene or Recent age are usually considered too young in geologic time to preserve fossils.

4.15.1.3 San Francisco HWC Converter Station

No fossil localities have been identified within the footprints of these Project components. The proposed San Francisco HWC Converter Station site and its associated onshore AC/DC cable route are assigned a high sensitivity rating, since excavations have the potential to penetrate into undisturbed *Qal* sediments which could contain significant fossil resources (refer to Figure 4.15-1). The proposed laydown area is assigned a low sensitivity rating, as use of this area is not expected to penetrate into undisturbed *Qal* sediments. The alternative laydown area is located outside of fossil bearing sediments.

4.15.1.4 Pittsburg Standard Oil Converter Station

No fossil localities have been identified within the footprints of these Project components. The proposed Pittsburg Standard Oil Converter Station and its associated onshore AC/DC cable route and proposed access road are assigned a high sensitivity rating, since excavations have the potential to penetrate into undisturbed *Qal* sediments which could contain significant fossil resources (refer to Figure 4.15-2). The proposed laydown area is assigned a low sensitivity rating, as use of this area is not expected to penetrate into undisturbed *Qal* sediments.

No fossil localities have been identified within the footprint of the alternative Standard Oil Converter Station access road or alternative laydown area. The alternative access road and laydown area are assigned a low sensitivity rating, since use of the road and laydown area are not expected to penetrate into undisturbed *Qal* sediments, which could contain significant fossil resources.

4.15.1.5 Offshore DC Cable Route

No fossil localities have been identified within the footprint of this project component. The proposed offshore route is assigned a low sensitivity rating, since excavations are not expected to penetrate into undisturbed *Qal* sediments where there would be a potential for paleontological resources.

4.15.2 Regulatory Setting

4.15.2.1 Federal

Paleontological resources are classified as a non-renewable scientific-cultural resource and are protected most notably by the 1906 Federal Antiquities Act and other subsequent federal legislation and policies. Significant paleontological resources are defined in this analysis to include the interpretation outlined by the Society of Vertebrate Paleontology (SVP) (1994), wherein vertebrate fossils are considered significant.

4.15.2.2 State

Appendix G of CEQA Guidelines provides a checklist of questions that a lead agency will normally address if relevant to a project's environmental impacts. Section (V) (c) of the CEQA Guidelines asks if the project will directly or indirectly destroy a unique paleontological resource, site, or unique geological feature.

4.15.2.3 Local

No local regulations pertaining to paleontological resources were identified.

4.15.3 Environmental Impacts

This section evaluates potential impacts from Project implementation on paleontological resources. Where applicable, mitigation measures are recommended to reduce potential impacts to a less-than-significant level.

4.15.3.1 Thresholds of Significance

The threshold of significance for impacts to paleontological resources for purposes of the analysis in this EIR utilized guidelines established by the SVP (1994) and CEQA.

SVP significance thresholds use the following criteria for vertebrate paleontological resources:

- Provides important information on evolutionary trends; relating living organisms to extinct organisms
- Provides important information pertaining to biological community development and zoological/botanical biota interaction
- Demonstration of unusual circumstances in biotic history
- Existence of limited sample size, in danger of depletion or destruction by natural processes, vandalism or commercial exploitation, found in no other geographic locations

The CEQA threshold for a significant impact to a paleontological resource is reached when the project would directly or indirectly destroy a unique paleontological resource, site, or unique geological feature.

4.15.3.2 San Francisco HWC Converter Station

4.15.3.2.1 Construction-related Impacts. Although no paleontological resources are known in the Project vicinity, *Qal* sediments underly the Project vicinity. Soils of the *Qal* series are known to contain paleontological remains.

Impact PALEO-1: Disturbance of Fossil Resources. There are no known significant fossil resources at this location. However, excavations associated with construction have the potential to penetrate into undisturbed *Qal* sediments, which could contain significant fossil resources. This impact would be considered potentially significant.

Mitigation Measure PALEO-1: Potential Fossil Resources Protection. The following measures shall be implemented:

- Pre-construction meetings shall be held with key construction personnel to provide brief discussions pertaining to paleontological resource significance, visual identification, and discovery notification procedures.
- Proposed construction areas containing geological units designated with a potentially moderate or high sensitivity rating shall be monitored by a professional paleontologist during construction, to insure that subsurface paleontological resources are adequately protected.
- If unique paleontological resources are discovered, all significant fossil material shall be collected, prepared, identified, and curated, and then placed into a state-designated scientific repository.
- Salvage operations shall be conducted in accordance with professional paleontological (e.g., SVP) standards.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: A professional paleontologist shall be retained prior to Project implementation to conduct monitoring in geological units designated with a potentially moderate or high sensitivity rating during onshore Project construction activities involving ground disturbance

Monitoring Requirements: The City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure PALEO-1 would reduce Impact PALEO-1 to a less-than-significant level.

4.15.3.2.2 <u>Operations-related Impacts</u>. No impacts have been identified with the operational phase of the Project.

4.15.3.3 <u>Pittsburg Standard Oil Converter Station</u>

4.15.3.3.1 <u>Construction-related Impacts</u>. There are no known significant fossil resources at this location. However, excavations associated with construction of the proposed Pittsburg Standard Oil Converter Station, proposed access road, and onshore cable routes have the potential to penetrate into undisturbed *Qal* sediments, which could contain significant fossil resources.

Impact PALEO-1: Disturbance of Fossil Resources. The disturbance of fossil resources impact (Impact PALEO-1) described in Section 4.15.3.2.1 applies to the Pittsburg Standard Oil Converter Station site.

Mitigation Measure PALEO-1: Potential Fossil Resources Protection. Mitigation Measure PALEO-1 described in Section 4.15.3.2 would be implemented at the Pittsburg Standard Oil Converter Station site.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	A professional paleontologist shall be retained prior to Project implementation to conduct monitoring in geological units designated with a potentially moderate or high sensitivity rating during onshore Project construction activities involving ground disturbance
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Implementation of Mitigation Measure PALEO-1 would reduce Impact PALEO-1 to a less-than-significant level.

4.15.3.3.2 <u>Operations-related Impacts</u>. No impacts have been identified for the operation of the Project.

4.15.3.4 <u>Offshore DC Cable Route</u>

No fossil localities have been identified within the footprint of this Project component. Excavations and operational aspects are not expected to penetrate into undisturbed *Qal* sediments where there would be a potential for significant paleontological resources.

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5.1 INTRODUCTION

5.1.1 Overview

Sections 5.2 through 5.6 of this Draft Environmental Impact Report (EIR) present summary assessments of the potential environmental effects that could result from implementation of the Project alternatives considered for the Trans Bay Cable Project (Project). This section also presents mitigation measures, where appropriate, to avoid or minimize potential environmental effects associated with the Project alternatives. The Project alternatives that are assessed in this EIR are:

- San Francisco Mirant Converter Station Alternative (three alternative layouts)
- San Francisco Sheedy Converter Station Alternative
- Pittsburg West Tenth Street Converter Station Alternative 1 (E/W)
- Pittsburg West Tenth Street Converter Station Alternative 2 (N/S)
- Pittsburg Mirant Converter Station Alternative

The general locations of the alternative converter station sites are shown on Figure 3-1. The locations of the alternative converter station sites in San Francisco are shown on Map A.2-1 (Sheet 1 of 10), and the alternative site locations in Pittsburg are shown on Map A.2-1 (Sheet 10 of 10).

The organization of this section differs substantially from the preceding Section 4.0 which addresses the proposed Project. Issue areas are compiled within the framework of each Project alternative that is addressed. In the discussion of each alternative, the information related to the regulatory setting is the same as presented in each of the environmental topic area discussions presented in Section 4.0, and is based on the same references identified in Section 4.0. All environmental impact significance thresholds identified in Section 4.0 in each environmental topic area are also used in characterizing impacts in this alternatives analysis. Unless differences in the environmental setting and/or impact discussions are specifically addressed in this alternatives analysis, the environmental setting and/or impact information presented in Section 4.0 for the proposed San Francisco HWC Converter Station site applies to all three of the San Francisco Mirant Converter Station alternatives and to the San Francisco Sheedy Converter Station Alternative. Similarly, the environmental setting and/or impact information presented in Section 4.0 for the proposed Pittsburg Standard Oil Converter Station site applies to both the Pittsburg West Tenth Street alternatives and to the Pittsburg Mirant Converter Station Alternative. Where applicable, the resource topic assessments presented in Section 5.0 refer back to the corresponding assessments in Section 4.0 to reduce redundancy.

A comparison of Project alternatives, including the proposed Project and the No Project Alternative, is presented in Section 6.0. Alternatives that were considered but eliminated from further consideration are discussed in Section A.8.3 of Appendix A.

5.1.2 Scope of the Environmental Analysis

The potential environmental effects of the alternative Project components are analyzed in subsequent sections for the following environmental issue areas:

- Air Quality
- Geologic Resources and Soils
- Water Resources and Quality
- Terrestrial Biological Resources
- Marine Biological Resources
- Cultural Resources
- Land Use and Recreation
- Marine Transportation and Commercial Fishing
- Traffic and Transportation
- Noise and Vibration
- Public Services and Utilities
- Visual Resources/Aesthetics
- Hazardous Materials and Waste Management
- Paleontological Resources

The summary impact assessments for the Project alternatives follow. The cumulative impact analysis is presented in Section 7.0.

5.2 SAN FRANCISCO MIRANT CONVERTER STATION ALTERNATIVES

5.2.1 Introduction

The San Francisco Mirant Converter Station Alternative site is located on the Mirant Potrero Power Plant property in San Francisco, California, directly west of San Francisco Bay, east of Illinois Street, south of 22nd Street, and north of 23rd Street. The San Francisco Mirant Power Plant encompasses approximately 22 acres. It is developed with numerous buildings, trailers, and other improvements involved in generating and distributing electric power, including maintenance and storage areas, three large aboveground storage tanks (ASTs) containing fuel oil and diesel, and a smokestack. The San Francisco Mirant Power Plant site, except for the approximately 7-acre switchyard to the west of the power plant site, was sold by Pacific Gas and Electric Company (PG&E) to Southern Energy Potrero, LLC (now Mirant Potrero, LLC) in 1999.

Three different converter station layouts are under consideration on the Mirant Potrero site. All three of these alternative layouts are located in the southwest portion of the overall San Francisco Mirant power plant property. The San Francisco Mirant Converter Station Alternatives are located directly adjacent to and north of the proposed San Francisco HWC Converter Station site, and adjacent to the PG&E Potrero Substation. These alternative site layouts require the removal of several old structures associated with the Station A complex for which Mirant is seeking a demolition permit. For the purposes of this EIR, it is assumed that the Trans Bay Cable Project would potentially need to demolish these same old structures in the event that the San Francisco Mirant site was approved and selected and Mirant did not proceed with the demolition activities. If this alternative was approved and selected for implementation, the specific location and layout of any of the three San Francisco Mirant Converter Station Alternatives might be subject to minor modification to accommodate Mirant's future plans for the site areas.

Summary descriptions for each of the three alternative site layouts are presented below.

5.2.1.1 San Francisco Mirant Converter Station Alternative 1

This alternative site and layout are shown on Figures A.8-1 and A.8-2, respectively. This alternative layout is rectangular and is oriented east-west on the north side of 23rd Street and east of the PG&E Potrero Substation. This alternative would require removal of Station A on the Mirant Potrero property. This alternative layout avoids the existing Mirant Units 4, 5, and 6 (peakers/jets). An elevation view of this alternative is shown on Figure A.8-3 and photosimulations are shown on Figures A.8-4 and A.8-5. The onshore AC/DC cable routes associated with this alternative layout are shown on Figure A.8-1. Refer to Map A.2-1, Sheet

1 of 10, for the relationship of the San Francisco Mirant Converter Station site to the proposed San Francisco HWC site and the alternative San Francisco Sheedy site

5.2.1.2 San Francisco Mirant Converter Station Alternative 2

This alternative site and layout are shown on Figures A.8-6 and A.8-7, respectively. This alternative layout is "L" shaped and is oriented east-west on the north side of 23rd Street and east of the PG&E Potrero Substation. This alternative would require removal of Station A on the Mirant Potrero property. This alternative layout avoids the existing Mirant Units 4, 5, and 6 (peakers/jets), and extends further to the east than Alternatives 1 and 3. An elevation view of this alternative is shown on Figure A.8-8 and photosimulations are shown on Figures A.8-9 and A.8-10. The onshore AC/DC cable routes associated with this alternative layout are shown on Figure A.8-6.

5.2.1.3 San Francisco Mirant Converter Station Alternative 3

This alternative site and layout are shown on Figures A.8-11 and A.8-12, respectively. This alternative layout is rectangular and is oriented north-south on the north side of 23rd Street and east of the PG&E Potrero Substation. This alternative would also require removal of Station A on the Mirant Potrero property. This alternative layout also avoids the existing Units 4, 5, and 6 (peakers/jets). The Alternative 3 layout minimizes encroachment on the eastern portion of the Mirant Potrero property. An elevation view of this alternative is shown on Figure A.8-3 and photosimulations are shown on Figures A.8-14 and A.8-15. The onshore AC/DC cable routes associated with this alternative layout are shown on Figure A.8-11.

5.2.2 Air Quality

5.2.2.1 Environmental Setting

The environmental setting for air quality associated with the alternative converter station sites in San Francisco is as described in Section 4.2.1.

5.2.2.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for all three of the San Francisco Mirant Converter Station Alternative site layouts in San Francisco are as described in Section 4.2.3 for the proposed San Francisco HWC site. Potentially significant air quality impacts associated with installation of the offshore DC cable route (refer to Section 4.2.3.4) apply equally to all three of the San Francisco Mirant Converter Station alternatives. With implementation of the following mitigation measures, potentially significant impacts would be reduced to less-than-significant levels for all three San Francisco Mirant Converter Station alternatives:

- Mitigation Measure AIR-1 (Fugitive Dust Controls) for Impact AIR-1 (Fugitive Dust Emissions)
- Mitigation Measure AIR-2 (Exhaust Controls) for Impact AIR-2 (Equipment Exhaust Emissions)

5.2.3 Geologic Resources and Soils

Background geological resources and soils data for the proposed Project (HWC site) are presented in Section 4.3. This background information is also generally applicable to the three San Francisco Mirant Converter Station alternative site layouts under consideration. Site-specific environmental setting and impact discussions for all three alternative sites are presented below. The following discussions apply equally to all three San Francisco Mirant Converter Station alternatives.

5.2.3.1 Environmental Setting

5.2.3.1.1 Site Geology. The three alternative San Francisco Mirant Converter Station sites are situated east of Potrero Hill within a zone characterized by sheared sedimentary and igneous rocks of the Franciscan Formation, known as the Fort Point-Potrero Hill-Hunters Point Shear Zone. The alternative San Francisco Mirant Converter Station location and geology of the San Francisco area are shown on Figure 4.3-3. Soil types are shown on Figure 4.3-4. The dominant rock type underlying the property is highly sheared and decomposed serpentinite, which represents a parent rock of ultrabasic composition (e.g., peridotite) that has been intruded into the Franciscan sediments and significantly altered by hydrothermal activity, undergoing volume changes (expansion) and internal shearing in the process.

The essentially flat Mirant Potrero property was developed by excavating a Franciscan bedrock outcrop of serpentinite and placing fill materials over the former marshlands bordering San Francisco Bay. Site geology consists of a northwest-to-southeast trending bedrock “platform” flanked by manmade fills over 40 feet thick in places, overlying silty clay deposits of Bay Mud (Dames & Moore, 2000).

One of the characteristic serpentinite minerals is naturally occurring asbestos, some of which is chrysotile, known to be a human carcinogen.

The dominant fill materials are very coarse and granular (typically gravel and sand sizes), and include rubble (e.g., concrete and bricks). By its nature, the fill material is very permeable and transmits groundwater readily.

Geologic Resources**.** The area encompassed by the three San Francisco Mirant alternative converter station sites does not have any identified unique geologic features or resources. The environmental setting for paleontological resources is discussed in Section 4.15.1.3, Paleontological Resources, for the proposed San Francisco HWC Converter Station site. The paleontological setting for the alternative San Francisco Mirant Converter Station site layouts is as described for the proposed HWC site in Section 4.15.

Faults**.** The closest known active faults are the San Andreas fault (9.5 miles to the west) and the Hayward fault (12 miles to the east). Figure 4.3-2 illustrates the location of the site with respect to the major Quaternary faults in the site region. Table 4.3-1 presents maximum earthquake magnitude estimates based on WGNCEP (1996) and indicates the closest distance from each fault to the site. Each fault zone is described in detail in Section 4.3.1.2.

5.2.3.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for all three of the San Francisco Mirant Converter Station alternative site layouts are as described in Section 4.3.3 for the proposed San Francisco HWC site. With implementation of the following mitigation measures, potential environmental impacts associated with these three alternatives would be reduced to a less-than-significant level:

- Mitigation Measure GEO-1 (Design Project for Erosion Control) for Impact GEO-1 (Design Project for Erosion Control)
- Mitigation Measure GEO-2 (Controls for Excavation of Serpentine) for Impact GEO-2 (Asbestos-containing Serpentine)
- Mitigation Measure GEO-3 (Design to Seismic Design Requirements) for Impact GEO-3 (Strong Ground Shaking)
- Mitigation Measure GEO-4 (Design Project for Liquefiable Deposits) for Impact GEO-4 (Liquefaction)
- Mitigation Measure GEO-5 (Design Project for Shrink-Swell/Subsidence) for Impact GEO-5 (Shrink-Swell/Subsidence)

5.2.4 Water Resources and Quality

5.2.4.1 Environmental Setting

The alternative San Francisco Mirant Converter Station site (three layouts under consideration) is shown on Figure 4.4-3. For the purposes of this analysis, there are no differences between the three alternative layouts under consideration and the three layouts are collectively referred to as the "site." The converter station sites are located approximately 330 to 1,050 feet west of the Bay depending on the converter station layout. There is no surface water on the site. Stormwater from the site is currently directed to the San Francisco combined stormwater and sanitary sewer system. As described in Section 4.4.1.5, the majority of San Francisco is served by a combined storm sewer system, where storm water, along with residential and commercial sewage, is directed to three wastewater treatment plants prior to being released to San Francisco Bay or the Pacific Ocean. Some stormwater at the Mirant site is captured in oil-water separators before the clear-well water (clean water) is discharged to the sewer system. Three structures currently exist at the site.

Groundwater is encountered at the site in two units: serpentinite bedrock in the western portion and coarse man-made fill in the eastern portion (URS/Dames & Moore, 2000). A bedrock ridge trending across the property in a northwest-to-southeast direction causes a groundwater divide: groundwater typically flows toward the Bay in an east-southeast direction from locations east of the ridge and to the south-southwest from locations west of the ridge (Geomatrix, 2000).

Groundwater in the vicinity of the Bay margin is affected by tidal action. Studies by others have demonstrated that tidal effects are observed in monitoring wells within about 50 feet of the shoreline at high tide.

Groundwater generally flows eastward toward the Bay with depth to groundwater ranging between 12-19 feet below ground surface (bgs) at the center of the site to less than 5 feet bgs at the shoreline (Geomatrix, 2000). Groundwater levels may be tidally influenced. However, groundwater generally flows east toward the Bay. The gradient is up to 0.02 near the ridge and approximately 0.006 along the eastern site boundary (Geomatrix, 2000). It appears that the fill and the fractured bedrock act as a single water-bearing unit. On the eastern side of the Mirant Potrero Power Plant site, the fill is underlain by a thick sequence of Bay Mud that inhibits vertical movement of groundwater (Geomatrix, 2000).

Groundwater at the site is contaminated with TPH, polyaromatic hydrocarbons (PAHs), cyanide, and metals. Groundwater contamination at the site is discussed further in Section 5.2.14. The San Francisco Mirant Converter Station site is not located within the 100-year flood zone.

5.2.4.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for all three of the San Francisco Mirant Converter Station Alternative sites are as described in Section 4.3 for the proposed San

Francisco HWC site. With implementation of the following mitigation measures, potentially significant impacts would be reduced to a less-than-significant level:

- Mitigation Measure WATER-1 (Erosion Control and Contaminant Source Control) for Impact WATER-1 (Erosion and Contaminated Runoff)
- Mitigation Measure WATER-2 (Spill Prevention, Control, and Countermeasure for HDD) for Impact WATER-2 (Surface Water Quality Impacts from HDD)
- Mitigation Measure WATER-3 (Use of Pilot Hole and Reaming) for Impact WATER-3 (Groundwater Quality Impacts from HDD)

5.2.5 Terrestrial Biological Resources

5.2.5.1 Environmental Setting

The San Francisco Mirant Converter Station Alternative site (three layouts) is located adjacent to and north of the HWC site (refer to Map A.2-1, Sheet 1 of 10 in Appendix A of this EIR). The environmental setting for this site is consistent with the HWC site, as described in Section 4.5.

5.2.5.2 Environmental Impacts

This area is dominated by previously developed and industrialized landscapes described in Section 4.5 as Disturbed/Developed habitats. No impacts to natural communities, wetlands, or special-status species are expected from this alternative.

5.2.6 Marine Biological Resources

5.2.6.1 Environmental Setting

The alternative San Francisco Mirant Converter Station Alternative site (three layouts) would not impact marine biological resources. Background information, including evaluation of marine biological resources with a review of special-status species with the potential to occur in the area for the proposed offshore submarine cable, are provided in Section 4.6.

5.2.6.2 Environmental Impacts

Cable placement in the Bay with any of the three alternative layouts would not differ from the proposed San Francisco HWC Converter Station, thus impacts would be the same as those discussed in Section 4.6.3.

5.2.7 Cultural Resources

5.2.7.1 Environmental Setting

5.2.7.1.1 Archaeological Resources. As discussed previously in Section 4.7.1.2.1, within the confines of the Mirant Potrero property, remnants of a mid-nineteenth century powder magazine have been identified (Wirth, 1979a, 1979b). No other archaeological resources have been identified within the Mirant Potrero property.

5.2.7.1.2 Historic Architectural Resources. As discussed previously in Section 4.7.1.2.1, within the confines of the Mirant Potrero property, the remaining components of the former Station A (Mirant Potrero Power Plant) have been identified (Hill, 1999).

5.2.7.2 Environmental Impacts

5.2.7.2.1 Archaeological Resources. Although no archaeological resources were identified on the surface of this alternative converter station site, the findings of the Wirth Associates (1979a, 1979b) study indicate that the Mirant Potrero Power Plant has a high potential for buried historical resources. Given the increased archaeological sensitivity within the confines of the Mirant Potrero Power Plant, it is possible that with Project implementation on the Mirant property, archaeological resources may be exposed during construction activities.

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for all three of the San Francisco Mirant Converter Station Alternative layouts in San Francisco are as described in Section 4.7.3 for the proposed San Francisco HWC site. With implementation of the following mitigation measures, potential environmental impacts would be reduced to less-than-significant levels for all three San Francisco Mirant Converter Station Alternative layouts.

- Mitigation Measure CUL-1a (Archaeological Resource Testing), Mitigation Measure CUL-1b (Archaeological Resource Data Recovery), and Mitigation Measure CUL-1c (Archaeological Resource Construction Monitoring) for Impact CUL-1 (Disturbance of Archaeological Resources)

5.2.7.2.2 Historic Architectural Resources. Construction of the San Francisco Mirant Converter Station Alternative on any of the three layouts under consideration would require demolition of historical resources. This action would cause a significant adverse change to these historical resources under CEQA. As such, the CEQA impact significance determination is significant. With implementation of the following mitigation measures the impact would be lessened, but not to a less-than-significant level:

- Mitigation Measures CUL-2a (Recording Architectural Resources), CUL-2b (Architectural Resource Interpretive Display and/or Interpretive Material), and CUL-2c (Architectural Resource Salvage Opportunities) for Impact CUL-2 (Demolition of Historic Architectural Resources)

5.2.8 Land Use and Recreation

5.2.8.1 Environmental Setting

The alternative San Francisco Mirant Converter Station sites (three layouts) and onshore AC/DC cable routes are collectively referred to as the San Francisco Mirant site here in this section, unless otherwise noted.

5.2.8.1.1 Existing Land Uses. The San Francisco Mirant site is located within the northeastern block of the intersection of 23rd Street and Illinois Street. The site is bounded completely by industrial properties. The Mirant Potrero Power Plant and PG&E Potrero Substation are directly north and northwest of the site. The AC cable would traverse the Mirant Potrero Power Plant property into the PG&E substation and the DC cable would run east-west along 23rd Street. San Francisco Bay is located approximately 330 to 1,050 feet east of the site (i.e., approximately 750 feet east of Alternative 1, 330 feet east of Alternative 2, and 1,050 feet east of Alternative 3; refer to Figures A.8-1, A.8-6, and A.8-11, respectively). The San Francisco Mirant site is located directly north of the proposed HWC site and within the Central Waterfront area of San Francisco. Existing land uses within this area are described further in Section 4.8.1.

5.2.8.1.2 Potentially Sensitive Land Uses. Table 5.2.8-1 lists potentially sensitive land uses near the San Francisco Mirant site. Warm Water Cove Park is located approximately 300 feet south of the site. The nearest residences are located approximately 620 feet from the west edge of the alternative San Francisco Mirant Converter Station sites. A church is located about 700 feet northwest of the Mirant Potrero Converter Station sites. Additional potentially sensitive land uses within the area are consistent with those associated with the HWC site, as discussed in Section 4.8.1.

5.2.8.1.3 Zoning Designations. The San Francisco Mirant site is zoned M-2 Heavy Industrial. Permitted uses and development standards (including height restrictions and exemptions) are consistent with those associated with the HWC site, as discussed in Section 4.8.1.

5.2.8.1.4 Land Use Trends. Land use trends for the San Francisco Mirant site are consistent with the HWC site, as discussed in Section 4.8.1.

TABLE 5.2.8-1
POTENTIALLY SENSITIVE LAND USES NEAR
SAN FRANCISCO MIRANT CONVERTER STATION ALTERNATIVE SITES

Land Use	Location	Approximate Distance From Alternative San Francisco Mirant Converter Station Sites (Feet)
Residential	West of Third Street	620
Warm Water Cove Park	East terminus of 23rd Street	300
St. Stephen Baptist Church	800 22nd Street	700
Daniel Webster Elementary	465 Missouri Street	3,200
Aquatic Vista Park and Public Viewing Area	East Terminus of 17th Street	2,800
Potrero Hill Recreation Center (Park)	801 Arkansas Street	2,800
St. Teresa's Church	390 Missouri Street	3,200
Potrero Library	1616 20th Street	3,200
King Starr Elementary	1215 Carolina Street	3,600
India Basin Shoreline Park	East terminus of Cargo Way	6,500
Bay Trail	Along Illinois & 3rd Street	200

5.2.8.2 Environmental Impacts

The alternative San Francisco Mirant Converter Station (three layouts) would not result in potentially significant impacts related to land use or recreation. The alternative San Francisco Mirant Converter Station site is completely bounded by industrial properties. The Mirant Potrero Power Plant and PG&E substation are directly north and northwest of the site. The San Francisco Mirant Converter Station site represents further development of an area committed to industrial use rather than the introduction of industry to a non-industrial area.

The alternative San Francisco Mirant Converter Station site is located within the same planning subarea (Central Waterfront) and zoning district (M-2) as the HWC site. Land use plans and policies pertaining to the San Francisco Mirant site are consistent with the HWC site. As such, public access to the shoreline and open space is emphasized. The Bay Trail is located 200 feet west of the Mirant Potrero site along Illinois Street. Public access to the shoreline is provided by Warm Water Cove Park situated 300 feet south of the San Francisco Mirant site. Operations of the Mirant Converter Station would not affect public access to Warm Water Cove Park or lessen recreational opportunities along the Bay Trail.

As discussed for the HWC site, the Central Waterfront Area Plan stipulates maintaining and improving existing recreational improvements at Warm Water Cove and expanding to the north side of the cove as opportunities arise. The policy requires that public access be provided along the north side of the cove and a fishing quay be constructed at the Bay. The alternative San Francisco Mirant Converter Station would not be affected by this policy, as the site is farther north of Warm Water Cove Park than the HWC site. The site is currently zoned Heavy Industrial and the alternative San Francisco Mirant Converter Station site is consistent with permitted uses within this district. Proposed future development plans outlined in the Draft Central Waterfront Neighborhood Plan would specifically prohibit residential development of the San Francisco Mirant Converter Station site and its adjacent areas.

The alternative San Francisco Mirant Converter Station would be consistent with the existing uses of the site and surrounding area. The nearest residential development near the San Francisco Mirant site is approximately 620 feet to the northwest of the site. The alternative San Francisco Mirant Converter Station would not require displacement of housing and would not have significant land use impacts on the community.

Established uses surrounding the alternative San Francisco Mirant Converter Station site are primarily industrial, excluding San Francisco Bay to the east and Warm Water Cove Park to the south. Potentially sensitive land uses in the area include Warm Water Cove Park located 300 feet south and a church situated approximately 700 feet northwest of the site. The Potrero Power Plant and PG&E substation are directly north and west of the site. Pier 70 to the north and Pier 80 to the south are actively used for dry dock and container terminals. The San Francisco Planning Department has proposed to rezone the site from M-2 to Heavy PDR district. Residential development would be prohibited in the Heavy PDR district, which would encompass the areas that contain the most intensive use. Operation of the alternative San Francisco Mirant Converter Station would be consistent with uses within the existing M-2 district and the proposed Heavy PDR district.

5.2.9 Marine Transportation and Commercial Fishing

The alternative San Francisco Mirant Converter Station site (three layouts) would not impact marine transportation or commercial fishing.

5.2.10 Traffic and Transportation

5.2.10.1 Environmental Setting

The Environmental Setting for Traffic and Transportation for the alternative San Francisco Mirant Converter Station sites (three layouts) is consistent with the discussion presented for the proposed HWC Converter Station sites (including proposed and alternative laydown areas) in Section 4.10.1.

5.2.10.2 **Environmental Impacts**

Construction traffic impacts discussed previously for the proposed HWC Converter Station site (and laydown areas) in Section 4.10.3 are also applicable to the alternative San Francisco Mirant Converter Station site (three layouts).

Since the alternative Project sites are within two blocks of the proposed HWC Project site in San Francisco and the local streets used for project-related truck deliveries and work trips would remain the same, the construction-related transit, bicycle, pedestrian, rail, and parking impacts would be the same as described for the HWC site described in Section 4.10.3. With implementation of the following mitigation measures, potential environmental impacts would be reduced to less-than-significant levels for all three San Francisco Mirant Converter Station Alternative sites:

- Mitigation Measure TRAFFIC-1 (Coordination to Reduce Cumulative Traffic Impacts) for Impact TRAFFIC-1 (Cumulative Traffic Impacts)
- Mitigation Measure TRAFFIC-2 (Coordination of Oversized Loads) for Impact TRAFFIC-2 (Oversized Loads)
- Mitigation Measure TRAFFIC-3 (Signage for Temporary Street Closures) for Impact TRAFFIC-3 (Temporary Street Closures Affecting Traffic, Bicycle, and Pedestrian Circulation)
- Mitigation Measure TRAFFIC-4 (Reducing Impact on the Movement of MUNI Light Rail Vehicles into and out of the Metro East Maintenance Facility) for Impact TRAFFIC-4 (Impacts on Metro East Light Rail Facility)

5.2.10.2.2 Operations-related Impacts. No operations-related impacts have been identified.

5.2.11 Noise and Vibration

5.2.11.1 **Environmental Setting**

The alternative San Francisco Mirant Converter Station site (three layouts) is within the San Francisco Mirant power plant property, immediately adjacent to the PG&E Potrero substation. It is adjacent to the proposed HWC site to the south. Three converter station layouts are under consideration on the Mirant site. The land use surrounding the site is the same as identified for the HWC site in Section 4.11. Ambient noise measurement location ST2 was taken at the south property line of the San Francisco Mirant alternative site, as described for the HWC site in Section 4.11.1.2. The results of the ambient noise measurements are summarized in Table 4.11-2. The measurement locations are shown on Figure 4.11-1.

Sensitive receptors in the Project area are the same as those identified for the proposed HWC site. They consist of multi-family residences approximately 620 feet west of the alternative San Francisco Mirant Converter Station sites at 2638 3rd Street in between 22nd and 23rd Streets and multi-family residences approximately 1,400 to 1,730 feet west-southwest at 1423 Indiana Street. No residences have a direct line-of-sight to the project due to intervening three and four story commercial buildings in between the residences and the project site. In addition, both residences are within 500 feet of Interstate 280 to the east.

5.2.11.2 Environmental Impacts

5.2.11.2.1 Construction-related Impacts. Scheduled construction hours at the alternative San Francisco Mirant Converter Station are consistent with those given for the proposed HWC site in Section 4.11. The anticipated construction noise sources would be the same as those outlined for the proposed HWC Project site.

***Construction Activities*.** Acoustical calculations were performed to estimate noise from construction activities at the closest residences with the same methodology as described for the proposed HWC Project site in Section 4.11.3.1. The closest offsite residential uses to the San Francisco Mirant Converter Station Alternatives 1 and 2 consist of multi-family residences approximately 620 feet west and 1,730 feet to the southwest. Average sound levels at the closest residences to the Alternative 1 and 2 sites would be 67 dBA and 57 dBA, respectively, as summarized in Table 5.2.11-1. For Alternative 3, the closest offsite residential uses are the same multi-family residences located 620 feet west and 1,400 feet southwest, respectively. Average sound levels at these residences for Alternative 3 are 67 dBA and 60 dBA, respectively. Because of the intermittent nature of construction work and the intervening buildings, it is unlikely that noise from construction of these converter station alternatives would be audible at the residences, much less increase the existing noise levels by 5 dBA; therefore, there would be no significant impact. During this time period, construction activity would be required to comply with the City’s noise ordinance criteria (80 dBA at 100 feet) and would result in a less-than-significant impact.

***Pile Driving*.** Calculations were performed to estimate sound levels from pile driving at the receptors. Direct line-of-sight sound levels at the residence 620 feet west were calculated to be 83 dBA L_{max} (78 dBA L_{eq}) and at the residence 1,730 feet southwest (Alternatives 1 and 2) were calculated to be 76 dBA L_{max} (71 dBA L_{eq}). For Alternative 3, the residences 620 feet west and 1,400 feet southwest would have calculated direct line of sight sound levels of 83 L_{max} (78 L_{eq}) and 76 L_{max} (71 L_{eq}), respectively. Due to the intervening buildings, received sound levels at the receptors would be substantially less than predicted, although it is likely that noise from the pile driving would still be audible at the receptors. Section 4.11.3.1.1 details pile driving restrictions to be followed in San Francisco. Calculated noise levels from

TABLE 5.2.11-1
CALCULATED SOUND LEVELS FROM CONSTRUCTION OF THE SAN FRANCISCO MIRANT CONVERTER STATION ALTERNATIVE SITES

Converter Station Site	Receptor Description	Distance to Receptors (Ft)	Calculated Sound Level from Construction (dBA)	Calculated Sound Level from Pile Driving (dBA)	
				L_{max}	L_{eq}
San Francisco Mirant Alternative 1 and 2	Multi-family residences (2638 3rd Street)	620	67	83	78
	Multi-family residences (1423 Indiana Street)	1730	57	73	68
San Francisco Mirant Alternative 3	Multi-family residences (2638 3rd Street)	620	67	83	78
	Multi-family residences (1423 Indiana Street)	1400	60	76	71

pile driving are well below the 90 dBA threshold for significance (FTA, 1995) and would result in a less-than-significant impact.

Calculations were performed to estimate vibration from pile driving activities at the closest residences, as detailed in Section 4.11.1.2. Vibration from pile driving was assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at residences 620 feet from the pile driving would be 0.005 in/sec, which is well below the FTA threshold of 0.20 in/sec; resulting in a less-than-significant impact.

***Construction Traffic*.** Construction traffic impacts discussed previously for the proposed San Francisco HWC Converter Station site in Section 4.11.3.1.1 are also applicable to the alternative San Francisco Mirant Converter Station site because this site is adjacent to the proposed Project site in San Francisco and the local streets used for project-related truck deliveries and work trips would remain the same.

5.2.11.2.2 Operations-related Impacts. Calculations were performed using linear octave band sound power levels as inputs from each noise source with the same equipment as the proposed HWC Project site. Siemens conducted the noise analysis, the results of which are summarized here and provided in Appendix H.

As summarized in Table 5.2.11-2, hourly average sound levels from the alternative San Francisco Mirant Converter Station for all three alternatives would range from 62 to 73 dBA L_{eq} at the property lines. Sound levels in the rectangular configuration for Alternative 1 would range from 70 to 72 dBA L_{eq} at the property lines. Sound levels in the L configuration for Alternative 2 would range from 62 to 73 dBA L_{eq} at the property lines. Sound levels in the rectangular configuration for Alternative 3 would range from 65 to 71 dBA L_{eq} at the property lines. Because sound levels are below the San Francisco 75 dBA L_{eq} requirement, there would not be a significant impact.

TABLE 5.2.11-2
CALCULATED SOUND LEVELS FROM OPERATION OF THE SAN FRANCISCO MIRANT CONVERTER STATION ALTERNATIVES (dBA)

Converter Station Site	Receptor Description	Calculated Sound Level (dBA)
San Francisco Mirant Alternative 1 (rectangular configuration)	North Property Line	70 L_{eq} (1 hr)
	South Property Line	72 L_{eq} (1 hr)
	East Property Line	70 L_{eq} (1 hr)
	West Property Line	71 L_{eq} (1 hr)
San Francisco Mirant Alterternative 2 (L-configuration)	North Property Line	67 L_{eq} (1 hr)
	South Property Line	73 L_{eq} (1 hr)
	East Property Line	62 L_{eq} (1 hr)
	West Property Line	63 L_{eq} (1 hr)
San Francisco Mirant Alternative 3 (rectangular configuration)	North Property Line	65 L_{eq} (1 hr)
	South Property Line	69 L_{eq} (1 hr)
	East Property Line	71 L_{eq} (1 hr)
	West Property Line	70 L_{eq} (1 hr)

5.2.12 Public Services and Utilities

5.2.12.1 Environmental Setting

The public services and utilities discussions for the alternative San Francisco Mirant Converter Station sites and onshore cable routes are consistent with those for the proposed HWC site addressed previously in Section 4.12.1.

5.2.12.2 Environmental Impacts

Potential impacts to public services and utilities from construction of the San Francisco Mirant Converter Station alternatives are consistent with HWC site impacts, discussed in Section 4.12.3. Mitigation measures include development of a Construction Fire Prevention and Protection Program and an Operations Fire Prevention and Protection Program. Furthermore, a survey shall be conducted prior to any excavation work at the converter station site to prevent conflict or disruption of existing underground utilities. With implementation of the following mitigation measures, potential environmental impacts would be reduced to less-than-significant levels for all three San Francisco Mirant Converter Station Alternative sites.

- Mitigation Measure PS-1 (Construction Fire Prevention) for Impact PS-1 (Construction-related Fire Hazards)
- Mitigation Measure PS-2 (Utility Survey) for Impact PS-2 (Existing Onshore Underground Utilities)
- Mitigation Measure PS-3 (Operations Fire Prevention) for Impact PS-3 (Operations Fire Hazards)

5.2.13 Visual Resources/Aesthetics

5.2.13.1 Environmental Setting

The alternative San Francisco Converter Station site (three layouts) is located within the existing San Francisco Mirant Power Plant property immediately to the east of the existing PG&E Potrero Substation. Three different converter station sites/configurations are under consideration as shown on Figures A.8-1 through A.8-15. From the visual environmental setting perspective, the three layouts would be essentially the same. The alternative San Francisco Mirant Converter Station would replace several existing structures and would be partially screened from Illinois Street by the PG&E Potrero substation and other structures eastward along 23rd Street, which is essentially an industrial access road to the Mirant plant (see Context Photo 1, Figure 5.2-1). The Mirant site is further removed from both Warm Water Cove and San Francisco Bay than either the proposed HWC or the alternative Sheedy site. The existing uses on the site are parking for either the substation, the power plant or the older, historic PG&E power plant structures that are now vacant.

5.2.13.1.1 Visual Quality. As with the proposed HWC site (which adjoins this property across 23rd Street), the visual character is completely industrial and visually related to the adjacent power facilities. While the old brick PG&E facility is of some visual interest to those who appreciate industrial architecture, this structure does not contribute to the visual character of the site or increase its visual quality. This site bears little relationship to either Warm Water Cove or the Bay and they do not contribute to the visual characteristics of the site. The visual quality is classified as Low.

5.2.13.1.2 Viewer Sensitivity. The viewer sensitivity analysis for the San Francisco Mirant Converter Station site is similar to that described for the proposed HWC Project site. The only relevant differences are: 1) that this site is not visible from Warm Water Cove Park and there would be less viewer concern as to what may happen at this location; and 2) since the converter station would mostly replace existing power plant-related facilities in the center of the view from Potrero Hill (see Context Photo 2, Figure 5.2-1), there would be less concern about blocking views to the Bay beyond. Few people would be viewing the site directly and the duration of the views would be short.

The viewer sensitivity is classified as Low. Therefore, the visual susceptibility index is Low, meaning any proposed facility would have a low probability for disrupting the existing visual resources of the area as seen from roads and public places.

5.2.13.2 Environmental Impacts

5.2.13.2.1 Introduction. The evaluation of the environmental impacts relevant to the alternative San Francisco Mirant Converter Station site addresses three alternative site layouts. The site layouts for these alternatives are presented on Figures A.8-2, A.8-7, and A.8-12 in Appendix A. All the alternatives contain the same components, but their locations and layouts are changed depending on the portion of the Mirant site utilized.

Alternative 1 places the DC and valve halls, the most visible Project components, immediately behind the PG&E switchyard and fronting on 23rd Street. This location requires the removal of the existing Station A Complex structures formerly occupied by PG&E (as do all of the alternatives).

Alternative 2 places the DC and valve halls in tandem in a north-south direction which reduces the mass of the building immediately facing 23rd Street, but places the DC hall at a higher elevation of 8 to 10 feet when compared with the other alternatives. This site plan also elongates the electrical switching area along the 23rd Street frontage back to the existing Mirant Unit 3.

Alternative 3 places the DC and valve halls about mid-block along 23rd Street with the switchyard to the north of these structures.

All these alternatives would place the converter station between the existing PG&E Potrero Substation facing Illinois Avenue and the existing Mirant Power Plant facing the Bay. The Mirant alternative sites are relatively hidden from all sensitive viewers with the possible exception of those living on Potrero Hill which is over 0.5 mile distant to the west of Interstate 280.

5.2.13.2.2 KOP Analysis.

***KOP SF-4: 23rd Street at Illinois*.** This Key Observation Point (KOP) is in the same location as KOP-1 (intersection of 23rd and Illinois, refer to Map 4.13-1 for the location of KOPs in San Francisco), but focuses northeast toward the alternative San Francisco Mirant Converter Station sites.

***Alternative 1*.** Construction of the Project at this alternative San Francisco Mirant Converter Station site would replace the existing brick structure with the 64-foot-tall converter station. The visual change may be seen by comparing the baseline photo A, Figure 5.2-2, with the new simulation shown on Photo B of the same figure. There is a net reduction in visual mass and visual obtrusiveness of buildings from this KOP based upon the replacement of the earlier structure. There would be no change in visual character since the area is surrounded by existing power plant facilities and the PG&E Potrero Substation (Photo B, Figure 5.2.2). There are no visual dominance or contrast issues and no significant views would be blocked. Impact Severity is classified as Low.

***Alternative 2*.** Construction of the Project at this alternative San Francisco Mirant Converter Station site would replace the existing brick structure with the 64-foot-tall converter station which is setback from 23rd Street. The visual change may be seen by comparing the baseline photo A, Figure 5.2-2, with the new simulation shown in Photo C of Figure 5.2-3. As with Alternative 1, there is a net reduction in the visual mass and obtrusiveness of buildings from this KOP based upon the replacement of the earlier structure. There would be no change in visual character since the area is surrounded by existing power plant facilities and the PG&E Potrero substation. There are no visual dominance or contrast issues and no significant views would be blocked. Impact Severity is classified as Low.

***Alternative 3*.** Construction of the Project at this alternative San Francisco Mirant Converter Station site would replace the existing brick structure with the 64-foot-tall converter station which is adjacent to 23rd Street. This alternative causes more of the structural building mass to be visible from the 23rd Street intersection at Illinois Street when compared to the other alternatives. The visual change may be seen by comparing the baseline photo A, Figure 5.2-2 with the new simulation shown in Photo D of Figure 5.2-3. There is a slight net reduction in the visual mass and obtrusiveness of buildings from this KOP based upon the replacement of the earlier structure. There would be no change in visual character since the area is surrounded by existing power plant facilities and the PG&E Potrero substation. There are no visual dominance or contrast issues and no significant views would be blocked. Impact Severity is classified as Low.

Since Impact Susceptibility is also Low for this location, the visual impacts would be less than significant for all three of the alternatives from this KOP. From this KOP, Alternative 1 generates the least environmental impact. Light and glare are not an issue for this KOP since there are no sensitive receptors in the immediate area.

***KOP SF-2: Potrero Hill*.** The discussion about views from Potrero Hill is the same as for the proposed HWC Project site (refer to Section 4.13). The view is distant and the project site for any of the alternatives forms a relatively small portion of the overall scene.

Alternative 1 would visually replace the existing brick PG&E structure with the smaller mass of the DC and valve halls. This change is graphically shown when comparing the baseline Photo A, Figure 5.2-4 with the simulation which is Photo B of the same figure. Since the proposed structures are less dominant from this KOP than the existing structure, there would arguably be a slight improvement to views from KOP SF-2. The Alternative 1 location would not block views of the Bay nor generate issues of dominance or contrast with the existing industrial character of the area. The Impact Severity is Low.

Alternative 2 would visually replace the existing brick PG&E structure with the smaller mass of the DC and valve halls though they now run parallel to the horizon. This change is graphically shown when comparing the baseline Photo A, Figure 5.2-4 with the simulation which is Photo C of Figure 5.2-5. Since the proposed structures are less dominant from this KOP than the existing structure, there would arguably be a slight improvement to views from KOP SF-2. The Alternative 2 location does not block views of the Bay nor generate issues of dominance or contrast with the existing industrial character of the area. The Impact Severity is Low.

Alternative 3 would visually replace the existing brick PG&E structure with the smaller mass of the DC and valve halls which are in tandem when seen from this KOP. This change is graphically shown when comparing the baseline Photo A, Figure 5.2-4 with the simulation which is Photo D of Figure 5.2-5. Since the proposed structures would be less dominant from this KOP than the existing structure, there would arguably be a slight improvement to views from KOP SF-2. The Alternative 3 location would not block views of the Bay nor generate issues of dominance or contrast with the existing industrial character of the area. The Impact Severity is Low.

Since the Impact Susceptibility for the area, as seen from KOP SF-2, is Low to Moderate, the resulting impact would be less than significant for San Francisco Mirant Converter Station Alternatives 1, 2, and 3. Although this impact would be less than significant, the following mitigation measure would lessen the impact further:

- Mitigation Measure VIS-2 (Plan Submittal Requirements for Lighting) reduces Impact VIS-2 (Converter Station will create Substantial Light and Glare) to a less-than-significant level

While this impact has been classified as less than significant, without design controls it may still be adverse. This adversity can be lessened through the application of Mitigation Measure VIS-2.

5.2.14 Hazardous Materials and Waste Management

5.2.14.1 Environmental Setting

5.2.14.1.1 San Francisco Mirant Converter Station Site – Alternative 1. The alternative San Francisco Mirant Converter Station site layouts are located on the Mirant Potrero Power Plant property, which is directly west of San Francisco Bay, east of Illinois Street, south of 22nd Street, and north of 23rd Street (refer to Figures A.8-1, A.8-6, and A.8-11). This section presents information for the overall San Francisco Mirant location, which for the purposes of this section includes the 22-acre Mirant Power Plant and the adjacent 7-acre Pacific Gas & Electric (PG&E) substation, and then focuses on the Alternative 1 converter station site layout, which is a subset of the overall San Francisco Mirant site. The San Francisco Mirant location is defined in this section as the Mirant Pittsburg Power Plant/PG&E substation property. This section focuses mainly on the 22-acre Mirant parcel, but includes the 7-acre PG&E substation areas due to the properties' common history and because the proposed cable route would utilize portions of the PG&E substation property.

The combined Mirant Power Plant/PG&E substation location encompasses approximately 29 acres; it is developed with numerous buildings, trailers, and other improvements involved in generating and distributing electric power, including maintenance and storage areas, a substation, and a parking lot on the western portion of the property; three large aboveground storage tanks (ASTs) containing fuel oil and diesel; and a large gas-fired electric-generating station, including a smokestack. Pacific Gas and Electric Company (PG&E) sold the 22-acre Mirant Potrero Power Plant site (excluding the substation) to Southern Energy Potrero, LLC (now Mirant Potrero, LLC), in 1999. The Mirant Potrero Power Plant location is listed on several environmental databases, including the Cortese Database, which is maintained by the California Department of Toxic Substances Control (DTSC).

The San Francisco Mirant Converter Station Alternative 1 site layout is shown on Map A.1-1 and Figure A.8-1 in Appendix A. The Alternative 1 converter station site is located in the southwest portion of the Mirant Potrero property.

The Phase I ESA (URS, 2005b) for the Mirant Potrero location identified the following recognized environmental conditions (RECs) at the Mirant Potrero location:

- REC 1, throughout the Mirant Potrero location: Historical reports indicate that portions of the Mirant Potrero location were owned by power companies, sugar refining companies, and a barrel manufacturer before being transferred to PG&E and subsequently to

Southern Energy Potrero, LLC (now Mirant Potrero, LLC). These previous owners used the location for the bulk storage of fuel oil and crude oil, gas manufacturing, and power generation. Sanborn Company historical fire insurance maps indicate the presence of above ground storage tanks (ASTs) at this location. At least three releases were documented for the Mirant Potrero location in the HAZNET Database and were reported as remediated. However, the elevated contaminant concentrations discovered during various subsurface investigations conducted at the location indicate that other releases have occurred that have adversely impacted soil and groundwater.

- REC 2, entire Mirant Potrero location: Fill underlying the Mirant Potrero location is likely 1906 earthquake rubble and has the potential to be impacted with lead and other contaminants. This fill, if excavated, likely involves special requirements for disposal (e.g., offsite disposal as a California hazardous waste).
- REC 3, entire Mirant Potrero location: Given the age of the buildings at the Mirant Potrero location, it is likely that asbestos-containing materials were used during construction.
- REC 4, entire Mirant Potrero location: Given the age of the buildings at the Mirant Potrero location, it is likely that lead-based paint was used during construction and maintenance of the buildings.
- REC 5, north-northeastern portion of Mirant Potrero location, former manufactured gas plant: Soil and groundwater contamination from residues associated with the historical operation of a manufactured gas plant have been detected on the Mirant Potrero location. The contaminants include total petroleum hydrocarbons (TPH), polynuclear aromatic hydrocarbons (PAHs), heavy metals, and nitrogen compounds (such as ammonia and cyanides). Also, recent site characterization and monitoring reports indicate the presence of between 14 feet and 18.2 feet of dense non-aqueous phase liquids (DNAPL) in groundwater on the northeastern border of the Mirant Potrero location. The northeastern portion of the property (in the area of operations of the former manufactured gas plant) is currently undergoing routine groundwater monitoring. Total petroleum hydrocarbons as diesel (TPH-d) and benzene are present in groundwater at concentrations of 11,000 parts per billion (ppb) and 3,700 ppb, respectively. PAHs are also present in groundwater at this location. However, the extent of contamination at the northeast portion of the Mirant Potrero location has not been fully characterized.
- REC 6, southwestern portion of Mirant Potrero location: Cyanide, PAHs, and TPH-d have been detected in groundwater in the southwestern portion of the Mirant Potrero location.

- REC 7, central part of Mirant Potrero location: Weathered serpentine and serpentine bedrock, which forms a ridge under the central portion of the Mirant Potrero location, may contain naturally occurring asbestos.

The Phase I ESA did not identify any RECs for the Mirant Potrero location from surrounding properties.

As shown on Figure A.8-1, the San Francisco Mirant Converter Station Alternative 1 site is located in the southwest portion of the Mirant Potrero location. The AC cable route would be entirely contained on the Mirant Potrero location until it connects with the PG&E substation, which is also on the property. Therefore, RECs 1 through 7 apply to the AC cable route. The DC cable route comes from San Francisco Bay and travels beneath 23rd Street before it enters the Mirant Potrero location. RECs 1 through 7 apply to the part of the DC cable route on the Mirant Potrero location. The following REC pertains to the offsite part of the DC cable route:

- REC 8, south and adjacent to the Mirant Potrero location: The proposed DC cable runs along 23rd Street before entering the Mirant Converter Station Alternative 1 site, and it may be buried at a depth that encounters groundwater. Elevated concentrations of hydrocarbons, fuel oil, and metals have been detected in groundwater in monitoring wells located on 23rd Street, just south of the Mirant Potrero location. The installation of this cable could produce a conduit for groundwater to San Francisco Bay that is contaminated with hydrocarbons. Given that the DC cable route will travel along this portion of 23rd Street, the groundwater is an REC to the cable route.

Summaries of suspected and confirmed soil/hazardous waste and groundwater contamination issues at the San Francisco Mirant Converter Station Alternative 1 site are presented in Tables 5.2.14-1 and 5.2.14-2, respectively.

5.2.14.1.2 <u>San Francisco Mirant Converter Station Site – Alternative 2</u>. This section presents information on the San Francisco Mirant Converter Station Alternative 2 site, which is a subset of the overall Mirant Potrero location. Refer to Section 5.2.14.1.1 for information on the overall Mirant Potrero property.

The San Francisco Mirant Converter Station Alternative 2 site is shown on Figure A.8-6 in Appendix A. The Alternative 2 converter station site is located in the southwest portion of the Mirant Potrero location.

The Phase I ESA (URS, 2005b) for the Mirant Potrero location identified eight RECs at the Mirant Potrero location as described in Section 5.2.14.1.1. The eight RECs described in Section 5.2.14.1.1 for Alternative 1 are directly applicable to Alternative 2. Summaries of suspected and confirmed soil/hazardous waste and groundwater contamination issues at the

San Francisco Mirant Converter Station Alternative 2 site are presented in Tables 5.2.14-1 and 5.2.14-2, respectively.

5.2.14.1.3 <u>San Francisco Mirant Converter Station Site – Alternative 3</u>. This section presents information on the San Francisco Mirant Converter Station Alternative 3 site, which is a subset of the overall Mirant Potrero location. Refer to Section 5.2.14.1.1 for information on the overall Mirant Potrero property.

The San Francisco Mirant Converter Station Alternative 3 site is shown on Figure A.8-11 in Appendix A. The Alternative 3 converter station site is located in the southwest portion of the Mirant Potrero location.

The Phase I ESA (URS, 2005b) for the Mirant Potrero location identified eight RECs at the Mirant Potrero location as described in Section 5.2.14.1.1. The eight RECs described in Section 5.2.14.1.1 for Alternative 1 are directly applicable to Alternative 3. Summaries of suspected and confirmed soil/hazardous waste and groundwater contamination issues at the San Francisco Mirant Converter Station Alternative 3 site are presented in Tables 5.2.14-1 and 5.2.14-2, respectively.

5.2.14.2 <u>Environmental Impacts</u>

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for all three of the San Francisco Mirant Converter Station alternative sites in San Francisco are as described in Section 4.14.3 for the proposed San Francisco HWC site. With implementation of the following mitigation measures, potential environmental impacts would be reduced to less-than-significant levels for all three San Francisco Mirant Converter Station alternative sites:

- Mitigation Measure HAZ-1 (Complete an ACM Abatement Plan and an LBP Abatement Plan) for Impact HAZ-1 (Removal of Potentially Hazardous Building Materials Resulting from Demolition)
- Mitigation Measure HAZ-2 (Soil Removal Protocols) for Impact HAZ-2 (Soil Removal)
- Mitigation Measure HAZ-3 (Reduction of Hazards During Construction Phase) for Impact HAZ-3 (Construction-phase Hazardous Materials Use)
- Mitigation Measure HAZ-4 (Management of Construction-phase Waste Streams) for Impact HAZ-4 (Construction-phase Waste Streams)
- Mitigation Measure HAZ-5 (Construction-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-5 (Construction-phase Accidental Spills)

TABLE 5.2.14-1
SUMMARY OF CONTAMINATED SOIL/HAZARDOUS WASTE ISSUES AT THE SAN FRANCISCO MIRANT ALTERNATIVE CONVERTER STATION SITES

		Confirmed or Suspected Contaminants											
		Petroleum Hydrocarbons											
Alternative Sites	Phase II Conducted[1]	TPH-g	TPH-d	TPH-mo	Manufactured Gas Plant PAH Residues	ASTs/ USTs	Metals	Solvents/ VOCs	PCBs	ACM[2]	LBP	RCRA Waste	CA Haz Waste
San Francisco													
Mirant Alternative 1	Yes	Yes	Heavy	Heavy	No	Yes, both	Yes	Minor	Yes, minor	Yes	Yes	No	Yes, some soils
Mirant Alternative 2	Yes	Yes	Heavy	Heavy	No	Yes, both	Yes	Minor	Yes, minor	Yes	Yes	No	Yes, some soils
Mirant Alternative 3	Yes	Yes	Heavy	Heavy	No	Yes, ASTs	Yes	Minor	Yes, minor	Yes	Yes	No	Yes

Note: Comments on the possibility of suspected contaminants are based on experience on similar sites.

[1] Phase II studies conducted previously (i.e., not part of EIR for Trans Bay Cable Project).

[2] In addition to ACM building materials, these sites also have confirmed or suspected naturally occurring serpentinite rock containing asbestos.

ACM = asbestos-containing materials
ASTs = aboveground storage tanks
LBP = lead-based paint
TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TPH-mo = total petroleum hydrocarbons as motor oil
UST = underground storage tank

TABLE 5.2.14-2
SUMMARY OF CONTAMINATED GROUNDWATER ISSUES AT THE SAN FRANCISCO MIRANT ALTERNATIVE CONVERTER STATION SITES

Alternative Sites	Phase II Conducted[1]	Confirmed or Suspected Contaminants: Petroleum Hydrocarbons TPH-g	TPH-d	TPH-mo	Manufactured Gas Plant PAAH Residues	Metals	Solvents/ VOCs	PCBs	Cyanide
San Francisco									
Mirant Potrero Alternative 1	Yes	Yes	Heavy	Heavy	No	Yes	Minor	Yes, minor	Measurable
Mirant Potrero Alternative 2	Yes	Yes	Heavy	Heavy	No	Yes	Minor	Yes, minor	Measurable
Mirant Potrero Alternative 3	Yes	Yes	Heavy	Heavy	No	Yes	Minor	Yes, minor	Measurable

Note: Comments on the possibility of suspected contaminants are based on experience on similar sites.

[1] Phase II studies conducted previously (i.e., not part of EIR for Trans Bay Cable Project).

ASTs = aboveground storage tanks
TPH-g = total petroleum hydrocarbons as gasoline
TPH-d = total petroleum hydrocarbons as diesel
TPH-mo = total petroleum hydrocarbons as motor oil
UST = underground storage tank

- Mitigation Measure HAZ-6 (Reduction of Construction Dust and Volatilization of Contaminants) for Impact HAZ-6 (Construction-phase Dust and Volatilization of Contaminants)
- Mitigation Measure HAZ 7 (Contaminated Groundwater Control) for Impact HAZ-7 (Contaminated Groundwater)
- Mitigation Measure HAZ-8 (Control of Operations-phase Hazardous Materials) for Impact HAZ-8 (Operations-phase Hazardous Materials Usage)
- Mitigation Measure HAZ-9 (Manage Waste Generation, Storage, and Disposal During Operations Phase) for Impact HAZ-9 (Operations-phase Waste Streams)
- Mitigation Measure HAZ-10 (Operations-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-10 (Operations-phase Accidental Spills)
- Mitigation Measure HAZ-11 (Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase) for Impact HAZ-11 (Operations-phase Fire and Explosion Risk)
- Mitigation Measure HAZ-12 (Manage Seismic Activity) for Impact HAZ-12 (Impacts from Seismic Activity)

5.2.15 Paleontological Resources

5.2.15.1 <u>Environmental Setting</u>

No fossil localities have been identified within the footprint of any of the three alternative layouts under consideration at the San Francisco Mirant Converter Station site. The alternative San Francisco Mirant Converter Station site is assigned a high sensitivity rating, since excavations have the potential to penetrate into undisturbed Quaternary alluvium (*Qal*) sediments which could contain significant fossil resources (refer to Figure 4.15-1).

5.2.15.2 <u>Environmental Impacts</u>

No fossil localities have been identified within the footprint of this alternative Project component. However, construction excavations have the potential to penetrate into undisturbed *Qal* sediments which could contain significant fossil resources. This would be a potentially significant impact.

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for all three of the San Francisco Mirant Converter Station Alternative sites in San Francisco are as described in Section 4.15.3 for the proposed San Francisco HWC Converter Station site. With implementation of the following mitigation measure, potential environmental impacts would be reduced to less-than-significant levels for all three San Francisco Mirant Converter Station alternative site layouts.

- Mitigation Measure PALEO-1 (Potential Fossil Resources Protection) for Impact PALEO-1 (Disturbance of Fossil Resources)

5.3 SAN FRANCISCO SHEEDY CONVERTER STATION

5.3.1 Introduction

The San Francisco Sheedy Converter Station Alternative site is bounded by 24th Street and 25th Street to the north and south, respectively, with Michigan Street to the west and the Western Pacific site and then San Francisco Bay to the east (refer to Figure A.1-1 and Figures A.8-16 through A.8-19 in Appendix A). The site is in an industrial area immediately south of the proposed San Francisco HWC Converter Station site. The site is currently operated by Sheedy Drayage and includes cranes, rigging, and trucking operations. Several existing structures on the site would require demolition prior to installation of a converter station at this alternative site.

5.3.2 Air Quality

5.3.2.1 Environmental Setting

The environmental setting for air quality associated with the San Francisco Sheedy Converter Station site is as described in Section 4.2.1 for the proposed HWC site.

5.3.2.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the San Francisco Sheedy Converter Station Alternative site are as described in Section 4.2.3 for the proposed San Francisco HWC site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure AIR-1 (Fugitive Dust Controls) for Impact AIR-1 (Fugitive Dust Emissions)
- Mitigation Measure AIR-2 (Exhaust Controls) for Impact AIR-2 (Equipment Exhaust Emissions)

Potentially significant impacts associated with installation of the offshore DC cable route (refer to Section 4.2.3.4) apply to the San Francisco Sheedy Converter Station Alternative site.

5.3.3 Geologic Resources and Soils

Background geological resources and soils data for the proposed Project is presented in Section 4.3. This background information is also generally applicable to the San Francisco

Sheedy Converter Station Alternative site. Site-specific environmental setting and impact discussions for the alternative Sheedy site are presented below.

5.3.3.1 Environmental Setting

5.3.3.1.1 Site Geology. The converter station location and geology of the San Francisco area are shown on Figure 4.3-3. Soil types are shown on Figure 4.3-4. The site is underlain primarily by artificial fill over reclaimed tidal flats featuring Bay Mud and estuarine deposits. The artificial fill consist of gravels, sands, and clays. Serpentine bedrock may be present at depth.

***Geologic Resources*.** The alternative San Francisco Sheedy Converter Station site does not have any identified unique geologic features or resources. Paleontological resources are as discussed in Section 4.15, Paleontological Resources, for the proposed HWC site.

***Faults*.** No active or potentially active faults have been identified on the Sheedy site. Figure 4.3-2 illustrates the location of the site with respect to the major Quaternary faults in the site region. The closest known active faults are the San Andreas fault (9.5 miles to the west) and the Hayward fault (12 miles to the east). Table 4.3-1 presents maximum earthquake magnitude estimates and indicates the closest distance from each fault to the proposed HWC site, which is also applicable to the Sheedy site. Each fault zone is described in detail in Section 4.3.1.2.

5.3.3.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the alternative San Francisco Sheedy Converter Station site are as described in Section 4.3.3. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level.

- Mitigation Measure GEO-1 (Design Project for Erosion Control) for Impact GEO-1 (Soil Erosion and Compaction)
- Mitigation Measure GEO-2 (Controls for Excavation of Serpentine) for Impact GEO-2 (Asbestos-containing Serpentine)
- Mitigation Measure GEO-3 (Design to Seismic Design Requirements) for Impact GEO-3 (Strong Ground Shaking)
- Mitigation Measure GEO-4 (Design Project for Liquefiable Deposits) for Impact GEO-4 (Liquefaction)

- Mitigation Measure GEO-5 (Design Project for Shrink-Swell/Subsidence) for Impact GEO-5 (Shrink-Swell/Subsidence)

5.3.4 Water Resources and Quality

5.3.4.1 Environmental Setting

The alternative San Francisco Sheedy Converter Station site is shown on Figure 4.4-3. The converter station site is located adjacent to the Bay (refer to Figure A.8-16). There is no surface water on the site. Stormwater from the site is currently directed to the San Francisco combined stormwater and sanitary sewer system. As described in Section 4.4.1.5 (Drainage and Flooding), the majority of San Francisco is served by a combined storm sewer system, where storm water, along with residential and commercial sewage, is directed to three wastewater treatment plants prior to being released to San Francisco Bay or the Pacific Ocean.

The groundwater at the Sheedy site is potentially contaminated with TPH, glycol, waste oil, and metals due to historic uses of the site as a contractor's yard, a truck and equipment repair facility, a tire shop, a crane and equipment storage facility, a hot asphalt plant, a rail spur, and for vehicle fueling. Fourteen historic diesel and gasoline USTs were also once located at the Sheedy site. The groundwater at the western portion of the HWC site, which is immediately adjacent to and north of the Sheedy site, is contaminated with TPH, and possibly heavy metals. Refer to Section 5.3.14 for more information regarding groundwater conditions at the Sheedy site.

The San Francisco Sheedy Converter Station site is not located within the 100-year flood zone.

5.3.4.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the alternative San Francisco Sheedy Converter Station site are as described in Section 4.4.3 for the proposed HWC site. With implementation of the following mitigation measures, potential environmental impacts associated with these three alternatives would be reduced to a less-than-significant level:

- Mitigation Measure WATER-1 (Erosion Control and Contaminant Source Control) for Impact WATER-1 (Erosion and Contaminated Runoff)
- Mitigation Measure WATER-2 (Spill Prevention and Control Plan for HDD) for Impact WATER-2 (Surface Water Quality Impacts from HDD)

- Mitigation Measure WATER-3 (Use of Pilot Hole and Reaming) for Impact WATER-3 (Groundwater Quality Impacts from HDD)

5.3.5 Terrestrial Biological Resources

5.3.5.1 Environmental Setting

This site is located adjacent to and south of the HWC site (refer to Map A.2-1, Sheet 1 of 10 in Appendix A of this EIR). The environmental setting for this site is consistent with the HWC site, as described in Section 4.5.

5.3.5.2 Environmental Impacts

This area is dominated by previously developed and industrialized landscapes described in Section 4.5 as Disturbed/Developed habitats. No potential impacts to natural communities, wetlands, or special-status species would be expected from this alternative.

5.3.6 Marine Biological Resources

5.3.6.1 Environmental Setting

Background information, including evaluation of marine biological resources with a review of special-status species with the potential to occur in the Project area, as well as the regulatory framework, are provided in Section 4.6.

5.3.6.2 Environmental Impacts

The San Francisco Sheedy Converter Station Alternative would require a minor difference in the placement of cable between mileposts (MP) 0 and 0.7 (refer to Map A.2.-1, Sheet 1 of 10). Potential impacts from this change in cable location would not be incrementally different from the proposed San Francisco HWC Converter Station location and would not result in significant impacts.

5.3.7 Cultural Resources

5.3.7.1 Environmental Setting

5.3.7.1.1 San Francisco Archaeological Resources. No archaeological resources were identified within the Sheedy Converter Station alternative site during any phase of the investigation.

The route of the offshore DC cable specific to this alternative site near the San Francisco landfall has not been subjected to a geophysical inventory. As such, it is unknown if submerged and/or buried archaeological resources occur within the footprint of this portion of this alternative.

5.3.7.1.2 Historic Architectural Resources. No historic architectural resources were identified within the San Francisco Sheedy Converter Station site during any phase of the investigation.

5.3.7.2 Environmental Impacts

No archaeological resources have been identified within the San Francisco Sheedy Converter Station site. As such, significant impacts to archaeological resources would not be anticipated with the construction of this terrestrial Project component.

No historic architectural resources have been identified within the San Francisco Sheedy Converter Station site. As such, significant impacts to historic architectural resources would not occur with implementation of this alternative Project component.

5.3.8 Land Use and Recreation

5.3.8.1 Environmental Setting

5.3.8.1.1 Existing Land Uses. The alternative Sheedy Converter Station site is located within the southeastern block of the intersection of 24th Street and Illinois Street. Several existing structures are present on the site and would require demolition. The site is bounded on the west and south by industrial properties, on the north by Warm Water Cove Park and industrial properties, and on the east by Warm Water Cove Park and San Francisco Bay. The alternative Sheedy site is located directly south of the proposed HWC site and within the Central Waterfront area of San Francisco. Existing land uses within this area are described in Section 4.8.1 for the proposed HWC site.

5.3.8.1.2 Potentially Sensitive Land Uses. Table 5.3.8-1 lists potentially sensitive land uses near the Sheedy site. Warm Water Cove Park is located directly north and east of the site. The nearest residences are located approximately 1,050 feet from the west edge of the Sheedy site. A church is located about 1,500 feet northwest of the site. Additional potentially sensitive land uses within the area are consistent with those associated with the HWC site, as discussed in Section 4.8.1.

5.3.8.1.3 Zoning Designations. The San Francisco Sheedy Converter Station site is zoned M-2 Heavy Industrial. Permitted uses and development standards (including height restrictions and exemptions) are consistent with those associated with the HWC site, as discussed in Section 4.8.1.

TABLE 5.3.8-1
POTENTIALLY SENSITIVE LAND USES NEAR
ALTERNATIVE SAN FRANCISCO SHEEDY CONVERTER STATION

Land Use	Location	Approximate Distance From Alternate Sheedy Converter Station (Feet)
Residential	West of Third Street	1,050
Warm Water Cove Park	East terminus of 23rd Street	Adjacent
St. Stephen Baptist Church	800 22nd Street	1,500
Daniel Webster Elementary	465 Missouri Street	3,700
Aquatic Vista Park and Public Viewing Area	East Terminus of 17th Street	3,800
Potrero Hill Recreation Center (Park)	801 Arkansas Street	3,000
St. Teresa's Church	390 Missouri Street	2,500
Potrero Library	1616 20th Street	3,500
King Starr Elementary	1215 Carolina Street	3,600
India Basin Shoreline Park	East terminus of Cargo Way	5,500
Bay Trail	Along Illinois & 3rd Street	500

5.3.8.1.4 Land Use Trends. Land use trends for the alternative San Francisco Sheedy Converter Station site are consistent with those associated with the HWC site, as discussed in Section 4.8.1.

5.3.8.2 Environmental Impacts

The alternative San Francisco Sheedy Converter Station site is bounded on the west and south by industrial properties, on the north by Warm Water Cove Park and industrial properties, and on the east by Warm Water Cove Park and San Francisco Bay. The alternative Sheedy Converter Station would represent further development of an area committed to industrial use rather than the introduction of industry to a non-industrial area.

The Sheedy site is located within the same planning subarea (Central Waterfront) and zoning district (M-2) as the proposed HWC site. Land use plans and policies pertaining to the Sheedy site are consistent with those for the HWC site. As such, public access to the shoreline and open space is emphasized. The Bay Trail is located 500 feet west of the Sheedy site along Illinois Street. Public access to the shoreline is provided by Warm Water Cove Park.

As discussed for the HWC site, the Central Waterfront Area Plan stipulates maintaining and improving existing recreational improvements at Warm Water Cove Park and expanding to the north side of the cove as opportunities arise. The policy requires public access to be provided along the north side of the cove and a fishing quay to be constructed at the Bay. The Sheedy Converter Station would not be affected by this policy, as the site is south and west of Warm Water Cove Park. The site is currently zoned Heavy Industrial and the Sheedy Converter Station is consistent with permitted uses within this district. Proposed future development plans outlined in the Draft Central Waterfront Neighborhood Plan would specifically prohibit residential development of the Sheedy site based on its proximity to the existing Mirant Potrero Power Plant.

Overall, operations-related impacts on existing land uses would not be significant. However, based on the Sheedy site's adjacent location to Warm Water Cove Park and close proximity to the Bay, Project implementation may conflict with San Francisco and BCDC policies for future uses, which stress the importance of public access to the Bay. This potential impact is discussed in more detail for the proposed HWC site in Section 4.8.3. With implementation of the following mitigation measure, potential environmental impacts/conflicts with BCDC policies would be reduced to a less-than-significant level:

- Mitigation Measure LU-1 (Public Access) for Impact LU-1 (Potential Conflict with Public Access Improvements)

The Sheedy Converter Station would be consistent with the existing uses of the site and surrounding area. The nearest residential development near the Sheedy site is approximately 1,050 feet to the northwest of the site. The Sheedy Converter Station would not require displacement of housing and would not have significant land use impacts on the community.

Established uses surrounding the Sheedy site are primarily industrial, excluding San Francisco Bay and Warm Water Cove Park. Potentially sensitive land uses in the area include Warm Water Cove Park to the north and east, and a church situated approximately 1,500 feet northwest of the site. The site is located approximately 1,000 feet south of the Mirant Potrero Power Plant and PG&E substation. Pier 70 to the north and Pier 80 to the south are actively used for dry dock and container terminals. As discussed in Section 4.8.3 for the proposed HWC site, the San Francisco Planning Department has proposed to rezone the site from M-2 to PDR. The PDR zoning would prohibit residential and most office developments. Utilities are described as a core use within the PDR district (SFPD, 2005). However, "heavier" industrial activities may not be consistent with PDR district uses as proposed in the Central Waterfront Neighborhood Plan (SFPD, 2002; Rubin, 2005). Operation of the alternative San Francisco Sheedy Converter Station would be consistent with uses within the existing M-2 district, but may not be consistent with the PDR district as currently proposed. The Neighborhood Plan is still in the community outreach process, and further refinements are possible as the Plan is finalized (Rubin, 2005).

5.3.9 Marine Transportation and Commercial Fishing

The alternative San Francisco Sheedy Converter Station would not impact marine transportation or commercial fishing.

5.3.10 Traffic and Transportation

5.3.10.1 Environmental Setting

The environmental setting for traffic and transportation for the alternative San Francisco Sheedy Converter Station site is consistent with the discussion presented for the proposed San Francisco HWC Converter Station site in Section 4.10.1.

5.3.10.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the alternative San Francisco Sheedy Converter Station site are as described in Section 4.10.3.

5.3.10.2.1 Construction-related Impacts. Construction traffic impacts discussed previously for the proposed HWC Converter Station site (and laydown areas) in Section 4.10.3.2.1 are also applicable to the alternative Sheedy Converter Station.

Since this alternative site is within two blocks of the proposed HWC Project site in San Francisco and the local streets used for Project-related truck deliveries and work trips would remain the same, the construction-related transit, bicycle, pedestrian, rail, and parking impacts would be the same as described for the HWC site.

With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure TRAFFIC-1 (Coordination to Reduce Cumulative Traffic Impacts) for Impact TRAFFIC-1 (Cumulative Traffic Impacts)
- Mitigation Measure TRAFFIC-2 (Coordination of Oversized Loads) for Impact TRAFFIC-2 (Oversized Loads)
- Mitigation Measure TRAFFIC-3 (Signage for Temporary Street Closures) for Impact TRAFFIC-3 (Temporary Street Closures)
- Mitigation Measure TRAFFIC-4 (Reducing Impact on the Movement of MUNI Light Rail Vehicles into and out of the Metro East Maintenance Facility) for Impact TRAFFIC-4 (Impacts on Metro East Light Rail Facility)

5.3.11 Noise and Vibration

5.3.11.1 Environmental Setting

The alternative San Francisco Sheedy Converter Station site is adjacent to the proposed HWC site to the north. The site is bounded by 24th, 25th, and Michigan Streets in an industrial area. Descriptions of the land use surrounding the site are the same as identified for the HWC site in Section 4.11.1. Ambient noise measurement location ST1 was taken at the north property line of the Sheedy alternative site, as described for the HWC site in Section 4.11.1.2. The results of the ambient noise measurements are summarized in Table 4.11-2. The measurement locations are shown on Figure 4.11-1.

Sensitive receptors in the Project area are the same as those identified for the proposed Project site. They consist of multi-family residences approximately 1,050 feet northwest at 2638 3rd Street in between 22nd and 23rd Streets and multi-family residences approximately 1,730 feet west at 1423 Indiana Street. No residences have a direct line-of-sight to the Sheedy site due to intervening three- and four-story commercial buildings in between the residences and the site. In addition, both residences are within 500 feet of Interstate 280 to the east.

5.3.11.2 Environmental Impacts

5.3.11.2.1 Construction-related Impacts. Scheduled construction hours at the alternative Sheedy Converter Station are consistent with those given for the proposed HWC Project site in Section 4.11. The anticipated noise sources would be the same as those outlined for the proposed Project site.

Acoustical calculations were performed to estimate noise from construction activities at the closest residences with the same methodology as described for the proposed HWC site. The closest offsite residential uses to the alternative San Francisco Sheedy Converter Station consist of multi-family residences approximately 1,050 feet northwest and 1,730 feet to the west. Average construction sound levels at the closest residences to the San Francisco Sheedy Converter Station construction site would be 62 and 57 dBA, respectively, as summarized in Table 5.3.11-1. Because of the intermittent nature of construction work and the intervening buildings, it is unlikely that noise from construction would be audible at the residences, much less increase the existing noise levels by 5 dBA; therefore, there would be no significant impact. During this time period, construction activity would be required to comply with the City of San Francisco noise ordinance criteria (80 dBA at 100 feet) and would result in a less-than-significant impact.

TABLE 5.3.11-1
CALCULATED SOUND LEVELS FROM CONSTRUCTION OF THE SAN FRANCISCO SHEEDY CONVERTER STATION (dBA)

Converter Station Site	Receptor Description	Distance to Receptors (Ft)	Calculated Sound Level from Construction (dBA)	Calculated Sound Level from Pile Driving (dBA)	
				L_{max}	L_{eq}
San Francisco Sheedy	Multi-family residences (2638 3rd Street)	1,050	62	77	73
	Multi-family residences (1423 Indiana Street)	1,730	57	73	68

***Pile Driving*.** Calculations were performed to estimate sound levels from pile driving at the receptors. Direct line-of-sight sound levels at the residences were calculated to be 77 dBA L_{max} (73 dBA L_{eq}) at the residences 1,050 feet northwest and 73 dBA L_{max} (68 dBA L_{eq}) at the residences 1,730 feet west. Due to the intervening buildings, received sound levels at the receptors would be substantially less than predicted, although it is likely that noise from the pile driving would still be audible at the receptors. Section 4.11.3.1.1 details pile driving restrictions to be followed in San Francisco. Calculated noise levels from pile driving are below the 90 dBA threshold for significance (FTA, 1995) and would result in a less-than-significant impact.

Calculations were performed to estimate vibration from pile driving activities at the closest residences, as detailed in Section 4.11.1.2. Vibration from pile driving was assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at residences 1,050 feet from the pile driving would be 0.002 in/sec, which is well below the FTA threshold of 0.20 in/sec; resulting in a less-than-significant impact.

5.3.11.2.2 Operations-related Impacts. Calculations were performed using linear octave band sound power levels as inputs from each noise source with the same equipment as the proposed HWC Converter Station. Siemens conducted the noise analysis, the results of which are summarized here and provided in Appendix H.

As summarized in Table 5.3.11-2, hourly average sound levels from the alternative San Francisco Sheedy Converter Station site in the rectangular configuration would range from 70 to 72 dBA L_{eq} at the property lines. Because sound levels are below the San Francisco 75 dBA L_{eq} requirement, the impact would be less than significant.

TABLE 5.3.11-2
CALCULATED SOUND LEVELS FROM OPERATION OF THE SAN FRANCISCO SHEEDY CONVERTER STATION ALTERNATIVE (dBA)

Converter Station Site	Receptor Description	Calculated Sound Level (dBA)
San Francisco Sheedy (rectangular configuration)	North Property Line	72 L_{eq} (1 hr)
	South Property Line	70 L_{eq} (1 hr)
	East Property Line	71 L_{eq} (1 hr)
	West Property Line	70 L_{eq} (1 hr)

5.3.12 Public Services and Utilities

5.3.12.1 Environmental Setting

The public services and utilities discussions for the alternative San Francisco Sheedy Converter Station site and associated cable routes are consistent with the proposed HWC site, discussed in Section 4.12.1.

5.3.12.2 Environmental Impacts

Potential impacts to public services and utilities from construction of the alternative San Francisco Sheedy Converter Station would be consistent with HWC site impacts, discussed in Section 4.12.3. Mitigation measures include development of Construction and Operations Fire Prevention and Protection Programs. Additionally, a survey shall be conducted prior to any excavation work at the converter station site to prevent conflict or disruption of existing underground utilities. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure PS-1 (Construction Fire Prevention) for Impact PS-1 (Construction-related Fire Hazards)
- Mitigation Measure PS-2 (Utility Survey) for Impact PS-2 (Existing Onshore Underground Utilities)
- Mitigation Measure PS-3 (Operations Fire Prevention) for Impact PS-3 (Operations Fire Hazards)

5.3.13 Visual Resources/Aesthetics

5.3.13.1 Environmental Setting

The alternative San Francisco Sheedy Converter Station site occupies approximately 5.4 acres to the south of Warm Water Cove Park and is one block east of Illinois Street. The site is currently occupied by the Sheedy Drayage Company which supplies large-scale cranes and transport vehicles. The site can be classified as visually very cluttered (see Context Photos 1 and 2 on Figure 5.3-1). It is bordered on the north and east by water, on the west by an industrial/warehouse complex and on the south by open land that used to be part of the Western Pacific Railroad marine terminal. To the southeast is the Pier 90 complex of the Port of San Francisco and a concrete plant and truck facility.

5.3.13.1.1 Visual Quality. As with the proposed HWC Project site, the predominant characteristic of this site is one of heavy industrial activity. The Sheedy operation, because of the trucks and cranes, contributes to the visual clutter of the area. Other than Warm Water Cove and the San Francisco Bay to the north and east, there are no natural features that are considered to have scenic value. Further, both of these water features are industrialized given that they are utilized for heavy shipping and/or are lined with current or former marine terminal facilities and warehouses.

The visual quality is classified as Low.

5.3.13.1.2 Viewer Sensitivity. Public views toward the San Francisco Sheedy Converter Station site occur from Illinois Street, 24th Street and Michigan Street (Photo 1, Figure 5.3-1), from Potrero Hill (Photo 2, Figure 4.13-1) and Warm Water Cove Park (Photo 2, Figure 5.3-1). The sensitivity from those utilizing Illinois Avenue was discussed in Section 4.13.1.2.1 for the proposed HWC site. The viewer sensitivity is classified as Low. The view from Potrero Hill was also discussed in Section 4.13.1.2.1 and the sensitivity is classified as Moderate for the reasons described there. Finally, users of Warm Water Cove Park, since the Project is immediately adjacent, would currently probably have a low sensitivity, given the visually chaotic characteristics of the park. However, given that it is a park with the potential to be improved, this classification is elevated to Moderate.

Therefore, the visual susceptibility index is Moderate, meaning any proposed facility would have a moderate probability of disrupting the existing visual resources of the area as seen from roads and public places.

5.3.13.2 Environmental Impacts

The visual resource impacts associated with development of the alternative San Francisco Sheedy Converter Station site are similar to those described in Section 4.13.3 for the proposed HWC site. The impact assessment presented in Section 4.13.3 for the proposed HWC site from Potrero Hill and Warm Water Cove Park is applicable to the alternative San Francisco Sheedy Converter Station site as well. If built at this location, the converter station would replace a visually cluttered operation composed of numerous cranes and steel support beams used to move equipment. While the site would be more compact than the proposed HWC Project site and set back in the industrial area (approximately 400 feet east of Illinois Street), it is immediately adjacent to Warm Water Cove Park. It would be visible from Potrero Hill (Photo A, Figure 4.13-10) and from 24th Street and Michigan Street (Photo A, Figure 5.13-2).

5.3.13.2.1 <u>KOP SF-5: 24th Street at Michigan</u>. Key observation point (KOP) SF-5 (24th Street at Michigan Street) is shown on Map 4.13-1. Construction of the alternative San Francisco Sheedy Converter Station would replace the existing visual clutter of the cranes and numerous small structures with a series of large, flat-planed structures which would dominate the 24th Street entry to Warm Water Cove Park and provide a relatively contrasting change in the character of the streetscape (Photo B, Figure 5.13-2). There is also the potential for the replacement of the Sheedy warehouses (Photo A, Figure 5.13-2, center) with a more open view toward the Bay. Of additional concern, though not visible in this simulation, is the effect of the security fencing between the switchyard and the immediately adjacent Warm Water Cove Park. At present there is a series of 6-foot-high steel plates which provide an effective and unique palette for urban graffiti. The Project does not designate what type of replacement fencing is proposed, though a standard chain link separation fence is the Project standard. The Impact Severity for the area adjacent to Warm Water Cove Park is classified as Moderate. It would typically be High but in this case it is replacing an industrial operation of an incompatible nature with the adjacent park.

Since the Impact Susceptibility is also Moderate, the visual impact is also classified as Moderate: adverse but less than significant. However, since no detailed landscaping and architectural designs have been proposed there is still the possibility for significant visual impacts based upon the converter station's potential to visually dominate the character of Warm Water Cove Park.

With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure VIS-1a (Plan Submittal Requirements for Building Materials and Colors) and Mitigation Measure VIS-1b (Plan Submittal Requirements for Landscaping) for Impact VIS-1 (Converter Station Domination of View)
- Mitigation Measure VIS-2 (Plan Submittal Requirements for Lighting) for Impact VIS-2 (Converter Station will Create Substantial Light and Glare) – While this impact has been

classified as less than significant, without design controls it may still be adverse. This adversity can be lessened through the application of Mitigation Measure VIS-2

Impact VIS-4: Converter Station Domination of Entrance to Warm Water Cove Park. The pedestrian approach to Warm Water Cove Park would be dominated by the San Francisco Sheedy Converter Station. This impact is considered to be potentially significant.

Mitigation Measure VIS-4a: Landscaping. To improve the entry to Warm Water Cove Park, the Project proponent shall provide extensive landscape planting including trees and shrubs in northwest corner of the facility at the intersection of Michigan and 24th Streets. In cooperation with the City and County of San Francisco a street tree plan shall be developed for 24th Street which shall balance a visually positive atmosphere with a vandal-resistant design.

Implementation Responsibility:	Project proponent
Requirements and Timing:	All plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Mitigation Measure VIS-4b: Common Fence Design. Both 24th Street and the common property line with Warm Water Cove Park will require a fence that provides security for the converter station as well as amenity and visual screen for the park. The Project proponent shall work with the Port of San Francisco and the Park and Recreation Commission to generate a creative design addressing these issues. Thought shall be given to a creative solution other than razor wire to prevent trespassing over the wall.

Implementation Responsibility:	Project proponent
Requirements and Timing:	All plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied
Monitoring Requirements:	City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Mitigation Measure VIS-4c: Street Lighting along 24th Street. The Project proponent shall work with agencies with the appropriate jurisdiction to provide adequate street lighting as part of the site security plan and as an amenity along the entry to Warm Water Cove Park.

Implementation Responsibility: Project proponent

Requirements and Timing: All plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied

Monitoring Requirements: City of Pittsburg, in consultation with the City and County of San Francisco, to monitor and ensure compliance

Resulting Level of Significance. Application of Mitigation Measures VIS-4a, VIS-4b, and VIS-4c would reduce Impact VIS-4 to a less-than-significant level.

5.3.14 Hazardous Materials and Waste Management

5.3.14.1 Environmental Setting

The San Francisco Sheedy Converter Station alternative site encompasses the Sheedy Drayage property, and is located directly west of San Francisco Bay, east of Illinois Street, north of the Western Pacific site, and south of 24th Street (refer to Figure A.8-16 in Appendix A).

A Phase I ESA was conducted for the Sheedy site associated with this EIR (URS, 2006a). Site inspections and/or interviews were not conducted as part of the Phase I ESA due to a lack of site access. The file review conducted as part of the Phase I ESA indicated that the City and County of San Francisco Department of Public Health's (SFDPH's) Hazardous Materials Unified Program Agency (HMUPA) is the oversight agency for the site. No files were reported for the Sheedy site by the following environmental agencies: the U.S. Environmental Protection Agency (USEPA) Superfund Program, DTSC, or the Regional Water Quality Control Board (RWQCB).

The Phase I ESA identified the following recognizable environmental conditions (RECs) at the Sheedy site:

- REC 1, entire Sheedy site: The Sheedy site was formerly a portion of San Francisco Bay that was filled in the 1950s. The nature of the fill is unknown; therefore, the presence of this fill represents an REC to the Sheedy site.

- REC 2, throughout Sheedy site: Historical reports indicate that portions of the Sheedy site were used as a contractor's yard, a truck and equipment repair facility, a tire shop, a crane and equipment storage facility, a hot-asphalt plant, and a rail spur. Also, vehicle fueling appears to have occurred at the Sheedy site in the 1950s. These activities potentially impacted site soils and groundwater with glycol, waste oil, and metals.
- REC 3, various locations throughout Sheedy site: The Sheedy site was listed in the regulatory agency databases for the historical presence of 14 diesel and gasoline underground storage tanks (USTs). The status of these USTs was not identified in the agency records; however, the site was not listed in the Leaking Underground Storage Tanks (LUST) Databases. However, the long history of UST use at the site and the use of petroleum products with the associated potential for leakage represent an REC to the Sheedy site.
- REC 4, unknown part of Sheedy site: No information on the site-specific geology of the Sheedy site was available and therefore it is not known whether the serpentinite ridge with naturally occurring asbestos that is present on the Mirant Potrero and HWC sites (to the north of the Sheedy site) continues onto the Sheedy site. If the ridge continues its general southeast and downward trend from the Mirant Potrero and HWC sites, the ridge may not be present at the Sheedy site at depths that could be impacted during excavations at this potential converter station site. However, if the ridge is present at the Sheedy site, excavated rock from the Sheedy site would need to be tested for asbestos content and characterized for proper use or offsite disposal.
- REC 5, throughout the Sheedy site: Given the age of the buildings on the Sheedy site, asbestos-containing materials were likely used in building construction.
- REC 6, throughout the Sheedy site: Given the age of the buildings on the Sheedy site, lead-based paint was likely used in building construction or maintenance.

The Phase I ESA identified the following RECs for the Sheedy site from surrounding properties:

- REC 7, northern part of Sheedy site: groundwater at the HWC site, which is immediately adjacent to the Sheedy site to the north, is contaminated with total petroleum hydrocarbons (TPH), and possibly PAHs and heavy metals and constitute an REC to the Sheedy site.
- REC 8, northern part of Sheedy site: groundwater at the Mirant Potrero location, which is north of both the HWC site and the Sheedy site, is contaminated with TPH, PAHs, minor volatile organic compounds (VOCs), and heavy metals and constitute an REC to the Sheedy site.

The proposed DC cable route would come from San Francisco Bay onto the Sheedy site. The proposed AC cable route would be linked from the Sheedy site to the existing PG&E switchyard on the Mirant Potrero location. Currently, two options are being considered for linking the AC cable to the switchyard on the Mirant Potrero location: 1) the AC cable travels beneath 24th Street, turns north, passes beneath Illinois Street, enters the Mirant Potrero property, and proceeds to the PG&E switchyard; or 2) the AC cable travels northwest beneath the HWC site via directional bore, crosses beneath 23rd Street, enters the Mirant Potrero property, and proceeds to the PG&E switchyard.

The following REC is identified for proposed AC cable Option 1:

- REC 9: Soil and groundwater at the HWC site (immediately adjacent to the Sheedy site to the north) has been reported to be contaminated with petroleum hydrocarbons, and possibly PAHs and metals. Given that the proposed AC cable would travel beneath 24th Street, which is adjacent to the HWC site, the HWC site is an REC to this AC cable route.
- REC 10: The soils excavated along the proposed AC cable route on the Mirant Potrero property would likely be impacted with hydrocarbons and metals. Because Option 1 travels beneath the Mirant Potrero property, these soils are an REC to this AC cable route.

The following RECs are identified for AC cable Option 2:

- REC 11: The HWC site has been reported to be contaminated with petroleum hydrocarbonsand possibly PAHs and metals. Given that this AC cable route would travel beneath the HWC site via directional bore, this property is an REC to this AC cable route.
- REC 12: Elevated concentrations of hydrocarbons have been detected in groundwater in the monitoring wells located on 23rd Street, just south of the Mirant Potrero property. Given that this AC cable route passes beneath 23rd Street, the groundwater on 23rd Street is an REC to this AC cable route.
- REC 13: The soils excavated along this AC cable route on the Mirant Potrero property would likely be impacted with hydrocarbons and metals. Given that this AC cable route travels beneath the Mirant Potrero property, it is an REC to this AC cable route.

5.3.14.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the alternative San Francisco Sheedy Converter Station site are generally as described in Section 4.14.3 for the proposed HWC site. With implementation of the following mitigation measures, potentially significant environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure HAZ-1 (Complete an ACM Abatement Plan and an LBP Abatement Plan) for Impact HAZ-1 (Removal of Potentially Hazardous Building Materials Resulting from Demolition)
- Mitigation Measure HAZ-2 (Soil Removal Protocols) for Impact HAZ-2 (Soil Removal)
- Mitigation Measure HAZ-3 (Reduction of Hazards During Construction Phase) for Impact HAZ-3 (Construction-phase Hazardous Materials Use)
- Mitigation Measure HAZ-4 (Management of Construction-phase Waste Streams) for Impact HAZ-4 (Construction-phase Waste Streams)
- Mitigation Measure HAZ-5 (Construction-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-5 (Construction-phase Accidental Spills)
- Mitigation Measure HAZ-6 (Reduction of Construction Dust and Volatilization of Contaminants) for Impact HAZ-6 (Construction-phase Dust and Volatilization of Contaminants)
- Mitigation Measure HAZ 7 (Contaminated Groundwater Control) for Impact HAZ-7 (Contaminated Groundwater)
- Mitigation Measure HAZ-8 (Control of Operations-phase Hazardous Materials) for Impact HAZ-8 (Operations-phase Hazardous Materials Usage)
- Mitigation Measure HAZ-9 (Manage Waste Generation, Storage, and Disposal During Operations Phase) for Impact HAZ-9 (Operations-phase Waste Streams)
- Mitigation Measure HAZ-10 (Operations-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-10 (Operations-phase Accidental Spills)
- Mitigation Measure HAZ-11 (Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase) for Impact HAZ-11 (Operations-phase Fire and Explosion Risk)
- Mitigation Measure HAZ-12 (Manage Seismic Activity) for Impact HAZ-12 (Impacts from Seismic Activity)

5.3.15 Paleontological Resources

5.3.15.1 Environmental Setting

No fossil localities have been identified within the footprint of the San Francisco Sheedy Converter Station alternative site or AC/DC cable routes. The proposed alternative Sheedy

Converter Station site is assigned a high sensitivity rating, since excavations have the potential to penetrate into undisturbed *Qal* sediments which could contain significant fossil resources (refer to Figure 4.15-1). The cable routes are assigned a low sensitivity rating, since typical excavations are not expected to penetrate into undisturbed *Qal* sediments where there would be a potential for significant paleontological resources.

5.3.15.2 Environmental Impacts

No fossil localities have been identified within the footprint of this project component. However, construction excavations have the potential to penetrate into undisturbed Quaternary alluvium (*Qal)* sediments which have the potential to contain significant fossil resources. This would be a potentially significant impact.

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the alternative San Francisco Sheedy Converter Station site are as described in Section 4.14.3 for the proposed HWC site. With implementation of the following mitigation measure, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level.

- Mitigation Measure PALEO-1 (Potential Fossil Resources Protection) for Impact PALEO-1 (Disturbance of Fossil Resources)

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5.4 PITTSBURG WEST TENTH STREET ALTERNATIVE 1 (E/W)

5.4.1 Introduction

The Pittsburg West Tenth Street Converter Station Alternative 1 (E/W) site is in close proximity to the PG&E 230 kV substation (refer to Figures 3-1 and 5.4-3). Use of this site would require leasing or procuring and sub-dividing several parcels in the northwest quadrant of the overall West Tenth Street group of parcels. Existing development on the West Tenth Street site includes light industrial businesses. The Alternative 1 site is in proximity to a new residential community on the south side of West Tenth Street, but is located further to the north and away from the residential area to the south than the Pittsburg West Tenth Street Converter Station Alternative 2 (N/S) (refer to Section 5.5). The City of Pittsburg is in the process of amending the existing CS-O (1171) zoning district (Service Commercial with Limited Overlay [Ordinance No. 00-1171]) for a group of parcels. The affected zoning district includes Assessor Parcels 085-270-016, 085-270-018, 085-270-019, 085-270-020, 085-270-022, 085-270-025, 085-270-026, 085-270-029, 085-270-032, 085-270-035, 085-270-036, 085-270-038, 085-270-039, and 085-270-040) and encompasses an area larger than that required for the alternative converter station layout under consideration for the Pittsburg West Tenth Street Converter Station Alternative 1 site. The details of the proposed Overlay Zoning Amendment would be as follows with respect to allowable uses, setbacks, and height limitation:

> *"Utility, Major – L39" with the additional land use regulations: "L39 Limited, as a permitted use, to electrical substations of 50 megawatts or less, or AC/DC power converter stations with electrical transformers. Any structures must be located a minimum of 35 feet from the right-of-way of West Tenth Street and a minimum of 600 feet from the right-of-way of Beacon Street, and with the maximum height of any building not to exceed 65 feet and/or any ancillary structure/tower not to exceed 80 feet in height. The site perimeter must be planted with a substantial screen of evergreen trees and other landscaping in order to minimize the impact of the size, height and bulk of the structures."*

This revised text to the City of Pittsburg General Plan is based on a Zoning Amendment proposed by the City in order to satisfy the needs of the Project proponent. The language above does not apply to land use on West Tenth Street as it exists today.

The Pittsburg West Tenth Street Converter Station Alternative 1 location (including ancillary facilities), layout under consideration, elevation views, and a photosimulation are presented on Figures A.1-1, A.8-20, and A.8-23 in Appendix A. This alternative includes a proposed permanent access road that would connect to West Tenth Street. Construction traffic would access this site via the existing access road to the Mirant Pittsburg Power Plant north of West Tenth Street.

5.4.2 Air Quality

5.4.2.1 Environmental Setting

The environmental setting for air quality associated with the Pittsburg West Tenth Street Converter Station Alternative 1 site in Pittsburg is as described in Section 4.2.1.

5.4.2.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station, Alternative 1 (E/W) are as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measures AIR-1 (Fugitive Dust Controls) for Impact AIR-1 (Fugitive Dust Emissions)
- Mitigation Measure AIR-2 (Exhaust Controls for Impact AIR-2 (Equipment Exhaust Emissions)

Potentially significant impacts associated with installation of the offshore DC cable route (refer to Section 4.2.3.4) apply equally to this alternative converter station site. However, offshore cable installation for the proposed Pittsburg Standard Oil Converter Station would involve slightly more offshore cable installation with associated marine vessel emissions than this alternative converter station site. The emissions estimates presented in Section 4.2.3 and Appendix D are based on the proposed Standard Oil Converter Station site. Selection of the Pittsburg West Tenth Street, Alternative 1 (E/W) site would result in slightly less emissions than accounted for in Section 4.2.3 for the proposed Standard Oil site.

5.4.3 Geologic Resources and Soils

Background geological resources and soils data for the proposed Project is presented in Section 4.3. This background information is also generally applicable to this alternative site. Site-specific environmental setting and impact discussions for this alternative site are presented below.

5.4.3.1 Environmental Setting

5.4.3.1.1 Site Geology. The Pittsburg West Tenth Street Alternative 1 site is located approximately 3,000 feet south of Suisun Bay. The geology of the Pittsburg area is shown on Figure 4.3-5. Soil types are shown on Figure 4.3-6. This site is located on artificial fill of gravels, sands, and clays and estuarine soils (soils with slopes between 0 and 3 percent) (City of Pittsburg, 2001). The sediments consist of unconsolidated silt and clay with abundant organic material, local peat, sand, and gravel lenses or discontinuous beds.

The Pittsburg West Tenth Street Converter Station Alternative 1 site would utilize up to 7 acres of laydown area on the adjacent Mirant Pittsburg property to the north as shown on Figure 4.3-6.

Geologic Resources**.** The converter station site does not have any identified unique geologic features or resources. Paleontological resources are as discussed for the proposed Standard Oil site in Section 4.15, Paleontological Resources.

Faults**.** Figures 4.3-2 and 4.3-5 illustrate the location of the site with respect to the major Quaternary faults in the site region. Table 4.3-1 presents maximum earthquake magnitude estimates for faults in proximity to the site.

As shown on Figure 4.3-5, the Pittsburg-Kirby Hills Fault Zone runs in a southeastern direction from Suisun Bay, immediately west of the Mirant Pittsburg power plant, through the West Tenth Street residential neighborhoods to the intersection of Harbor Street and Pittsburg-Antioch Highway. The Pittsburg-Kirby Hills Fault Zone is less than 1,000 feet from the northeast corner of the West Tenth Street site. As discussed in Section 4.3.1.2.10, a recent fault rupture hazard investigation (Terrasearch, 2005) found no evidence that the Pittsburg-Kirby Hills Fault Zone is active in the Project vicinity. The fault and other regional faults are described in detail in Section 4.3.1.2.

5.4.3.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 1 are as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure GEO-1 (Design Project for Erosion Control) for Impact GEO-1 (Soil Erosion and Compaction)

- Mitigation Measure GEO-3 (Design to Seismic Design Requirements) for Impact GEO-3 (Strong Ground Shaking)
- Mitigation Measure GEO-4 (Design Project for Liquefiable Deposits) for Impact GEO-4 (Liquefaction)
- Mitigation Measure GEO-5 (Design Project for Shrink-Swell/Subsidence) for Impact Geo-5 (Shrink/Swell Subsidence)

5.4.4 Water Resources and Quality

5.4.4.1 Environmental Setting

The Pittsburg West Tenth Street Converter Station Alternative 1 (E/W) site is shown on Figure 4.4-5. The site is located approximately 3,000 feet south of Suisun Bay. There is no surface water on this alternative site. Stormwater from the site collects and discharges to the City of Pittsburg's stormwater system.

An area of up to approximately 7 acres north of the alternative converter station site on the Mirant Pittsburg property (refer to Figure 4.4-5) would be temporarily devoted to equipment and materials laydown, storage, parking of construction equipment, small fabrication areas and office trailers. Once the converter station construction and onshore cable installation was completed, the temporary construction laydown area would be returned to its preconstruction condition and use.

As shown on Figure 4.4-4, the Pittsburg West Tenth Street Converter Station Alternative 1 site and associated laydown areas and onshore cable routes on the Pittsburg Mirant property are within the Lawlor Creek Watershed.

As described in the groundwater section for the Standard Oil site (Section 4.4.1.6.2), the site is located within the Pittsburg Plain Groundwater Basin. The water-bearing units in the Basin are Pleistocene to recent alluvial deposits of sand, gravel, and clay. Groundwater tends to flow northerly, toward Suisun Bay.

The West Tenth Street area is built on artificial fill near the Bay where the shallower, tidally influenced groundwater may be encountered. Groundwater levels in the Pittsburg area vary from a few feet bgs near Suisun Bay, to 28 feet bgs in the upland areas of the Pittsburg Plain (City of Pittsburg, 2001). Shallower groundwater (2 to 7 feet bgs) can be found in low-lying areas near Suisun Bay and in ravines and creek channels. Groundwater is tidally influenced and tends to be saline with high mineral concentrations (City of Pittsburg, 2001). Intense pumping for industrial uses in the 1930s through 1950s resulted in overdraft and seawater intrusion. Limited amounts of water drawn from the underground aquifer are now blended with raw water from the Contra Costa Canal before treatment and distribution to the city.

Based on the site history, groundwater at the site is potentially contaminated. The site history and potential groundwater contamination at the site are discussed further in Section 5.4.14. The northwest portion of the Pittsburg West Tenth Street Alternative 1 site is located within the 100-year flood zone.

5.4.4.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 1 are generally as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site, except as noted below for Impact WATER-8. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure WATER-1 (Erosion Control and Contaminant Source Control) for Impact WATER-1 (Erosion and Contaminated Runoff)
- Mitigation Measure WATER-2 (Spill Prevention and Control Plan for HDD) for Impact WATER-2 (Surface Water Quality Impacts from HDD)
- Mitigation Measure WATER-3 (Use of Pilot Hole and Reaming) for Impact WATER-3 (Groundwater Quality Impacts from HDD)

Some areas along the shoreline and drainages leading to the Suisun Bay and San Francisco Bay are potential floodplains. Risks associated with building in a floodplain include threats to life and property. Local city or county government agencies regulate floodplain development through land use controls, based on determinations of flood elevations. FEMA maintains maps of 100-year flood areas in the Bay Area counties. A “100-year flood” refers to a flood level with a 1 percent or greater chance of being equaled or exceeded in any given year.

As shown on Figure 4.4-4, the northwest portion of the Pittsburg West Tenth Street Converter Station Alternative 1 site (including ancillary facilities) is located in the Lawlor Creek watershed within the 100-year flood zone. Impacts due to flooding of the site are considered potentially significant.

Impact WATER-8: Flooding. The northwest corner of the Pittsburg West Tenth Street Converter Station Alternative 1 site is located within the 100-year flood zone.

Mitigation Measure WATER-8: Flood Mitigation. Design the site to adequately minimize risk from 100-year flood. Typical measures that shall be incorporated into the project design include:

- Ensure that pad elevations on newly constructed habitable buildings are a minimum of 1 foot above the 100-year floodplain, as determined by FEMA
- Reduce the risk of localized and downstream flooding and runoff through the use of high infiltration measures, including the maximization of permeable landscape

Implementation Responsibility: Project proponent

Requirements and Timing: Design facility pad elevation above predicted base flood elevation prior to commencement of construction

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Mitigation Measure WATER-8 would reduce Impact WATER-8 to a less-than-significant level.

5.4.5 Terrestrial Biological Resources

5.4.5.1 Environmental Setting

The Pittsburg West Tenth Street Converter Station Alternative 1 (E/W) site includes Township 2 North, Range 1 East, in an undefined southeastern section of the Honker Bay 7.5-minute USGS Quadrangle with elevations ranging from 0 to 15 feet above mean sea level (see Sheet 10 of Map A.2-1). This location corresponds to the northwestern side of Pittsburg, near West Tenth Street and Willow Pass Road, and occurs within industrialized and previously disturbed landscapes. A small section of cleared and maintained field with planted horticultural trees and ruderal herbaceous weed species occurs along the Mirant property entrance road adjacent to West Tenth Street, and one freshwater ditch dominated by cattail (*Typha sp.*) wetland occurs near the entrance to the Mirant property (just before the security gate and north of the Pittsburg West Tenth Street Alternative 1 site). This ditch is culverted under the Mirant entrance road. No sensitive terrestrial biological resources are present on this alternative converter station site or the associated onshore facilities (i.e., AC/DC cable routes and temporary laydown areas).

5.4.5.2 Environmental Impacts

This alternative site is dominated by previously developed and industrialized landscapes described in Section 4.5 as Disturbed/Developed habitats. A small section of the proposed onshore cable route near the entrance to the Mirant Pittsburg Power Plant and West Tenth

Street is near heavily disturbed California annual grassland series vegetation along the edges of a paved roadway (entrance road to Mirant) and one freshwater ditch that is vegetated with cattail wetland with a culvert under the entrance road to the Mirant property. The proposed AC/DC cables would be installed in the Mirant power plant road and, thus, would not impact the freshwater ditch or the adjacent grasslands. No impacts to natural communities, wetlands, or special-status species would be expected from this alternative.

5.4.6 Marine Biological Resources

5.4.6.1 <u>Environmental Setting</u>

Background information, including evaluation of marine biological resources with the potential to occur in the Project area, as well as the regulatory framework, are provided in Section 4.6.

5.4.6.2 <u>Environmental Impacts</u>

The Pittsburg West Tenth Street Converter Station Alternative 1 would eliminate the need for the HVAC installation in the Bay, and would reduce the length of the HVDC installation by approximately 4 miles relative to the proposed Standard Oil site. No cable installation would be needed in the channel between Winter Island and Browns Island and no dredging would be needed to cross the channel where the cable routes cross New York Slough associated with the Standard Oil site (only). This would result in incrementally lower construction and operational impacts relative to those described in Section 4.6. No construction or operation impacts would occur east of the Mirant Pittsburg property under this alternative.

5.4.7 Cultural Resources

5.4.7.1 <u>Environmental Setting</u>

This evaluation includes the Pittsburg West Tenth Street Converter Station Alternative 1 site, plus the overall group of West Tenth Street parcels, onshore DC/AC cable routes and construction laydown areas on the adjacent Mirant Pittsburg property, and the nearshore DC cable route north of the Mirant Pittsburg facility (refer to Map A.2-1, Sheet 10 of 10).

5.4.7.1.1 <u>Archaeological Resources</u>. No archaeological resources were identified within the Pittsburg West Tenth Street site, onshore DC/AC cable routes, or laydown area during any phase of the investigation.

The route of the offshore DC cable has not been subjected to a geophysical inventory. As such, it is unknown if submerged and/or sub-bottom archaeological resources occur within the footprint of this portion of this alternative.

5.4.7.1.2 <u>Historic Architectural Resources</u>. The overall West Tenth Street study area for this project consists of 15 parcels north of West Tenth Street and south of the former Sacramento Northern Railroad line, on the western edge of the City of Pittsburg. Some of the buildings or structures located on these parcels date to the 1940s and early 1950s and were inventoried and evaluated as part of the survey conducted for this Project. These roadside commercial businesses (including automotive repair and salvage, construction supply, a motel, and other businesses) are typical post-World War II construction. All of the buildings inventoried have been modified since their original construction, and none of them appear to have historic significance. The businesses are not important within the context of the history of the City of Pittsburg, or state or national history. The former Sacramento Northern Railroad line, just outside the West Tenth Street study area to the north, has been extensively refurbished and upgraded since the alignment was originally established in the early nineteenth century and does not retain historic integrity.

5.4.7.2 <u>Environmental Impacts</u>

5.4.7.2.1 <u>Archaeological Resources</u>. No archaeological resources have been identified within the Pittsburg West Tenth Street converter station sites, onshore DC/AC cable routes, or construction laydown areas. As such, significant impacts to archaeological resources are not anticipated with the construction of this Project component.

5.4.7.2.2 <u>Historic Architectural Resources</u>. No historic architectural resources have been identified within the Pittsburg West Tenth Street converter station sites, onshore DC/AC cable routes, or construction laydown areas. As such, significant impacts to historic architectural resources would not occur with implementation of this Project component.

5.4.8 Land Use and Recreation Resources

5.4.8.1 <u>Environmental Setting</u>

The alternative West Tenth Street converter station sites, onshore AC/DC cable routes, and construction laydown area(s) on the Mirant Pittsburg property are collectively called the West Tenth Street site here, unless otherwise noted. The West Tenth Street site includes two alternative converter station layouts (Alternatives 1 and 2) as well as a larger overall site boundary that is proposed to be subject to a Zoning Overlay Amendment. Refer to Section A.8.2.3.1 in Appendix A for more information.

5.4.8.1.1 <u>Existing Land Uses</u>. The West Tenth Street site is situated northwest of the intersection of West Tenth Street and Beacon Street. Several automobile service and other commercial shops are currently located on the site. The Project would require leasing or procuring and subdividing several parcels. The site is located within a mixed land use setting of Pittsburg consisting of single family homes, motels, apartments, and service commercial types of uses such as wrecking yards, auto repair, pool contractors, and similar uses. The site is bounded by the Mirant Pittsburg Power Plant and PG&E Pittsburg Substation on the north and west. Commercial businesses and recently constructed single-family homes are present south of West Tenth Street. Many of the homes south of West Tenth Street are situated behind commercial uses fronting West Tenth Street (see Figure 4.8-3 in Section 4.8). The area southwest of the West Tenth Street Converter Station sites and adjacent to the west of the recently constructed homes is currently vacant, but was recently approved for industrial development.

The West Tenth Street Converter Station sites are located within the West Central planning subarea in the City of Pittsburg. The primary uses within this subarea are residential neighborhoods (CPPD, 2004), however, the north side of West Tenth Street in this area is service commercial and light industrial. Residential uses are located approximately 450 feet south of the West Tenth Street, Alternative 1 (E/W) site, and 150 feet south of the West Tenth Street, Alternative 2 (N/S) site.

5.4.8.1.2 Potentially Sensitive Land Uses. Table 5.4.8-1 lists potentially sensitive land uses near the West Tenth Street site. Residential development is located approximately 450 feet south from the site. Additional residential development occurs farther east and southeast of the site along West Tenth Street, Beacon Street, and Herb White Road. Marina Park and St. Peter Martyr School are situated approximately 800 feet and 1,400 feet northeast of the site, respectively.

TABLE 5.4.8-1
POTENTIALLY SENSITIVE LAND USES NEAR
PITTSBURG WEST TENTH STREET CONVERTER STATION

		Approximate Distance From (Feet)
Land Use	Location	Alternate West Tenth Street Converter Station
Residential (closest to West Tenth Street site)	South of West Tenth Street off Enterprise Street	450 (Alternative 1) 150 (Alternative 2)
St. Peter Martyr School	425 West Fourth Street	1,400 (Alternatives 1 and 2)
Marina Park	425 West Fourth Street	800 (Alternatives 1 and 2)
(Future) First Baptist Church	550 West Tenth Street	500 (Alternatives 1 and 2)

5.4.8.1.3 <u>Zoning and General Plan Designations</u>. The Pittsburg General Plan designation of the alternative West Tenth Street Converter Station site is Service Commercial and the site is zoned CS-O (1171) [Service Commercial with a Limited Overlay, Ordinance No. 00-1171]. The overlay covers the area bounded by Beacon Street on the east, the Pittsburg Mirant Power Plant driveway entrance on the west, West Tenth Street on the south, and the former Union Pacific ROW to the north. The Contra Costa County General Plan designation of the AC/DC cable routes is Industrial and the area is zoned "HI" Heavy Industrial. The West Tenth Street converter station sites are within the City of Pittsburg. The cable routes and the temporary construction laydown areas on the Mirant Pittsburg property are within the unincorporated area of Contra Costa County, but within the City of Pittsburg's Sphere of Influence and Planning Area.

The West Tenth Street converter station site is subject to development regulations in Pittsburg Municipal Code Section 18.52.015, which would allow a maximum structure height of 35 feet. Permitted uses within the CS-O (1171) currently include Minor Utility, but not Major Utility. A zoning overlay amendment is currently being prepared by the City of Pittsburg, which would allow for a Major Utility limited to AC/DC converter station and/or electrical substation uses within a specified area of the zoning district (discussed further below under Environmental Impacts). The maximum Floor Area Ratio for this district is 0.75, with a 60 percent maximum lot coverage.

5.4.8.1.4 <u>Land Use Trends</u>. The General Plan's West Central discussion indicates that business commercial, services, and industrial parcels adjacent to and north of the BNSF railroad tracks have the potential for redevelopment opportunities. A church (First Baptist Church) is planned at the northwestern corner of West Tenth Street and Beacon Street, approximately 500 feet east of the site. A housing development (Mariner Walk Development shown on Figure 4.8-3) is planned approximately 800 feet northeast of the site, in the location of the existing Marina Park. Mariner Walk Development would consist of 123 single-family units and relocation of the park. Future land use trends near the West Tenth Street site appear to continue the mixed use setting.

5.4.8.2 <u>Environmental Impacts</u>

The West Tenth Street converter station sites are located within a mixed land use setting of Pittsburg consisting of single-family homes, motels, apartments, and service commercial types of uses such as wrecking yards, auto repair, pool contractors, and similar uses. Single-family homes are situated 450 feet south of the West Tenth Street Alternative 1 site and a future church has been approved for construction 500 feet to the east of the site. Although the permit for the church has subsequently expired, there are plans to re-submit an application for a smaller church. The existing Mirant Pittsburg Power Plant is located directly north of the West Tenth Street site and industrial development was recently approved southwest of the site.

Land use plans and regulations applicable to the West Tenth Street site include the Pittsburg General Plan, Pittsburg Municipal Code, and Contra Costa County Zoning Ordinance. The Contra Costa County Zoning Ordinance would only apply to portions of the Project on the Mirant Pittsburg Power Plant property, i.e. onshore cable routes and temporary laydown areas. The alternative West Tenth Street converter station sites are located approximately 3,000 feet from the shoreline of Suisun Bay in the City of Pittsburg's West Central planning subarea. The primary uses within this subarea are residential neighborhoods, however, the north side of West Tenth Street in this area is service commercial and light industrial. The site is located on the northeastern corner of this subarea, adjacent to unincorporated Contra Costa County directly north. This unincorporated area is transected by the AC/DC onshore cables and situated in the Northwest River planning subarea of the City of Pittsburg. Policy 2-P-96 within the Northwest River subarea of the General Plan stipulates maintaining the Mirant Pittsburg Power Plant site in the Industrial designation and pursuing annexation of the power plant and adjacent properties to ensure land use control of these areas.

The West Tenth Street Converter Station would include a 64-foot-tall control building and poles that make up part of the static electricity grounding grid up to 80 feet high. The West Tenth Street Converter Station would be subject to development regulations in Pittsburg Municipal Code Section 18.52.015, which would allow a maximum structure height of 35 feet. Section 18.80.020 allows for height limit exceptions for the overhead transmission cables if they encompass no more than 10 percent of the ground area covered by the structure to which they are accessory.

The site is currently zoned CS-O (1171) (Service Commercial with Limited Overlay [Ordinance No. 00-1171]). The City of Pittsburg is in the process of amending the existing zoning district for a group of parcels. The affected zoning district encompasses an area larger than that required for the alternative West Tenth Street Converter Station. The details of the proposed Overlay Zoning Amendment with respect to allowable uses, setback, and height limitation are as described previously in Section 5.4.1.

Approval of this zoning overlay would allow the use and height of the proposed structures.

With implementation of the following mitigation measure, potentially significant impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure LU-2 (Height Allowance) for Impact LU-2 (Exceedence of Height Allowance)

The alternative West Tenth Street Converter Station would be situated in a mixed-use area. Recently constructed single-family homes are situated south of West Tenth Street. The site is currently occupied by various automotive repair and other facilities. No housing would be displaced by the West Tenth Street Converter Station. Development of the West Tenth Street site for the proposed Project would not divide the community, since industrial land uses are present to the north and west of the site.

The West Tenth Street Converter Station would be situated in a mixed-use area. Adjacent land uses include industrial, commercial, and residential land uses. The nearest potentially sensitive land uses consist of housing south of West Tenth Street and a proposed church approximately 500 feet to the east of the site. The site is currently occupied by automobile repair and other commercial facilities and is directly adjacent to the existing Mirant Pittsburg Power Plant. Based on the mixed use of the area, which includes industrial uses of the West Tenth Street site and the areas adjacent to the north, west, and southwest of the site, this alternative would be consistent with existing and proposed land uses.

5.4.9 Marine Transportation and Commercial Fishing

The Pittsburg West Tenth Street Converter Station alternative would not impact marine transportation or commercial fishing.

If the Pittsburg West Tenth Street Converter Station alternative were to be selected instead of the Standard Oil site, there would be no need to install the submarine AC and DC cables between the PG&E Pittsburg substation and the Standard Oil Converter Station site landfall on the east end of New York Slough. This alternative would therefore avoid the potential local impacts to commercial marine transportation and commercial fishing vessel operation east of the Mirant Pittsburg property. Selection of this alternative would also avoid the need to dredge the shipping channel in two locations on either end of New York Slough, thereby minimizing potential impacts relative to the proposed Standard Oil Converter Station site.

5.4.10 Traffic and Transportation

5.4.10.1 Environmental Setting

Roadways near the West Tenth Street alternative converter station site in Pittsburg are discussed in Section 4.10.1 based on the onshore portion of the proposed cable route to the PG&E Pittsburg substation associated with the Standard Oil Converter Station site. The Environmental Setting for Traffic and Transportation for the alternative converter station sites in Pittsburg is consistent with the discussion presented for the proposed Standard Oil Converter Station in Section 4.10.1, excluding the items noted below.

- Curb parking is available immediately in front of the Pittsburg West Tenth Street site, continuing to the east toward the historic center. The Pittsburg Mirant property has controlled access and, as such, offers parking to those allowed through the company's gate. On-street parking is permitted on the residential streets to the east of this site.
- The Pittsburg West Tenth Street Converter Station sites are served by public transit, including Tri Delta Transit Service, which operates the north-south Route 70 Pittsburg-Marina to Buchanan Loop and the east-west Route 387, which connects the Pittsburg Bay Point BART Station with the centers of Pittsburg and Antioch. Service on these routes operates weekdays with Route 387 extending into evening hours at frequencies ranging from 45 to 90 minutes.
- In Pittsburg, the General Plan identifies bicycle routes planned for the study area including Railroad Avenue, Third Street, Harbor Street, North Parkside, West Tenth Street, Loveridge Road, and Herb White Way. The West Tenth Street and Herb White Way bicycle routes are near the Pittsburg West Tenth Street Converter Station sites.
- At the Pittsburg West Tenth Street Converter Station Alternative 1 site, a new access road from West Tenth Street is proposed and would be aligned to pass through Assessor's Parcel No. 085-270-035 (refer to Figures A.8-20 and A.8-21 in Appendix A of this EIR). This new access road would be utilized during the operational phase only when Project-related traffic would be minimal. Construction traffic would utilize the existing access road to the Mirant Pittsburg site; this road would be used to access the temporary construction laydown areas and cable routes on the Mirant Pittsburg property.

5.4.10.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 1 are generally as described in Section 4.10.3 for the proposed Pittsburg Standard Oil site, except as noted below.

5.4.10.2.1 Construction-related Impacts.

Truck Shipments and Deliveries. Truck shipments to the West Tenth Street site would follow the same route described previously for the Standard Oil site except on State Route (SR) 4, trucks would exit at Railroad Avenue rather than Loveridge Road**.** From Railroad Avenue, trucks would turn west onto West Tenth Street and proceed to the West Tenth Street site west of Beacon Street. The Mirant site and nearby construction staging area are located north of the West Tenth Street site. This site would also have access from West Tenth Street, turning north opposite Enterprise Street along a private road entering the Mirant Pittsburg Power Plant property.

Both the SR 4 off-ramp at Railroad Avenue, and Railroad Avenue itself, operate at LOS A (unimpeded flow) all day except during the p.m. peak when the eastbound ramps are more congested, but within acceptable traffic circulation standards (LOS C) (CCCMP, 2003). Similarly, traffic operation at the West Tenth Street/Herb White Way intersection is free-flowing, except during the p.m. peak, when it operates at LOS C (Reinders, 2005). Because West Tenth Street passes through a commercial area, the speed limit at the access road location is slow, and traffic would not be affected by truck turning movements.

Trucks hauling demolition material resulting from construction of the Pittsburg West Tenth Street Converter Station site would follow the truck delivery route in reverse, using the regional roadway network to access available landfill sites in the region.

Because the local roadway network has capacity to accommodate additional truck trips, no significant construction-related traffic impacts would be expected on local streets and arterials providing access for the West Tenth Street Converter Station.

***Construction Work Trips*.** As with the Standard Oil site, no significant effects would occur on local roads due to the additional peak month truck delivery and construction worker commute trips, which would peak at a total 32 round trips per day during the 12th month of construction and then decline in number.

***Vehicular Safety*.** The existing left turn signal would allow trucks to safely turn left onto West Tenth Street from Railroad Avenue. Ample road and shoulder width on West Tenth Street would also permit right turns made safely into the West Tenth Street or Mirant sites. As a result, no safety impacts would occur at either alternative Project site. In addition, the City's Emergency Operations Plan and emergency vehicle access would not be impeded by the project at either site.

***Cumulative Traffic Impacts*.** Several projects have been approved by the City of Pittsburg near the West Tenth Street site that could increase traffic on West Tenth Street. Given the current traffic volumes and unimpeded level of service on West Tenth Street, the road has capacity to absorb the expected cumulative traffic increases. No significant cumulative transportation impacts on local roads are expected. Truck trips would be scheduled to avoid the most congested times on the regional roadway network.

***Transit Service and Bicycle and Pedestrian Impacts*.** Tri-Delta Transit Service operates one route (Route 387) along West Tenth Street. The service, which operates hourly at most, would not be delayed by truck movements into and out of this site. To further ensure smooth traffic flow, Project truck deliveries would be on site or at the construction laydown area at the Mirant Pittsburg site and, therefore, would not block nearby streets or sidewalks. No impacts on transit, bicycle, or pedestrian circulation are anticipated.

***Parking*.** West Tenth Street offers some curb parking opportunities for Project workers at the West Tenth Street site. Employee parking would be accommodated on site at the Mirant Pittsburg location. No parking impacts are anticipated.

***Rail Facilities*.** BNSF operation is not adjacent to or does not traverse the alternative sites. Freight rail service on the former Sacramento Northern line near the West Tenth Street and Mirant sites is no longer in operation. As a result, no rail impacts would result from truck deliveries or construction activities.

Implementation of the proposed Project at the Pittsburg West Tenth Street site has the potential to result in significant impacts relative to cumulative traffic impacts on the regional roadway system during peak periods, and transport of oversize loads. With implementation of the following mitigation measures, potential impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure TRAFFIC-1 (Coordination to Reduce Cumulative Traffic Impacts) for Impact TRAFFIC-1 (Cumulative Traffic Impacts)
- Mitigation Measure TRAFFIC-2 (Coordination of Oversized Loads) for Impact TRAFFIC-2 (Oversized Loads)

5.4.10.2.2 Operations-related Impacts. There would be no daily commute trips or truck deliveries to either the alternative West Tenth Street site after on-going operation was established. As a result, there would be no adverse impact to the plans and policies in the City of Pittsburg General Plan or to the Contra Costa County Congestion Management Agency Expenditure Plan. Therefore, no transportation impacts would occur after operation of the Pittsburg Converter Station site commenced.

5.4.11 Noise and Vibration

5.4.11.1 Environmental Setting

The alternative Pittsburg West Tenth Street Converter Station site is located in an industrial area of Pittsburg, south of the existing PG&E Pittsburg Substation and the Mirant Pittsburg Power Plant. Two converter station layouts within the overall West Tenth Street property are under consideration in this EIR. One layout is positioned on the northwest portion of the West Tenth Street property and is oriented in an east-west fashion (Alternative 1). The second layout (Alternative 2) is located in the central portion of the West Tenth Street property and is oriented in a north-south fashion. This section focuses on Alternative 1 (E/W) although the majority of this assessment applies equally to Alternative 2 (N/S) as well. The overall West Tenth Street site is set within the commercial frontage along West Tenth Street, and it is opposite the entry to a new residential community that has been recently developed on the south side of West Tenth Street. The area to the east and west consists of wholesale and service commercial businesses. Traffic on West Tenth Street includes commercial and residential traffic.

A series of sound level measurements was conducted on September 13 through 14, 2005 to quantify the existing acoustical environment at the alternative West Tenth Street Converter Station site as well as at sensitive receptors near the site. The same methodology identified for the San Francisco sound level measurements was used. The results of the measurements are summarized in Table 4.11-3. The measurement locations are shown on Figure 4.11-2. The following summarizes the property line measurements.

ST6 Thirty-minute measurements were conducted during the daytime and nighttime at the south property line of the overall West Tenth Street property. West Tenth Street is a two-lane surface street with a center turn lane and a posted speed limit of 45 mph. Surrounding land uses are commercial on the property north of West Tenth Street and a mix of residential (to the south) and commercial (to the southeast) on the property south of West Tenth Street. The daytime measurement was taken between 2:36 p.m. and 3:06 p.m. on September 13 and the nighttime measurement between 12:10 a.m. and 12:40 a.m. on September 14. The dominant noise source for both measurements was vehicular traffic on West Tenth Street. West Tenth Street had a large percentage of heavy-truck traffic for both the daytime and nighttime measurements. The only other noise source was vehicular traffic on State Route 4 (SR 4) (faint). During the daytime measurements, metal grinding was noted at 4:06 p.m. as well as backup beepers from the towing company to the east of the measurement site. The daytime one-hour L_{eq} was 62.9 dBA and the nighttime one-hour L_{eq} was 63.8 dBA.

Sensitive receptors in the project area (Alternative 1) consist of single-family residences approximately 450 feet south across West Tenth Street and single-family residences 500 feet east on West Tenth Street. The distances to the residences to the south and east of the Alternative 2 site are approximately 150 feet and 500 feet, respectively. The residences south of the site are surrounded by a 6-foot high concrete block wall, but the second stories have a direct line-of-sight to the Project. The residences to the east do not have a direct line-of-sight due to the intervening buildings on West Tenth Street. The following describes the measurements conducted at the closest receptor.

ST9 Thirty-minute measurements were conducted during the daytime, evening, and nighttime at the residences south of the West Tenth Street. Permission was not obtained to conduct the measurements inside the 6-foot high block wall surrounding the community; therefore, the measurements were conducted at the north property line just outside the wall. Land uses in the vicinity are the same as described previously for ST6. The daytime measurement was taken between 9:55 a.m. and

10:25 a.m. on September 14, the evening measurement from 9:30 p.m. to 10:00 p.m. on September 13, and the nighttime measurement was taken between 12:10 a.m. and 12:40 a.m. on September 14. The dominant noise source for all three measurements was vehicular traffic along West Tenth Street. The other source of noise was rustling leaves. The daytime one-hour L_{eq} was 67.6 dBA, the evening one-hour L_{eq} was 63.0 dBA, and the nighttime one-hour L_{eq} was 66.1 dBA. The calculated L_{dn} was 73 dBA.

The existing noise environment and sensitive receptors for the onshore AC/DC cable route and laydown areas would be the same as that identified for the Pittsburg West Tenth Street Converter Station and the discussion in Section 5.6.11 for the Pittsburg Mirant Converter Station alternative.

5.4.11.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 1 are generally as described in Section 4.11.3 for the proposed Pittsburg Standard Oil site.

5.4.11.2.1 Construction-related Impacts. Scheduled construction hours at the alternative Pittsburg West Tenth Street Converter Station site are consistent with those given for the proposed Standard Oil Project site in Section 4.11. Criteria are not set forth by the Pittsburg Noise Element or Noise Ordinance related to construction noise levels and times of operation. The anticipated noise sources would be the same as those outlined for the proposed Project site in Section 4.11.

Acoustical calculations were performed to estimate noise from construction activities at the closest residences with the same methodology as described for the Pittsburg Standard Oil Converter Station site. The closest offsite residential uses to the alternative West Tenth Street Converter Station Alternative 1 (E-W configuration) site consist of residences approximately 450 feet south and 600 feet to the east. Average sound levels at the closest residences to this alternative site would be 70 dBA, as summarized in Table 5.4.11-1.

The closest offsite residential uses to the West Tenth Street Converter Station Alternative 1site (E/W configuration) consist of residences approximately 450 feet south and 600 feet to the east. Average sound levels at the closest residences to this site would be 70 and 67 dBA, respectively, as summarized in Table 5.4.11-1. Construction noise would be audible at the residential receptors south of West Tenth Street. Construction noise would be intermittent and limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday, thus there would be no significant impact.

TABLE 5.4.11-1
CALCULATED SOUND LEVELS FROM CONSTRUCTION OF THE PITTSBURG WEST TENTH STREET ALTERNATIVE 1 CONVERTER STATION

Converter Station Site	Receptor Description	Distance to Receptors (Ft)	Calculated Sound Level from Construction (dBA)	Calculated Sound Level from Pile Driving (dBA)	
				L_{max}	L_{eq}
Pittsburg West Tenth Street Alternative 1 (E-W Orientation)	Single-family residences (182 Builders Court)	450	70	86	81
	Single-family residences (900 Beacon Street)	600	67	83	78

***Pile Driving*.** Calculations were performed to estimate sound levels from pile driving at the receptors. Direct line-of-sight sound levels at the residences from the West Tenth Street Converter Station Alternative 1 (E-W) site were calculated to be 86 dBA L_{max} (81 dBA L_{eq}). Pile driving is not subject to sound level restrictions in Pittsburg, but it is limited to the hours of 7:00 a.m. to 10:00 p.m. This alternative could result in received noise levels as high as 86 dBA (L_{max}) at the closest receptors. This noise level is less than the 90 dBA threshold of significance (FTA, 1995) and, therefore, would be less than significant.

Calculations were performed to estimate vibration from pile driving activities at the closest residences. Vibration from pile driving was assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at residences 450 feet from the pile driving under Alternative 1 would be less than 0.007 in/sec, which is well below the FTA threshold, resulting in a less than significant impact.

***Construction Traffic*.** Truck shipments to the Pittsburg West Tenth Street site would follow the same route described previously for the proposed Project site except that on SR 4, trucks would exit at Railroad Avenue rather than Loveridge Road. The number of shipment deliveries and employee trips would remain the same as described for the proposed Project site. From Railroad Avenue, trucks would turn west onto West Tenth Street and proceed to the West Tenth Street site west of Beacon Street. The construction laydown area is located on the Mirant Pittsburg property north of the West Tenth Street site. This site would also have access from West Tenth Street, turning north opposite Enterprise Street along a private road entering the Mirant Pittsburg Power Plant property. Trucks hauling demolition material prior to construction of the West Tenth Street Converter Station site would follow the truck delivery route in reverse, using the regional roadway network to access available landfill sites in the region. The additional peak month truck delivery and construction worker commute trips would peak at a total 62 trips per day in each direction during the 12th month of construction and then decline in number.

The few additional daily truck trips (delivery or worker) would result in no change to the existing noise environment on these roadways. Therefore, there would be no significant impact.

5.4.11.2.2 Operations-related Impacts. Calculations were performed using linear octave band sound power levels as inputs from each noise source with the same equipment as the Pittsburg Standard Oil Converter Station site. Siemens conducted the noise analysis, the results of which are summarized here and provided in Appendix H. As summarized in Table 5.4.11-2, unmitigated sound levels at the Pittsburg West Tenth Street Converter Station Alternative 1 site would exceed the City of Pittsburg 75 L_{dn} requirement. This is considered to be a potentially significant impact. With implementation of the following mitigation measure, this potentially significant impact would be reduced to a less-than-significant level:

- Mitigation Measure NOISE-1 (Noise Barrier Installation for Alternative Converter Station) for Impact NOISE-1 (Converter Station Operations Sound Levels)

TABLE 5.4.11-2
CALCULATED SOUND LEVELS FROM OPERATION OF THE PITTSBURG WEST TENTH STREET CONVERTER STATION – ALTERNATIVE 1

Converter Station Site	Receptor Description	Calculated Sound Level (dBA)	Calculated Sound Level (dBA) With Mitigation
Pittsburg West Tenth Street Alternative 1 (E-W Orientation)	North Property Line	79 L_{dn}	72 L_{dn}
	South Property Line	76 L_{dn}	72 L_{dn}
	East Property Line	78 L_{dn}	74 L_{dn}
	West Property Line	79 L_{dn}	68 L_{dn}
	Receptors	59 L_{dn}	56 L_{dn}

5.4.12 Public Services and Utilities

5.4.12.1 Environmental Setting

The public services and utilities discussions for the West Tenth Street Converter Station Alternative 1 site (including associated onshore cable routes) are consistent with the proposed Pittsburg Standard Oil Converter Station site discussed in Section 4.12, except for the distances to certain facilities that are addressed below.

CCCFPD Station No. 84 (300 East Sixth Street) is located 0.6 mile to the east of the West Tenth Street site. Station No. 85 (2555 Harbor Street) is located 2.3 miles to the southeast. Fire and Hazardous Materials Response Unit response times to the West Tenth Street site are consistent with the response times to the proposed Standard Oil site, addressed in Section 4.12.1.

The closest medical clinic to the West Tenth Street site is the Pittsburg Health Center (2313 Loveridge Road), located approximately 3 miles to the southeast. The closest full service hospital is Sutter Health (3901 Lone Tree Way) in Antioch, located approximately 7 miles to the southeast. The schools closest to the West Tenth Street site are St. Peter Martyr (425 W. 4th Street), located 1 mile to the east, and Parkside Elementary (985 West 17th Street), located approximately 1.5 miles to the south.

5.4.12.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 1 site are generally as described in Section 4.2.3 for the proposed Pittsburg Standard Oil Converter Station site, except as noted below.

Potential impacts to public services and utilities from construction of Pittsburg West Tenth Street Converter Station Alternative 1 are generally consistent with the Pittsburg Standard Oil Converter Station site impacts discussed in Section 4.12.3, excluding Impact PS-4 Water Service. Mitigation measures include development of Construction and Operation Fire Prevention and Protection Programs. Further, a survey shall be conducted prior to any excavation work at the converter station site to prevent conflict or disruption of existing belowground utilities. Several fire hydrants are present along West Tenth Street. Water pressure is expected to be between 70 to 75 pounds per square inch based on site elevation. Water supply and flow to the site are expected to be adequate based on the site elevation and proximity to existing fire hydrants. Construction activities requiring water (i.e., dust control) could tie into the existing fire hydrants as long as a meter was obtained from the Pittsburg Finance Department (Pease, 2006).

Several automobile service shops are currently located on the West Tenth Street site. The West Tenth Street Converter Station would replace these service shops. There are several additional service shops in the local area, including Ned's Auto Body Supply (625 California), Amigos Quality Auto Repair (1145 Railroad Avenue), and All Star Auto Electric (670 Garcia Avenue). All of these service stations are located within 2 miles of the site. No significant impacts are expected to this sector of commercial business with construction of the West Tenth Street Converter Station.

With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure PS-1 (Construction Fire Prevention) for Impact PS-1 (Construction-related Fire Hazards)
- Mitigation Measure PS-2 (Utility Survey) for Impact PS-2 (Existing Onshore Underground Utilities)
- Mitigation Measure PS-3 (Operations Fire Prevention) for Impact PS-3 (Operations Fire Hazards)

5.4.13 Visual Resources/Aesthetics

5.4.13.1 Environmental Setting

This alternative site is located in an industrial area of Pittsburg, south of the existing Mirant Pittsburg Power Plant property and the existing PG&E Pittsburg Substation (Photo 1, Figure 5.4-1). The Pittsburg West Tenth Street Converter Station Alternative 1 site is positioned on the northwest portion of the overall West Tenth Street property and is oriented in an east-west direction. The Alternative 1 site is set within the commercial frontage along West Tenth Street. It is opposite the entry to a new residential community that was recently developed (Photo 2, Figure 5.4-1) on the south side of West Tenth Street. The existing character in the area to the east and west is one of wholesale and service commercial business of a relatively modest scale. In the background is the larger scale series of fuel tanks and the Mirant Pittsburg Power Plant with its substantial stack visible in the photo (Photo 1, Figure 5.4-1) at mid right. Traffic on West Tenth Street used to be predominantly commercial but recently, with the development of new housing tracts to the west of Pittsburg, there is an increasing amount of residential traffic as well.

5.4.13.1.1 Visual Quality. There is relatively low-density commercial clutter on the north frontage of West Tenth Street with a backdrop of heavy industrial as indicated by the tanks and stacks. There are no scenic vistas or natural features. The visual quality is lacking in harmony and coherence. Visual quality is classified as Low.

5.4.13.1.2 Viewer Sensitivity. The expectation of travelers is changing along this portion of West Tenth Street. Several years ago, most of those traveling in the area were working at either the power plant or the service commercial and the scenic quality of the area was not an important consideration. With the addition of housing on the south site of the street, there is likely more concern from the residents about the visual quality of the neighborhood. While there are no major scenic vistas or historic features in the area, there will be increased sensitivity about new construction, which would change the scale of the increasingly residential area. According to the City Public Works Department, traffic counts for this portion of West Tenth Street have increased from 5,800 ADT in 1990 to 7,050 in 2000 (the latest date for which counts are available.) This places the number of viewers in the moderate category. Duration of views is relatively short (5 to 10 seconds for travelers in both directions).

The viewer sensitivity is classified as moderate/low given the current mix of travelers, their moderate number and the relatively short duration of view.

Therefore, the visual susceptibility index is moderate/low meaning any proposed facility, unless it is very obtrusive, would have a relatively low probability for disrupting the existing visual resources of the area as seen from roads and public places.

5.4.13.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 1 are generally as described in Section 4.2.3 for the proposed Pittsburg Standard Oil Converter Station site.

The Pittsburg West Tenth Street Converter Station, Alternative 1 (E/W), situated in an east-west configuration, lies adjacent to the abandoned rail corridor to the north, and is set back from West Tenth Street by about 350 feet. There is a series of existing service commercial structures providing visual screening between West Tenth Street and the proposed valve and DC halls (Photo B, Figure 5.4-2).

The present CS-O zoning district allows a maximum height of 35 feet. The converter station would not be allowed at this location with the current zoning. The visual analysis below assumes that this issue would be addressed via a pending amendment to the Zoning Overlay by the City of Pittsburg for the collective West Tenth Street parcels.

5.4.13.2.1 KOP P-3.1 (West Tenth Street). Key observation points (KOPs) for this alternative site are shown on Map 5.4-1. Visual impacts of constructing the project at this location would be relatively minimal (Photo B, Figure 5.4-2). No scenic vistas would be blocked and the project character, seen in the context of the background fuel tanks and Mirant Pittsburg Power Plant would be in character. The 64-foot-high DC/valve hall would be co-dominant with other major features in this scene but would not be a prominent feature along West Tenth Street. The Impact Severity is classified Low.

Light and glare would be a concern with the recent residential development south of West Tenth Street. However, given the distance from the converter station and the intervening screening by adjacent structures this would not be a significant issue if lighting design were controlled.

The Impact Susceptibility for the area is classified as Moderate, and the resulting impact would be less than significant. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced further:

- Mitigation Measures VIS-1a (Plan Submittal Requirements for Building Materials and Colors) and VIS-1b (Plan Submittal Requirements for Landscaping). for Impact VIS-1 (Converter Station Domination of View)
- Mitigation Measure VIS-2 (Plan Submittal Requirements for Lighting) for Impact VIS-2 (Converter Station will Create Substantial Light and Glare)

5.4.14 Hazardous Materials and Waste Management

5.4.14.1 Environmental Setting

The Pittsburg West Tenth Street Converter Station Alternative 1 (E/W) configuration is located in the northwest part of the overall West Tenth Street property (refer to Figure A.8-20 in Appendix A). Existing uses of the West Tenth Street location include light industrial and service commercial businesses at 610, 620, 630, 640, and 650 West Tenth Street (refer to Figure 5.4-3). The West Tenth Street location is bordered on the north and west by the Mirant Pittsburg Power Plant and the PG&E Pittsburg Substation, to the east by light industrial and service commercial businesses, and to the south by West Tenth Street and a residential development across the south side of West Tenth Street. The alternative Pittsburg West Tenth Street Converter Station Alternative 1 and 2 sites are shown on figure 5.4-3, which also shows the site parcel numbers and some of the current site activities.

For the most part, the AC and DC cable routes for the Pittsburg West Tenth Street Converter Station Alternative 1 site would be located on the Mirant Pittsburg Power Plant property. The AC cable would start from the north side of this alternative converter station site, enter the Mirant Pittsburg Power Plant property, travel north-northwest through the southern tank farm, loop east, and connect to the PG&E switchyard (refer to Figure A.8-20). During its northwestern run, the AC cable route would cross the former BNSF railroad tracks on the north side of the West Tenth Street location.

The DC cable route would follow the AC cable route for most of the land portion of the distance between the West Tenth Street Converter Station Alternative 1 site and New York Slough. At the point where the AC cable diverges to the PG&E switchyard, the DC cable would continue to the northeast to the edge of the Mirant Pittsburg Power Plant property before turning northwest into New York Slough.

The Phase I ESA (URS, 2005d) for the West Tenth Street location identified the following recognized environmental conditions (RECs):

- REC 1, entire West Tenth Street location: Given the age of the buildings on the West Tenth Street location, asbestos-containing materials were likely used in building construction.
- REC 2, entire West Tenth Street location: Given the age of the buildings on the West Tenth Street location, lead-based paint was likely used in building construction and maintenance.
- REC 3, 620 West Tenth Street (western part of West Tenth Street location): Redwood Painting Company, an industrial painting contracting company located at 620 West Tenth Street, is currently registered as a Resource Conservation and Recovery Act (RCRA) Hazardous Waste Large-Quantity Generator and a registered UST operator. Three USTs are currently located at Redwood Painting: a 1,000-gallon UST containing mid-grade unleaded fuel, a 1,000-gallon UST containing red diesel (a low-duty type of diesel), and one 2,000-gallon UST containing diesel. No evidence exists of spills or leaks at this facility; however, in June 1986 two 1,000-gallon steel USTs containing unleaded gasoline were removed from this site, and one had several holes ranging in size from 0.25 inch to 3 inches. Soil samples were reportedly collected in conjunction with these excavations, but no laboratory results were included in the files available for the Phase I review. Fill dirt was spread on the property for aeration. This facility is a large-quantity generator of ignitable hazardous wastes, benzene, tetrachloroethene, non-halogenated solvents, lead, methyl ethyl ketone (MEK), and trichloroethene (TCE). This site is included in the Alternative 1 converter station site.
- REC 4, 610 West Tenth Street (south-central border of West Tenth Street location): The property at 610 West Tenth Street was once owned and operated by Mexico Auto Wreckers. This site is listed in the California Spills, Leaks, Investigations, and Cleanups (SLIC) Database, but the database does not provide any information about the unauthorized release that occurred at this site. Soil contamination, primarily from oil, grease, and diesel, was discovered in a site investigation conducted in 1994, but the contamination was determined to have a low potential to leach from the soil. The Contra Costa County Department of Health Services and the Regional Water Quality Control Board recommended remedial actions for the site, including soil mitigation to 5,000 parts per million (for an unspecified contaminant), capping of the entire site, long-term groundwater monitoring, and a deed restriction. No information could be obtained during the Phase I ESA to determine whether the remedial actions had been implemented at the facility. However, observations made during the site visit appeared to indicate that that the property was not occupied, implying that the remedial action has not been conducted and that the site would require remediation before any redevelopment. No information

could be obtained regarding the current level of contamination at the facility. Metals are also potential contaminants for the site. This site is included in the Alternative 1 converter station site.

- REC 5, 650 West Tenth Street (southwest corner of West Tenth Street location): M. Fernandes Auto Wreckers, located at 650 West Tenth Street, is a used motor vehicle parts yard that uses the property for vehicle storage and vehicle recycling. The site is considered a hazardous waste generator of waste oil, waste antifreeze, gasoline, and oil filters. Solvents, metals, waste oil, antifreeze, and fuels are also considered potential contaminants for this site. This site is included in the Alternative 1 converter station site.
- REC 6, 588 West Tenth Street (east-central part of West Tenth Street location): A Stripping Workshop, which is located at 588 West Tenth Street, is a hazardous waste generator of paint residues. B-7, an industrial paint remover, and other potential contaminants, including methylene chloride, sodium hydroxide, solvents, and metals are also stored at this facility. The Alternative 1 converter station site includes part of this facility.

The Phase I ESA identified the following RECs for the West Tenth Street location from surrounding properties:

- REC 7, 630 and 640 West Tenth Street (immediately adjacent to the southern boundary of the Alternative 1 converter station site): Performance Mechanical, an industrial construction contractor, is currently located at 630 and 640 West Tenth Street. According to the Phase I ESA, a former occupant at 640 West Tenth Street, Union Beverage, is listed in the Cortese Database. This beer distribution facility was classified as a Leaking Underground Storage Tank (LUST) site with soil contamination only. The leak in the gasoline UST was caused by corrosion and was confirmed during tank closure in May 1994. Soil was over excavated, sample results were reported as non-detect, and the case was reported to be closed in July 1998. At 630 West Tenth Street, the EDR report mentioned that two USTs were located on the site: one containing regular gasoline and one containing premium gasoline. Potential contaminants at this site include gasoline; benzene, toluene, ethylbenzene, and total xylenes (BTEX); and methyl tertiary-butyl ether (MTBE). Although the case at 630 and 640 West Tenth Street was closed, this site is an REC because it is not clear that remedial action occurred for the leaking USTs at the site.
- REC 8, 701 Willow Pass Road (west of Tenth Street location): Sonoco Fibre Drum, 701 Willow Pass Road, is located approximately 406 feet west and crossgradient of the West Tenth Street location. This facility was classified as a CERCLIS No Further Remedial Action Planned (NFRAP) site with TCE, cis-1, 2-dichloroethene, and vinyl chloride contamination. This facility was also a former LUST site with groundwater

contamination from heater fuel. An investigation is ongoing at the site, but the current levels of contamination are unknown. PCBs, solvents, and fuels are also potential contaminants at this site.

- REC 9, 552 West Tenth Street (east of Tenth Street location): Trench Plate Rental Company, which is located at 552 West Tenth Street, is classified as a LUST site with diesel groundwater contamination. Other potential contaminants include gasoline, motor oil, BTEX, and metals.
- REC 10, 498 West Tenth Street (east of Tenth Street location): Banister Electric, which is located at 498 West Tenth Street, is listed in both the LUST and the Cortese Databases. The EDR report did not provide any information about the soil and/or groundwater impacts at this facility. However, given the type of business located on this site, contamination from fuels and possibly solvents is possible.

The following RECs are based on conditions encountered by the offsite parts of both the DC and the AC cable routes:

- REC 11: A previous Phase I investigation at the Mirant Pittsburg Power Plant property reported that soil saturated with No. 6 fuel oil was discovered northeast of tank 16 in an area outside of the containment basin and south of the railroad tracks. A significant amount of fuel oil was encountered up to a depth of 5 feet in the hand pits and trenches that were excavated.
- REC 12: A previous Phase II investigation at the Mirant Pittsburg Power Plant property identified groundwater contaminated with TPH and PAHs and soil impacted with TPH near tank 16. Because no evidence of subsurface remediation was found for this area, the contamination may still remain at this location and/or may have migrated along the railroad.

The following RECs are based on conditions encountered by the offsite parts of the AC cable route on the Mirant Pittsburg Power Plant site:

- REC 13: Between the late 1970s and the early 1980s, a portable turbine power generator was located to the west of the Main Road. This generator was operated using kerosene and reportedly leaked routinely. Because no documentation exists pertaining to spill cleanup and/or subsurface remediation, these spills potentially impacted the area.
- REC 14: An underground piping conduit was used to transfer dielectric fluid from the oil-containing switchyard circuit breakers and the main bank transformers to two former aboveground storage tanks located west of the switchyard. The integrity of this piping does not appear to have been investigated; hence, these pipelines may have potentially released PCBs.

- REC 15: A previous Phase I investigation indicated that before 1970 cleaning compounds and transformer oil spills were discharged to the rock blotter surrounding the base of the transformers at the PG&E substation. These cleaning compounds contained hazardous chemicals, so these disposal practices and spills had the potential to impact the area.

A Phase II Soil and Groundwater Investigation was performed on the West Tenth Street site during mid-December of 2005 (URS, 2006b). The results of this Phase II investigation are summarized below:

- The observations made during the Phase II site visit indicated that the 0–5 foot soil interval at the West Tenth Street location is mostly fill material that was brought onsite at an unknown time in the past. Much of the site contamination correlates to this interval.
- The investigation results indicated that the West Tenth Street location soils are not RCRA (i.e., federal) hazardous wastes. Thus, if site soils are excavated, they would not need to be disposed of as federal hazardous waste. However, at several "hot spots" in the 0–5 foot depth interval, concentrations of total and/or soluble mercury, copper, and lead exceeded the California hazardous waste criteria. If excavated, these hot spots would need to be disposed of as California hazardous waste at a Class I landfill. Excavation of these soils would require the use of personnel that have met the Occupational Safety and Health Administration (OSHA) hazardous work operations training requirements and dust control and dust monitoring would need to be implemented.
- No volatile organic compounds (VOCs) or polychlorinated biphenyls (PCBs) were found on-site in concentrations that exceeded their regulatory criteria.
- The remaining non–hot spot soils in the 0–5 foot depth interval as well as all the soils at the 5–10 foot, 10–15 foot, and 15–20 foot depth intervals concentrations of TPH-d, TPH-mo, PAHs, or metals in various locations exceeded the Environmental Screening Level (ESL) criteria (established by the San Francisco Regional Water Quality Control Board) and/or the Preliminary Remediation Goal (PRG) criteria (established by the U.S. Environmental Protection Agency, Region IX) for residential and/or commercial/ industrial use. In these locations, soils, if excavated, would need to be disposed of in a Class II or a Class III landfill, as appropriate, if offsite disposal is required.
- Due to subsurface conditions at the West Tenth Street location, groundwater samples could not be collected during the Phase II investigation. No groundwater was available for recovery at 20 feet below ground surface (bgs). Because the excavation depth for the converter station would be approximately 15 feet bgs, dewatering below 20 feet bgs would likely not be an issue. In lieu of collecting groundwater samples, soil samples were collected at 20 feet bgs. If groundwater was encountered during construction, it should be sampled, analyzed, and characterized for use for dust control or for treatment and discharge.

Asbestos-containing materials and lead-based paint were found in several of the buildings on the West Tenth Street location. Specifically, Asbestos-containing materials were found in taping mud/joint compound in three buildings:

- 566 W. Tenth Street (Crane Heating & Air [Parcel 29])
- 580/582/584 W. Tenth Street (Auto Works Plaza [Parcel 18])
- 590 W. Tenth Street (East County Towing [Parcel 19])

Lead-based paint was also identified in three buildings:

- 564 W. Tenth Street (vacant [Parcel 32])
- 566 W. Tenth Street (Crane Heating & Air [Parcel 29])
- 590 W. Tenth Street (East County Tow [Parcel 19])

The northern half of the West Tenth Street location has more contamination than the southern half.

The Alternative 1 site includes Parcel 40 of the West Tenth Street location. Parcel 40 was not investigated as part of the Phase II Soil and Groundwater Investigation because site access was not available. If the Pittsburg West Tenth Street Converter Station Alternative site was selected for implementation, Parcel 40 would need to be investigated in a supplemental Phase II investigation.

5.4.14.2 <u>Environmental Impacts</u>

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 1 site are generally as described in Section 4.2.3 for the proposed Pittsburg Standard Oil Converter Station site.

5.4.14.2.1 <u>Construction-related Impacts</u>. Impacts HAZ-1 through HAZ-6 apply to the alternative Pittsburg West Tenth Street site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure HAZ-1 (Complete an ACM Abatement Plan and an LBP Abatement Plan) for Impact HAZ-1 (Removal of Potentially Hazardous Building Materials Resulting from Demolition)
- Mitigation Measure HAZ-2 (Soil Removal Protocols) for Impact HAZ-2 (Contaminated Soil Removal)

- Mitigation Measure HAZ-3 (Reduction of Hazards During Construction Phase) for Impact HAZ-3 (Construction-phase Hazardous Materials Use)
- Mitigation Measure HAZ-4 (Management of Construction-phase Waste Streams) for Impact HAZ-4 (Construction-phase Waste Streams)
- Mitigation Measure HAZ-5 (Construction-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-5 (Construction-phase Accidental Spills)
- Mitigation Measure HAZ-6 (Reduction of Construction Dust and Volatilization of Contaminants) for Impact HAZ-6 (Construction-phase Dust and Volatilization of Contaminants)

5.4.14.2.2 <u>Operations-related Impacts</u>. Impacts HAZ-8 through HAZ-13 would apply to the operations phase at the alternative Pittsburg West Tenth Street site. Mitigation Measures HAZ-8 through HAZ-13 would be implemented to reduce potentially significant impacts to less-than-significant levels:

- Mitigation Measure HAZ-8 (Control of Operations-phase Hazardous Materials) for Impact HAZ-8 (Operations-phase Hazardous Materials Usage)
- Mitigation Measure HAZ-9 (Manage Waste Generation, Storage, and Disposal During Operations Phase) for Impact HAZ-9 (Operations-phase Waste Streams)
- Mitigation Measure HAZ-10 (Operations-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-10 (Operations-phase Accidental Spills)
- Mitigation Measure HAZ-11 (Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase) for Impact HAZ-11 (Operations-phase Fire and Explosion Risk)
- Mitigation HAZ-12 (Manage Seismic Activity) for Impact HAZ-12 (Impacts from Seismic Activity)

5.4.15 Paleontological Resources

5.4.15.1 <u>Environmental Setting</u>

No fossil localities have been identified within the footprint of the alternative West Tenth Street Converter Station site, including associated AC/DC cable routes. The Pittsburg West Tenth Street Converter Station site and its associated onshore AC/DC cable route components are assigned a high sensitivity rating, since excavations have the potential to penetrate into undisturbed *Qal* sediments which could contain significant fossil resources (refer to Figure 4.15-2). The nearshore DC cable route associated with this alternative north of the Mirant Pittsburg Power Plant is assigned a low sensitivity rating, since excavations are not expected to penetrate into undisturbed *Qal* sediments where there would be a potential for significant paleontological resources. The associated construction laydown area is assigned a low sensitivity rating, as use of this area is not expected to penetrate into undisturbed *Qal* sediments.

5.4.15.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter Station alternative are as described in Section 4.2.3 for the proposed Pittsburg Standard Oil Converter Station site. With implementation of the following mitigation measure, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure PALEO-1 (Potential Fossil Resources Protection) for Impact PALEO-1 (Disturbance of Fossil Resources)

5.5 PITTSBURG WEST TENTH STREET ALTERNATIVE 2 (N/S)

5.5.1 Introduction

The Pittsburg West Tenth Street Converter Station Alternative 2 (N/S) site is located adjacent to and east of the Pittsburg West Tenth Street Alternative 1 (N/S) site described in Section 5.4.1 (refer to Figure 5.4-3). The information presented in Section 5.4 is generally applicable to this site as well, however, this site is oriented in a north-south configuration and is closer to West Tenth Street and the residences to the south of West Tenth Street. The fact that this alternative site is closer to the residences south of West Tenth Street influences the impact assessments for noise and vibration and visual resources. In addition, the onshore AC/DC cable routes for Alternative 2 have the potential to impact a wetland area north-northwest of the converter station site whereas the Alternative 1 cable routes would completely avoid this sensitive habitat. Access to the Pittsburg West Tenth Street Converter Station Alternative 2 site would be from West Tenth Street at the southern end of the site. The Pittsburg West Tenth Street Converter Station Alternative 2 location (including ancillary facilities), layout under consideration, elevation views, and a photosimulation are presented on Figures A.1-1 and A.8-24 through A.8-27 in Appendix A.

5.5.2 Air Quality

5.5.2.1 Environmental Setting

The environmental setting for air quality associated with the Pittsburg West Tenth Street Converter Station Alternative 2 site in Pittsburg is as described in Section 4.2.1.

5.5.2.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station, Alternative 2 (N/S) are as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measures AIR-1 (Fugitive Dust Controls) for Impact AIR-1 (Fugitive Dust Emissions)
- Mitigation Measure AIR-2 (Exhaust Controls) for Impact AIR-2 (Equipment Exhaust Emissions)

Potentially significant impacts associated with installation of the offshore DC cable route (refer to Section 4.2.3.4) apply equally to this alternative converter station site. However, offshore cable installation for the proposed Pittsburg Standard Oil Converter Station would involve slightly more offshore cable installation with associated marine vessel emissions than this alternative converter station site. The emissions estimates presented in Section 4.2.3 and Appendix D are based on the proposed Standard Oil Converter Station site - i.e., selection of the Pittsburg West Tenth Street, Alternative 2 (N/S) site would result in slightly less emissions than accounted for in Section 4.2.3 for the proposed Standard Oil Project site.

5.5.3 Geologic Resources and Soils

Background geological resources and soils data for the proposed Project is presented in Section 4.3. This background information is also generally applicable to this alternative site.

5.5.3.1 Environmental Setting

Site-specific environmental setting and information for this alternative site are as discussed in Section 5.4.3.1 for the Pittsburg West Tenth Street Converter Station Alternative 1 site which are essentially the same site with respect to geologic conditions and soils.

5.5.3.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 are as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site, and Section 5.4.3 for the Pittsburg West tenth Street Converter Station Alternative 1 site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure GEO-1 (Design Project for Erosion Control) for Impact GEO-1 (Soil Erosion and Compaction)
- Mitigation Measure GEO-3 (Design to Seismic Design Requirements) for Impact GEO-3 (Strong Ground Shaking)
- Mitigation Measure GEO-4 (Design Project for Liquefiable Deposits) for Impact GEO-4 (Liquefaction)
- Mitigation Measure GEO-5 (Design Project for Shrink-Swell/Subsidence) for Impact GEO-5 (Shrink-Swell/Subsidence)

5.5.4 Water Resources and Quality

5.5.4.1 Environmental Setting

The environmental setting for the Pittsburg West Tenth Street Alternative 2 site is as described in Section 5.4.4.2 for the Alternative 1 site, except that the Alternative 2 site is not located within a 100-year flood zone.

5.5.4.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 site are generally as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure WATER-1 (Erosion Control and Contaminant Source Control) for Impact WATER-1 (Erosion and Contaminated Runoff)
- Mitigation Measure WATER-2 (Spill Prevention and Control Plan for HDD) for Impact WATER-2 (Surface Water Quality Impacts from HDD)
- Mitigation Measure WATER-3 (Use of Pilot Hole and Reaming) for Impact WATER-3 (Groundwater Quality Impacts from HDD)

5.5.5 Terrestrial Biological Resources

5.5.5.1 Environmental Setting

The Pittsburg West Tenth Street Converter Station Alternative 2 site (N/S) includes Township 2 North, Range 1 East, in an undefined southeastern section of the Honker Bay 7.5-minute USGS Quadrangle with elevations ranging from 0 to 15 feet above mean sea level (see Sheet 10 of Map A.2-1 and Figure A.8-24). This location corresponds to the northwestern side of Pittsburg, near West Tenth Street and Willow Pass Road, and occurs within industrialized and previously disturbed landscapes. A small section of cleared and maintained field with planted horticultural trees and ruderal herbaceous weed species occurs along the Mirant Property entrance road adjacent to West Tenth Street, and one wetland ditch dominated by cattail (Typha sp.) wetland occurs near the entrance to the Mirant property (just before the security gate and north of the Pittsburg West Tenth Street Alternative 2 site). This ditch runs in a culvert under the Mirant entrance road.

5.5.5.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 site are generally as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site except as noted below.

5.5.5.2.1 Construction-related Impacts.

***Potential Impacts to Natural Communities and Wildlife Habitat*.** The majority of this site is dominated by previously developed and industrialized landscapes described in Section 4.5 as Disturbed/Developed habitats. A smaller section of the onshore cable route near the entrance to the Mirant Power Plant and West Tenth Street contains heavily disturbed California annual grassland series vegetation along the edges of a paved roadway (entrance road to Mirant) and one freshwater ditch that is vegetated with cattail wetland with a culvert under the entrance road to the Mirant property.

***Impacts to Wetlands*.** One freshwater canal wetland dominated by cattail occurs along the cable route near the entrance to the Mirant property. Impacts to this wetland could occur from onshore cable trenching across this area associated with the Pittsburg West Tenth Street Converter Station Alternative 2.

***Impacts to Potentially Occurring Special-status Species*.** Western pond turtle has the potential to be impacted by construction of the AC/DC of cable route near marshes and open water ditches associated with the Pittsburg West Tenth Street Converter Station Alternative 2.

Giant garter snake historically ranged throughout the Sacramento and San Joaquin valleys but is very scarce throughout its range due to the elimination of natural sloughs and marshy areas. This federally-listed threatened species is an active diurnal snake rarely found away from water. It is likely to feed upon introduced species such as mosquito fish, carp, and minnows, as native historic food sources are often unavailable. Potential habitat within the Project area is located within the open surface run-off ditch, and wetlands within portions of the Mirant property along the West Tenth Street Converter Station Alternative 2 onshore cable route.

***Terrestrial Endangered, Rare, or Threatened Species*.** This alternative (cable route) has the potential to significantly impact, either directly or through habitat modifications, terrestrial endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (Sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (Sections 17.11 or 17.12).

***Giant Garter Snake and Western Pond Turtle*.** This alternative has the potential to affect these species if they are present in the vegetated freshwater ditch near the entrance to the Mirant property within the proposed cable route for this alternative site. This surface run-off ditch provides potential habitat for these species, because it contains a continuous water supply and sufficient emergent vegetation. Western pond turtles are known from the immediate vicinity of the Project area while giant garter snake is expected from the region in these habitat types. Snakes and turtles could be incidentally harmed or harassed by construction activities if they were foraging within the Project area adjacent to the wetland or within the canal/ditch at the time of construction.

Impact TBIO-3: Disturbance or Fill of Wetlands and Streams. Potential jurisdictional wetlands exist in the Project area that may be filled or altered during construction, due to project trenching for onshore cables associated with the Pittsburg West Tenth Street Converter Station Alternative 2 site. This is a potentially significant impact.

Mitigation Measure TBIO-3e: Implement HDD or Comparable Technology Techniques to Avoid Impacts to Wetlands. The onshore cable routes for the Pittsburg West Tenth Street Converter Station Alternative 2 site shall incorporate HDD or comparable technology techniques from the converter station site to the north and west to the paved access road into the Mirant Pittsburg Power Plant to avoid impacts to the wetland area and associated habitat. This mitigation measure would also avoid potential impacts to giant garter snake and western pond turtle habitat as well as annual grassland vegetation. The HDD shall be drilled at a minimum of 15 feet below the bottom of the wetland area in order to avoid a "frac-out" (i.e., release of drilling mud). The temperatures associated with the buried AC cable are expected to be warmer than ambient soil temperatures over a limited area (refer to Appendix F for more information). The required minimum HDD depth shall also remove any potential for impacts to this wetland due to potential heating from the buried cable. Implementation of the HDD or comparable technology techniques would avoid impacts to the wetland within this portion of the onshore cable route.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	HDD operations shall be conducted as discussed above during the applicable portion of the construction phase. Qualified biological monitors shall be required to be present during Project-related ground disturbance in this area.
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Implementation of Mitigation Measure TBIO-3e would reduce Impact TBIO-3 to a less-than-significant level.

With implementation of the following additional mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure TBIO-4a (Avoidance of Habitat and Timing of Construction), TBIO-4b (Worker Training for Giant Garter Snake and Western Pond Turtle), TBIO-4c (Biological Monitoring for Giant Garter Snake and Western Pond Turtle), and TBIO-4d (Avoiding Impacts to Wetlands and Habitat) for Impact TBIO-4 (Potential Impacts to Giant Garter Snake and Western Pond Turtle)

5.5.6 Marine Biological Resources

5.5.6.1 Environmental Setting

Background information, including evaluation of marine biological resources with the potential to occur in the Project area, as well as the regulatory framework, are provided in Section 4.6.

5.5.6.2 Environmental Impacts

The Pittsburg West Tenth Street Converter Station Alternative 2 would eliminate the need for the HVAC installation in the Bay, and would reduce the length of the HVDC installation by approximately 4 miles relative to the proposed Standard Oil site. No cable installation would be needed in the channel between Winter Island and Browns Island and no dredging would be needed. This would result in incrementally lower construction and operational impacts relative to those described in Section 4.6. No construction or operation impacts would occur east of the Mirant Pittsburg property under this alternative.

5.5.7 Cultural Resources

5.5.7.1 Environmental Setting

The environmental setting for cultural resources for the Pittsburg West Tenth Street Converter Station Alternative 2 site is as described in Section 5.4.7.1 for the Alternative 1 site.

5.5.7.2 Environmental Impacts

The environmental impacts for Alternative 2 are as described for Alternative 1 in Section 5.5.6.2; no potentially significant impacts to cultural resources are anticipated associated with Alternative 2.

5.5.8 Land Use and Recreation

5.5.8.1 Environmental Setting

The environmental setting for land use and recreation for the Pittsburg West Tenth Street Alternative 2 is as described in Section 5.4.8.1 for Alternative 1, except that the Alternative 2 (N/S configuration) (refer to Figure A.8-20) site is located approximately 300 feet closer to the residences on the south side of West Tenth Street than Alternative 1.

5.5.8.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 site are as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site and in Section 5.4.8.2 for the Pittsburg West Tenth Street Alternative 1 site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure LU-2 (Height Allowance) for Impact LU-2 (Exceedence of Height Allowance)

5.5.9 Marine Transportation and Commercial Fishing

If the Pittsburg West Tenth Street Converter Station alternative was selected instead of the Standard Oil site, there would be no need to install the submarine AC and DC cables between the PG&E Pittsburg substation and the Standard Oil Converter Station site landfall on the east end of New York Slough. This alternative would therefore avoid the potential local impacts to commercial marine transportation and commercial fishing vessel operation east of the Mirant Pittsburg property. Selection of this alternative would also avoid the need to dredge the shipping channel in two locations on either end of New York Slough, thereby minimizing potential impacts relative to the proposed Standard Oil Converter Station site.

5.5.10 Traffic and Transportation

5.5.10.1 Environmental Setting

The environmental setting for traffic and transportation for the Pittsburg West Tenth Street Converter Station Alternative 2 is as described in Section 5.4.10.1 for Alternative 1.

5.5.10.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 are as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site and Section 5.4.10.2 for the Pittsburg West Tenth Street Converter Station Alternative 1. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure TRAFFIC-1 (Coordination to Reduce Cumulative Traffic Impacts) for Impact TRAFFIC-1 (Cumulative Traffic Impacts)
- Mitigation Measure TRAFFIC-2 (Coordination of Oversized Loads) for Impact TRAFFIC-2 (Oversized Loads)

5.5.11 Noise and Vibration

5.5.11.1 Environmental Setting

The environmental setting for noise for the Pittsburg West Tenth Street Converter Station Alternative 2 is as described in Section 5.4.11.1 for Alternative 1, although the Alternative 2 site is oriented north-south and is much closer to the residences on the south side of West Tenth Street than Alternative 1.

5.5.11.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 are generally as described in Section 4.11.3 for the proposed Pittsburg Standard Oil site and Section 5.4.11.2 for the Pittsburg West Tenth Street Converter Station Alternative 1 site, except as noted below for impacts due to pile driving.

5.5.11.2.1 Construction-related Impacts. Scheduled construction hours at the alternative Pittsburg West Tenth Street Converter Station site are consistent with those given for the proposed Standard Oil Project site in Section 4.11. Criteria are not set forth by the Pittsburg

Noise Element or Noise Ordinance related to construction noise levels and times of operation. The anticipated noise sources would be the same as those outlined for the proposed Project site in Section 4.11.

Acoustical calculations were performed to estimate noise from construction activities at the closest residences with the same methodology as described for the Pittsburg Standard Oil Converter Station site. The closest offsite residential uses to the alternative West Tenth Street Converter Station Alternative 2 site (N/S configuration) consist of multi-family residences approximately 150 feet to the south and 600 feet to the east. Average sound levels at the closest residences to this alternative site would be 79 and 67 dBA, respectively, as summarized in Table 5.5.11-1.

TABLE 5.5.11-1
CALCULATED SOUND LEVELS FROM CONSTRUCTION OF THE PITTSBURG WEST TENTH STREET CONVERTER STATION – ALTERNATIVE 2

Converter Station Site	Receptor Description	Distance to Receptors (Ft)	Calculated Sound Level from Construction (dBA)	Calculated Sound Level from Pile Driving (dBA)	
				L_{max}	L_{eq}
Pittsburg West Tenth Street Alternative 2 (N-S Orientation)	Single-family residences (182 Builders Court)	150	79	95	90
	Single-family residences (900 Beacon Street)	600	67	83	78

Construction noise would be audible at the residential receptors south of West Tenth Street. Construction noise would be intermittent and limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday, thus there would be no significant impact.

***Pile Driving*.** Calculations were performed to estimate sound levels from pile driving at the receptors (refer to Table 5.5.11-1). Direct line-of-sight sound levels at the residences from the Alternative 2 site were calculated to be 95 dBA L_{max} (90 dBA L_{eq}) at the residences 150 feet south and 83 dBA L_{max} (78 dBA L_{eq}) at the residences 600 feet east. Although pile driving is not subject to sound level restrictions in Pittsburg, it is limited to the hours of 7:00 a.m. to 10:00 p.m. However, because received noise levels from pile driving are calculated to be higher than 90 dBA at the closest receptors for Alternative 2, this is a potentially significant impact.

Impact NOISE-2: Construction Sound Levels. Sound levels from pile driving at the Pittsburg West Tenth Street Alternative 2 site are calculated to be 95 dBA L_{max} at the residences on the south side of West Tenth Street. This impact would occur over an estimated 4- to 5-month period. Pittsburg does not restrict sound levels from pile driving, however, the FTA recommends that hourly sound levels of 90 dBA from pile driving be considered a significant impact at residences (FTA, 1995). Accordingly, this impact is considered to be potentially significant.

Mitigation Measure NOISE-2: Construction Noise Control Measures. Mitigation Measure NOISE-2 shall be applied to the Pittsburg West Tenth Street Converter Station Alternative 2 site. The Project proponent shall submit and implement a noise reduction plan containing site-specific noise attenuation measures to ensure maximum feasible noise attenuation. The noise reduction plan shall be approved by the City of Pittsburg.

Implementation Responsibility:	Project proponent/construction contractor
Requirements and Timing:	Submit plans and obtain approval from City of Pittsburg Planning Department during Design Review
Monitoring Requirements:	City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Noise mitigation measures (e.g., shrouding) for pile driving are difficult to implement and typically capable of reducing noise levels by 10 dBA at most. Although mitigation would reduce the severity of this impact, the impact remains significant. Approval of the Pittsburg West Tenth Street Converter Station Alternative 2 would require a Statement of Overriding Considerations by the City of Pittsburg.

Calculations were performed to estimate vibration from pile driving activities at the closest residences. Vibration from pile driving was assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at residences 150 feet from the pile driving for Alternative 2 would be less than 0.08 in/sec, which is well below the FTA threshold of 0.20 in/sec; resulting in a less than significant impact.

Construction Traffic**.** Construction traffic impacts for Alternative 2 are as described for Alternative 1 in Section 5.4.11.2.

5.5.11.2.2 Operations-related Impacts. Calculations were performed using linear octave band sound power levels as inputs from each noise source. Siemens conducted the noise analysis, the results of which are summarized here and provided in Appendix H. As summarized in Table 5.5.11-2, unmitigated sound levels at the alternative West Tenth Street Converter Station sites would exceed the City of Pittsburg 75 L_{dn} requirement. This is considered to be a potentially significant impact. With implementation of the following

TABLE 5.5.11-2
CALCULATED SOUND LEVELS FROM OPERATION OF THE PITTSBURG WEST TENTH STREET CONVERTER STATION – ALTERNATIVE 2

Converter Station Site	Receptor Description	Calculated Sound Level (dBA)	Calculated Sound Level (dBA) With Mitigation
Pittsburg West Tenth Street Alternative 2 (N-S orientation)	North Property Line	78 L_{dn}	74 L_{dn}
	South Property Line	77 L_{dn}	66 L_{dn}
	East Property Line	76 L_{dn}	72 L_{dn}
	West Property Line	79 L_{dn}	72 L_{dn}
	Receptors	70 L_{dn}	60 L_{dn}

mitigation measures, this potentially significant impact would be reduced to a less-than-significant level:

- Mitigation Measure NOISE-1 (Noise Barrier Installation for Alternative Converter Station) for Impact NOISE-1 (Converter Station Operations Sound Levels)

5.5.12 Public Services and Utilities

5.5.12.1 Environmental Setting

The public services and utilities discussions for the Pittsburg West Tenth Street Converter Station Alternative 2 site (including associated onshore cable routes) are consistent with the proposed Standard Oil site discussed in Section 4.12, except for the distances to certain facilities that are as discussed in Section 5.4.12.1 for the Pittsburg West Tenth Street Converter Station Alternative 1.

5.5.12.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 are generally as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site, except as noted in Section 5.4.12.5 for the Pittsburg West Tenth Street Alternative 1 site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure PS-1 (Construction Fire Prevention) for Impact PS-1 (Construction-related Fire Hazards)

- Mitigation Measure PS-2 (Utility Survey) for Impact PS-2 (Existing Onshore Underground Utilities)
- Mitigation Measure PS-3 (Operations Fire Prevention) for Impact PS-3 (Operations Fire Hazards)

5.5.13 Visual Resources/Aesthetics

5.5.13.1 Environmental Setting

This alternative site is located in an industrial area of Pittsburg, south of the existing Mirant Pittsburg Power Plant property and the existing PG&E Pittsburg substation (Photo 1, Figure 5.4-1). The Pittsburg West Tenth Street Converter Station Alternative 2 is located in the central portion of the overall West Tenth Street property and is oriented in a north-south direction. The proposed site is set within the commercial frontage along West Tenth Street. It is opposite the entry to a new residential community that was recently developed (Photo 2, Figure 5.4-1) on the south side of West Tenth Street. The existing character in the area to the east and west is one of wholesale and service commercial business of a relatively modest scale. In the background is the larger scale series of fuel tanks and the Mirant Pittsburg Power Plant with its substantial stack visible in the photo at mid right. Traffic on West Tenth Street used to be predominantly commercial but recently, with the development of new housing tracts to the west of Pittsburg, there is an increasing amount of residential traffic as well.

5.5.13.1.1 Visual Quality. There is relatively low-density commercial clutter on the north frontage of West Tenth Street with a backdrop of heavy industrial as indicated by the tanks and stacks. There are no scenic vistas or natural features. The visual quality is lacking in harmony and coherence. Visual quality is classified as Low.

5.5.13.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 are generally as described in Section 4.2.3 for the proposed Pittsburg Standard Oil site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level.

This Pittsburg West Tenth Street Converter Station, Alternative 2 (N/S) site is situated in a north-south configuration, connecting the abandoned railway corridor and to the frontage on West Tenth Street (Photo A, Figure 5.4-1). In this configuration, the large valve and DC halls with their ridgeline of 64 feet would be relatively close to West Tenth Street compared to

Pittsburg West Tenth Street Converter Station Alternative 1 (E/W). At this time no supplemental architectural design has been proposed as part of the Project.

The present CS-O zoning district allows a maximum height of 35 feet. The converter station would not be allowed at this location with the current zoning. The visual analysis below assumes that this issue would be addressed via a pending amendment to the Zoning Overlay for the collective West Tenth Street parcels which will address acceptable uses, setbacks, and height limitations.

5.5.13.2.1 <u>KOP P-3.2: West Tenth Street</u>. Key observation points (KOPs) for this alternative site are shown on Map 5.4-1. Alternative 2 (N/S), unlike Alternative 1 (E/W), encroaches close to West Tenth Street with a proposed 35-foot setback (Photo B, Figure 5.5-1). In this configuration, the 64-foot ridgeline would dominate the streetscape since the structure is almost three times as high as adjacent structures which are in the 20- to 24-foot range. A project at this location would also require a zoning and height limitation change by the City of Pittsburg. The City is currently processing a Zoning Overlay Amendment for a 35-foot setback and a 65-foot height limitation. While the alternative Project would meet this proposed criteria, the Impact Severity is classified as High given the great change in mass which would be obtrusive along this street frontage.

The Impact Susceptibility for the area is classified as Moderate given the residential project across the street with a resulting Impact Severity of Significant. There is the potential to reduce the impact level through mitigation (Photo C, Figure 5.5-2). The Project proponent has proposed a landscaping plan with multiple layers of landscape planting ranging from shrubs to clusters of trees selected from the City of Pittsburg's approved planting list (Photo C, Figure 5.5-2). The Project proponent determined that some potential mitigation measures (such as reducing the height of the DC/valve hall or increasing the setback from West Tenth Street) would not be possible given the technical constraints of the equipment size and layout as well as the constrained size of the property available.

Light and glare would be a concern with the recent residential development south of West Tenth Street. With implementation of the following mitigation measure, this potentially significant impact would be reduced to a less-than-significant level:

- Mitigation Measure VIS-2 (Plan Submittal Requirements for Lighting) for Impact VIS-2 (Converter Station will Create Substantial Light and Glare)

Impact VIS-5: Converter Station Domination of View. This impact is similar to Impact VIS-1 described previously for the other converter station sites under consideration. However, given the size and height of the converter station at the West Tenth Street Converter Station Alternative 2 (N/S), the Project would generate a potentially significant impact and more intensive mitigation would be required. While in this circumstance it is not possible to reduce the level of impact, CEQA does call for identification of mitigation measures which may reduce the adversity of the impact. This design effort would be concerned with the selection of appropriate architectural design and building colors as well as the landscape design in the street yard setback area.

Mitigation Measure VIS-5a: West Tenth Street Converter Station Alternative 2: Street Yard Setback. The Project proponent shall work with the City of Pittsburg to rezone the property to provide a front yard setback of 35 feet and increase the height restriction to 65 feet for all buildings and 80 feet for ancillary structures.

Implementation Responsibility: Project proponent

Requirements and Timing: Comply with setback and height limitations in final design plans and obtain approvals prior to construction

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Mitigation Measure VIS-5b: Street Yard Landscape. The Project proponent shall work with the City of Pittsburg to provide a secure and extensive landscape plan for the street yard along the frontage of West Tenth Street to partially reduce the adverse and significant visual impact of the converter station at this location. Specific elements in this plan shall include:

- Multiple layers of vegetative screening shall be selected from the City of Pittsburg-approved planting list. This screening shall be generally located to create the visual effect simulated in Photo C, Figure 5.5-2. The intent is to soften and obscure the physical form and mass of the DC/valve hall as seen from the residences across the street and travelers along West Tenth Street, not completely screen the structure. Various heights, colors and textures of vegetation shall be selected and the trees shall be clustered to avoid the effect of a rigid soldier row. The tree selection shall include species which would be expected to reach 45 feet in height within five years.
- The perimeter security fence/wall shall be set back from the rear of the sidewalk by a minimum of 15 feet. Chain link fencing shall not be used. If fencing is selected then it shall be of wrought iron or steel pickets. If a solid wall is preferred, the surface material shall be a split face block or stucco compatible with the residential development across West Tenth Street. No visible barbed wire shall be allowed to meet security requirements.

Implementation Responsibility: Project proponent

Requirements and Timing: All plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Mitigation Measure VIS-5c: Architectural Design and Building Colors. The Project proponent shall work with the City of Pittsburg to design a structure that is compatible in materials with the neighborhood and select colors that will minimize visual impacts with the adjacent community. While this effort will partially reduce the adverse and significant impact of the converter station at this location, the significant impact would remain. Specific elements in this plan shall include:

- Work with the City of Pittsburg architectural review process to select a building design that effectively reduces the street façade to the minimum consistent with the technical requirements of the equipment housed within the structures
- Select building surface materials, such as stucco, that are compatible with the adjacent community
- Select muted light colors that will minimize apparent bulk and height of the DC/valve hall and other structures

Implementation Responsibility: Project proponent

Requirements and Timing: All plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Application of Mitigation Measures VIS-5a, 5b, and 5c would help reduce the Impact VIS-5, but would not mitigate the impact to a less-than-significant level. Approval of the Pittsburg West Tenth Street Converter Station Alternative 2 would require a Statement of Overriding Considerations by the City of Pittsburg.

5.5.14 Hazardous Materials and Waste Management

5.5.14.1 Environmental Setting

The Pittsburg West Tenth Street Converter Station Alternative 2 site (north-south configuration is located in a light industrial and service commercial business area of Pittsburg, south of the existing Mirant Pittsburg Power Plant property and the existing PG&E

Pittsburg substation (refer to Figures A.1-1 and A.8-24). The Pittsburg West Tenth Street Converter Station Alternative 2 site is shown on Figure 5.4-3, which also shows the site parcel numbers and some of the current site activities. The environmental setting for this alternative site is as described in Section 5.4.14.1 for the Alternative 1 site, except as noted below.

The northern half of the overall West Tenth Street location (i.e., group of parcels) has more contamination than the southern half. Therefore, Alternative 2, the north-south converter station configuration, likely has less contaminated soil that would need to be disposed of than Alternative 1, the east-west converter station configuration.

Alternative 2, the north-south converter station configuration, does not include Parcel 40 of the West Tenth Street location. Parcel 40 was not investigated as part of the Phase II Soil and Groundwater Investigation because site access was not available. If Alternative 2 was selected and approved, Parcel 40 would not need to be investigated in a supplemental Phase II investigation.

5.5.14.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 site are generally as described in Section 4.14.3 for the proposed Pittsburg Standard Oil Converter Station site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level.

5.5.14.2.1 Construction-related Impacts. Impacts HAZ-1 through HAZ-6 apply to construction activities at the Pittsburg West Tenth Street Converter Station Alternative 2 site.

With implementation of the following mitigation measures, potentially significant environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure HAZ-1 (Complete an ACM Abatement Plan and an LBP Abatement Plan) for Impact HAZ-1 (Removal of Potentially Hazardous Building Materials Resulting from Demolition)
- Mitigation Measure HAZ-2 (Soil Removal Protocols) for Impact HAZ-2 (Contaminated Soil Removal)
- Mitigation Measure HAZ-3 (Reduction of Hazards During Construction Phase) for Impact HAZ-3 (Construction-phase Hazardous Materials Use)

- Mitigation Measure HAZ-4 (Management of Construction-phase Waste Streams) for Impact HAZ-4 (Construction-phase Waste Streams)
- Mitigation Measure HAZ-5 (Construction-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-5 (Construction-phase Accidental Spills)
- Mitigation Measure HAZ-6 (Reduction of Construction Dust and Volatilization of Contaminants) for Impact HAZ-6 (Construction-phase Dust and Volatilization of Contaminants)

5.5.14.2.2 Operations-related Impacts. Impacts HAZ-8 through HAZ-12 would apply to the operations phase at the Pittsburg West Tenth Street Alternative 2 site. Mitigation Measures HAZ-8 through HAZ-12 would be implemented to reduce potentially significant impacts to less-than-significant levels:

- Mitigation Measure HAZ-8 (Control of Operations-phase Hazardous Materials) for Impact HAZ-8 (Operations-phase Hazardous Materials Usage)
- Mitigation Measure HAZ-9 (Manage Waste Generation, Storage, and Disposal During Operations Phase) for Impact HAZ-9 (Operations-phase Waste Streams)
- Mitigation Measure HAZ-10 (Operations-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-10 (Operations-phase Accidental Spills)
- Mitigation Measure HAZ-11 (Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase) for Impact HAZ-11 (Operations-phase Fire and Explosion Risk)
- Mitigation HAZ-12 (Manage Seismic Activity) for Impact HAZ-12 (Impacts from Seismic Activity)

5.5.15 Paleontological Resources

5.5.15.1 Environmental Setting

No fossil localities have been identified within the footprint of the Pittsburg West Tenth Street Converter Station Alternative 2 site, including associated AC/DC cable routes. The Pittsburg West Tenth Street Converter Station Alternative 2 site and its associated onshore AC cable route components are assigned a high sensitivity rating, since excavations have the potential to penetrate into undisturbed *Qal* sediments which could contain significant fossil resources (refer to Figure 4.15-2). The nearshore DC cable route north of the Mirant Pittsburg Power Plant is assigned a low sensitivity rating, since excavations are not expected to penetrate into undisturbed *Qal* sediments where there would be a potential for significant paleontological resources. The associated construction laydown area is assigned a low sensitivity rating, as use of this area is not expected to penetrate into undisturbed *Qal* sediments.

5.5.15.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg West Tenth Street Converter Station Alternative 2 are as described in Section 4.2.3 for the proposed Pittsburg Standard Oil Converter Station site. With implementation of the following mitigation measure, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure PALEO-1 (Potential Fossil Resources Protection) for Impact PALEO-1 (Disturbance of Fossil Resources)

5.6 PITTSBURG MIRANT CONVERTER STATION ALTERNATIVE

5.6.1 Introduction

The Pittsburg Mirant Converter Station Alternative site is located in unincorporated Contra Costa County within the larger Mirant Pittsburg Power Plant site (refer to Figures A.1-1 and A.8-28 in Appendix A) on the east-central portion of the overall site. The Pittsburg Mirant Converter Station Alternative site is located east of the PG&E Pittsburg Substation and west of a north-south oriented tank farm on the Mirant Pittsburg Power Plant site (refer to Figure A.8-28 in Appendix A). The alternative converter station site is industrial and currently has an oil tank and several wooden and metal frame buildings, which would need to be demolished prior to installation of a converter station on this site. The layout, plan view, elevation view, and a photo simulation for the Pittsburg Mirant Converter Station Alternative are shown on Figures A.8-29 through A.8-31 in Appendix A. The proposed temporary construction laydown areas and onshore cable routes for this alternative (as well as the Pittsburg West Tenth Street Converter Station Alternatives 1 and 2) are also located on the Mirant Pittsburg Power Plant site (refer to Figure A.8-28 and Map A.2-1, Sheet 10 of 10).

If this alternative were to be approved and selected for implementation, the specific location and layout of the Pittsburg Mirant Converter Station Alternative (and associated temporary laydown areas) might be subject to minor modification to accommodate Mirant's future plans for the site areas.

As discussed above, the Pittsburg Mirant Converter Station Alternative site is currently (at the time this Draft EIR was prepared) located in unincorporated Contra Costa County. The site is within the City of Pittsburg's Sphere of Influence and is included in the Planning Area of the City's General Plan. The Pittsburg City Council has initiated the process to pre-zone an area that includes the alternate site to IG (General Industrial), which is consistent with the City's General Plan Land Use designation of "Industrial" for that area. A Mitigated Negative Declaration is in preparation for the pre-zoning and an application for annexation has been submitted to the Contra Costa Local Agency Formation Commission (LAFCO). Upon annexation, the Laws, Ordinances, Regulations, and Standards (LORS) of the City of Pittsburg would be applicable to the Pittsburg Mirant Converter Station Alternative site.

5.6.2 Air Quality

5.6.2.1 Environmental Setting

The environmental setting for air quality associated with the Pittsburg Mirant Converter Station Alternative site is as described in Section 4.2.1 for the proposed Standard Oil Converter Station site. This Pittsburg alternative converter station site has a unique air quality aspect. St. Peter Martyr School (425 West Fourth Street) is located within 1,000 feet of the

Mirant Pittsburg site. This will invoke BAAQMD Rule 2-1-412 which requires that BAAQMD notify the school families in writing of the proposed project at least 30 days prior to issuing the air permit. The BAAQMD must review, consider and respond to any comments received before taking action on the permit. This is a notification requirement only and it does not incorporate any more restrictive air quality standards or health risk criteria.

5.6.2.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter Station Alternative are as described in Section 4.2.3 for the proposed Pittsburg Standard Oil Converter Station site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure AIR-1 (Fugitive Dust Controls) for Impact AIR-1 (Fugitive Dust Emissions)
- Mitigation Measure AIR-2 (Exhaust Controls) for Impact AIR-2 (Equipment Exhaust Emissions)

Potentially significant impacts associated with installation of the offshore DC cable route (refer to Section 4.2.3.4) apply equally to this alternative converter station site. However, offshore cable installation for the proposed Pittsburg Standard Oil Converter Station would involve slightly more offshore cable installation with associated marine vessel emissions than this alternative converter station site. The emissions estimates presented in Section 4.2.3 and Appendix D are based on the proposed Standard Oil Converter Station site - i.e., selection of the Pittsburg Mirant site would result in slightly less emissions than accounted for in Section 4.2.3 for the proposed Standard Oil Project site.

5.6.3 Geologic Resources and Soils

Background geological resources and soils data for the proposed Project is presented in Section 4.3. This background information is also generally applicable to this alternative site. Site-specific environmental setting and impact discussions for this alternative site are presented below.

5.6.3.1 Environmental Setting

The Pittsburg Mirant Converter station site location is shown on Figure 4.3-5.

5.6.3.1.1 Site Geology. The Pittsburg Mirant Converter Station and laydown areas are located approximately 400 feet from Suisun Bay. The geology of the Pittsburg area is shown on Figure 4.3-5. Soil types are shown on Figure 4.3-6. The site is underlain by flatland soils (soils with slopes between 0 and 20 percent) (City of Pittsburg, 2001) consisting of Pleistocene fluvial and alluvial deposits. Portions of the site are underlain by artificial fill.

***Geologic Resources*.** The converter station site does not have any identified unique geologic features or resources. Paleontological resources are as discussed in Section 4.15 for the proposed Standard Oil site.

***Faults*.** Figures 4.3-2 and 4.3-5 illustrate the location of the site with respect to the major Quaternary faults in the site region. Table 4.3-1 presents maximum earthquake magnitude estimates for faults in proximity to the site.

As shown on Figure 4.3-5, the mapped location of the Pittsburg-Kirby Hills Fault Zone runs in a southeasterly direction from Suisun Bay, immediately west of the Mirant (formerly PG&E) power plant, through the West Tenth Street residential neighborhoods to the intersection of Harbor Street and the Pittsburg-Antioch Highway. The mapped location of this fault zone is directly adjacent to the Pittsburg Mirant Converter Station site. As discussed in Section 4.31.2.10, a recent fault rupture hazard investigation (Terrasearch, 2005) found no evidence that the Pittsburg-Kirby Hills Fault Zone is active in the Project Vicinity.

5.6.3.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter Station Alternative are generally as described in Section 4.3.3 for the proposed Pittsburg Standard Oil site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure GEO-1 (Design Project for Erosion Control) for Impact GEO-1 (Soil Erosion and Compaction)
- Mitigation Measure GEO-3 (Design to Seismic Design Requirements) for Impact GEO-3 (Strong Ground Shaking)
- Mitigation Measure GEO-4 (Design Project for Liquefiable Deposits) for Impact GEO-4 (Liquefaction)
- Mitigation Measure GEO-5 (Design Project for Shrink-Swell/Subsidence) for Impact GEO-5 (Shrink-Swell/Subsidence)

5.6.4 Water Resources and Quality

5.6.4.1 Environmental Setting

The alternative Pittsburg Mirant Converter Station site is shown on Figure 4.4-5. The converter station and laydown sites are located approximately 400 feet south of Suisun Bay. There is no surface water on the site. Some storm water at the site is captured in oil-water separators before the clear-well water (clean water) is discharged to Suisun Bay. Prior to use, existing structures (e.g., tankage) would be demolished and removed and the site would be graded and paved as necessary.

As shown on Figure 4.4-4, the alternative Pittsburg Mirant Converter Station site and associated laydown areas and onshore cable routes are within the Lawlor Creek Watershed. The Pittsburg Mirant Converter Station site is located within the 100-year flood zone (refer to Figure 4-4).

As described in the groundwater section for the proposed Standard Oil Site (Section 4.4.1.6.2), the site is located within the Pittsburg Plain Groundwater Basin. The water-bearing units in the Basin are Pleistocene to recent alluvial deposits of sand, gravel, and clay. Groundwater tends to flow northerly, toward Suisun Bay.

The Pittsburg Mirant Converter Station site is underlain by artificial fill near the Bay, where the shallower, tidally influenced groundwater may be encountered. Groundwater levels in the Pittsburg area vary from a few feet below ground surface (bgs) near Suisun Bay, to 28 feet bgs in the upland areas of the Pittsburg Plain (City of Pittsburg, 2001). Shallower groundwater (2 to 7 feet bgs) can be found in low-lying areas near Suisun Bay and in ravines and creek channels. Groundwater is tidally influenced and tends to be saline with high mineral concentrations (City of Pittsburg, 2001). Intense pumping for industrial uses in the 1930s through 1950s resulted in overdraft and seawater intrusion. Limited amounts of water drawn from the underground aquifer are now blended with raw water from the Contra Costa Canal before treatment and distribution to the City of Pittsburg.

Groundwater at the site is contaminated with TPH and metals. Groundwater contamination at the site is discussed further in Section 5.6.14.

5.6.4.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter Station Alternative are generally as described in Section 4.4.3 for the proposed Pittsburg Standard Oil site, except as noted below for Impact WATER-8. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure WATER-1 (Erosion Control and Contaminant Source Control) for Impact WATER-1 (Erosion and Contaminated Runoff)
- Mitigation Measure WATER-2 (Spill Prevention and Control Plan for HDD) for Impact WATER-2 (Surface Water Quality Impacts from HDD)
- Mitigation Measure WATER-3 (Use of Pilot Hole and Reaming) for Impact WATER-3 (Groundwater Quality Impacts from HDD)

Flooding**.** Some areas along the shoreline and drainages leading to the Suisun Bay and San Francisco Bay are potential floodplains. Risks associated with building in a floodplain include threats to life and property. Local city or county government agencies regulate floodplain development through land use controls, based on determinations of flood elevations. FEMA maintains maps of 100-year flood areas in the Bay counties. A "100-year flood" refers to a flood level with a 1 percent or greater chance of being equaled or exceeded in any given year.

As shown on Figure 4.4-4, the Pittsburg Mirant Converter Station Alternative site (including ancillary facilities) is located within the Lawlor Creek watershed within the 100-year flood zone. Impacts due to flooding of the site are considered potentially significant. With implementation of the following mitigation measure, this potentially significant environmental impact would be reduced to a less-than-significant level:

- Mitigation Measure WATER-8 (Flood Mitigation) for Impact WATER-8 (Flooding)

Refer to Section 5.4.4.2 for more information regarding this potential impact and associated mitigation.

5.6.5 Terrestrial Biological Resources

5.6.5.1 Environmental Setting

The Pittsburg Mirant Converter Station sites include Township 2 North, Range 1 East, in an undefined southeastern section of the Honker Bay 7.5-minute USGS Quadrangle with elevations ranging from 0 to 20 feet above mean sea level (see Sheet 10 of Map A.2-1 in Appendix A). This location corresponds to an area in unincorporated Contra Costa County just outside the northwestern side of the City of Pittsburg, near Suisun Bay and occurs within industrialized and previously disturbed landscapes**.**

5.6.5.2 Environmental Impacts

The area encompassed by the Pittsburg Mirant site is dominated by previously developed and industrialized landscapes described in Section 4.5 as Disturbed/Developed habitats. No impacts to natural communities, wetlands, or special-status species would be expected to occur from this alternative. In addition, no operations phase related impacts have been identified for terrestrial biological resources associated with this alternative.

5.6.6 Marine Biological Resources

5.6.6.1 Environmental Setting

Background information, including evaluation of marine biological resources with the potential to occur in the Project area, as well as the regulatory framework, are provided in Section 4.6.

5.6.6.2 Environmental Impacts

The Pittsburg Mirant Converter Station Alternative would eliminate the need for the HVAC installation in the Bay, and would reduce the length of the HVDC installation by approximately 4 miles relative to the proposed Pittsburg Standard Oil site. No cable installation would be needed in the channel between Winter Island and Browns Island and no dredging would be needed where the AC/DC cable routes cross New York Slough. This would result in incrementally lower construction and operational impacts relative to those described in Section 4.6. No construction or operation impacts would occur east of the Mirant Pittsburg property under this alternative.

5.6.7 Cultural Resources

5.6.7.1 Environmental Setting

5.6.7.1.1 Archaeological Resources. No archaeological resources were identified within the Mirant Pittsburg Converter Station Alternative site, onshore AC/DC cable routes, or laydown areas during any phase of the investigation. The route of the offshore DC cable has not been subjected to a geophysical inventory. As such, it is unknown if submerged and/or sub-bottom archaeological resources occur within the footprint of this portion of this alternative.

5.6.7.1.2 Historic Architectural Resources. No historic architectural resources were identified within the Mirant Pittsburg Converter Station Alternative site, cable routes, or laydown areas during any phase of the investigation.

5.6.7.2 Environmental Impacts

5.6.7.2.1 Construction-related Impacts.

***Archaeological Resources*.** No archaeological resources have been identified within the alternate Pittsburg Mirant Converter Station, onshore AC/DC cable routes, or construction laydown areas. As such, significant impacts to archaeological resources would not be anticipated with the construction of this Project component.

***Historic Architectural Resources*.** No historic architectural resources have been identified within the Pittsburg Mirant Converter Station, onshore AC/DC cable routes or construction laydown areas. As such, significant impacts to historic architectural resources would not occur with implementation of this Project component.

5.6.8 Land Use and Recreation

5.6.8.1 Environmental Setting

The alternative Pittsburg Mirant Converter Station site, onshore AC/DC cable routes, and construction laydown areas are collectively called the Mirant Pittsburg site here, unless otherwise noted.

5.6.8.1.1 Existing Land Uses. The Pittsburg Mirant site is completely encompassed within the Mirant Pittsburg Power Plant site, and the PG&E Pittsburg Substation. The site is located within unincorporated Contra Costa County, just northwest of annexed areas within the City of Pittsburg. The site is located within Pittsburg's Sphere of Influence and Planning Area, and as such, is addressed in the Northwest River Planning Subarea in Pittsburg's General Plan. The Mirant Power Plant encompasses much of this subarea, in addition to a small portion occupied by the Concord Naval Weapons Station. The remainder of the Northwest River consists of marshland (CPPD, 2004).

5.6.8.1.2 Potentially Sensitive Land Uses. Table 5.6.8-1 lists potentially sensitive land uses near the alternative Pittsburg Mirant site. Residential development is located approximately 460 feet from the site, just west of the Pittsburg Marina. Additional residential development occurs farther southeast of the site along Linda Vista Avenue. A church (Stewart Memorial) is located at the north terminus of Linda Vista Avenue, approximately 500 feet from the site. Marina Park and St. Peter Martyr School are situated 650 feet and 900 feet, respectively, southeast of the site.

TABLE 5.6.8-1
POTENTIALLY SENSITIVE LAND USES NEAR
PITTSBURG MIRANT CONVERTER STATION ALTERNATIVE

Land Use	Location	Approximate Distance From Alternate Mirant Converter Station (Feet)
Residential (closest to Mirant site)	West side of the Pittsburg Marina	460
St. Peter Martyr School	425 West Fourth Street	900
Marina Park	425 West Fourth Street	650
Stewart Memorial Church	580 Front Street	500

5.6.8.1.3 Zoning and General Plan Designations. The Pittsburg Mirant site is currently located within unincorporated Contra Costa County. The site is within the City of Pittsburg's Sphere of Influence and is included in the Planning Area of the City's General Plan. The site is designated as Industrial in the Pittsburg General Plan and is currently zoned HI (Heavy Industrial) by Contra Costa County. The Mirant site is currently subject to development regulations in Contra Costa County Zoning Ordinance Section 84-62. There are no regulations or limitations on lot area, height, or side yard in the HI district (Section 84-62.602). Heavy industrial manufacturing uses "of all kinds" and all other industrial or manufacturing products are permitted in the HI district.

The Pittsburg City Council recently initiated pre-zoning an area that includes the Mirant Converter Station site to IG (General Industrial). This new zoning for the site would be consistent with the General Plan land use designation of Industrial for that area. A CEQA Initial Study is currently being prepared for the pre-zoning.

5.6.8.1.4 Land Use Trends. The Mirant Pittsburg site is located in the general area of the West Tenth Street site. Land use trends associated with the Mirant Pittsburg site are discussed in Section 5.4.8.1.4.

5.6.8.2 Environmental Impacts

The alternative Mirant Pittsburg Converter Station is completely bounded by the existing Mirant Pittsburg Power Plant and PG&E Pittsburg Substation. The alternative Mirant Pittsburg Converter Station would represent further development of an area committed to industrial use rather than the introduction of industry to a non-industrial area.

Land use plans and regulations applicable to the Mirant Pittsburg site include the Pittsburg General Plan, Pittsburg Municipal Code, and Contra Costa County Zoning Ordinance. The Mirant Pittsburg Converter Station Alternative is located in the City of Pittsburg's Northwest River Planning Subarea. The Mirant Power Plant encompasses much of this subarea, in addition to a small portion occupied by the Concord Naval Weapons Station. The remainder of the Northwest River subarea consists of marshland. Pittsburg's General Plan Policy 2-P-96 for the Northwest River subarea stipulates maintaining the Mirant Pittsburg power plant site in the Industrial designation and pursuing annexation of the power plant and adjacent properties to ensure land use control of these areas. The General Plan states that opportunities for non-industrial uses should be explored in the unlikely event that the plant is decommissioned in the future. The General Plan also indicates that expansion of the power plant or related industrial uses to the west of the facility should be regulated by the City of Pittsburg.

The site is currently zoned HI, (Heavy Industrial) by Contra Costa County. The Pittsburg Mirant site is currently subject to development regulations in the Contra Costa County Zoning Ordinance Section 84-62. There are no regulations or limitations on lot area, height, or side yards in the HI district. Heavy industrial manufacturing uses "of all kinds" and all other industrial or manufacturing products are permitted in the HI district. The Pittsburg Mirant Converter Station Alternative site is currently within the City of Pittsburg's Sphere of Influence and is included in the Planning Area of the City's General Plan. The Pittsburg City Council has initiated the process to pre-zone an area that includes the Alternate site to IG (General Industrial), which is consistent with the City's General Plan Land Use designation of "Industrial" for that area. A Mitigated Negative Declaration is in preparation for the pre-zoning Upon annexation, the Laws, Ordinances, Regulations, and Standards (LORS) of the City of Pittsburg would be applicable to the Pittsburg Mirant Converter Station Alternative site. No conflicts with current zoning or future re-zoning of the site are anticipated with development of the Mirant Converter Station.

The alternative Mirant Pittsburg Converter Station would be consistent with the existing uses of the site and surrounding area. The nearest residential development near the site is approximately 460 feet to the east. The Mirant Pittsburg Converter Station Alternative would not require displacement of housing and would not have significant impacts on the community.

The site is completely bounded by the existing Mirant Power Plant and PG&E Pittsburg Substation. The nearest potentially sensitive land uses are located beyond the power plant boundaries, and include residences located approximately 460 feet to the east, an existing church 500 feet to the northeast, and a park and school 650 feet and 900 feet to the southeast, respectively. The Mirant Pittsburg Converter Station Alternative would be consistent with established and proposed land uses of the area.

In summary, no potentially significant land use or recreation related impacts have been identified for the Pittsburg Mirant Converter Station Alternative.

5.6.9 Marine Transportation and Commercial Fishing

The Pittsburg Mirant Converter Station Alternative would not impact marine transportation or commercial fishing.

If the Pittsburg Mirant Converter Station Alternative site was selected instead of the proposed Standard Oil site, there would be no need to install the submarine AC/DC cables between the PG&E Pittsburg Substation and the Standard Oil Converter Station site landfall on the east end of New York Slough. This alternative would therefore avoid the potential local impacts to commercial marine transportation and commercial fishing vessel operation east of the Mirant Pittsburg site. Selection of this alternative site would also avoid the need to dredge the shipping channel in two locations on either end of New York Slough, thereby minimizing potential impacts relative to the proposed Standard Oil Converter Station site.

5.6.10 Traffic and Transportation

5.6.10.1 Environmental Setting

Roadways near the alternative Mirant Pittsburg Converter Station site in Pittsburg and unincorporated Contra Costa County, respectively, are discussed in Section 4.10.1 based on the onshore portion of the proposed cable routes to the PG&E Pittsburg Substation associated with the proposed Standard Oil Converter Station site. The environmental setting for traffic and transportation for the Mirant Pittsburg Converter Station Alternative is consistent with the discussion presented for the proposed Standard Oil Converter Station in Section 4.10.1, with the exception of the items noted below.

- The Pittsburg Mirant Converter Station Alternative site has controlled access and, as such, offers parking to those allowed through the Mirant's gate. On-street parking is permitted on the residential streets to the east of this site.
- The Pittsburg Mirant Converter Station site is served by public transit, including Tri Delta Transit Service, which operates the north-south Route 70 Pittsburg-Marina to Buchanan Loop and the east-west Route 387, which connects the Pittsburg Bay Point BART Station with the centers of Pittsburg and Antioch. Service on these routes operates weekdays with Route 387 extending into evening hours at frequencies ranging from 45 to 90 minutes.
- In Pittsburg, the General Plan identifies bicycle routes planned for the study area including Railroad Avenue, Third Street, Harbor Street, North Parkside, West Tenth

Street, Loveridge Road, and Herb White Way. The West Tenth Street and Herb White Way bicycle routes are near the site.

- Construction traffic would utilize the existing access road to the Mirant site. The access road to the Mirant site would remain on the private road.

5.6.10.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter Station Alternative are generally as described in Section 4.10.3 for the proposed Pittsburg Standard Oil Converter Station site, and in Section 5.4.10.2 for the Pittsburg West Tenth Street Converter Station Alternative 2. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level.

- Mitigation Measure TRAFFIC-1 (Coordination to Reduce Cumulative Traffic Impacts) for Impact TRAFFIC-1 (Cumulative Traffic Impacts)
- Mitigation Measure TRAFFIC-2 (Coordination of Oversized Loads) for Impact TRAFFIC-2 (Oversized Loads)

5.6.11 Noise and Vibration

5.6.11.1 Environmental Setting

The alternative Pittsburg Mirant Converter Station site is located within the Pittsburg Mirant Power Plant property, adjacent to the PG&E Pittsburg Substation. This site is industrial and currently has an oil tank on it; in addition, multiple oil tanks oriented in a north-south configuration are located to the east of the site. This site is not located within the City of Pittsburg; therefore, the applicable jurisdiction is currently the County of Contra Costa. As discussed in Section 5.6.1, the City of Pittsburg has initiated the process to pre-zone an area that includes the Pittsburg Mirant site to IG (General Industrial), and an application for annexation of this area has been submitted to the Contra Costa LAFCO. Upon annexation, the LORS of the City of Pittsburg, including those related to noise, would be applicable to the Pittsburg Mirant site.

A series of sound level measurements were conducted on September 13 through 14, 2005 to quantify the existing acoustical environment at the alternative Pittsburg Mirant Converter Station site as well as at sensitive receptors near this alternative site. The same methodology identified in Section 4.11.1.2. for the proposed San Francisco HWC site sound level measurements was used. The results of the measurements are summarized in Table 4.11-3.

The measurement locations are shown on Figure 4.11-2. The following summarizes the property line measurements.

ST7 Thirty-minute measurements were conducted during the daytime and nighttime at the southeast property line of the alternative Pittsburg Mirant Converter Station site. This alternative site is bounded by a single-family residential subdivision to the east, Marina Park to the southeast, and industrial uses to the west and north. Marina Park is the site of a recently approved residential development (Mariner Walk Project). The daytime measurement was taken between 4:20 p.m. and 4:50 p.m. on September 13 and the nighttime measurement was taken between 10:56 p.m. and 11:26 p.m. on September 13. The daytime noise sources included aircraft overflights, barking dogs, birds vocalizing, faint sirens, infrequent automobile honking (faint), and vehicular traffic. The loudest noise sources were the leaves rustling and humming from the power plant. The nighttime noise sources included industrial hum, vehicular traffic from West Tenth Street, rustling leaves, and a helicopter overflight. The daytime one-hour L_{eq} was 47.9 dBA and the nighttime one-hour L_{eq} was 50.6 dBA.

Sensitive receptors in the project area consist of single-family residences approximately 460 feet to the east on Linda Vista Avenue, Marina Park approximately 650 feet to the southeast, and single-family residences approximately 1,500 feet to the south. The residences to the east and Marina Park to the southeast are separated from the Pittsburg Mirant site by three storage tanks associated with the Mirant Pittsburg Power Plant, although there is direct line-of-sight in between the tanks. There is also a 6-foot-tall embankment on the western property line of the residences. The residences to the south do not have a direct line-of-sight due to the intervening buildings on Beacon Street. The following describes the measurements conducted at the closest residential receptor.

ST8 Thirty-minute measurements were conducted during the daytime, evening, and nighttime at the intersection of West Second Street and Linda Vista Avenue. The meter was setup next to the rear yard of the residence, facing the Pittsburg Mirant power plant between 204 and 196 Linda Vista Avenue. Surrounding land uses were residential to the north, east, and south and industrial to the west. The daytime measurement was taken between 10:35 a.m. and 11:05 a.m. on September 14, the evening measurement from 9:00 p.m. and 9:30 p.m. on September 13, and the nighttime measurement was taken between 23:30 and 24:00 on September 14. Noise sources during the daytime were distant vehicular traffic, aircraft overflights, train whistles, people talking, music from residences, and birds vocalizing. Noise sources for the evening were the power plant, vehicular traffic on surface streets and SR 4, train whistles, and leaves rustling. Noise sources at night included vehicular traffic on surface streets and SR 4, aircraft and helicopter overflights, train whistles, and automobile horns. The daytime one-hour L_{eq} was 44.8 dBA, the evening one-hour L_{eq}

was 45.3 dBA, and the nighttime one-hour L_{eq} was 46.9 dBA. The calculated L_{dn} was 53 dBA.

The existing noise environment and sensitive receptors for the onshore DC/AC cable routes and laydown areas would be the same as that identified for the Pittsburg Mirant Converter Station Alternative site, above.

5.6.11.2 <u>Environmental Impacts</u>

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter Station Alternative are generally as described in Section 4.11.3 for the proposed Pittsburg Standard Oil site, except as noted below.

5.6.11.2.1 <u>Construction-related Impacts</u>. Scheduled construction hours at the alternative Pittsburg Mirant Converter Station site are consistent with those given for the proposed Standard Oil Project site in Section 4.11. Criteria are not set forth by the Pittsburg Noise Element or Noise Ordinance related to construction noise levels and times of operation. The anticipated noise sources would be generally the same as to those outlined for the proposed Project site.

Acoustical calculations were performed to estimate noise from construction activities at the closest residences with the same methodology as described for the proposed Standard Oil Project site. The closest offsite residential uses to the alternative Pittsburg Mirant Converter Station consist of single-family residences approximately 460 feet east and single-family residences approximately 1,500 feet southeast. Average sound levels at the closest residences to the Pittsburg Mirant Converter Station Alternative construction site would be 70 and 59 dBA, respectively, as summarized in Table 5.6.11-1. Because of the intermittent nature of construction work and intervening structures and roads, construction noise would not be audible at the receptors. Furthermore, because construction would be limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday, there would be no significant impact.

***<u>Pile Driving</u>*.** Calculations were performed to estimate sound levels from pile driving at the receptors. Direct line-of-sight sound levels at the residences 460 feet east were calculated to be 86 dBA L_{max} (81 dBA L_{eq}) and 74 dBA L_{max} (69 dBA L_{eq}) at the residences 1,500 feet southeast. Although pile driving is not subject to sound level restrictions in Pittsburg, it is limited to the hours of 7:00 a.m. to 10:00 p.m. Pile driving would be required to comply with the requirements of Pittsburg. These noise levels are below the 90 dBA threshold of significance (FTA, 1995) and, thus, would result in a less-than-significant impact.

TABLE 5.6.11-1
CALCULATED SOUND LEVELS FROM CONSTRUCTION OF THE PITTSBURG MIRANT CONVERTER STATION ALTERNATIVE

Converter Station Site	Receptor Description	Distance to Receptors (Ft)	Calculated Sound Level from Construction (dBA)	Calculated Sound Level from Pile Driving (dBA)	
				L_{max}	L_{eq}
Pittsburg Mirant	Single-family residences (192 Linda Vista Avenue)	460	70	86	81
	Single-family residences (900 Beacon Street)	1,500	59	74	69

Calculations were performed to estimate vibration from pile driving activities at the closest residences. Vibration from pile driving was assumed to have point source propagation characteristics. Vibration levels for impact pile drivers are typically 0.644 inches/second peak particle velocity (PPV) at 25 feet (FTA, 1995). Under normal propagation conditions, vibration levels at residences 460 feet from the pile driving would be 0.008 in/sec, which is well below the FTA threshold of 0.20 in/sec; resulting in a less than significant impact.

Construction Traffic**.** Impacts identified for the Pittsburg West Tenth Street Alternative 1 site in Section 5.4.11.2 are applicable to the Pittsburg Mirant Converter Station Alternative. No significant construction traffic-related noise impacts are anticipated.

5.6.11.2.2 Operations-related Impacts. Calculations were performed using linear octave band sound power levels as inputs from each noise source with the same equipment as the proposed Project site. Siemens conducted the noise analysis, the results of which are summarized here and provided in Appendix H. Sound levels during the operations phase would not exceed the 60 dBA L_{dn} standard at the closest sensitive receptor and would not result in a significant impact. As summarized in Table 5.6.11-2, unmitigated sound levels at the alternative Pittsburg Mirant Converter Station site would exceed the City of Pittsburg 75 L_{dn} requirement. This is considered to be a potentially significant impact. With implementation of the following mitigation measure, this potentially significant impact would be reduced to a less-than-significant level:

- Mitigation NOISE-1 (Noise Barrier Installation for Alternative Converter Station) for Impact NOISE-1 (Converter Station Operations Sound Levels)

TABLE 5.6.11-2
CALCULATED SOUND LEVELS FROM OPERATION OF THE PITTSBURG MIRANT CONVERTER STATION ALTERNATIVE

Converter Station Site	Receptor Description	Calculated Sound Level (dBA)	Calculated Sound Level (dBA) With Mitigation
Pittsburg Mirant	North Property Line	77 L_{dn}	74 L_{dn}
	South Property Line	76 L_{dn}	71 L_{dn}
	East Property Line	76 L_{dn}	74 L_{dn}
	West Property Line	78 L_{dn}	73 L_{dn}
	Receptors	54 L_{dn}	53 L_{dn}

5.6.12 Public Services and Utilities

5.6.12.1 Environmental Setting

The public services and utilities discussions for the alternative Pittsburg Mirant Converter Station Alternative site (including associated onshore cable routes) are consistent with the proposed Standard Oil site discussed in Section 4.12.1, except for the distances to certain facilities that are addressed below.

CCCFPD Station No. 84 (300 East Sixth Street) is located 0.6 mile to the southeast of the Pittsburg Mirant site. Station No. 85 (2555 Harbor Street) is located 2.3 miles to the southeast. Fire and Hazardous Materials Response Unit response times to the Pittsburg Mirant site are consistent with the response times to the proposed Standard Oil site, addressed in Section 4.12.3.3.2.

The closest clinic to the Pittsburg Mirant site is the Pittsburg Health Center (2313 Loveridge Road), located approximately 3 miles to the southeast. The closest full service hospital is Sutter Health (3901 Lone Tree Way) in Antioch, located approximately 7 miles to the southeast. The schools closest to the Pittsburg Mirant site are St. Peter Martyr (425 West 4th Street), located 1 mile to the east, and Parkside Elementary (985 West 17th Street), located approximately 1.5 miles to the south.

5.6.12.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter

Station Alternative are generally as described in Section 4.12.3.3 for the proposed Pittsburg Standard Oil site, except as noted below.

Several fire hydrants are present along West Tenth Street; however, the fire department is not able to provide information on fire hydrants within the Mirant Power Plant property. The Contra Costa Fire Code Section 903.2 stipulates that a fire hydrant may need to be added if the site is located more than 150 feet off of a main public street. A fire flow test in addition to an access and water supply review are typically recommended where fire hydrants are not in the general vicinity of the site. Mitigation measures would include performing a flow test with the fire department to ensure that access and water supply can accommodate the proposed Project facilities. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure PS-1 (Construction Fire Prevention) for Impact PS-1 (Construction-related Fire Hazards)
- Mitigation Measure PS-2 (Utility Survey) for Impact PS-2 (Existing Onshore Underground Utilities)
- Mitigation Measure PS-3 (Operations Fire Prevention) for Impact PS-3 (Operations Fire Hazards)
- Mitigation Measure PS-4 (Water Service) for Impact PS-4 (Water Service)

5.6.13 Visual Resources/Aesthetics

5.6.13.1 <u>Environmental Setting</u>

The alternative Pittsburg Mirant Converter Station site is located within the Mirant Pittsburg Power Plant property east of the PG&E Pittsburg Substation. The site is industrial in character and is currently utilized primarily for parking at the Mirant Pittsburg Power Plant. There is a series of large storage tanks, as well as other small metal and wood supporting structures in the immediate area. Marina Park, which includes a series of recreation fields, is located to the east of the site and is somewhat screened by a windrow of trees (Photo 1, Figure 5.6-1). Beyond the park there is an older residential neighborhood (Photo 2, Figure 5.6-1). An approved development plan would relocate Marina Park to the northwest corner of Herb White Way and East Eighth Street. A new subdivision of single family homes (Mariner Walk) is planned and approved for development at the site of the present park.

5.6.13.1.1 <u>Visual Quality</u>. The alternative Pittsburg Mirant Converter Station site is classified as heavy industrial as it is adjacent to the Mirant Pittsburg Power Plant, the PG&E Pittsburg Substation, and the large storage tanks. There are no scenic features or landmarks in the vicinity. Views toward the site from the park and residential area are screened by the existing trees which somewhat soften the industrial character. The visual quality of the site itself is low but the scene as viewed from the adjacent areas is improved by the tree screen.

Visual Quality is rated as Moderate.

5.6.13.1.2 <u>Viewer Sensitivity</u>. Given that the viewers are from developed residential and recreation areas, their general sensitivity is rated as moderate. There are relatively few viewers since there are no major arterial roads in the area. The duration of views from the park is classified as long (defined as more than three minutes) given that people will be using the park for significant amounts of time. In the future when residences replace the park, there will be fewer viewers but with a projected higher level of sensitivity. These two factors are considered to equalize each other.

Viewer sensitivity, therefore, is classified as Moderate. The visual susceptibility index is classified as Moderate, meaning any proposed facility would have a moderate probability for disrupting the existing visual resources of the area as seen from roads and public places assuming that the screening trees remain in place.

5.6.13.2 <u>Environmental Impacts</u>

The alternative Pittsburg Mirant Converter Station site is located internally on the existing Mirant Pittsburg Power Plant. The PG&E Pittsburg Substation is located to the west, the Mirant Power Plant to the north, and a series of large tanks to the south and east. The only visual access to this location occurs from Marina Park to the east (Photo 1, Figure 5.6-1).

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter Station Alternative are as described in Section 4.13.3 for the proposed Pittsburg Standard Oil site.

5.6.13.2.1 <u>KOP P-4: Marina Park</u>. Key observation points (KOPs) for this alternative site are shown on Map 5.4-1.The addition of the alternative Pittsburg Mirant Converter Station is simulated and contributes almost no visible change to the views from Marina Park Area whether it is the current park or the approved single family residential area (Photo B, Figure 5.6-2). This is true because the facility would be seen in the context of the existing power plant and related fuel tanks. The existing tree screen is relatively mature and would also shield the project at this location. Therefore, there are no issues of visual dominance or contrast of character, and no scenic vista is blocked. The Impact Severity is Low.

Since the Impact Susceptibility for the area is Moderate, the resulting impact would be less than significant. The view from the Marina Park area could be slightly improved by planting additional trees and shrubs adjacent to the existing screen. Although this potential impact is less than significant, with implementation of the following mitigation measures, this potential impact would be reduced further:

- Mitigation Measure VIS-1a (Plan Submittal Requirements for Building Materials and Colors) and Mitigation Measure VIS-1b (Plan Submittal Requirements for Landscaping) for Impact VIS-1 (Converter Station Domination of View).

5.6.14 Hazardous Materials and Waste Management

5.6.14.1 Environmental Setting

The Pittsburg Mirant Converter Station Alternative site is located within the larger Mirant Pittsburg Power Plant property (refer to Figure A.1-1 and A.8-19 in Appendix A). The Mirant Pittsburg Power Plant property and the PG&E Pittsburg Substation are located at 696 and 696-B West Tenth Street. The Mirant Pittsburg Power Plant property has an area of approximately 2,100 acres, of which a 280-acre parcel on the eastern end is used for power generation and its associated activities. The PG&E Pittsburg Substation is approximately 37.5 acres in area and is located within the Mirant Pittsburg Power Plant property to the south of the power generation units. The two sites are known collectively in this section of the EIR as the Mirant Pittsburg Power Plant/PG&E substation property. The section considers the combined Mirant parcel and the PG&E substation areas as they relate to the properties' common history and because the proposed AC cable route would utilize portions of the PG&E switchyard property.

The proposed DC cable route would extend from the proposed converter station site (at the current location of Tank 7) along the Main Road, run between the closed-air preheater wash pond and Tank 1, exit the Mirant Pittsburg Power Plant property at its northeastern end, and extend into New York Slough.

The proposed AC cable route would extend from the proposed converter station site along the Main Road, enter the PG&E substation property at its southern boundary, and terminate at the PG&E substation.

The Mirant Pittsburg Power Plant property is bordered to the north by New York Slough, to the south by Willow Pass Road and the BNSF railroad tracks, to the east by residential/commercial properties, and to the west by PG&E non-power generation property. The Mirant Pittsburg Power Plant property consists of an office building, seven power generating units, a cooling water canal, two cooling towers, 16 ASTs containing fuel oil and constructed within concrete/diked berms, several chemical and oil ASTs, a hazardous waste storage area, solid waste management units (SWMUs), four closed Class I surface impoundments, and one active Class II surface impoundment. The PG&E substation consists of a control building, a hazardous waste storage area, and a mobile tank trailer. The substation consists of a 230-kilovolt (kV) transmission unit and a 115-kV transmission unit.

According to the EDR report prepared for the Phase I ESA for the Mirant Pittsburg Power Plant property (URS, 2005e), one sensitive receptor is located within a 0.25-mile radius: St. Peter Martyr parochial school, a Kindergarten through eighth grade school that is located to the southeast of the Mirant Pittsburg converter station site. The Mirant Pittsburg Power Plant property is identified as an RCRA facility with existing soil and groundwater contamination. A Remedial Feasibility Investigation was conducted at the site and stabilization measures were implemented in 1999. The stabilization measures primarily involved source removal activities and in situ and off-site treatment. Groundwater monitoring of contamination at the Mirant Pittsburg Power Plant property is required to evaluate subsurface plume control. The Mirant Pittsburg Power Plant property is also listed in the Toxic Pits Control Act (TPCA) Database and is known to have five active toxic pits. In addition, the EDR report identified a total of 43 USTs at the Mirant Pittsburg Power Plant property, some of which may have been sumps rather than tanks. These tanks appear to have been installed between 1952 and 1981 and were used to store product and waste. The status of these USTs is not known.

The URS Phase I ESA for the Mirant Pittsburg Power Plant property identified the following RECs based on conditions at the Mirant Pittsburg Power Plant property:

- REC 1, ASTs (at the proposed converter station site and immediately east of the site; also near to the DC cable route): The Phase I investigation of the Mirant Pittsburg property identified a number of issues regarding these tanks:
  - The Phase I file review and previous ESAs for the Mirant Pittsburg Power Plant property indicate that several chemical and fuel oil releases have occurred near the fuel ASTs and the diked containment areas where the spills were contained. Although impacted soils from the AST releases were removed and disposed of offsite on a case-by-case basis, data gaps in the records documenting the investigations, the remediation of the residual sources, and the impacted areas were noted.
  - In the early 1980s, electrical equipment was cleaned outside of Units 1 through 7 with solvents containing trichloroethene (TCE) within a concrete-covered and bermed area. Subsurface impacts from this practice are expected to have occurred in these areas. VOCs were detected above the preliminary remediation goal (PRG) level around these units during a Phase II investigation in 1997.
  - A 1997 Phase II investigation reported maximum detections of TPH and PAHs in soil at concentrations of 11,000 mg/kg and 32.83 mg/kg, respectively, north of Tank 1 near the proposed boring pit location for the DC cable route. Also, a maximum TPH concentration of 690 mg/L was detected in groundwater collected closer to the north

side of Tank 1. URS found no evidence of subsurface remediation activities in this area in the files reviewed for the Phase I ESA for this site. Although groundwater in this area is monitored as part of a groundwater monitoring program for the previously regulated air preheater wash pond, the wells in this area are not being sampled for TPH or PAHs. Therefore, the current TPH and PAH concentrations in groundwater remain unknown.

- Interviews conducted during a previous Phase I in 1997 investigation indicated several releases of no. 6 fuel oil in and around Tanks 1 through 6 (along the DC cable route). Although some of these releases were cleaned up, it was suspected that the subsurface soils might have been affected. Further, a Phase II investigation in 1997 identified metals and VOCs in groundwater as a remedial issue at this location. Again, URS found no evidence documenting subsurface remediation of this area in its Phase I ESA for the Mirant Pittsburg property.

- REC 2, power-generating units (north and east of the converter station site): Several contamination issues were identified for the power-generating units at the Mirant Pittsburg Power Plant property:

  - Previous investigations of the Mirant Pittsburg Power Plant property reported detections of PCBs around the power generating units (Units 1 through 6) at a maximum concentration of 0.03 mg/kg in soil. No records were found to document whether this contamination was remediated in the Phase I ESA for this site.
  - A 1996 PG&E memorandum indicated that before 1971, some wastewater from the cleaning of vehicles and large turbine parts as well as drainage from degreasers and steam cleaners may have been directed to the riverbanks between Units 6 and 7. Also, some previous fuel spills had flowed into Willow Creek. No information was found on the locations of these discharges in the Phase I ESA for this site.
  - A Phase II investigation in 1997 identified TPH and PAH concentrations in groundwater and TPH concentrations in soil (no information was available on the specific concentrations) in the areas between Units 6 and 7. No documentation was found regarding remedial efforts in the Phase I ESA for this site.
  - The integrity of several underground pipelines, including a fuel oil supply line, was not verified. Records were found documenting subsurface wastewater spills from the pipelines connecting the generating units to the Class I surface impoundments.
  - The integrity of several sumps, including the oily sludge/condensate collection sump beneath Units 1 through 6, a storm water transfer sump, and a catch basin sump located south of Unit 6, was not verified. A potential for releases from these underground pipelines and sumps exists.

- REC 3, unknown locations: Rectangular basins at the Mirant Pittsburg Power Plant property were subject to unauthorized dumping by local residents. The exact locations of these basins are unknown. To confirm that the materials dumped at these locations did not create an REC, further research would be needed to identify these areas for further investigation and potential remediation.

- REC 4, unknown location: A PG&E memorandum indicated that before 1970, accumulated wastes from the former clarifier sludge pond and oily water treatment system were disposed of somewhere on-site, but the location of the on-site disposal is unknown. The memorandum also indicated that PG&E was conducting an investigation to identify this area. This former onsite disposal area may need further investigation and remediation, depending on the results of that investigation.

- REC 5, Tank 16 (in the far southern part of the Mirant Pittsburg Power Plant property): A previous Phase I investigation reported that soil saturated with no. 6 fuel oil was discovered northeast of Tank 16 outside of the containment basin and south of the railroad tracks. A significant amount of fuel oil was encountered up to a depth of 5 feet in the trenches that were excavated. Also, a 1997 Phase II investigation identified TPH and PAH contamination in groundwater and TPH contamination in soil near Tank 16. In the URS Phase I ESA, no documentation was found of subsurface remediation in this area. Therefore, the contamination in this area may remain in the subsurface or may have migrated along the railroad tracks.

- REC 6, unknown location: Until 1989, painting material was stored at the Mirant Pittsburg Power Plant site on a 7-inch-thick concrete pad and unpaved surface. A Phase I investigation identified stains and cracks on the concrete pad. Although the area received closure from DTSC, it is noted that the soil samples were not analyzed for VOCs. Hence, this area may require further investigation and potential remediation.

- REC 7, liquid waste storage area (northwest of Tank 1): In 1997 a Phase II investigation identified metals in groundwater near the previously operated liquid waste storage area. Thus, this area may represent an REC to the Mirant Pittsburg Power Plant property and to the proposed DC cable route.

- REC 8, throughout Mirant Pittsburg Power Plant site: A 2004 chemical inventory reported under EPCRA indicated that the asbestos-containing waste insulation material was handled at the Mirant Pittsburg Power Plant property. Given the age of the buildings at the site, it is likely that the buildings and equipment on the property are insulated with asbestos-containing material. These materials should be tested if demolition is conducted as part of the redevelopment of the property.

- REC 9, west of Main Road: Between the late 1970s and early 1980s, a portable turbine power generator located to the west of the main road was operated using kerosene. The unit reportedly leaked routinely. Since no documentation exists about spill cleanup and subsurface remediation, contaminated soil may still exist in this area. This is an REC for the Pittsburg Mirant site and also could be an REC for the AC cable route.

- REC 10, throughout Mirant Pittsburg Power Plant site: Given the age of the buildings on the Mirant Pittsburg Power Plant site, lead-based paint was likely used in building construction and maintenance.
- REC 11, north and south of the power-generating units: The proposed converter station site is located near the current hazardous waste storage area, the hazardous materials storage buildings, and the former asbestos and paint storage area. Based on the types of materials stored and handled at these locations, the potential for contamination exists. Soil staining at the former asbestos and paint storage area was noted during RCRA inspections. Also, a Phase II investigation conducted in 1998 (by Fluor Daniel GTI) identified TPH in soil and TPH and PAH in groundwater in this area. Remediation of this area was not reported in any of the files reviewed. Hence, the potential for VOC, TPH, and PAH contamination in this area still exists for the converter station site and both the AC and the DC cable routes.
- REC 12, demineralizer and neutralization pond: Quarterly groundwater monitoring conducted to monitor the previously regulated demineralizer and neutralization pond (DNP) indicates potassium and fluoride Upper Confidence Limit (UCL) exceedances in groundwater for the DNP unit. The fluoride exceedance is attributed to upgradient minor sources such as the shower and eye wash station. The exceedance of potassium is still being investigated. This is an REC for the Pittsburg Mirant site and the DC cable route.
- REC 13, PG&E substation (along AC cable route): The Phase I investigation of the Mirant Pittsburg property identified a number of issues regarding the PG&E substation:
  - In previous Phase I investigations at the PG&E substation, TPH was detected in soil at concentrations of 30 mg/kg and in water at concentrations of 3,000 micrograms per liter (µg/L). Arsenic was also detected in groundwater at 90.2 µg/L. These areas may potentially need remedial action, as no records were found documenting remediation in these areas in its Phase I ESA.
  - Before 1970, cleaning compounds and spills or leaks of transformer oil were discharged to the rock blotter surrounding the base of the transformers at the PG&E substation. Because the cleaning compounds contained hazardous chemicals, the spills potentially impacted the Pittsburg Mirant site.
  - Underground piping was used to transfer dielectric fluid from the PG&E substation oil-containing circuit breakers and main bank transformers to two former ASTs located west of the PG&E substation. Integrity of this piping does not appear to have

been investigated, and hence potential for polychlorinated biphenyl (PCB) release from these pipelines exists.

The Phase I ESA identified the following RECs for the Mirant Pittsburg Power Plant site from surrounding properties:

- REC 14, 701 Willow Pass Road (south-southwest of Mirant Pittsburg Power Plant property): Greif Fiber Drum, originally Sonoco Fiber Drum, which operated at 701 Willow Pass Road, is located upgradient and 2,669 feet south-southwest of the Mirant Pittsburg Power Plant property. The site is listed in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) and Voluntary Cleanup Program (VCP) Databases. Soil and groundwater contamination is known to exist at the site. TCE, dichloroethene (DCE), and vinyl chloride have been identified as the primary contaminants. Monitoring wells installed by Sonoco Fiber Drum are known to exist at the site to identify the extent of the contamination. Due to the proximity of this site to the Mirant Pittsburg Power Plant property and the migration potential of the contamination, this site is identified as a REC to the Mirant Pittsburg property.

5.6.14.2 <u>Environmental Impacts</u>

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter Station Alternative site are generally as described in Section 4.14.3 for the proposed Pittsburg Standard Oil site.

5.6.14.2.1 <u>Construction-related Impacts</u>. Impacts HAZ-1 through HAZ-6 apply to the alternative Pittsburg Mirant Converter Station site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure HAZ-1 (Complete an ACM Abatement Plan and an LBP Abatement Plan) for Impact HAZ-1 (Removal of Potentially Hazardous Building Materials Resulting from Demolition)
- Mitigation Measure HAZ-2 (Soil Removal Protocols) for Impact HAZ-2 (Contaminated Soil Removal)
- Mitigation Measure HAZ-3 (Reduction of Hazards During Construction Phase) for Impact HAZ-3 (Construction-phase Hazardous Materials Use)
- Mitigation Measure HAZ-4 (Management of Construction-phase Waste Streams) for Impact HAZ-4 (Construction-phase Waste Streams)

- Mitigation Measure HAZ-5 (Construction-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-5 (Construction-phase Accidental Spills)
- Mitigation Measure HAZ-6 (Reduction of Construction Dust and Volatilization of Contaminants) for Impact HAZ-6 (Construction-phase Dust and Volatilization of Contaminants)

5.6.14.2.2 Operations-related Impacts. Impacts HAZ-8 through HAZ-12 would apply to the operations phase at the Pittsburg Mirant Converter Station Alternative site. Mitigation Measures HAZ-8 through HAZ-12 would be implemented to reduce potentially significant impacts to less-than-significant levels:

- Mitigation Measure HAZ-8 (Control of Operations-phase Hazardous Materials) for Impact HAZ-8 (Operations-phase Hazardous Materials Usage)
- Mitigation Measure HAZ-9 (Manage Waste Generation, Storage, and Disposal During Operations Phase) for Impact HAZ-9 (Operations-phase Waste Streams)
- Mitigation Measure HAZ-10 (Operations-phase Spill Prevention, Control, and Countermeasure) for Impact HAZ-10 (Operations-phase Accidental Spills)
- Mitigation Measure HAZ-11 (Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase) for Impact HAZ-11 (Operations-phase Fire and Explosion Risk)
- Mitigation HAZ-12 (Manage Seismic Activity) for Impact HAZ-12 (Impacts from Seismic Activity)

5.6.15 Paleontological Resources

5.6.15.1 Environmental Setting

No fossil localities have been identified within the footprint of the alternative Pittsburg Mirant Converter Station site. The Pittsburg Mirant Converter Station and its associated onshore AC/DC cable route components are assigned a high sensitivity rating, since excavations have the potential to penetrate into undisturbed *Qal* sediments which could contain significant fossil resources (refer to Figure 4.15-2). The nearshore cable route associated with this alternative is assigned a low sensitivity rating, since excavations are not expected to penetrate into undisturbed *Qal* sediments where there would be a potential for significant paleontological resources. The associated laydown areas are assigned a low sensitivity rating, as use of these areas is not expected to penetrate into undisturbed *Qal* sediments.

5.6.15.2 Environmental Impacts

The thresholds of significance, identification of potentially significant impacts, mitigation measure requirements, and residual impact findings for the Pittsburg Mirant Converter Station Alternative are as described in Section 4.15.3 for the proposed Pittsburg Standard Oil site. With implementation of the following mitigation measures, potential environmental impacts associated with this alternative would be reduced to a less-than-significant level:

- Mitigation Measure PALEO-1 (Potential Fossil Resources Protection) for Impact PALEO-1 (Disturbance of Fossil Resources)

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6.1 INTRODUCTION

This section provides a summary comparison of potentially significant impacts for the proposed Project and Project Alternatives, including ancillary facilities. Refer to Section 4.0 (Proposed Project) and Section 5.0 (Project Alternatives) for more information regarding specific impacts and proposed mitigation measures. The No Project Alternative is also included for comparison purposes. Refer to Section A.8.3 in Appendix A for a discussion of alternatives that were considered but eliminated from further consideration, including the rationale for elimination.

The proposed Project and Project Alternatives considered in this comparison of potentially significant impacts are as follows:

- Proposed San Francisco HWC Converter Station
- Proposed Pittsburg Standard Oil Converter Station
- Proposed Offshore DC Cable Route
- San Francisco Mirant Converter Station Alternative (three site layouts)
- San Francisco Sheedy Converter Station Alternative
- Pittsburg West Tenth Street Converter Station (Alternative 1)
- Pittsburg West Tenth Street Converter Station (Alternative 2)
- Pittsburg Mirant Converter Station Alternative
- No Project Alternative

6.2 COMPARISON OF ALTERNATIVES

The potentially significant impact findings (including potential impacts, proposed mitigation measures, and residual impact findings) for the proposed and alternative Project components are summarized in Table 6-1.

As shown in Table 6-1, the identified potentially significant impacts, mitigation measures, and residual impact findings for the proposed and alternative converter station sites (including ancillary facilities) in San Francisco and Pittsburg are very similar, except as noted in Section 6.3. The identified potentially significant impacts associated with the submarine cable installation in the Bay are essentially the same for all converter station sites with the exception of the Pittsburg Standard Oil site as noted in Section 6.3.

6.2.1 San Francisco Converter Stations

- The proposed San Francisco HWC Converter Station and alternative San Francisco Mirant Converter Station (three layouts) sites would result in unavoidable adverse significant impacts associated with the required demolition of historic architectural resources (Impact CUL-2), whereas the alternative San Francisco Sheedy Converter Station would not

- The proposed San Francisco HWC Converter Station and the alternative San Francisco Sheedy Converter Station would both involve potentially significant impacts associated with potential conflicts with possible future improvements to public access to San Francisco Bay (Impact LU-1), whereas the alternative San Francisco Mirant Converter Station (three site layouts) would not; with implementation of Mitigation Measure LU-1, this potentially significant impact would be reduced to a less-than-significant level
- Potential environmental impacts associated with the offshore submarine HVDC cable and for the proposed HWC and alternative Mirant and Sheedy converter station sites are the same and, with implementation of mitigation measures, all identified potentially significant impacts would be reduced to less-than-significant levels

6.2.2 Pittsburg Converter Stations

- The proposed Pittsburg Standard Oil Converter Station as well as the Pittsburg West Tenth Street Alternative 1 and Pittsburg Mirant sites would not result in any unavoidable adverse significant environmental impacts, whereas the Pittsburg West Tenth Street Alternative 2 would result in unavoidable significant adverse construction/pile driving noise (Impact NOISE-2) and long-term visual impacts (Impact VIS-5)
- While the proposed Pittsburg Standard Oil Converter Station (and ancillary facilities) would not result in any identified unavoidable adverse significant environmental impacts, the proposed Standard Oil site has the following potentially significant impacts that are not applicable to the alternative Pittsburg West Tenth Street sites or the Pittsburg Mirant site:

  - Water quality impacts from dredging and dredge material disposal (Impact WATER-5) associated with installation of the submarine AC/DC cables between the vicinity of the Mirant Pittsburg Power Plant property and the New York Slough landfall to the east
  - Potential impacts to the Kirker Creek watershed drainage area (Impact WATER-4)
  - Potential impacts to vernal pools that provide habitat for special-status biological species (Impact TBIO-1)
  - Potential impacts to saltmarsh and wetland habitats (Impact TBIO-2)

  - Potential impacts to wetlands and streams (Kirker Creek) (Impact TBIO-3)
  - Potential impacts to special-status raptors and birds (Impact TBIO-5)
  - Potential impacts to Giant garter snake and Western pond turtle (Impact TBIO-4) (note: this potential impact also applies to the Pittsburg West Tenth Street Alternative 2 site)
  - Potential impacts to special-status plants (Impact TBIO-7)

- The northwest portion of the Pittsburg West Tenth Street Alternative 1 site and the entire Pittsburg Mirant site are within the 100-year flood zone (Impact WATER-8) while the proposed Standard Oil and West Tenth Street Alternative 2 sites are not

6.2.3 No Project Alternative

As shown in Table 6-1, the No Project Alternative would avoid the potential environmental impacts of the proposed Trans Bay Cable Project, including those associated with the identified Project Alternatives.

The No Project Alternative would involve taking no action to provide additional electrical transmission capacity to San Francisco-i.e., status quo. Under the No Project Alternative, the potential environmental impacts and benefits of the proposed Trans Bay Cable Project would not occur as a direct consequence of Project implementation. However, the No Project Alternative is incapable of meeting the Project goals and objectives, or the CAISO's objectives for solving the near-term and long-term electrical supply and reliability issues in San Francisco and the northern Peninsula area. One potential consequence of the No Project Alternative would be that the relatively inefficient and polluting Mirant Potrero and Hunters Point power plants may need to continue to run in the future to meet San Francisco's electrical supply needs. Another potential consequence of the No Project Alternative would be the lost potential to save an estimated 20 MW of electrical power that is currently expended in line losses, which would be avoided by the proposed Project. In summary, the No Project Alternative does not constitute a reasonable alternative to the proposed HVDC Project.

6.3 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The No Project Alternative would result in the fewest environmental effects. However, the No Project Alternative would not meet the Project/CAISO goals and is not considered to be a reasonable or feasible alternative. Numerous "non-Project" alternatives were also considered, as discussed in Section A.8.3 in Appendix A of this EIR. None of the various alternatives evaluated are considered to be capable of meeting all of the Project objectives and the related screening criteria for "feasibility" and "environmental impacts avoidance and minimization."

Therefore, none of the potential non-Project alternatives were retained for further consideration in this EIR.

The Trans Bay Cable Project Alternatives are considered by the City of Pittsburg to be the only feasible alternative for meeting the Project and CAISO objectives at this point in time.

It is difficult to determine, however, which of Trans Bay Cable Project converter station site alternatives in San Francisco and Pittsburg is the environmentally superior alternative as, with few exceptions, the sites are very similar to each other in terms of potential impacts. The San Francisco Sheedy Converter Station Alternative would avoid the unavoidable adverse significant impact to historic architectural resources associated with the proposed HWC and alternative San Francisco Mirant sites. However, Mirant plans to demolish the buildings considered to be historic (i.e., Station A Complex) on the San Francisco Mirant property due to their deteriorated condition and seismic safety concerns. Locating the proposed Trans Bay Cable Project San Francisco converter station on any one of the three alternative Mirant site layouts would consolidate the electrical station facilities (i.e., PG&E Potrero Substation and the Trans Bay Cable San Francisco converter station) at one location and would avoid potential conflicts with possible future improvements to public access to San Francisco Bay (Impact LU-1). In addition, the required electrical interconnection (115 kV AC) between the Sheedy Converter Station site and the PG&E Potrero Substation is problematic due to potential conflicts with existing underground utilities along Illinois Street. At this stage of the EIR process, no one site in San Francisco is clearly environmentally superior to another.

Of the proposed and alternative converter station sites in Pittsburg (including ancillary facilities), it is also difficult to determine the clearly environmentally superior alternative at this stage of the EIR process. Due to the unavoidable adverse significant noise and visual impacts associated with the Pittsburg West Tenth Street Alternative 2 site, this alternative site is the least preferable from an environmental impact perspective. The Pittsburg West Tenth Street Alternative 1 and Pittsburg Mirant sites both avoid various potentially significant impacts (e.g., potential water quality impacts due to dredging and potential onshore biological impacts associated with installation of AC/DC cables) that would be associated with the proposed Standard Oil Converter Station site. Accordingly, the Pittsburg West Tenth Street Alternative 1 and Pittsburg Mirant alternative sites are considered to be environmentally superior to the proposed Standard Oil Converter Station site and the Pittsburg West Tenth Street Alternative 2 site. At this stage of the EIR process, it is not possible to clearly differentiate the environmentally superior alternative in Pittsburg between the West Tenth Street Alternative 1 site and the Pittsburg Mirant site.

TABLE 6-1
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
Air Quality										
AIR-1: Fugitive Dust Emissions										
	AIR-1: Fugitive Dust Controls	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
AIR-2: Equipment Exhaust Emissions										
	AIR-2: Exhaust Controls	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
AIR-3: Marine Construction – Criteria Pollutants										
	AIR-3: Marine Vessel Emission Controls			X						
	Resulting Level of Significance			LTS						
AIR-4: Marine Construction – Toxic Air Contaminants										
	AIR-4: Implement Mitigation Measure AIR-3			X						
	Resulting Level of Significance			LTS						
Geologic Resources and Soils										
GEO-1: Soil Erosion and Compaction										
	GEO-1: Design Project for Erosion Control	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
GEO-2: Asbestos-containing Serpentine										
	GEO-2: Controls for Excavation of Serpentine	X			X	X				
	Resulting Level of Significance	LTS			LTS	LTS				
GEO-3: Strong Ground Shaking										
	GEO-3: Design to Seismic Design Requirements	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
GEO-4: Liquefaction										
	GEO-4: Design Project for Liquefiable Deposits	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
GEO-5: Shrink-Swell/Subsidence										
	GEO-5: Design Project for Shrink-Swell/Subsidence	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
Water Resources and Quality										
WATER-1: Erosion and Contaminated Runoff										
	WATER-1: Erosion Control and Contaminant Source Control	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
WATER-2: Surface Water Quality Impacts from HDD										
	WATER-2: Spill Prevention and Control Plan for HDD	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
WATER-3: Groundwater Quality Impacts from HDD										
	WATER-3: Use of Pilot Hole and Reaming	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
WATER-4: Impacts to Kirker Creek Watershed Drainage Area										
	WATER-4: Kirker Creek Stormwater Management		X							
	Resulting Level of Significance		LTS							
WATER-5. Water Quality Impacts from Cable Laying Operation										
	WATER-5: Avoidance of Sediment Contamination			X						
	Resulting Level of Significance			LTS						

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
WATER-6: Water Quality Impacts from Dredging and Dredge Material Disposal										
	WATER-6: Dredging Controls and Sediment Testing Program			X						
	Resulting Level of Significance			LTS						
WATER-7: Water Quality Impacts from Vessel Fuel Spills										
	WATER-7: Vessel Fuel Spill Response Plan			X						
	Resulting Level of Significance			LTS						
WATER-8: Flooding										
	WATER-8: Flood Mitigation						X		X	
	Resulting Level of Significance						LTS		LTS	
Terrestrial Biological Resources										
TBIO-1: Trenching Near Pools Providing Habitat for Special-status Species										
	TBIO-1a: Avoidance and Prevention Measures for Work Near Vernal Pool Habitat		X							
	TBIO-1b: Awareness Training for Workers		X							
	TBIO-1c: Biological Monitoring Requirement		X							
	Resulting Level of Significance		LTS							

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
TBIO-2: Trenching Near Saltmarsh and Wetland Habitats										
	TBIO-2a: Marking Habitat and Implementing Physical Avoidance Measures		X							
	TBIO-2b: Monitoring Requirements for Salt Marsh Species		X							
	TBIO-2c: Awareness Training for Construction Personnel		X							
	TBIO-2d: Halting Work to Remove Endangered Species from Job Site		X							
	TBIO-2e: Check Under Parked Vehicles		X							
	TBIO-2f: Pre-construction Nesting Surveys		X							
	Resulting Level of Significance		LTS							

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
TBIO-3: Disturbance or Fill of Wetlands and Streams										
	TBIO-3a : Implement HDD or Comparable Technology Techniques to Avoid Impacts to Kirker Creek and Associated Floodplain Wetlands		X							
	TBIO-3b: Wetland and Jurisdictional Waters Delineation Survey		X							
	TBIO-3c: Wetland and Pool Avoidance		X							
	TBIO-3d: Obtain Streambed Alteration Agreement		X							
	TBIO-3e : Implement HDD or Comparable Technology Techniques to Avoid Impacts to Wetlands							X		
	Resulting Level of Significance		LTS					LTS		

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
TBIO-4: Potential Impacts to Giant Garter Snake and Western Pond Turtle										
	TBIO-4a: Avoidance of Habitat and Timing of Construction		X					X		
	TBIO-4b: Worker Training for Giant Garter Snake and Western Pond Turtle		X					X		
	TBIO-4c: Biological Monitoring for Giant Garter Snake and Western Pond Turtle		X					X		
	TBIO-4D: Avoiding Impacts to Wetlands and Habitat							X		
	Resulting Level of Significance		LTS					LTS		
TBIO-5: Potential Impacts to Special-status Raptors and Birds in Construction Laydown Area										
	TBIO-5: Pre-construction Nesting Surveys at Construction Laydown Area		X							
	Resulting Level of Significance		LTS							
TBIO-6: Potential Impacts to Special-status Plants										
	TBIO-6a: Rare Plant Surveys		X							
	TBIO-6b: Avoidance of Rare Plant Populations		X							
	Resulting Level of Significance		LTS							

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
TBIO-7: Potential Impacts to Special-status Plants from Laydown Areas										
	TBIO-7a: Rare Plant Surveys in Laydown Areas		X							
	TBIO-7b: Avoidance of Special-status Plants		X							
	Resulting Level of Significance		LTS							
Marine Biological Resources										
No potentially significant impacts										
Cultural Resources										
CUL-1: Disturbance of Archaeological Resources										
	CUL-1a: Archeological Resource Testing	X			X					
	CUL-1b: Archaeological Resource Data Recovery	X			X					
	CUL-1c: Archaeological Resource Construction Monitoring	X			X					
	Resulting Level of Significance	LTS			LTS					

TABLE 6-1 (CONTINUED) SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
CUL-2: Demolition of Historic Architectural Resources										
	CUL-2a: Recording Architectural Resources	X			X					
	CUL-2b: Architectural Resource Interpretive Display and/or Interpretive Material	X			X					
	CUL-2c: Architectural Resource Salvage Opportunities	X			X					
	Resulting Level of Significance	RS			RS					
CUL-3: Offshore Cable Route Archaeological Resources										
	CUL-3a: Archaeological Resources Geophysical Survey			X						
	CUL-3b: Archaeological Resources Avoidance			X						
	CUL-3c: Archaeological Resources Supplemental Underwater Investigation			X						
	Resulting Level of Significance			LTS						
Land Use and Recreation										
LU-1: Potential Conflict with Public Access Improvements										
	LU-1: Public Access	X				X				
	Resulting Level of Significance	LTS				LTS				

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
LU-2: Exceedance of Height Allowance										
	LU-2: Height Allowance		X				X	X		
	Resulting Level of Significance		LTS				LTS	LTS		
LU-3: Potential Conflict with Kirker Creek Policy										
	LU-3: Kirker Creek Policy		X							
	Resulting Level of Significance		LTS							
LU-4: Increased Vessel Traffic										
	LU-4a: Vessel Crew Procedures			X						
	LU-4b: Coast Guard Coordination			X						
	Resulting Level of Significance			LTS						
LU-5: Potential Conflict with Local Plans and Policies										
	LU-5: Local Plans and Policies Coordination			X						
	Resulting Level of Significance			LTS						

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
Commercial Fishing and Marine Transportation										
MTRANS-1: Vessel Navigation Hazards										
	MTRANS-1a: Project Registration, Information and Pilotage			X						
	MTRANS-1b: Compliance with Navigation Rules			X						
	MTRANS-1c: Precautionary Area			X						
	Resulting Level of Significance			LTS						
MTRANS-2: Interference with Commercial Fishing Operations										
	MTRANS-2a: Commercial Fishing Avoidance			X						
	MTRANS-2b: Project Information			X						
	Resulting Level of Significance			LTS						
MTRANS-3: Interference with Commercial Sport Fishing Operations										
	MTRANS-3a: Commercial Sport Fishing Avoidance			X						
	MTRANS-3b: Project Information			X						
	Resulting Level of Significance			LTS						

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
Traffic and Transportation										
TRAFFIC-1: Cumulative Traffic Impacts										
	TRAFFIC-1: Coordination to Reduce Cumulative Traffic Impacts	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
TRAFFIC-2: Oversized Loads										
	TRAFFIC-2: Coordination of Oversized Loads	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
TRAFFIC-3: Temporary Street Closures Affecting Traffic, Bicycle, and Pedestrian Circulation										
	TRAFFIC-3: Signage for Temporary Street Closures	X			X	X				
	Resulting Level of Significance	LTS			LTS	LTS				
TRAFFIC-4: Impacts on Metro East Light Rail Facility										
	TRAFFIC-4: Reducing Impact on the Movement of MUNI Light Rail Vehicles into and out of the Metro East Maintenance Facility	X			X	X				
	Resulting Level of Significance	LTS			LTS	LTS				

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
TRAFFIC-5: Traffic Impacts During Construction										
	TRAFFIC-5: Improve Vehicular Safety		X							
	Resulting Level of Significance		LTS							
Noise and Vibration										
NOISE-1: Converter Station Operations Sound Levels										
	NOISE-1: Noise Barrier Installation for Converter Station		X				X	X	X	
	Resulting Level of Significance		LTS				LTS	LTS	LTS	
NOISE-2: Construction Sound Level										
	NOISE-2: Construction Noise Control Measures							X		
	Resulting Level of Significance							RS		
Public Services and Utilities										
PS-1: Construction Fire Hazards										
	PS-1: Construction Fire Prevention	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
PS-2: Existing Onshore Underground Utilities										
	PS-2: Utility Survey	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
PS-3: Operations Fire Hazards										
	PS-3: Operations Fire Prevention	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
PS-4: Water Service										
	PS-4: Water Service		X						X	
	Resulting Level of Significance		LTS						LTS	
Visual Resources										
VIS-1: Converter Station Domination of View										
	VIS-1a: Plan Submittal Requirements for Building Materials and Colors	X	X			X	X		X	
	VIS-1b: Plan Submittal Requirements for Landscaping	X	X			X	X		X	
	VIS-1C: Landscaping Plan		X							
	Resulting Level of Significance	LTS	LTS			LTS	LTS		LTS	

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
VIS-2: Converter Station Will Create Substantial Light and Glare										
	VIS-2: Plan Submittal Requirements for Lighting	X	X		X	X	X	X		
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS		
VIS-3: Creation of Visual Clutter										
	VIS-3: Landscaping Plan	X								
	Resulting Level of Significance	LTS								
VIS-4: Converter Station Domination of Entrance to Warm Water Cove Park										
	VIS-4a: Landscaping					X				
	VIS-4b: Common Fence Design					X				
	VIS-4c: Street Lighting along 24th Street					X				
	Resulting Level of Significance					LTS				
VIS-5: Converter Station Domination of View										
	VIS-5a: Street Yard Setback							X		
	VIS-5b: Street Yard Landscape							X		
	VIS-5c: Architectural Design and Building Colors							X		
	Resulting Level of Significance							RS		

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
Hazardous Materials and Waste Management										
HAZ-1: Removal of Potentially Hazardous Building Materials Resulting from Demolition										
	HAZ-1: Complete an ACM Abatement Plan and an LBP Abatement Plan	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
HAZ-2: Soil Removal										
	HAZ-2: Soil Removal Protocols	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
HAZ-3: Construction-phase Hazardous Materials Use										
	HAZ-3: Reduction of Hazards During Construction Phase	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
HAZ-4: Construction-phase Waste Streams										
	HAZ-4: Management of Construction-phase Waste Streams	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
HAZ-5: Construction-phase Accidental Spills										
	HAZ-5: Construction-phase Spill Prevention, Control, and Countermeasure	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
HAZ-6: Construction-phase Dust and Volatilization of Contaminants										
	HAZ-6: Reduction of Construction Dust and Volatilization of Contaminants	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
HAZ-7: Contaminated Groundwater										
	HAZ-7: Contaminated Groundwater Control	X	X		X	X				
	Resulting Level of Significance	LTS	LTS		LTS	LTS				
HAZ-8: Operations-phase Hazardous Materials Usage										
	HAZ-8: Control of Operations-phase Hazardous Materials	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
HAZ-9: Operations-phase Waste Streams										
	HAZ-9: Manage Waste Generation, Storage and Disposal During Operations Phase	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
HAZ-10: Operations-phase Accidental Spills										
	HAZ-10: Operations-phase Spill Prevention, Control, and Countermeasure	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
HAZ-11: Operations-phase Fire and Explosion Risk										
	HAZ-11: Reduction of Fire and Explosion Risk and Emergency Support During Operations Phase	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	
HAZ-12: Impacts from Seismic Activity										
	HAZ-12: Manage Seismic Activity	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	

TABLE 6-1 (CONTINUED)
SUMMARY OF POTENTIALLY SIGNIFICANT IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measure	Proposed San Francisco HWC Converter Station	Proposed Pittsburg Standard Oil Converter Station	Proposed Offshore DC Cable Route	San Francisco Mirant Converter Station Alternative	San Francisco Sheedy Converter Station Alternative	Pittsburg West Tenth Street Converter Station (Alternative 1)	Pittsburg West Tenth Street Converter Station (Alternative 2)	Pittsburg Mirant Converter Station Alternative	No Project Alternative
Paleontological Resources										
PALEO-1: Disturbance of Fossil Resources										
	PALEO-1: Potential Fossil Resources Protection	X	X		X	X	X	X	X	
	Resulting Level of Significance	LTS	LTS		LTS	LTS	LTS	LTS	LTS	

X = Applicable; Blank = Not Applicable; LTS = Less than Significant; RS = Residual Significant Impact.

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7.1 INTRODUCTION

The cumulative impact assessment for the Trans Bay Cable Project (TBC Project) provided in this section is based on the California Environmental Quality Act (CEQA) and the *CEQA Guidelines* which require that the discussion of cumulative impacts be "guided by the standards of practicality and reasonableness" (Public Resources Code, § 21083(b)); and, that "the discussion include a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts" (Code of Regulations, Title 14, § 15130(b)(1)(A)). The *CEQA Guidelines* require that cumulative impacts be discussed when they are significant, and that the discussions of cumulative impacts reflect the severity of the impacts and their likelihood of occurrence. However, the *CEQA Guidelines* state that the discussion need not present cumulative impacts in as great a detail as is provided for a project's impacts.

Therefore, the purpose of this section of the EIR is to:

- Identify past, present, and reasonably foreseeable actions in the project area that could affect the same resource(s) as the TBC Project
- Determine if the impacts of the TBC Project and the other actions would overlap in time and geographic extent
- Determine if the impacts of the TBC Project would interact with, or intensify, the impacts of the other actions
- Identify any potentially significant cumulative impacts

The TBC Project includes an AC/DC converter station and ancillary facilities in the Pittsburg area, a DC cable routed within Suisun Bay, San Pablo Bay, and San Francisco Bay, and a DC/AC converter station and ancillary facilities in the Potrero Point, San Francisco area. Ancillary facilities include the AC transmission line tie-ins between the PG&E Pittsburg Substation and the AC/DC converter station in the Pittsburg area, and the tie-in between the San Francisco distribution grid and the DC/AC converter station in the Potrero area.

The study area includes portions of the cities of Pittsburg and San Francisco, and the study corridor for the cable route as depicted on Figure 3-1 in Section 3.0, and Map A.2-1, sheets 1 through 10, in Appendix A. For this cumulative impacts assessment, the study area generally is defined as the area within a 1-mile radius of the converter station and ancillary facilities for each site. In addition, the study area includes any portions of the cable route study corridor that intercept existing and proposed infrastructure such as bridges, tunnels, utilities, terminals, ports, docks, shipping channels and navigational markers, other types of similar facilities, and on-going operations and programs by governmental and commercial interests that utilize and/or maintain these infrastructure features in the study corridor.

Information regarding recent and potential future projects was mostly obtained from federal, State and local agency contacts, internet websites, and reviews of available environmental documents. Projects that were identified for consideration in the assessment include those: 1) that have commenced or have been recently completed; 2) where an application has been submitted to agencies for required approvals and permits; and 3) that have been previously approved and may be implemented in the near future. Since information pertaining to construction schedules, construction workforce and other details is typically not available for projects that are contemplated but have not been formally proposed, such projects are not included in this assessment.

Potential cumulative impacts were identified if the TBC Project impacts could potentially contribute to the impacts of reasonably foreseeable future projects under construction at the same time. The magnitude of such cumulative impacts is dependent, in part, on the extents of construction overlap in time and geographic area. For the purposes of this cumulative impact assessment, it is estimated that the construction phase for the TBC Project is 27 to 30 months, beginning in 2007.

The potential environmental impacts of the TBC Project are primarily related to construction activities and disturbances at the selected converter station sites and ancillary facilities, and during installation of the DC cable route within the Bay environment and at both landfall sites. Construction and disturbance impacts mostly include short-term disturbances to land use, land-based traffic and transportation, marine-based traffic and transportation, biological resources, noise, air quality, visual resources, and geologic conditions. Potential long-term significant adverse impacts have been identified for the proposed San Francisco HWC Converter Station site with regard to cultural and historic resources associated with demolition of structures during site preparation.

The potential cumulative impact of the TBC Project and other projects under consideration in this cumulative impact assessment is limited primarily to the additive construction impacts of the individual projects. No potentially significant cumulative impacts have been identified for the operational phase of the TBC Project.

7.2 CUMULATIVE IMPACTS ANALYSIS

The projects considered in the cumulative impact assessment are presented in the following sections. For each project and/or project category, a brief description is provided of the project or the activities taking place if there is an on-going operation or program by a governmental or commercial interest, followed by an assessment of potential cumulative impacts. The projects are presented under the categories of Pittsburg facilities vicinity, Bay Area cable route, and San Francisco/Potrero facilities vicinity. The areas under consideration include land-based commercial and industrial projects within a 1-mile radius of the Pittsburg and San Francisco facilities sites, and the cable route study corridor as illustrated on Figure

3-1 in Section 3.0 and Map A.2-1, sheets 1 through 10 in Appendix A. The timeframes for these projects and programs, where available, are also provided.

7.2.1 Pittsburg Facilities Vicinity

7.2.1.1 Project Descriptions

Development projects that are subject to the permitting jurisdiction of the City of Pittsburg Planning Department that may contribute to potential cumulative impacts associated with the TBC Project are available for review at the City of Pittsburg website in the document titled "Project Pipeline List" updated on December 7, 2005 (City of Pittsburg, 2005). The City of Pittsburg's Project Pipeline List includes the following categories of projects that are in various stages (i.e., pending approval, under construction, and built): single-family residential, apartments/condominiums, mixed-use projects, and commercial. Many of these projects are already built or are under construction (i.e., construction phases would not be expected to overlap with the TBC Project). In addition, very few of the listed projects are located in proximity to the proposed or alternative TBC Project components in Pittsburg. Therefore, the potential for significant cumulative impacts to occur in Pittsburg is considered to be low.

One approved project of potential interest is the planned Mariner Walk Residential Development, which is located northeast of the alternative Pittsburg West Tenth Street Converter Station site and southeast of the alternative Mirant Pittsburg Converter Station site. The planned Mariner Walk Residential Development project is a subdivision of 15.6 acres for purposes of development of 123 detached, single-family clustered units with common private driveways and a 0.95-acre improved and privately-maintained linear parkway. The project would require relocation of an existing 5-acre public park from the northwestern corner of the property to a 3.45-acre site at the southeastern corner of the property, in order to position the park in a more accessible location near the Eighth Street linear park and make the current park site available for residential construction. The location of the proposed development is west of Herb White Way and north of West Eighth Street. Adjacent land uses include a mixture of residential, institutional, and industrial uses, and roads. Existing neighborhoods of older single-family houses are located north and south of the property. Herb White Way, a two-lane street, is east of the property with a neighborhood of recently-constructed single-family homes located on the opposite side of Herb White Way. St. Peter Martyr, a K-8 school, abuts the property to the northeast, and the Delta Diablo Sanitation District pump station abuts the property to the southwest. A Calpine power transmission corridor, and several above-ground tanks that are part of the Mirant Pittsburg Power Plant are located on adjacent property to the west, and are separated from the site by a landscaped earthen berm. The "Project Pipeline List" status of the Mariner Walk project is "approved."

7.2.1.2 <u>Cumulative Impacts Assessment</u>

Construction of the AC/DC converter station and the ancillary facilities concurrent with any of the projects listed in the City of Pittsburg "Project Pipeline List" as having a status of either under construction, pending, or approved is not expected to result in any significant cumulative impacts. Construction and operation of the TBC Project would not be expected to have any significant cumulative impacts with the construction and operation of those projects listed in the "Project Pipeline List."

7.2.2 Bay Area Cable Route

Projects or activities that pertain to governmental and commercial infrastructure, operations, and programs in the Bay Area that may contribute to potential cumulative impacts associated with the TBC Project are described in this section.

7.2.2.1 <u>Vessel, Port, and Terminal Operations</u>

7.2.2.1.1 <u>Infrastructure and Activities Description</u>. There are 8 ports, 26 marine terminals, and 2 naval terminals in the Bay Area. A snapshot of the scope and magnitude of vessel traffic that occurred in the Bay Area in 2000 in terms of passenger and cargo vessels, tanker traffic, tow or tug, and barges is summarized in Table 7.2-1, and can be reviewed in greater detail in the U.S. Army Corps of Engineers (USACE) document titled *Waterborne Commerce of the United States, Calendar Year 2000, Part 4 – Waterways and Harbors of the Pacific Coast, Alaska and Hawaii* (USACE, 2000).

TABLE 7.2-1
SCOPE AND MAGNITUDE OF VESSEL TRAFFIC

Facilities Location	Total Vessel Calls	Oil Tankers
Carquinez Strait	2,544	320
Port of Richmond	5,626	353
Port of San Francisco	28,562	96
Port of Oakland	6,555	11
Port of Redwood City	215	0

Commercial shipping, naval/Coast Guard vessel operations, passenger transport, and private recreational boating are the primary activities that would occur within the proposed TBC Project cable installation route and, thereby, constitute a basis for consideration of potential cumulative impacts associated with installation of the DC cable. The passenger transport operations and schedules of the several different ferry lines within the Bay Area can be accessed from web sources including the following:

- http://www.sfguide.com/transportation/ferries.htm
- http://www.baycrossings.com/Archives/2002/04_May/a_guide_to_san_francisco_bay_ferrys.htm

7.2.2.1.2 <u>Cumulative Impacts Assessment</u>. The incremental and minimal impact associated with the proposed submarine TBC Project cable installation using the C/S Giulio Verne and/or barge operations within the Bay would not result in significant cumulative impacts related to commercial shipping, naval/Coast Guard vessel operations, or passenger/private recreational boating.

7.2.2.2 <u>New Benicia-Martinez Bridge and Retrofit Project (I-680)</u>

7.2.2.2.1 <u>Project Description</u>. This California Department of Transportation (Caltrans) project includes retrofitting the existing bridge and constructing a new bridge across the Carquinez Strait between Benicia and Martinez for traffic on Interstate 680 (I-680). Retrofitting began in August 1998 and was completed in 2002. The existing bridge will be converted to one-way traffic. The new bridge is being built east of the existing railroad bridge, which lies east of the existing vehicular bridge. In addition to the construction of the new bridge, the project also includes improving highway approaches to the bridge, expansion to four lanes, carpool lane, bicycle and pedestrian path, as well as new toll plaza facilities. The construction of the new bridge began in fall 2001 was completed in 2005. (Source: http://www.dot.ca.gov/dist4/route680.htm).

7.2.2.2.2 <u>Cumulative Impacts Assessment</u>. The bridge design accommodates current vessel operations in the Carquinez Strait. The incremental and minimal impact associated with the proposed submarine TBC Project cable installation using the C/S Giulio Verne and/or barge operations within the strait would not result in a significant cumulative impact to marine water quality or marine biological resources since this bridge project is already completed.

7.2.2.3 <u>Carquinez Bridge Replacement Project (I-80)</u>

7.2.2.3.1 <u>Project Description</u>. The Carquinez Bridge consists of two separate bridges, one for westbound and one for eastbound traffic. Caltrans began replacing the bridge that carries the westbound lanes of I-80 over the Carquinez Strait in 2000 with a suspension bridge, which is located west of the existing bridge. The bridge was opened to traffic in late 2003 with three mixed flow lanes, a carpool lane, and a pedestrian/bicycle path. Ramps were completed in 2004. The westbound bridge was constructed in 1927, and is one of the two steel truss bridges often referred to in combination as “the Carquinez Bridge.” The project is needed because the existing bridge does not meet current seismic design or traffic safety standards. The existing bridge will be dismantled in 2006 (Source: http://www.dot.ca.gov/dist4/carquinez.htm).

7.2.2.3.2 Cumulative Impacts Assessment. The bridge design accommodates current vessel operations in the Carquinez Strait. The incremental and minimal impact associated with the proposed submarine TBC Project cable installation using the C/S Giulio Verne and/or barge operations within the strait would not result in a significant cumulative impact to marine water quality or marine biological resources since this bridge project would already be completed prior to construction of the TBC Project.

7.2.2.4 San Francisco Bay to Stockton Phase III – John F. Baldwin Navigation Channel Project

7.2.2.4.1 Project Description. The proposed project would involve deepening approximately 16 miles of existing navigational channels extending from north of Angel Island and central San Francisco Bay to the vicinity of Pacheco Creek in Suisun Bay to 35 feet. The purpose of the channel deepening is to provide improved direct access of large oil tankers to the petroleum refineries and terminals adjacent to the Carquinez Strait. This would reduce vessel-to-vessel lightering of crude oil at Anchorage No. 9 and reduce tanker traffic in San Francisco Bay. Once dredging and disposal for the channel deepening alternative began, the project should take approximately 30 months to complete. The project is currently in the concept phase and funding availability is being studied (Sources: http://www.epa.gov/fedrgstr/EPA-IMPACT/1995/April/Day-26/pr-809.html; http://www.slc.ca.gov/Division_Pages/DEPM/DEPM_Programs_and_Reports/Shore_Terminals/Text/19%20sec%204%20Cumulative%20Projects%20Analysis.doc).

7.2.2.4.2 Cumulative Impacts Assessment. The routing and design (i.e., burial depth) of the proposed TBC submarine cable take into account current known future dredging operations and would avoid potential conflicts with future deepening of dredge/shipping channels. The incremental and minimal impact associated with the proposed TBC submarine cable installation using the C/S Giulio Verne and/or barge operations within the strait would not result in a significant cumulative impact to marine resources.

7.2.2.5 Mare Island Reuse Plan

7.2.2.5.1 Project Description. Mare Island is located on the western edge of the City of Vallejo in southwestern Solano County. It is flanked by the Napa River on the east, the Carquinez Strait on the south, and the San Pablo Bay on the west. Mare Island is approximately 3.5 miles long and 1 mile wide. The island is relatively flat and ranges in elevation from sea level to 285 feet above sea level in the southern regional park area.

The Navy established a shipyard in 1854 known as Naval Magazine, NSY Mare Island. The 5,252-acre facility included approximately 996 buildings with 10.5 million square feet of space, 4 dry docks, 20 ship berths, 2 shipbuilding ways, 3 finger piers, and 21 large industrial sites. Water transit route accessibility includes over 1.5 miles of piers and docks. Conversion of the Mare Island Naval Shipyard and related properties from military to civilian use continues. The land has been transferred to the City of Vallejo for redevelopment. A potential liquid natural gas (LNG) facility and a 1,500 MW power plant on Mare Island proposed by Shell and Bechtel in 2002 was suspended by these companies in 2003. Subsequently, the City Council voted to reaffirm the city's commitment to the Mare Island Reuse Plan, which would, in effect, permanently cancel the project. The plan designates parcel 12, which would have been the site of the LNG receiving terminal, as open space and recreation area. Parcel 10, where the power plant would have been built, is zoned for light industrial use. (Sources: http://www.fas.org/man/company/shipyard/mare_island.htm; http://www.vallejosearch.com/vallejo_mare_island.htm; and http://www.nrel.gov/vehiclesandfuels/ngvtf/pdfs/lng_import_ngvtf_sac.pdf).

7.2.2.5.2 Cumulative Impacts Assessment. The incremental and minimal impact associated with proposed TBC Project cable installation using the C/S Giulio Verne and/or barge operations within the vicinity of Mare Island would not result in a significant cumulative impact to marine resources.

7.2.2.6 Deepening of the Suisun Bay Channel for the Concord Naval Weapons Station

7.2.2.6.1 Project Description. The Concord Naval Weapons Station is on the southern shore of the Suisun Bay in northern Contra Costa County, between the cities of Martinez and Pittsburg. The weapons station ships munitions around the world. The sponsor for this project is TRANSCOM Military Command and the USACE has been tasked with the evaluation and potential construction of a deep draft navigation channel (-42 feet mean lower low water [MLLW]) to accommodate the current and future fleets of container ships. Design and construction are contingent upon modeling results and testing to determine impacts. (Source: http://www.watertransit.org/pubs/eir/Section3.01_Dredging.pdf.).

7.2.2.6.2 Cumulative Impacts Assessment. The DC cable installation would occur mostly outside of the area of the deep draft navigation channels. Where the DC cable installation crosses a USACE-dredge channel, the installation would be placed well below the maximum dredge depth. The incremental and minimal marine impacts associated with installation of the submarine cable would not result in significant cumulative impacts on marine resources.

7.2.2.7 Long-term Management Strategy (LTMS) Program

7.2.2.7.1 Project Description. The LTMS program is designed to provide a regional plan for the disposal of dredged material from the San Francisco Bay over the next 50 years. The LTMS program began in January 1990 as a federal/state partnership among the four agencies that have regulatory authority for dredged material in the San Francisco Bay, and include the USACE, the U.S. Environmental Protection Agency (EPA) Region IX, the San Francisco Bay Regional Water Quality Control Board (RWQCB), and the San Francisco Bay BCDC.

These four lead agencies share responsibility for managing the various components of the LTMS. The LTMS Final EIS/EIR indicates that approximately 6 million cubic yards (mcy) of sediments must be dredged and disposed each year from shipping channels and related navigational facilities in the Bay Area. The estimated total volume of dredged material that would require disposal over the 50-year LTMS planning horizon is approximately 300 mcy. The policy alternatives involve different volumes of dredged sediment being disposed at in-Bay, ocean, and upland/wetland reuse sites. Under current regulatory conditions, 80 percent or more of the dredged material would continue to be disposed of at designated sites in the Bay, with only a small percentage of material disposed of outside the estuary at the new offshore ocean site or used in "beneficial reuse" applications, such as wetlands restoration (Source: http://swr.nmfs.noaa.gov/overview/ overview.htm).

7.2.2.7.2 Cumulative Impacts Assessment. The proposed submarine cable installation would occur outside of designated in-Bay, ocean, and upland/wetland dredge disposal reuse sites. As such, DC cable installation would not conflict with the LTMS. The potential incremental and minimal marine impacts associated with installation of the TBC Project submarine cable, including possible limited dredging activities near Pittsburg, would not be expected to result in significant cumulative impacts on marine water quality or marine biological resources.

7.2.2.8 Ferry Point Pier and Terminal Projects

7.2.2.8.1 Project Description. The Miller-Knox Regional Shoreline Land Use-development Plan (LUDP) was amended in October 1995 to include the Ferry Point pier and terminal projects. The Miller-Knox Regional Shoreline is located off of Point Richmond and just north of the north end of the Richmond Harbor Channel entrance. The Ferry Point parcels, including the Ferry Point Terminus site and the Ferry Point Pier, have been given zoning and land use designations appropriate for their proposed uses. The Ferry Point parcels added a total of 28 acres to the Miller-Knox Regional Shoreline. The Ferry Point Pier has been rehabilitated and fishing facilities have been established. (Source: http://www.slc.ca.gov/Division_Pages/ DEPM/DEPM_Programs_and_Reports/Shore_Terminals/PDF/19%20sec%204C%201.pdf).

7.2.2.8.2 Cumulative Impacts Assessment. The incremental and minimal impact associated with the proposed TBC Project cable installation using the C/S Giulio Verne and/or barge operations within the vicinity of the Ferry Point pier and terminal would not be expected to result in a significant cumulative impact to marine vessel operations, fishing, or marine biological resources.

7.2.2.9 Port of Oakland Harbor Navigation Improvement (-50-Foot) Project

7.2.2.9.1 Project Description. Deepening Oakland Harbor to -50 feet MLLW would involve dredging approximately 12 to 13 mcy. The USACE submitted the Feasibility Study and Environmental Impact Statement/Report to the Assistant Secretary of the Army for Civil Works in February 1999. The project was authorized in the 1999 Water Resources Act. The dredging and transport and disposal will take approximately 4 years with completion in 2006. Transport of dredged material may be via barge through the Bay Area. (Source: http://www.portofoakland.com/pdf/eirs_01d.pdf).

7.2.2.9.2 Cumulative Impacts Assessment. The proposed TBC Project cable installation would occur outside of the Oakland Harbor and the designated in-Bay, ocean, and upland/wetland dredge disposal reuse sites and would occur subsequent to completion of the Oakland Harbor deepening project. Therefore, no significant cumulative impacts would occur.

7.2.2.10 Richmond Outer Harbor and Southampton Shoal Channel Deepening Project

7.2.2.10.1 Project Description. This channel is immediately south of the Richmond-San Rafael Bridge. Southampton Shoal is the entrance to the Richmond Harbor and the Richmond Longwharf Maneuvering Area. The dredging will deepen the channel from -45 feet to -50 feet, and resulted in as much as 9 mcy of sediment requiring disposal. The project is part of the USACE 2005 O&M Dredging program and work was scheduled to commence in June of 2005. Dredged material disposal would be placed at the Alcatraz Dredged Materials Disposal Site SF-11. (Source: http://www.sfmx.org/support/hsc/acrobat/hsc_army_corp_5-12-05.pdf).

7.2.2.10.2 Cumulative Impacts Assessment. The proposed TBC Project cable installation would occur outside of the Richmond Outer Harbor/Southampton Shoal area and the SF-11 sites. In addition, the construction time frames would not coincide. As such, cable installation would not conflict with the dredging project, and would not have the potential to result in a significant cumulative impact.

7.2.2.11 Richmond-San Rafael Bridge Seismic Retrofit Project

7.2.2.11.1 Project Description. The bridge is a part of I-580 spanning Richmond (Contra Costa County) on the east across the Bay to Point San Quentin (Marin County) on the west. The approximately 4.5-mile-long bridge is located between the San Andreas and Hayward faults, and without retrofit, would be vulnerable to a major seismic event.

Seismic retrofit construction activities were planned within the same alignment as the existing bridge. Development of seismic retrofit construction strategies on the bridge required separating the bridge into four segments: 1) concrete trestle section; 2) west approach structure; 3) main steel truss superstructure; and 4) east approach structure.

A single deck parallel concrete trestle extends from Point San Quentin to the west approach structure. This part of the bridge was completely replaced along the existing alignment due to severe corrosion of the existing structure. Construction began in December 2000 and was completed in September of 2005.

7.2.2.11.2 Cumulative Impacts Assessment. The incremental and minimal impact associated with the proposed submarine cable installation using the C/S Giulio Verne and/or barge operations combined with the fact that this bridge project has been completed indicate that no significant impacts to marine resources would occur.

7.2.2.12 Point Molate Reuse Project

7.2.2.12.1 Project Description. The Point Molate site covers approximately 290 acres in the Potrero Hills on San Pablo Peninsula on the eastern shore of San Francisco Bay. Point Molate is in the northern portion of the City of Richmond and is approximately 1.5 miles north of the Richmond-San Rafael Bridge. Point Molate is surrounded on the north, east, and south by Chevron. In 1995, the Point Molate Navy Fuel Depot (Point Molate) was listed for closure and disposition under the Defense Base Closure and Realignment Act (BRAC) of 1990. The *Point Molate Reuse Plan*, which was adopted by the Richmond City Council in March 1997. The City of Richmond established the City Council as the Local Reuse Authority (LRA). The LRA is the official governmental agency responsible for the reuse planning and disposition strategy for the Point Molate site. The reuse options include open space and recreational, educational, residential, and commercial developments, but implementation of any use is likely to take several years. General Plan and zoning changes will be necessary for long-term reuse of Point Molate property. Future project proposals will be analyzed for consistency with the final approved Reuse Plan and Certified Program EIR/EIS. Subsequent Negative Declaration and Supplemental EIRs will be prepared for specific project proposals as necessary. (Source: http://kcrt.com/specialfeatures/ptmolate/index.html).

7.2.2.12.2 Cumulative Impacts Assessment. The incremental and minimal impact on marine resources associated with the proposed TBC Project cable installation using the C/S Giulio Verne and/or barge operations and the distance from Pointe Molate indicate that no significant cumulative impacts would occur.

7.2.2.13 BART Earthquake Safety Program

7.2.2.13.1 Project Description. BART has initiated the Earthquake Safety Program for the purpose of safeguarding the public's significant investment in the system due to the likelihood that the BART system will be subject to a major earthquake. The program will upgrade the original BART system operating facilities to ensure that they can return to operation shortly after a major earthquake. This will be accomplished by using the latest seismic standards to upgrade the structural integrity of vulnerable portions of the system. The Earthquake Safety Program addresses the original system completed in 1972, with a service area spanning three counties (San Francisco, Alameda, and Contra Costa). System extensions built since 1972 employed more stringent and up-to-date seismic criteria than the original system, and thus do not require upgrades. Several major geologic faults that occur within the BART service area are depicted on the BART project website at http://www.bart.gov/about/projects/earthquakesafety.asp.

Results of a systemwide vulnerability study titled the Seismic Vulnerability Study and completed in 2002 indicated that if the BART system is not strengthened, it would take years to restore service after a major earthquake. The study found that portions of the system most susceptible to earthquake damage include the Transbay Tube which connects Oakland to San Francisco, aerial structures, stations, and equipment. The study recommended that priority be given to the Transbay Tube including its seismic joints and two ventilation structures, where soil backfill is prone to liquefaction. Though the consequences of liquefaction on the Tube are uncertain, a worst-case scenario could cause excessive movement of the seismic joints and structural stress that could result in significant damage. Preliminary upgrade concepts include the following:

- Micropile tiedowns or vibro-replacement in soils along the length of the Tube
- "Stitching" piles at each end of the Tube
- Reinforcements or increased capacity of seismic joints on the San Francisco side of the Tube
- Large diameter piles and a "collar" around the San Francisco Ventilation Structure
- Steel bracing of the Oakland Ventilation Structure

The estimated duration for design and construction of the entire program is approximately 10 years. By carefully planning and monitoring upgrade work, BART aims to continue train operation during construction, with minimal impact to BART riders.

7.2.2.13.2 <u>Cumulative Impacts Assessment</u>. The implementation of the BART project may or may not coincide with construction of the proposed cable installation in the area of the Transbay Tube. As such, construction- and timeline-related cumulative environmental impacts are uncertain at this time. There is a potential foreseeable cumulative impact pertaining to installing the proposed primary upgrades, specified above, by BART relative to the TBC Project with regard to underwater routing and long-term maintenance of the DC cable. Accordingly, the Project proponent will coordinate with BART regarding the final routing of the proposed TBC Project cable where it crosses the BART Tube to avoid potential conflicts. No significant cumulative impacts to marine resources would be expected to occur.

7.2.3 San Francisco/Potrero Facilities Vicinity

Projects in the commercial and industrial categories that are subject to the permitting jurisdiction of the City and County of San Francisco that may contribute to potential cumulative impacts associated with the TBC Project (in the vicinity of Potrero where the proposed and alternative TBC converter station sites are located) are summarized below.

For more information regarding proposed development in the greater City of San Francisco area refer to "The Pipeline – A Quarterly Report on Proposed Development in the City of San Francisco, 4th Quarter 2005" (San Francisco Planning Department, 2006).

7.2.3.1 Potrero to Hunters Point 115 kV Cable Project

7.2.3.1.1 Project Description. The purpose of the Potrero to Hunters Point 115 kV Cable Project is to improve electric reliability. It is also a critical component of the plan to close PG&E's Hunters Point Power Plant in the Bayview-Hunters Point neighborhood. In September 2004, the California Independent System Operator (CAISO) created an action plan for several projects to improve electrical transmission system reliability in San Francisco. The action plan also outlined seven projects which are necessary in order to close PG&E's Hunters Point Power Plant. The Potrero to Hunters Point 115 kV Cable Project is one of those seven required projects. Both the California Public Utilities Commission (CPUC) and the CAISO have affirmed the need for the Potrero to Hunters Point 115 kV Cable Project, which also enjoys the support of the City and County of San Francisco.

The CPUC, in consultation with other agencies and interested groups, has determined the best possible route to minimize impacts on residents and businesses. The approved project is located in the eastern Potrero Hill, northern Bayview, and Hunters Point neighborhoods. Construction will follow city streets and be located primarily in commercial and industrial areas. A figure depicting this route can be viewed on the following website: http://www.pge.com/field_work_projects/street_construction/potrero_hunterspoint/.

The route begins at the northwest corner of the Potrero switchyard between 22nd and 23rd streets and runs south on Illinois Street until turning west on 23rd Street. From 23rd Street, the route turns south on Tennessee Street and continues for four blocks before turning west on Cesar Chavez. The route follows Cesar Chavez Street, crossing under Interstate 280 and the Caltrain tracks, then turning south along property owned by the Chronicle. The route then turns west onto Marin Street before turning south-southeast onto Evans Avenue. Finally, the route proceeds down Evans Avenue for approximately 1 mile before entering the Hunters Point Power Plant switchyard. The finished line will be underground and out of sight.

7.2.3.1.2 Cumulative Impacts Assessment. The Potrero to Hunters Point 115 kV Cable Project will be completed before construction of the proposed TBC Project converter station and ancillary facilities in the Potrero Point area commences. As such, there are no construction timeline-related cumulative environmental impacts anticipated (e.g., traffic, noise, etc.).

7.2.3.2 San Francisco Electric Reliability Project

7.2.3.2.1 Project Description. The City of San Francisco has acquired four low-emission, natural-gas-fired combustion turbines (CTs) to maintain reliable electric service. Coupled with the upgrade of electric transmission both into and within San Francisco, these units will ensure the removal from Reliability-Must-Run (RMR) status and allow for possible closure of the city's older, less efficient power plants located at Hunters Point and Potrero. The San Francisco Electric Reliability Project consists of two parts: 1) Three CTs to be sited at or near the existing Mirant Potrero Power Plant site; and 2) one CT to be sited at the San Francisco Airport. (Sources: http://www.energy.ca.gov/sitingcases/sanfrancisco/; http://sfwater.org/main.cfm/MC_ID/7/MSC_ID/64/MTO_ID/138). The California Energy Commission issued their Final Staff Assessment for this pending project in February of 2006 (AFC-04-1).

7.2.3.2.2 Cumulative Impacts Assessment. The installation of the 3 CTs with ancillary facilities near the Mirant Potrero Power Plant site may, or may not, be completed before construction of the proposed TBC Project converter station and ancillary facilities in the Potrero Point area would commence. As such, potential construction-related cumulative environmental impacts could occur (e.g., traffic, noise, visual, etc.), but are uncertain at this time. With implementation of required project-specific mitigation measures for both projects, no significant long-term cumulative impacts would be expected to occur.

7.2.3.3 Port of San Francisco Southern Waterfront Master Planning Area Projects

7.2.3.3.1 Project Description. The Port of San Francisco owns and manages about 370 acres of property in the Southern Waterfront, most of which is designated for existing or future expanded maritime uses. The proposed TBC Project converter station and ancillary facilities occur within the sphere of the Port of San Francisco-administered Southern Waterfront area. A figure depicting this area can be viewed at the following website: http://www.sfport.com/site/sfport_index.asp?id=24518. The primary centers within the Southern Waterfront are Pier 70, home of the ship repair industry, and the Pier 80-96 maritime complex, made up of various marine terminals, and transportation and support areas for container and non-container cargo shipping. The Pier 90-94 Backlands is included within the Pier 80-96 maritime terminal complex, located upland from the Port's cargo terminals on the south side of Islais Creek.

Master planning for Pier 70 began with the identification of Pier 70 in the Waterfront Land Use Plan (1997) as one of several "mixed use opportunity sites" owned by the Port where traditional maritime uses were unlikely to be continued and, thus, new uses would be sought. An array of potential uses was identified and a programmatic Environmental Impact Report was prepared for the Land Use Plan. In 2000, a Central Waterfront Advisory Committee was created. The group developed goals for the eventual rehabilitation and development of Pier 70, calling in particular for the preservation of the magnificent and unique 19th and early 20th century industrial buildings. The Port will commence developing an approach for the Master Plan for the Pier 70 area based on the input and direction received from the committee and the public in Fall 2005. A preliminary Feasibility Analysis for Environmental, Engineering, and Economic Viability for the Piers 90-94 Backlands was conducted. The analysis focussed on maritime support warehouse/distribution development of a 45+ acre site located within the Piers 80-96 maritime cargo complex. Development would include community benefits such as passive recreation space, alternative storm water management systems, and community economic development opportunities.

7.2.3.3.2 Cumulative Impacts Assessment. The implementation of planned projects as part of the Port's Master Plan for the Pier 70 area and the Piers 90-94 Backlands may, or may not, coincide with construction of the proposed TBC converter station and ancillary facilities in the Potrero Point area. As such, potential construction-related cumulative environmental impacts could occur (e.g., traffic, noise, visual, etc.), but are uncertain at this time. With implementation of required project-specific mitigation measures for both projects, no significant long-term cumulative impacts would be expected to occur.

7.2.3.4 Central Waterfront Neighborhood Plan

7.2.3.4.1 Project Description. The general boundary of the Central Waterfront Neighborhood Plan is from Mariposa Street south to Islais Creek and from the I-280 east to the Bay. A figure depicting this area can be viewed at the following website: http://www.sfgov.org/site/planning_index.asp?id=25205. The Planning Department released the public review draft on January 22, 2003. The department also developed a Central Waterfront Concept Plan that presents the essential components of a land use program, transportation strategies, and an urban design framework. These concepts are depicted in the figure titled "Proposed Land Use Plan" that can be viewed at the following website: http://www.sfgov.org/site/planning_index.asp?id=25212. The department is currently refining these concepts based on community workshops and public feedback.

Based on that figure, the proposed TBC converter station and ancillary facilities would be sited within areas designated as PDR (Production, Distribution & Repair) and/or heavy PDR.

7.2.3.4.2 Cumulative Impacts Assessment. The implementation of planned projects as part of the City's Central Waterfront Neighborhood Plan may, or may not, coincide with construction of the proposed TBC converter station and ancillary facilities in the Potrero Point area. As such, potential construction-related cumulative environmental impacts could occur (e.g., traffic, noise, visual, etc.), but are uncertain at this time. With implementation of required project-specific mitigation measures for both projects, no significant long-term cumulative impacts would be expected to occur.

7.2.3.5 Illinois Street Bridge Project

7.2.3.5.1 Project Description. The Port of San Francisco has proposed to construct the Illinois Street Bridge Project, a combination freight rail and truck/auto bridge across Islais Creek, extending from Illinois Street on the north side of the Creek, one block east of the existing Levon Hagoop Nishkian drawbridge on Third Street. The bridge would connect the Port's northern container terminal (Pier 80) on the northern bank of Islais Creek with the southern container terminals (Pier 90-92, Pier 94-96, and Backlands) located on the southern bank of the creek. The environmental impacts of the Illinois Street Bridge were analyzed in the Southern Waterfront Supplemental EIR (finalized in February 2001), which concluded that the bridge would mitigate significant traffic congestion impacts that otherwise would be projected to occur at Third Street and Cargo Way. The bridge would provide more efficient vehicle access to the freeways, the Central Waterfront area, and other city destinations to the north via Illinois Street while avoiding adding additional traffic to Third Street. The Port has proposed to develop a fully moveable bridge that would maintain access to the west end of Islais Creek for all types of commercial and recreational vessels and boats. Project design specifications include: an intermodal (i.e., rail or truck/auto alternately) design; freight rail tracks centered on two 12-foot-wide traffic lanes; approximately 500 feet long with 55 feet of horizontal clearance; a new signalized intersections at Amador/Cargo/Illinois, Marin/Illinois, and Cesar Chavez/Illinois streets; and paving of Illinois Street between Marin and Cesar Chavez. The originally projected start and completion dates were July 22nd, 2003, and June 7th, 2004, respectively. However, it is currently understood that the project will be completed in the summer of 2006 as a consequence of budget and scheduling issues. (Sources: http://www.islaiscreek.org/illinoisbridgeallstuff/illinoisbridgesfportupdat_files/illinoisbridgesfportupdate.htm; http://www.islaiscreek.org/illinoisbridgeallstuff/Illinoisstreetfactsheet; http://www.sfexaminer.com/articles/2005/07/27/news/20050727_ne14_bridge.txt).

7.2.3.5.2 Cumulative Impacts Assessment. The Illinois Street Bridge Project is expected to be completed in 2006 prior to the initiation of construction for the proposed TBC converter station and ancillary facilities in the Potrero Point area. As such, potential construction-related cumulative environmental impacts are not anticipated.

7.2.3.6 MUNI Third Street Light Rail Project

7.2.3.6.1 Project Description. The proposed MUNI Third Street Light Rail project is sponsored by the San Francisco Municipal Railway (MUNI), the City of San Francisco, and the San Francisco County Transportation Authority and would consist of two phases. Phase 1 would extend MUNI Metro light rail service south from its current terminal at Fourth and King streets. The line would cross the Fourth Street Bridge and run along Third Street and Bayshore Boulevard, ending at the Bayshore Caltrain Station in Visitacion Valley. Tracks would be constructed primarily in the center of the street to improve safety and reliability and 19 stops would be provided. This phase of the light rail project is expected to open for service in 2006. Phase 2 would extend light rail service north from King Street along Third Street, entering a new Central Subway near Bryant Street, crossing beneath Market Street and running under Geary and Stockton streets to Stockton and Clay streets. Underground subway stations would be located at Moscone Center, Market Street, Union Square, and Clay Street in Chinatown. MUNI and the City are actively pursuing funding for the Central Subway.

7.2.3.6.2 Cumulative Impacts Assessment. The implementation of Phase I of the planned MUNI Third Street Light Rail project may, or may not, coincide with construction of the proposed TBC converter station and ancillary facilities in the Potrero Point area. As such, potential construction-related cumulative environmental impacts could occur (e.g., traffic, noise, visual, etc.), but are uncertain at this time. With implementation of required project-specific mitigation measures for both projects, including traffic control/management plans, no significant cumulative impacts would be expected to occur.

7.3 SUMMARY OF CUMULATIVE IMPACT ANALYSIS FINDINGS

In summary, no significant unavoidable cumulative impacts have been identified for the proposed (or alternative) Trans Bay Cable Project during the construction, operation, or abandonment phases when considered together with the potential cumulative projects/ considerations discussed in this section.

7.4 REFERENCES

City of Pittsburg. 2005. Project Pipeline List. City of Pittsburg, Planning Department. Updated 12/07/2005. (http://www.ci.pittsburg.ca.us/NR/rdonlyres/AAE7C132-7549-4856-B213-325C69052153/0/ProjectPipeline.pdf).

San Francisco Planning Department. 2006. The Pipeline – A Quarterly Report on Proposed Development in the City of San Francisco, 4th Quarter 2005. February.

USACE (U.S. Army Corps of Engineers). 2000. *Waterborne Commerce of the United States, Calendar Year 2000, Part 4–Waterways and Harbors of the Pacific Coast, Alaska and Hawaii.*

8.1 INTRODUCTION

The California Environmental Quality Act (CEQA) requires a discussion of the ways in which a proposed project could be a direct and indirect inducement to growth. The *CEQA Guidelines* (Section 15126.2 [d]) require a lead agency to identify that a project will have growth-inducing impacts if it is directly or indirectly responsible for, or substantially contributes to:

- Fostering economic growth, including expanding the size of local markets, and attracting additional economic activity to the area
- Promoting population growth that may further burden existing community services facilities
- Construction of additional housing
- Job creation for proposed commercial and industrial development projects
- Expansion of urban utilities services into a previously unserved or under-served area
- The increase in the capacity of infrastructure in an area in which the public service currently met demand
- The creation or extension of transportation links
- The removal of major obstacles to growth; examples include the removal of infrastructure limitations, result in a change to a local General Plan and Zoning Ordinance, and removal of regulatory constraints

Typically, the growth-inducing potential of a proposed project would be considered significant if it would foster growth or a concentration of population above what is assumed in local and regional land use plans, or in projections made by regional utilities and transportation planning authorities. Significant growth impacts could also occur if the proposed project would provide infrastructure or service capacity to accommodate growth levels beyond those permitted by local or regional plans and policies.

8.2 IMPACT DISCUSSION

The follow subsections assess the potential growth-inducing impacts of the proposed Trans Bay Cable Project (Project) for each of the considerations listed above in Section 8.1.

8.2.1 Fostering Economic Growth

The proposed Project would not be expected to foster economic growth in the San Francisco Peninsula area (or Pittsburg) because the Project, when operational, would not provide surplus power, but would serve only to provide a reliable source of electrical power to support the economic growth that is already projected by local jurisdictions and regional planners. Similarly, the Project would not be responsible for expanding the size of local markets nor attracting additional economic activity to the area since such demographics are based largely on free market dynamics and service opportunities in the public and private sectors.

8.2.2 Promoting Population Growth

The Project would not contribute to promoting population growth that may further burden existing community services facilities. The Project service area which includes the City and County of San Francisco is, to large degree, a built-out metropolis and suburban area with an intricate community, business, and public services infrastructure. The future of a reliable and adequate power supply to this area is of concern to local jurisdictions for several reasons that are discussed throughout this EIR. As such, a goal of the Project is to ensure an adequate and reliable power supply so that the magnitude of the existing and projected population and community services demographics will continue to be supported. Therefore, over the long term, the Project would have a minimal and less-than-significant impact on population growth and community services.

8.2.3 Construction of Additional Housing

The Project would not be responsible for, nor substantially contribute to, construction of additional housing and would not affect the surrounding environment. As described elsewhere in this section, the construction workforce is minimal in number and would be largely recruited from the existing resident pool in the Greater Bay Area. Similarly, any workforce personnel from outside areas would likely not become resident and, therefore, would not constitute a house-purchasing demographic. Lastly, Project facilities operations do not require onsite personnel and, therefore, would not represent a source of job creation and potential home buyers. As such, the Project would not constitute a factor driving the housing market in the greater Bay Area.

8.2.4 Job Creation

The construction and operation of the Project itself would not affect the employment patterns in the area. The three major components of the Project which include construction of an AC/DC converter station and ancillary facilities in the Pittsburg area, laying of a DC cable in the Bay, and construction of a DC/AC converter station and ancillary facilities in the San Francisco-Potrero area, would require an estimated peak total of about 90 construction workers at any given time over the estimated 27- to 30-month construction period. Half of the peak construction workforce (i.e., 45 workers) would be in the Pittsburg area and the other half in San Francisco. It is anticipated that the majority of the construction personnel would come from the existing labor pool of the greater Bay Area. Some of the construction personnel may commute from outside of the Project area and stay at existing local hotels during construction. There is an adequate supply of hotels and inns in the Project area that could be utilized by the out-of-town personnel. Therefore, no growth in hotel services would be expected to occur. Project facilities would not require onsite personnel and would be operated from a remote location. Facilities security, maintenance, and emergency response services would be contracted to existing businesses in the Greater Bay Area. As such there is no substantial creation of new jobs associated with the Project.

8.2.5 Expansion of Urban Utilities Services

The Project would not be responsible for, nor contribute to, the expansion of urban utilities services into a previously unserved area or an under-served area. As described above, a primary goal of the Project is to ensure an adequate and reliable power supply to the San Francisco Peninsular Area which includes the City and County of San Francisco metropolis and suburban domains. The power provided by the Project would serve the existing and projected levels of demand in the currently serviced area and, in the future term, would not be dedicated to expanding power supply into previously unserved or under-served areas of the San Francisco Peninsular Area.

8.2.6 Increase the Capacity of Infrastructure

The project would not increase the capacity of infrastructure in the San Francisco Peninsular Area above the current and projected levels-of-service. A benefit of the Project is its capacity to supply a new and reliable source of power and potentially facilitate replacement of existing facilities that are obsolete and to be decommissioned. Accordingly, the Project would provide an efficient and reliable long-term solution to power supply issues facing the San Francisco Peninsular Area.

8.2.7 Creation or Extension of Transportation Links

The Project would have no direct affect on the creation or extension of transportation links. Instead, the power supply reliability associated with the Project would support the efficiency and security of the existing and planned transportation links associated with commuter rail, street and highway, and Port facilities as already projected in City, County, and regional planning documents.

8.2.8 Removal of Major Obstacles to Growth

The project would not be responsible for, nor contribute to, the removal of major obstacles to growth. The Project would be constructed and operated according to the land use and zoning regulations of local jurisdictions and would be compatible with their respective general plans. Similarly, the Project would be permitted subject to the existing regulatory setting of federal, state, regional, and municipal jurisdictions, and, therefore, would not result in the removal of regulatory constraints.

8.3 SUMMARY

The City and County of San Francisco area is, and will continue to be, a dynamic population and economic growth area of California. The proposed Project would not cause this growth to occur. Instead, the construction of this Project would be a practical and responsible solution to addressing the power demand needs that exist in the San Francisco Peninsular Area irregardless of this Project being built or not.

9.1 INTRODUCTION

This section discusses unavoidable significant adverse impacts that would be expected to occur if the proposed Trans Bay Cable Project (Project), including alternatives, was implemented. Unavoidable significant adverse impacts are those which cannot be reduced to a less-than-significant level. Approval and implementation of a project that involves unmitigable significant impacts typically requires a Statement of Overriding Considerations by the Lead Agency for CEQA compliance (i.e., City of Pittsburg for this Project). Unavoidable significant adverse impact findings are summarized in the following sections, by proposed converter station site, and alternative converter station site, as applicable.

9.2 PROPOSED PROJECT

9.2.1 San Francisco HWC Converter Station

See Section 4.7, Cultural Resources, for details regarding the nature of buildings addressed in the following impact discussions.

9.2.1.1 Cultural Resources

Impact CUL-2: Disturbance of Historical Architectural Resources. The construction of the converter station would require demolition of historical resources. This action would cause a significant adverse change to these historical resources under CEQA. This is considered a significant impact.

Mitigation Measure CUL-2a: Recording Architectural Resources. Recording would ensure a permanent record of the present appearance and context of the historical resources. Under this mitigation proposal, the Project proponent would ensure that the historical resources to be demolished would be recorded to Historic American Buildings Survey (HABS) and Historic American Engineering Record (HAER) standards prior to any construction activities. The HABS/HAER documentation would be filed with the State Historic Preservation Officer (SHPO), the HABS/HAER collection in the Library of Congress, the University of California Bancroft Library, the San Francisco Landmarks Preservation Advisory Board files at the San Francisco Planning Department, the Foundation for San Francisco's Architectural Heritage (FSFAH), and the San Francisco Public Library.

Although recording eliminates one adverse impact of demolition (the loss of historical information), it does not prevent the physical loss of historically significant resources. Therefore, additional mitigation measures should be developed and could include Mitigation Measures CUL-2b and CUL- 2c:

Mitigation Measure CUL-2b: Architectural Resource Interpretive Display and/or Interpretive Material. The Project proponent would develop a display or interpretive material for public exhibition and dispersal. The display or interpretive material, such as a printed brochure, could be based on the photographs produced in the HABS/HAER documentation, and the historic archival research previously prepared for the resources in and near the Project. This display and/or interpretive material would be provided to the City of San Francisco.

Mitigation Measure CUL-2c: Architectural Resource Salvage Opportunities. After recording and at least 30 days prior to demolition, the interested parties would have the opportunity to salvage architectural elements for re-use or curation. Items selected would be removed in a manner that minimizes damage to those items.

Resulting Level of Significance. Mitigation Measures CUL-2a through 2c are intended to be part of the overall consideration of impacts to historical resources as part of this Project. While implementation of Mitigation Measures CUL-2a through CUL-2c would lessen Project impacts, demolition of historical resources is a significant adverse change that cannot be mitigated to a less-than-significant level. These proposed mitigation options, therefore, will be discussed and refined by the Project proponent and other responsible agencies in conjunction with preparation of a Statement of Overriding Considerations. Mitigation measures will be set forth in the Mitigation Monitoring Reporting Program (MMRP), which will include input from other responsible agencies.

No other unavoidable significant adverse impacts have been identified for the proposed Project.

9.3 PROJECT ALTERNATIVES

9.3.1 San Francisco Mirant Converter Station Alternative

9.3.1.1 Cultural Resources

See Section 4.7, Cultural Resources, for details regarding the nature of buildings addressed in the following impact discussions.

Impact CUL-2: Disturbance of Historical Architectural Resources. The impact findings and discussion, including proposed mitigation measures, presented in Section 9.2.1.1 for the proposed HWC Converter Station also apply to the San Francisco Mirant Converter Station Alternative (all three sites/layouts).

9.3.2 Pittsburg West Tenth Street Converter Station Alternative 2 (N/S)

9.3.2.1 Noise and Vibration

Impact NOISE-2: Construction Sound Levels. The construction sound levels hazard (Impact NOISE-2) described in Section 5.11.3.2.1 applies to the Pittsburg West Tenth Street Converter Station Alternative 2 site. Sound levels from pile driving at the Pittsburg West Tenth Street Alternative 2 site would be 95 dBA L_{max} (90 dBA L_{eq}) at the residences 150 feet south. Although Pittsburg does not restrict sound levels from pile driving, the FTA recommends that hourly sound levels of 90 dBA from pile driving be considered a significant impact at residences (FTA, 1995).

Mitigation Measure NOISE-2: Construction Noise Control Measures. Mitigation Measure NOISE-2 described in Section 5.11.3.2.1 shall be applied to the Pittsburg West Tenth Street Converter Station Alternative 2 site.

Implementation Responsibility: Project proponent/construction contractor

Requirements and Timing: Submit plans and obtain approval from City of Pittsburg Planning Department during Design Review

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. The City of Pittsburg noise ordinance prohibits pile driving between the hours of 10 p.m. and 7 a.m. While implementation of Mitigation Measure NOISE-2 would lessen noise impacts from pile driving at the sensitive receptors (residences) in proximity to this site, this impact cannot be reduced to a less-than-significant level. Accordingly, a Statement of Overriding Considerations would be required for this impact.

9.3.2.2 Visual Resources

Impact VIS-5: Converter Station Domination of View. This impact is similar to Impact VIS-1 described previously for the other converter station sites under consideration. However, given the size and height of the converter station at the West Tenth Street Converter Station Alternative 2 (N/S), the Project would generate a potentially significant impact and more intensive mitigation would be required. While in this circumstance it is not possible to reduce the impact to a less-than-significant level, CEQA does call for identification of mitigation measures which may reduce the adversity of the impact. This design effort would be concerned with the selection of appropriate architectural design and building colors as well as the landscape design in the street yard setback area.

Mitigation Measure VIS 5a: West Tenth Street Converter Station Alternative 2: Street Yard Setback. The Project proponent shall work with the City of Pittsburg to rezone the property to provide a front yard setback of 35 feet and increase the height restriction to 65 feet for all buildings and 80 feet for ancillary structures.

Implementation Responsibility: Project proponent

Requirements and Timing: Comply with setback and height limitations in final design plans and obtain approvals prior to construction

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Mitigation Measure VIS 5b: Street Yard Landscape. The Project proponent shall work with the City of Pittsburg to provide a secure and extensive landscape plan for the street yard along the frontage of West Tenth Street to partially reduce the adverse and significant visual impact of the converter station at this location. Specific elements in this plan include:

- Multiple layers of vegetative screening shall be selected from the City of Pittsburg-approved planting list. This screening shall be generally located to create the visual effect simulated in Photo C, Figure 5.5-2. The intent is to soften and obscure the physical form and mass of the DC/valve hall as seen from residences across the street and travelers along West Tenth Street, not completely screen the structure. Various heights, colors, and textures of vegetation shall be selected and the trees shall be clustered to avoid the effect of a rigid soldier row. The tree selection shall include species which would be expected to reach 45 feet in height within five years.
- The perimeter security fence/wall shall be set back from the rear of the sidewalk by a minimum of 15 feet. Chain link fencing shall not be used. If fencing is selected then it shall be of wrought iron or steel pickets. If a solid wall is preferred, the surface material shall be a split face block or stucco compatible with the residential development across West Tenth Street. No visible barbed wire shall be allowed to meet security requirements.

Implementation Responsibility: Project proponent

Requirements and Timing: All plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Mitigation Measure VIS-5c: Architectural Design and Building Colors. The Project proponent shall work with the City of Pittsburg to design a structure that is compatible in materials with the neighborhood and select colors that will minimize visual impacts with the adjacent community. While this effort will partially reduce the adverse and significant impact of the converter station at this location, the significant impact would remain. Specific elements in this plan shall include:

- Work with the City of Pittsburg architectural review process to select a building design that effectively reduces the street façade to the minimum consistent with the technical requirements of the equipment housed within the structures
- Select building surface materials, such as stucco, that are compatible with the adjacent community
- Select muted light colors that will minimize apparent bulk and height of the DC/valve hall and other structures

Implementation Responsibility: Project proponent

Requirements and Timing: All plans shall be prepared by professionals qualified in the designated field of expertise; plans and revised design shall be submitted prior to final planning approval to ensure that the identified mitigation measure is satisfied

Monitoring Requirements: City of Pittsburg to monitor and ensure compliance

Resulting Level of Significance. Application of Mitigation Measures VIS-5a, 5b, and 5c would help reduce the Impact VIS-5, but would not mitigate the impact to a less-than-significant level. Accordingly, a Statement of Overriding Considerations would be required for this impact.

No other unavoidable significant adverse impacts have been identified for the Project alternatives.

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10.1 INTRODUCTION

This section presents the following items:

- List of EIR Preparers
- List of agencies and organizations that were consulted during preparation of the EIR

10.2 LIST OF EIR PREPARERS

TABLE 10-1
LIST OF EIR PREPARERS

Company/Organization	Name	Key Contributions/Responsibilities
Lamphier-Gregory (Consultant to City of Pittsburg)	Joan Lamphier	CEQA Compliance
URS Corporation	Robert Ray	EIR Project Manager
	Mark Strehlow	Air Quality
	Susan Zielinski	Geologic Resources and Soils
	Ian Austin, PhD.	Water Resources and Quality
	Bill Martin	Terrestrial Biological Resources
	Bill Martin	Marine Biological Resources
	Brian Hatoff	Cultural Resources
	Mark Hale	Cultural Resources
	Kathy Rushmore	Land Use and Recreation
	Sandy Stadtfeld	Commercial Fishing and Marine Transportation
	Sandy Stadtfeld	Traffic and Transportation
	Sheyna Wisdom	Noise and Vibration
	Kathy Rushmore	Public Services and Utilities
	Joe Morgan	Hazardous Materials and Waste Management
	Angela Dombrowski	GIS
	Vivien Arnold	Graphics
	Bonnie Ladd	Graphics
	David Rodrigues	Document Preparation
JRP Historical	Meta Bunse	Cultural Resources (Historical/Built-Environment)
Merriam Planning Associates	Andrew Merriam, AICP	Visual Resources/Aesthetics
Lawler Associates Geoscience	David Lawler	Paleontological Resources
Trans Bay Cable LLC	Samuel Wehn	Project Manager
	David Parquet	Project Director
Siemens	Lindsay Martin	Project Description (Converter Stations)

TABLE 10-1 (CONTINUED)
LIST OF EIR PREPARERS

Company/Organization	Name	Key Contributions/Responsibilities
	Cristen Schimpf	Project Description (Converter Stations)
	Karlheinz Hartmann	Project Description (Converter Stations)
Prysmian	Marco Bacchini	Project Description (AC/DC Cables)
	Massimiliano Livigni	Project Description (AC/DC Cables)
Patch Services	Joe Patch	Project Description/Design
	Ken Horn	Project Description/Design

10.3 LIST OF AGENCIES AND ORGANIZATIONS CONSULTED DURING PREPARATION OF THE EIR

10.3.1 Federal Agencies

- National Oceanic and Atmospheric Administration (NOAA) Fisheries Service
- U.S. Army Corps of Engineers, San Francisco District, Regulatory Branch and Operations and Readiness Division – Dredged Materials Management Office
- U.S. Coast Guard, Marine Safety Office

10.3.2 State Agencies

- California Department of Fish and Game
- California Department of Transportation
- California State Lands Commission
- San Francisco Bay Regional Water Quality Control Board

10.3.3 Regional and Local Agencies

- Bay Area Air Quality Management District
- Bay Area Conservation and Development Commission
- City and County of San Francisco, Planning Department
- City of Hercules
- City of Martinez
- City of Pinole
- City of Pittsburg Planning Department

- City of Richmond
- City of San Rafael
- City of Tiburon
- Contra Costa County
- Marin County
- Port of San Francisco, Planning and Development Division
- Solano County

10.3.4 Organizations

- Bay Area Rapid Transit District
- Burlington Northern and Santa Fe Railroad
- Dow Chemical
- Mirant Delta LLC
- Mirant Potrero LLC
- Natural Resources Defense Council
- Pacific Gas and Electric Company
- Potrero Hills Neighborhood Association
- San Francisco Bar Pilots Association
- San Francisco Baykeepers/Waterkeepers
- Union Pacific Railroad

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°C	Degrees Celsius
°F	Degrees Fahrenheit
µg/kg	Micrograms per kilogram
µm	Microns
µPa	Micropascals
1,2-DCE	1,2-dichloroethene
1,2-DCP	1,2-dichloropropane
AAQS	Ambient Air Quality Standards
AC	Alternating Current
ACHP	Advisory Council on Historic Preservation
ACM	Asbestos-containing material
ACPs	Area Contingency Plans
Action Plan	Revised Action Plan for San Francisco
ADT	Average daily trips
AHPA	Archaeological and Historic Preservation Act
AIS	Automatic Identification System
ANSI	American National Standards Institute
AP	Alquist-Priolo
AQMP	Air Quality Management Plan
AST	Aboveground storage tank
AT&SF	Atchison Topeka and Santa Fe
ATC/PTO	Authority to Construct/Permit to Operate
AWSS	Auxiliary Water Supply System

BAAQMD	Bay Area Air Quality Management District
BACM	Best achievable control measures
BART	Bay Area Rapid Transit
BCDC	Bay Conservation and Development Commission
bgs	Below ground surface
bhp	Brake Horsepower
BMPs	Best Management Practices
BNSF	Burlington Northern Santa Fe
BPTCP	Bay Protection and Toxic Cleanup Program
CAA	Clean Air Act
CAAA	Clean Air Act Amendment
CAISO	California Independent System Operator
CalARP	California Accidental Release Prevention (Program)
CalEPA	California Environmental Protection Agency
Caltrain	Peninsula Commuter Service
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCCFPD	Contra Costa County Fire Protection District
CCCGP	Contra Costa County General Plan
CCCHD	Contra Costa County Health Department
CCCMP	Contra Costa Congestion Management Program
CCR	California Code of Regulations

CCSF	City and County of San Francisco
CCTS	Central California Taxonomic System
CCWD	Contra Costa Water District
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Conservation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CHRIS	California Historical Resource Information System
CIWMA	California Integrated Waste Management Act
CNDDB	California Natural Diversity Data Base
CNPS	California Native Plant Society
CO	Carbon Monoxide
COLREGS	International Rules for Preventing Collision At Sea
CPPD	City of Pittsburg Planning Department
CRHR	California Register of Historic Resources
CRSB	Coast Range-Sierran Block
C/S	Cable Ship
CTR	California Toxics Rule
CUPA	Certified Uniform Program Agency
CZMA	Coastal Zone Management Act
dB	Decibel

dBA	A-weighted sound level
DC	Direct Current
DMMO	Dredged Material Management Office
DNAPL	Dense non-aqueous phase liquid
DP	Dynamic positioning
DPT	Department of Parking and Traffic
DPW	Department of Public Works
DTSC	Department of Toxic Substances Control
EDR	Environmental Data Resources, Inc.
EEA	Environmental Evaluation Application
EFH	Essential Fish Habitat
EHSs	Extremely Hazardous Substances
EMFAC	On-road Motor Vehicle Emissions Models Specific to California
EPA	United States Environmental Protection Agency
EPC	Engineering, procurement, and construction
EPCRA	Emergency Planning and Community Right-to-Know Act
ERL	Effects Range Low
ERM	Effects Range Mean
ESA	Environmental Site Assessment
ESI	Environmental Sensitivity Index
ESL	Environmental Screening Levels
ESU	Evolutionarily Significant Unit
FEMA	Federal Emergency Management Agency

FESA	Federal Endangered Species Act
FSFAH	Foundation for San Francisco's Architectural Heritage
FTA	Federal Transit Administration
GMP	Groundwater Management Plan
H&SC	Health and Safety Code
HABS	Historic American Buildings Survey
HAER	Historic American Engineering Record
HAZnet	Health Action Zone net
HCP	Habitat Conservation Plan
HCWA	Hazardous Waste Control Act
HDD	Horizontal directional drilling
HDPE	High density polyethylene pipe
HMBP	Hazardous Materials Business Plan
HMMP	Hazardous Materials Management Plan
HMUPA	Hazardous Materials Unified Program Agency
HOV	High-Occupancy Vehicle
HUD	United States Department of Housing and Urban Development
HVAC	High-voltage alternating current
HVDC	High-voltage direct current
HWCL	Hazardous Waste Control Law
Hz	Hertz
I-80	Interstate 80
IG	General Industrial

IHA	Incidental Harassment Authorization
IMO	International Maritime Organization
ISO	International Organization for Standardization
ITM	Inland Testing Manual
JARPA	Joint Aquatic Resource Permit Application (process)
KCMIL	1,000 circular mil
km	Kilometer
KOPs	Key Observation Points
kt	Knots
kV	Kilovolt
LBP	Lead-based paint
LCM	Loss circulation materials
L_{dn}	Day-Night Average Noise Level
L_{eq}	Equivalent sound level
L_{max}	Maximum sound level
L_{min}	Minimum sound level
LNAPL	Light non-aqueous phase liquid
LNM	Local Notice to Mariners
LORS	Laws, Ordinances, Regulations and Standards
LOS	Level of service
LTMS	Long-Term Management Strategy
LUST	Leaking Underground Storage Tank
L_w	Sound Power Level

M	Magnitude
mcy	Million cubic yards
mG	Milligauss
mgd	Million gallons per day
m.p.h.	Mile per hour
MEP	Marine Environmental Protection
MFD	Marine Facilities Division
mg/kg	Milligrams per kilogram
MGP	Manufactured gas plant
MHHW	Mean higher high water
M_L	Local Magnitude
MLLW	Mean lower low water
MMPA	Marine Mammal Protection Act of 1972
MMRP	Mitigation Monitoring Reporting Program
MP	Milepost
MSDSs	Material Safety Data Sheets
MSO	Marine Safety Officer/Marine Safety Office
MTL	Mean tide level
MUNI	San Francisco Municipal Railway
MV	Medium Voltage
MVDC	Medium Voltage Direct Current
MW	Megawatt
M_W	Movement Magnitude

NAGRPA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NCCP	Natural Communities Conservation Plan
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Council
NFAP	No Further Action Planned
NFPA	National Fire Prevention Association
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act
nm	Nautical mile
NMFS	National Marine Fisheries Services
NMSA	National Marine Sanctuaries Act
NO_2	Nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOD	Notice of Determination
NOI	Notice of Intent
NOP	Notice of Preparation
NOS	National Ocean Service
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRC	National Response Center
NTR	National Toxics Rule
NWIC	Northwest Information Center

NWPs	Nationwide permits
O_3	Ozone
OA&E	Oakland, Antioch, and Eastern Railway
OCPs	Organochlorine pesticides
OES	Office of Emergency Services
OHWM	Ordinary high water mark
OPA	Oil Pollution Act of 1990
OSHA	Occupational Safety and Health Administration
OSPR	Office of Spill Prevention and Response
OSPRA	Oil Spill Prevention and Response Act
OSROs	Oil Spill Removal Organizations
PAH	Polyaromatic Hydrocarbons
Pb	Lead
PCBs	Polychlorinated biphenyls
PCE	Perchloroethene
PDR	Production, Distribution and Repair
PFMC	Pacific Fisheries Management Council
PG&E	Pacific Gas and Electric Company
PKHFZ	Pittsburg-Kirby Hills Fault Zone
$PM_{2.5}$	Particulate matter less than 2.5 micrometers in diameter
PM_{10}	Particulate matter less than 10 micrometers in diameter
PNA	Polynuclear aromatic hydrocarbons
Ppb	Parts per billion

ppm	Parts per million
POC	Precursor organic compounds
PRC	Public Resources Code
PRG	Preliminary Remediation Goals
PSD	Prevention of Significant Deterioration
PSM	Process Safety Management
PVC	Polyvinyl chloride
Qa	Quaternary alluvial
Qal	Quaternary alluvium
Qb	Quaternary basinal
Qu	Quaternary undifferentiated
RACM	Regulated asbestos-containing material
RC	Reportable quantities
RCRA	Resource Conservation and Recovery Act
RECs	Recognized Environmental Conditions
RFI	Remedial Feasibility Investigation
RMP	Regional Monitoring Program
RMR	Reliability Must-Run
RMS	Root mean-square
RNA	Regulated Navigation Area
ROW	Right-of-Way
RWQCB	Regional Water Quality Control Board
SAP	Sampling and Analysis Program

SARA	Superfund Amendments and Reauthorization Act
SCAQMD	South Coast Air Quality Management District
Sf	Square Foot
SF&SJV	San Francisco and San Joaquin Valley Railway
SFBC	San Francisco Building Code
SFDPH	San Francisco Department of Public Health
SFEC	San Francisco Energy Company
SFEI	San Francisco Estuary Institute
SFEP	San Francisco Estuary Project
SFPD	San Francisco Planning Department
SFPUC	San Francisco Public Utilities Commission
SFRA	San Francisco Redevelopment Administration
SFSSP	San Francisco Stakeholders' Study Group
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SLC	State Lands Commission
SLIC	Spills, Leaks, Investigations, and Cleanup
SMP	Soil Management Plan
SO_2	Sulfur dioxide
SPCC	Spill Prevention, Control, and Countermeasures
SPL	Sound Pressure Level
SPRR	Southern Pacific Railroad
SR 4	State Route 4

STLC	Soluble Threshold Limit Concentration
SUAD	Suitable for unconfined aquatic disposal
SVOCs	Semivolatile organic compounds
SVP	Society of Vertebrate Paleontology
SWMU	Solid waste management unit
SWPPP	Storm Water Pollution and Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant
TBC	Trans Bay Cable
TCE	Trichloroethene
TCLP	Toxicity Characteristic Leaching Procedure
TCPA	Toxic Pits Control Act
TMDL	Total maximum daily load
TPH	Total petroleum hydrocarbons
TPH-d	Total petroleum hydrocarbons as diesel
TPH-g	Total petroleum hydrocarbons as gasoline
TPH-mo	Total petroleum hydrocarbons as motor oil
TPQ	Threshold planning quantities
TQ	Threshold quantities
TSDF	Treatment, storage, and disposal facility
TTLC	Total Threshold Limit Concentration
U.S. 101	U.S. Highway 101
UBC	Uniform Building Code

UCMP	University of California, Berkeley, Museum of Paleontology
UFC	Uniform Fire Code
UPRR	Union Pacific Railroad
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground storage tank
VCP	Voluntary Cleanup Program
VOC	Volatile organic compound
VTM	Vessel Traffic Management
VTS	Vessel Traffic Services
WET	Waste Extraction Test
WGNCEP	Working Group on Northern California Earthquake Potential
yd^3	Cubic yards

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This Appendix presents the detailed project description for the proposed Trans Bay Cable Project, including alternatives.

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A.1 INTRODUCTION

This Appendix to the Draft Environmental Impact Report (EIR) describes the Trans Bay Cable (TBC) Project (Project) proposed by Trans Bay Cable LLC, including alternatives. The Project is a High Voltage Direct Current (HVDC) submarine transmission system planned to transmit 400 megawatts (MW) of electrical power and provide a dedicated connection between a substation in the East Bay in Pittsburg, which is fed by sufficient generating and transmission capacity, and the electrical transmission and distribution facilities in San Francisco. The Project is designed to be a cost-effective, energy-efficient solution addressing San Francisco's need for additional energy, while reducing transmission grid congestion and improving transmission grid reliability and load serving capability.

The proposed Project consists of the following major components:

- Installation of approximately 57 miles of submarine and buried onshore HVDC cable transmitting up to 400 MW of electrical power from Pittsburg to San Francisco
- New 5.4-acre converter station on a 7.5-acre site in Pittsburg, converting alternating current from the grid to direct current
- New 5.6-acre converter station on a 6.8-acre site in San Francisco, to convert the direct current back to alternating current for distribution
- Installation of approximately 5.5 miles of new single circuit, 3-phase 230 kilovolt (kV) AC submarine and buried onshore cable and/or overhead transmission line interconnecting the Pittsburg Converter Station with the existing Pacific Gas and Electric Company (PG&E) Pittsburg Substation
- Installation of approximately 0.3 mile of new double-circuit, 3-phase 115 kV AC underground cable or aboveground line connecting the San Francisco Converter Station with the existing PG&E Potrero Substation

The Project is scheduled to take approximately 27 to 30 months to perform final engineering, manufacturing, construction, start up, and testing to be ready for commercial operation. The construction phase is scheduled to take approximately 20 months, including approximately 4 to 5 months to install the cable systems in the floor of San Francisco Bay and onshore, followed by 5 to 6 months of startup and commissioning activities. The construction phase would be preceded by approximately 3 to 6 months of demolition of existing structures, site preparation, and remediation (as applicable).

Figure A.1-1 shows the overall project and the HVDC and High Voltage Alternating Current (HVAC) submarine cable routes. Figures A.1-2 and A.1-3 show aerial views of the proposed converter station sites and the routing of the AC and DC inter-tie connections in San Francisco and Pittsburg, respectively.

The balance of this Appendix to the EIR is organized as follows:

- A.2 – Proposed Project Location and Setting
- A.3 – Project Component Design
- A.4 – Construction Activities
- A.5 – Operation and Maintenance Procedures
- A.6 – Public Safety
- A.7 – Abandonment Procedures
- A.8 – Alternatives Considered
- A.9 – CAISO-Related Projects
- A.10 – References

A.2 PROPOSED PROJECT LOCATION AND SETTING

A.2.1 Overview

A.2.1.1 Proposed Submarine Cable Route and Study Corridor

The proposed Project would involve construction and operation of approximately 57 miles of HVDC cable of which approximately 56 miles would be buried in the bottom of San Francisco Bay from near Potrero Point in San Francisco, to Pittsburg (Contra Costa County). The cable would be buried underwater and routed from the San Francisco-based converter station into the San Francisco Bay through San Pablo Bay and the Carquinez Strait to Suisun Bay, and New York Slough to a landing point near the Pittsburg Converter Station. Refer to Figure A.1-1 for an overview of the proposed submarine cable route. Map A.2-1 provides additional detail regarding the proposed HVDC and HVAC cable routes, including delineation of a 500-meter-wide study corridor that is centered on the cable route over the majority of its length. Map A.2-1 consists of an index and 10 strip maps with route mileposts (MP) that begin in San Francisco and end in Pittsburg.

A.2.1.2 Proposed Converter Station Locations

The proposed Project involves construction of HVDC converter stations and associated underground AC cable systems to existing PG&E substations in Potrero and Pittsburg. The proposed 6.8-acre converter station site in San Francisco is known as the HWC Site and is located on 23rd Street south of the existing Mirant Power Plant and adjacent to San Francisco Bay. The site is currently developed and occupied by several businesses. Utilization of this site would require demolition of the existing buildings and facilities prior to construction of the proposed converter station. This site may require some level of subsurface contamination remediation prior to construction of the proposed San Francisco Converter Station. The site is currently zoned Heavy Industrial (M-2).

The proposed 7.5-acre converter station site in the City of Pittsburg is known as the Standard Oil site and is located within a developed industrial area with a mix of industrial and former industrial uses. The only structures on the site are 2 abandoned concrete wastewater storage tanks and a small dilapidated building. The remainder of the site was previously occupied by a wastewater treatment facility and then an automobile storage yard. Prior to construction of the proposed converter station the site would be cleared of all structures and stored materials. There is no vegetation on the site except for a few scattered patches of ruderal species (plants that grow in wasteland, trash, or disturbed ground). The relatively flat site, which is surrounded by a berm, contains no waterways or wetlands. The site is zoned IG (General Industrial).

A.2.2 Proposed Submarine Cable Route and Study Corridor

The submarine cable portion of the Project extends from the Potrero Point area in San Francisco to Pittsburg, California (refer to Figure A.1-1). The proposed HVDC cable system between the 2 terminals consists of a high voltage (HV) transmission cable, a separate medium voltage (MV) metallic return cable, and a fiber optic communication cable (refer to Figures A.2-1 and A.2-2).

The cable system would be buried underwater and extend between the San Francisco Converter Station and the Pittsburg Converter Station, with the exception of approximately 0.9 mile of buried onshore cable connecting to the Pittsburg Converter Station and 0.2 mile along the south side of the San Francisco Converter Station. The proposed submarine system cable route travels from San Francisco to Pittsburg within the floor of San Francisco Bay, San Pablo Bay, the Carquinez Strait, Suisun Bay, and New York Slough. The proposed cable route was selected to avoid shipping channels, anchorages, channel maintenance dredging, dredge disposal areas, and other known obstacles.

Electromagnetic devices would be used to detect and locate existing cables and pipelines that cross the proposed cable system path. Table A.2-1 presents a list of currently known utility crossings, and Table A.2-2 lists other known crossings.

In order to confirm the proposed cable system routing in the Bay, guide selection of cable system burying equipment and procedures, and to confirm that the cable system installation along the proposed route would not stir up contaminated sediments (at levels above regulatory thresholds) that may be present along the proposed route, a 2-tier core-sampling program of bay floor sediments would be implemented to complement and confirm existing data and surveys. The first-tier sampling program of bay floor sediments was performed in September 2005. The survey scope and results are presented in Appendix E of this EIR.

TABLE A.2-1
KNOWN UTILITY CROSSINGS[1,2,3]

Cable Route Milepost	Map ID	Utility Description	Owner
13.9–14.4	11, 12	Cable Crossing-Point San Quentin to Castro Point	Pacific Telephone and Telegraph
30.5	10	Fiber Optics Conduit (12-inch)	Level 3 Communications, LLC
31.7	9	Communication Line	Pacific Telephone and Telegraph
31.9	8	Two Submarine Communications Cables	Pacific Telephone and Telegraph
36.1	6	Communications Facilities	American Telephone and Telegraph Communications of California Inc.
37.6–37.8	5	Two Petroleum Pipelines and One Discharge Pipeline	Exxon Corporation-Assigned to Valero Refining Co.
45.2	4	To Be Determined	Shell Oil Co. Multiple reassignments to Chevron USA Inc, Venoco Inc.
49.4	3	Refined Petroleum Product Line (8-inch)	Chevron USA Inc.
49.7	2	CPN Natural Gas Pipeline	Shell Oil co-reassignments – Shell Cal Prod. Inc, Shell Western E&P Inc, Cal Resources LLC. AERA Energy LLC

1 Refer to Map A.2-1 for approximate crossing locations.

2 Source: State Lands Commission lease documentation review conducted in 2005.

3 Note: numerous bay crossings have been identified. The information in this table will be revised and updated, as required, when the need for a crossing consent has been confirmed.

TABLE A.2-2
OTHER KNOWN CROSSINGS[1]

Milepost	Utility Description	Owner
3.1	Oakland Bay Bridge	Caltrans
3.4	Trans Bay (BART) Tube	Bay Area Rapid Transit
13.9	Richmond Bridge	Caltrans
30.8	Carquinez Bridge	Caltrans
37.5	Benicia Bridge	Caltrans

1 Refer to Map A.2-1 for approximate crossing locations.

A.2.3 Proposed Onshore Cable/Electrical Interconnection Routes

A.2.3.1 San Francisco

The proposed onshore route for the HVDC cable system entry into the San Francisco Converter Station from San Francisco Bay would parallel the southern property line of the converter station for approximately 1,000 feet from the bore pit, to enter the DC hall at the proposed converter station site (refer to Figure A.1-2). Refer to section A.4.4.1.5 for more information regarding horizontal directional drilling (HDD).

The double-circuit 115 kV HVAC interconnecting cable system could exit the proposed San Francisco Converter Station to the north approximately 900 feet from the easterly line of Illinois Street, then west along the north side of 23rd Street for 600 feet. The HVAC cable would then turn north in former Michigan Street paralleling the existing PG&E Potrero Substation for approximately 375 feet, where it would enter the substation to interconnect with the PG&E transmission and distribution system. Another proposed route involves keeping the 115 kV HVAC interconnecting cable system on the south side of 23rd Street (on HWC property for a portion of its westward path until it reaches a point roughly adjacent to Mirant Potrero's western boundary). It would then turn north, cross 23rd Street, and proceed north on Mirant property.

A.2.3.2 Pittsburg

The proposed HVAC and HVDC cable system routings would begin at the Pittsburg Converter Station (Standard Oil Site) in Pittsburg, California. Both the HVDC and HVAC cable systems would run approximately 0.3 mile to the northeast to an existing paved access road associated with the Delta Energy Center (south of the Burlington Northern Santa Fe [BNSF] right-of-way [ROW]) (refer to Figure A.1-3 and Map A.2-1, Sheet 10 of 10). This initial section of the cable routes would be installed via HDD (for detailed information on HDD, see Section A.4.4.1.5 of this appendix). The route (buried in conduit) then would parallel the existing paved access road in an easterly direction for a distance of approximately 0.25 mile, and then turn north for approximately 0.5 mile along the Delta Diablo outflow access road ending at a splice box approximately 100 to 500 feet south of New York Slough on Winter Island property. The submarine cable system would be drawn in from the bay side, and joined to the underground cable system in this splice box or transition to aboveground.

To avoid aquatic habitat and protect the cable system at the shore crossing, the proposed cable system would enter the bay floor through casings placed by HDD. The casings would terminate offshore and direct burial in the bay floor would begin at the exit of the casings.

The proposed Pittsburg Converter Station 230 kV HVAC cable system interconnect with the PG&E Pittsburg Substation would exit from the southernmost bay of the 230 kV switchyard, bearing west-northwest for approximately 850 feet, and then on a north-northeast bearing for a distance of 650 feet to casings installed by means of HDD. The casings would terminate offshore. The proposed HVAC cable system would enter New York Slough approximately 500 feet west of Mirant's Pittsburg Power Plant Unit 7.

A.3 PROJECT COMPONENT DESIGN

A.3.1 Overview

The proposed Project is made up of the following primary components:

- Installation of an approximately 57-mile-long new HVDC cable system (approximately 56 miles submarine and approximately 1 mile onshore)
- Construction of 2 new converter stations, 1 in San Francisco and 1 in Pittsburg
- Installation of approximately 0.3 mile of underground (and/or overhead) double-circuit 115 kV AC transmission cable (and/or overhead transmission line) in San Francisco
- Installation of approximately 4.2 miles of new submarine and 1.3 miles of underground/aboveground single-circuit 230 kV HVAC transmission cable/line in Pittsburg
- Construction of a new access road for the proposed Standard Oil Converter Station site in Pittsburg
- Temporary use of 1 or more construction laydown areas on previously disturbed sites in San Francisco and Pittsburg

Table A.3-1 provides a list of major equipment for the proposed Trans Bay Cable Project.

A.3.2 Transmission Systems

All the proposed submarine and underground cable systems have a primary conductor and numerous layers of electrical insulation and other materials to ensure that the cable surface voltage remains at zero, protect the cable against water infiltration, and provide physical protection against breakage of the cable.

A.3.2.1 HVDC Transmission Cable

The power transmission capacity of the proposed Project is 400 MW. The proposed HVDC transmission cable system between the San Francisco and Pittsburg converter stations will consist of 1- 400 kV HVDC transmission cable, 1- 12 kV MVDC metallic return cable, and a fiber optic communication cable to be laid in a bundle. The transmission cable is estimated to be 4.5 inches in diameter and the return cable is estimated to be 3.5 inches in diameter. The combined cable system bundle is estimated to be 10 inches in diameter. A cross-sectional diagram of the proposed HVDC cable system bundle is presented on Figure A.2-2.

TABLE A.3-1
SUMMARY OF PROPOSED PROJECT COMPONENTS AND MAJOR EQUIPMENT

Submarine Cable System (HVDC, MVDC, and Fiber Optic)

- HVDC voltage: 400 kilovolt (kV)
- HVDC conductor: single-circuit, 2,467 kcmil (1,000 circular mil), copper conductor; outer diameter: 114 mm (4.5 inches)
- MVDC return voltage: 12 kV
- MVDC conductor: single-circuit, 2,171 kcmil copper; outer diameter: 86 mm (3.4 inches)
- Fiber optic: 1-inch diameter for communication

HVDC Underground Cable (Onshore)

- HVDC voltage: 400 kV
- HVDC conductor: single-circuit, 2,467 kmil copper conductor; outer diameter: 102 mm (4.0-inch diameter)

MVDC Underground Cable/Fiber Optic Bundle (Onshore)

- Voltage: 12 kV
- Conductor: single-circuit, 2,171 kcmil, copper conductor; outer diameter: 86 mm (3.4 inches)
- Fiber optic: 1-inch diameter for communication

115 kV AC Underground Transmission Cable (Onshore; San Francisco Only)

- Voltage: 115 kV
- Conductors: double-circuit, 2,368 kcmil, Milliken copper conductor, XLPE; outer diameter: 91 mm (3.6 inches), each circuit consisting of 3 cable phases (6 cables total)
- Conduit type: PE or PVC
- Minimum depth: 30 inches to top of duct
- Splice vaults: reinforced concrete, 30 feet long x 20 feet wide x 10 feet deep (outside dimensions); 6 splices per vault
- Total number of splice vaults: 0 to 1 (depending on final design)

115 kV AC Overhead Transmission Line (Onshore Alternative to Underground; San Francisco Only)

- Voltage: 115 kV
- Conductors: double-circuit, 715.5 kcmil ACSR each circuit with 3 phases; conductor diameter: 21 mm (0.84 inches)
- Structure type: self-supporting tubular steel poles
- Structure height: approximately 75 feet (exclusive of any EMF reduction measures that may be required)
- Approximate distance between structures: 350 to 700 feet

230 kV AC Submarine Transmission Cable (Applies to Proposed Standard Oil Converter Station Site Only)

- Voltage: 230 kV
- Conductors: single-circuit, 2,763 kcmil, copper conductor, XLPE; outer diameter: 125 mm (4.9 inches), the circuit consisting of 3 cable phases (3 cables total)

TABLE A.3-1 (CONTINUED)
SUMMARY OF PROPOSED PROJECT COMPONENTS
AND MAJOR EQUIPMENT

230 kV AC Underground Transmission Cable (Onshore; Pittsburg Only)

- Voltage: 230 kV
- Conductors: single-circuit, 2,371 kcmil, copper conductor, XLPE; outer diameter: 112 mm (4.4 inches), the circuit comprising 3 cable phases (3 cables total)
- Cable directly buried or installed in conduit (typically PVC or PE)
- Minimum depth: 36 inches to top of conduit
- Splice vaults: reinforced concrete, 30 feet long x 10 feet wide x 10 feet deep (outside dimensions); 3 splices per vault
- Total number of splice vaults: 0 to 3 (depending on final design)

230 kV AC Overhead Transmission Line (Applies to Standard Oil Converter Station Site Only; Pittsburg)

- Voltage: 230 kV
- Conductors: single-circuit, 954 kcmil ACSS each circuit with 3 phases; conductor diameter: 30 mm (1.196 inches)
- Structure type: self-supporting tubular steel poles
- Structure height: approximately 75 feet (exclusive of any EMF reduction measures that may be required)
- Approximate distance between structures: 700 to 1,500 feet

Converter Stations (Common to Both Stations)

- Control building: 64 feet tall, 4,550 square feet
- Valve hall: 9,750 square feet
- DC hall: 7,500 square feet
- AC switchyard: high voltage AC circuit breakers, horizontal- or center-break line disconnect switch, vertical-break feeder disconnect switch
- AC filters, capacitor banks: 3 banks – additional filtering or reactive power demand may be required as determined by PG&E Facilities Impact Study.
- Converter transformers: oil-insulated
- DC smoothing reactor: air-insulated
- Emergency diesel generator: 900 kW rated output (1,350 hp driver)
- Two diesel-driven fire pumps: 1,500 gpm each (268 hp drivers)

Note: The above data may vary based on final engineering.

A.3.2.2 AC Transmission Cable

The proposed 115 kV and 230 kV AC transmission cables consist of an inner copper conductor, surrounded with XLPE insulation. The 230 kV and 115 kV underground cables have aluminum or lead alloy sheaths. The 230 kV submarine cable has a copper wire armor.

A.3.3 Fiber Optic Communications Cable

A fiber optic communications cable will be installed to ensure reliable communications and control between the San Francisco and Pittsburg converter stations. The Project proposes to bundle an armored, multi-strand fiber optic cable with the HVDC and MVDC cables in a single installation (refer to Figure A.2-2).

A.3.4 HVDC Converter Stations

The 2 proposed converter stations (San Francisco and Pittsburg) consist of various key components with multiple functions associated with the conversion of electrical current between HVDC and HVAC.

A.3.4.1 San Francisco Converter Station

The proposed San Francisco Converter Station would occupy approximately 5.6 acres of a 6.8-acre site at the HWC property site on 23rd Street, located between the shore of the Bay and Illinois Street, north of 24th Street. The existing buildings on the site are considered to be potentially eligible for listing on the National Register of Historic Places; the existing buildings on the site (refer to Figure A.3-1) would need to be removed in order for the proposed San Francisco Converter Station to be constructed.

The proposed valve hall would be approximately 64 feet high with an adjoining DC hall and a control building occupying approximately 23,000 square feet. Transformers, AC and DC switchgear, AC filters and a closed loop valve cooling system would occupy the balance of the site. A perimeter barrier would surround the site in order to prevent unauthorized access. The proposed HWC Converter Station layout is shown on Figure A.3-2 and Figure A.3-3 presents an elevation view of the proposed HWC Converter Station.

Photosimulations of the proposed HWC Converter Station are shown from 2 different viewing locations on Figures A.3-4 and A.3-5.

The buildings would be designed to blend in with surroundings and to complement existing architecture of the area.

A.3.4.2 Pittsburg Converter Station

The proposed Pittsburg Converter Station at the location referred to as the Standard Oil site would occupy an approximately 7.5-acre site. Utilization of this site would require the existing structures (e.g., abandoned wastewater storage tanks, small dilapidated building, and the surrounding berm) be removed (refer to Figure A.3-6).

Proposed structures are the same as described in Section A.3.4.1 of this Appendix for the proposed San Francisco Converter Station. The proposed Pittsburg Converter Station layout is shown on Figure A.3-7, and Figure A.3-8 presents an elevation view of the proposed Standard Oil Converter Station.

A photosimulation of the proposed Pittsburg Converter Station from the Pittsburg-Antioch Highway is presented on Figure A.3-9.

The buildings would be designed to blend in with surroundings and to complement existing architecture of the area.

A.3.5 HVAC Interconnections to PG&E Switchyards

The proposed Project is designed to deliver electric power from the PG&E Pittsburg substation to the PG&E Potrero substation. The existing PG&E Pittsburg Substation interconnects with a number of other substations in Northern California. It is also fed by several nearby existing power plant facilities in Contra Costa County capable of producing over 3,000 MW. The existing PG&E Potrero Substation is at the northern end of PG&E's transmission system on the San Francisco Peninsula.

The proposed locations of the San Francisco and Pittsburg Converter Stations were chosen to fit in with surrounding land uses, provide direct land-to-sea cable access and minimize the length of AC transmission inter-ties to the PG&E substations. The interconnection of the Project to the PG&E substations at Potrero and Pittsburg does not increase the land area of the substations, and does not increase the voltage of the substations above the voltage for which those substations were previously rated. No permit to construct is required for the substation work or the interconnections under CPUC General Order No. 131-D, Section III.

A.3.5.1 San Francisco

The proposed HVAC interconnection in San Francisco consists of a 3-phase, double-circuit 115 kV underground or overhead transmission line that would deliver AC power from the proposed San Francisco Converter Station to the existing PG&E Potrero Substation.

A.3.5.2 Pittsburg

The proposed HVAC interconnection in Pittsburg consists of a 3-phase, single-circuit 230kV submarine and buried onshore transmission cable that would deliver AC power from the PG&E Pittsburg Substation to the Pittsburg Converter Station.

A.3.6 Electromagnetic Fields (EMF)

The following information indicates that no established electric or magnetic field standards would be exceeded by the Project. Refer to Appendix K for further information regarding EMF.

A.3.6.1 Transmission Lines

A.3.6.1.1 Submarine Transmission Cable. External electric fields for both HVDC and HVAC submarine cable systems would be practically absent due to their shielded design. The electric field is confined within the insulation. The cable shields (metallic sheath and armor) would be directly grounded at both ends. Continuous grounding along the entire length of the cable would be achieved due to direct contact with water. Therefore, the cable would be at zero potential with respect to the surrounding earth.

The HVDC and MVDC cables to be buried in the floor of the bay and for short onshore sections in San Francisco and Pittsburg would develop low-intensity, static magnetic fields approximately equal to the earth's natural magnetic fields. The magnetic fields of the main and return cables would be substantially cancelled due to the fact that the 2 cables would be bundled closely together. The current flowing in the 2 cables would be equal but flow in opposite directions. As a result, the total magnetic field on the bay floor would be within or near background levels. Figure A.3-10 depicts the predicted magnetic field along a profile crossing the 400 kV HVDC monopole system laid at a depth of approximately 5 feet (1.5 meters) beneath the bottom of the bay.

A.3.6.1.2 Underground AC Transmission Cable. External electric fields for the HVAC cable system would be zero due to their shielded design. The proposed configuration for the buried double-circuit 115 kV HVAC cable system (in pre-installed conduit) interconnecting the San Francisco Converter Station with the Potrero substation is shown on Figure A.3-11. An alternate configuration for the buried double-circuit 115 kV HVAC cable system (in duct bank) is shown on Figure A.3-12. The graph on Figure A.3-13 shows typical magnetic field levels along a profile crossing the 115 kV HVAC cable system as configured on Figure A.3-11 and Figure A.3-14 shows typical magnetic field levels along a profile crossing the 115 kV HVAC cable system as configured on Figure A.3-12.

Figure A.3-15 shows the trefoil arrangement for the single-circuit 230 kV HVAC route at Pittsburg, and Figure A.3-16 shows the typical magnetic field values at 3 heights above ground level along a profile that crosses perpendicular to the cable system. The proposed configuration for the buried single-circuit 230 kV HVAC, 400 kV HVDC, and MVDC is shown on Figure A.3-17. The external magnetic fields resulting from this configuration are shown on Figures A.3-18, A.3-19, and A.3-20.

A.3.6.1.3 Overhead AC Transmission Line Option. The proposed Project includes a buried HVAC cable system between the converter stations and the PG&E substations. Another option under consideration in San Francisco would be to employ an overhead transmission line. The proposed configuration for the double-circuit 115 kV HVAC overhead transmission line option for interconnecting the San Francisco Converter Station with the PG&E Potrero Substation is shown on Figure A.3-21. This is an alternate configuration if the underground configuration is not used. Typical electric field levels for aboveground 115 kV transmission lines are 1.0 kV/m under the transmission towers, 0.5 kV/m at 50 feet, and 0.07 kV/m at 100 feet (EMF-Link Information, Ventures, Inc, 1995). Typical magnetic field levels for aboveground 115 kV transmission lines are 29.7 milligauss (mG) under the transmission towers, 6.5 mG at 50 feet, and 1.7 mG at 100 feet.

The proposed configuration for the single-circuit 230 kV HVAC overhead transmission line that applies to a portion of the proposed cable route between the Standard Oil Converter Station site and New York Slough is shown on Figure A.3-22. Typical electric field levels for aboveground 230 kV transmission lines are 2.0 kV/m under the transmission tower, 1.5 kV/m at 50 feet, and 0.3 kV/m at 100 feet (EMF-Link Information Ventures, Inc., 1995). Typical magnetic field levels for aboveground 230 kV transmission lines are 57.5 mG under the transmission towers, 19.5 mG at 50 feet, and 7.1 mG at 100 feet.

A.3.6.2 Converter Stations

Currently, final design details are unavailable for the converter stations and the AC inter-ties to PG&E substations. However, preliminary estimates of electric and magnetic field levels, based on conceptual design, have been performed. The preliminary estimates indicate the AC and DC electric and magnetic fields are expected to be within established engineering standards.

The DC cable would enter the converter stations and end at a cable termination within the DC hall. The high-voltage conductor would be routed through a disconnect switch, current and voltage metering, a large smoothing reactor, and then on to the converter. Sufficient isolation of the high-voltage conductor would be maintained using post insulators. The spacing between conductors would result in electric and magnetic fields in some areas within the converter stations.

The proposed DC cable terminations and equipment are situated well within the proposed converter station facilities and all of the aforementioned equipment would be installed inside a building. Electric fields would be shielded by the building enclosure, and the magnetic fields would be reduced further because the buildings would be made of steel.

In the converter station AC filter area, lines run between the busbar and converter transformers, along with the interconnections to 3 AC filter banks, a shunt reactor and the underground inter-ties to the PG&E substations. Electric fields would occur beneath these conductors. Electric fields at the converter station fence lines would be negligible.

Preliminary estimates for the proposed San Francisco HWC Converter Station indicate the magnetic field along the fence line typically would be below 200 mG, with peak values along a relatively small portion of the southern fence line less than 300 mG (without consideration for attenuation by fencing). This southern fence line area is adjacent to the water and would not be accessible to the public. Electric fields at a distance of 1 foot from the fence line are estimated to be less than 1 kV/m, assuming a fence height of at least 13 feet (Siemens Preliminary EMF Estimation Potrero Converter Station 23 Nov 2005 [2005a]).

Preliminary estimates for the Pittsburg Standard Oil Converter Station indicate that the magnetic field along the fence line typically would be below 100 mG (without consideration for attenuation by fencing). Electric fields at a distance of 1 foot from the fence line are estimated to typically be less than 2 kV/m, assuming a fence height of at least 4.6 feet (Siemens Preliminary EMF Estimation Pittsburg Converter Station 23 Nov 2005 [2005b]).

A.3.6.2.1 Radio Interference. Corona effects would be limited to the air-insulated parts of the AC switchgear and the overhead line. The use of shielded, buried 230 kV and 115 kV AC cable would eliminate corona and field effects and thus radio interference related to these cables.

Radio frequency measurements taken near existing Siemens-designed HVDC converter stations show no disturbance to any radio, broadcast, or communication services. Measurements have shown, in all cases, that the radio frequency interference from the converter stations is reduced to a level so as to eliminate disturbances to such services. In most cases, the radio frequency levels are so low they cannot be distinguished from ambient levels.

A.3.6.2.2 Telephone Interference. The AC harmonic filters will be designed to limit the contribution to harmonic distortion in the PG&E AC grid to levels that would not influence the local telephone systems.

A.3.7 Audible Noise

The converter stations would be designed to conform to local ordinances, rules, and standards for the City and County of San Francisco and the City of Pittsburg. In addition, once the stations were operating, noise levels would be measured to ensure design goals were met. Major sources of noise from the converter stations include transformers, filters, HVAC units, circuit breakers, and the emergency diesel generator. Preliminary Audible Noise Studies have been performed and the predicted sound levels during operation are presented in Appendix H. Section 4.11 (Noise and Vibration) of this EIR presents a noise impact assessment for the proposed project and alternatives. Final measures for compliance with applicable regulations would be determined during detailed design.

A.4 CONSTRUCTION ACTIVITIES

The engineering, procurement, and construction (EPC) activities for the proposed Project are expected to be 27 to 30 months in duration. The onsite construction phase of the Project would require approximately 20 months, preceded by 3 to 6 months for demolition of existing onshore structures and site preparation, and followed by 5 to 6 months of startup and commissioning. The San Francisco and Pittsburg converter stations would be constructed concurrently. Installation of the cable systems between San Francisco and Pittsburg would be expected to require about 4 to 5 months. The schedule would begin when a Notice to Proceed was issued to the EPC Contractor, and would be completed when the facility was commercially operational. Construction is currently planned to begin in 2007.

The results of the final engineering design work have the potential to influence construction activities. The final design of the HVDC cable system including operational characteristics would be defined during detailed system studies. All necessary studies to confirm the appropriate performance requirements and ratings of all the equipment would be performed. During the detailed engineering phase all available data would be reviewed and analyzed and incorporated into the final Project design and the issued construction documents. Final engineering activities would include:

- Cable corridor survey analysis (bathymetry, morphology, etc.)
- Soils survey/laboratory test analysis
- Shore approach areas considerations (accessibility, cable floating, landing operations, etc.)

The existing data would be examined for accuracy, completeness, and applicability to the required design, and engineered for the installation. This work would also consider the cable burial recommendations and existing utility crossing protection plans. Further, the analysis would include consideration and assessment of critical areas, recommended solutions, laying directions, instructions to control tensions during laying, and any other data required to ensure successful installation of the submarine HVDC cable.

Construction activities would include building the converter stations, installation and connection of HVAC and HVDC transmission systems, substation interconnections, and start-up. Sequential construction activities would include demolition of existing facilities, grading and site preparation, foundation construction, erection of major equipment and structures, installation of electrical systems and control systems, and start-up/testing.

A.4.1 Planning, Engineering, Procurement, and Construction Management

Construction activities would be limited to the worksite dimensions depicted on the site layouts presented in Sections A.2 and A.3. These drawings include the location and boundaries of the access routes and associated construction laydown and parking areas. Temporary construction laydown and parking areas would be located in the temporary construction easements. The boundaries of all work areas would be identified with lath, flagging or other temporary marker/barrier.

The general sequence of construction activities would proceed as follows:

- Construction mobilization, commencing after the start of final engineering when sufficient design had been completed and necessary plan approvals received
- Site preparation and construction of temporary facilities, including construction of the laydown area and parking lots, office complex, and storm water ponds to collect site runoff
- Demolition of existing structures and site remediation, as applicable
- Installation of underground systems
- Construction of concrete foundations
- Installation, interconnection, and testing of aboveground systems
- Installation, interconnection, and testing of submarine systems
- Installation, interconnection, and testing of instrumentation and control devices and control systems

Construction would conclude with start-up and testing activities to ensure reliable operation.

Each converter station would receive a total of six oversized loads (four transformers and two smoothing reactors), beginning in month 12 of the project schedule (see Table A.4-4). The transformers would each be approximately 31.3 feet x 12.9 feet x 16.5 feet, weighing approximately 192 tons. The smoothing reactors would be approximately 12.9 feet x 16.5 feet. Each oversized item detailed above is expected to be loaded on a single trailer.

The proposed Project schedule, estimated construction workforce, construction equipment requirements, construction truck deliveries, and estimated land disturbance during construction are described in the following sections and itemized in Tables A.4-1 through A.4-5.

TABLE A.4-1
ESTIMATED PROJECT SCHEDULE

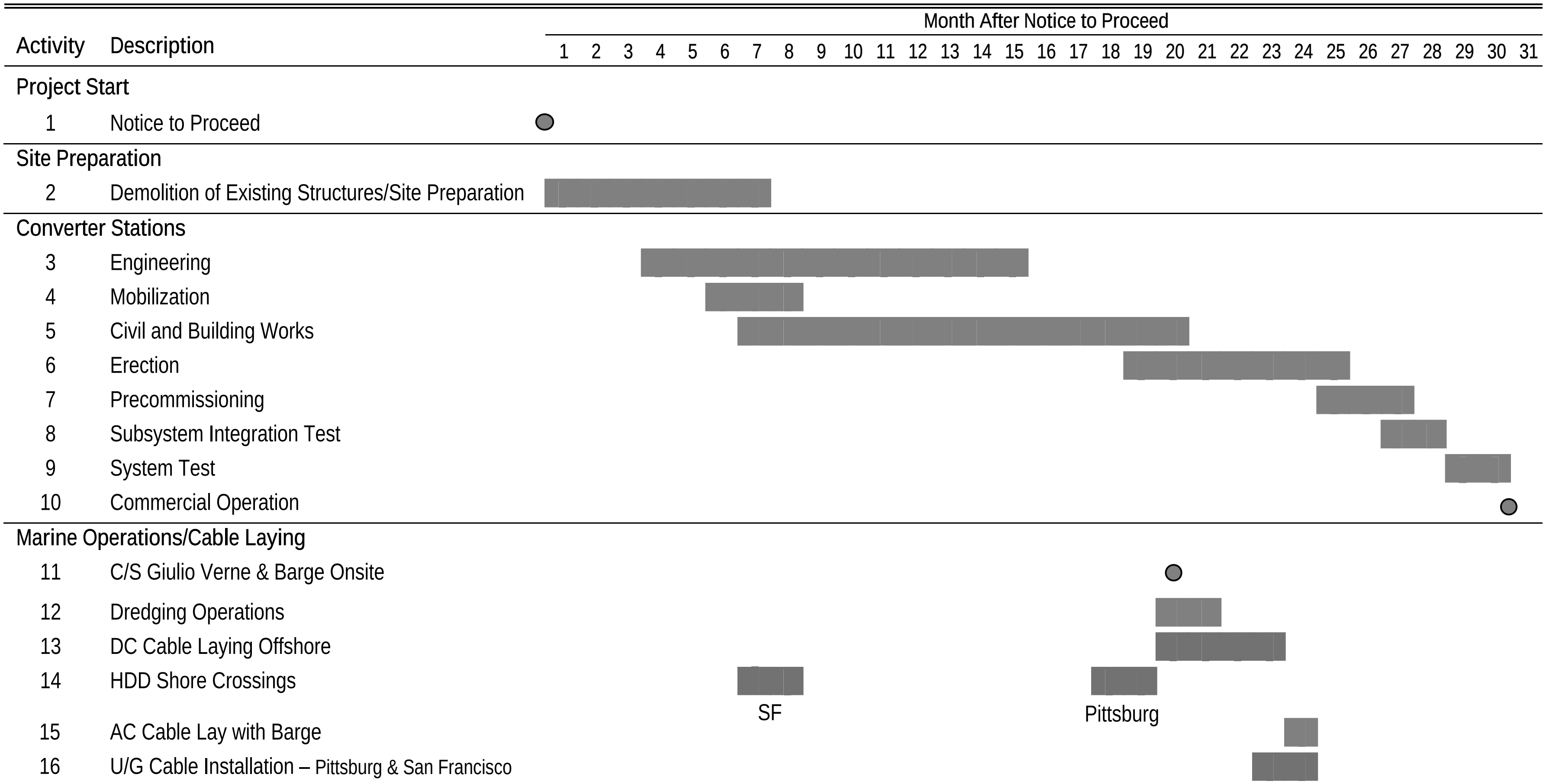

TABLE A.4-2
ESTIMATED CONSTRUCTION WORKFORCE
WORKERS PER MONTH

	Months After Notice To Proceed																														Total Worker Months
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
San Francisco Converter Station	16	27	27	20	12	9	11	15	21	31	32	45	37	37	45	45	45	45	45	36	27	15	11	7	7	6	6	3	3	0	686
Pittsburg Converter Station	0	0	0	14	16	7	10	15	21	29	32	45	37	39	44	45	45	45	45	36	27	15	11	7	7	6	6	3	3	0	610
San Francisco and Pittsburg Grand Totals	16	27	27	34	28	16	21	30	42	60	64	90	74	76	89	90	90	90	90	72	54	30	22	14	14	12	12	6	6	0	1,296

TABLE A.4-3
CONSTRUCTION EQUIPMENT UTILIZATION

Construction Equipment	HP	Months After Notice to Proceed (Pieces per Month)																														Estimated Total Piece Months	Estimated Total Hours W/ Utilization
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
San Francisco Converter Station																																	
Air Compressors - 300 cfm**	90							1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1		37	1,628
Backhoe***	175	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	1	1								1	1					27	2,200
Boom Truck***	220									1	1	1	1	1	1	1	1	1	1	1	1	1	1									14	1,232
Cranes - 230 Ton***	350											1	1																			2	176
Cranes - 150 Ton***	290										1		1	1																		3	264
Cranes - 15 Ton***	130	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1									20	1,760
Crane -Truck - 60 Ton***	150												1	1	1	1																4	352
Dozers – D8***	300	1	1	1	1	1	1	1	1																							8	704
Excavator - Loader***	195	2	2	2	2	1	1	1	1	1	1	1	1	1	1																	18	1,584
Excavator - Motor Grader***	125							1	1	1																						3	264
Forklift - CAT V200***	50	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1														17	1,496
HDD Rig – Cat 3412***	550							1	1																							2	176
Manlifts - 60 foot***	50													2	2	2	2	2	2	2												14	1,232
Portable Plate Compactors**	10								4	4	4	4	4	4	4	4																32	1,408
Vibratory Roller Compactors**	125						1	1	1	1											1	1										6	264
Pile Driving Equipment***	300								1	2	1	1																				5	440
Tractor for 40 Foot Float***	275								1	1	1	1	2	2	3	3	3	3	3	2	1											26	2,288
Trucks - Tandem Dump*	250	3	10	10	10	10	2	2	10	10	10	5																				82	1,443
Trucks - Concrete Mixing*	300						6	8	8	6	4						2	2														36	634

TABLE A.4-3 (CONTINUED)
CONSTRUCTION EQUIPMENT UTILIZATION

		Months After Notice to Proceed (Pieces per Month)																															
Construction Equipment	HP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Estimated Total Piece Months	Estimated Total Hours W/ Utilization
Trucks - Water***	225						1	1	1																							3	264
Trucks - 2 Ton***	225	2	2	2	2	1		1	1	1	1	1																				14	1,232
Trucks - Pickup***	175	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2						48	4,224
Trucks - Winch 100 Ton**	200													1	1	1	1	1	1													6	264
Truck - Lube Oil*	350	1	1	1	1	1	1	1	1	1	1		1		1		1		1		1	1										16	282
Welding Machines - Portable***	50	1	2	2	1			2	2	2	2	2	2	2	1	1	1	1	1	1	1	1										28	2,464
San Francisco Total		16	24	24	23	18	17	27	41	38	34	24	21	22	22	20	18	17	14	11	10	9	6	3	3	4	2	1	1	1	0	471	28,450
Pittsburg Converter Station																																	
Air Compressors - 300 cfm**	90					1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1	1				37	1,628
Backhoe***	175				1	1	1	1	1	1	1	1	1	1											1	1	1					13	1,144
Boom Truck***	220									1	1	1	1	1	1	1	1	1	1	1	1	1										13	1,144
Cranes - 230 Ton***	340											1	1																			2	176
Cranes - 150 Ton***	290										1			1	1																	3	264
Cranes - 15 Ton***	130				1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1												16	1,408
Crane -Truck - 60 Ton***	150												1	1	1	1																4	352
Dozers – D8***	300					1	1		1	1																						4	352
Excavator - Loader***	195				1	1		1	1	1																						5	440
Excavator - Motor Grader***	215							1	1	1	1																					4	352
Forklift - CAT V200***	50								1	1	1	1	1	1	1	1	1	1														10	880
HDD Rig-Cat 3412***	550																		1	1												2	176

TABLE A.4-3 (CONTINUED)
CONSTRUCTION EQUIPMENT UTILIZATION

Construction Equipment	HP	Months After Notice to Proceed (Pieces per Month)																														Estimated Total Piece Months	Estimated Total Hours W/ Utilization
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
Manlifts - 60 foot***	50													2	2	2	2	2	2	2												14	1,232
Portable Plate Compactors**	10								4	4	4	4	4	4	4	4																32	1,408
Vibratory Roller Compactors**	125							1	1												1	1										4	176
Pile Driving Equipment***	300								1	1	1																					3	264
Tractor for 40 Foot Float***	275								1	1	1	1	2	2	3	3	3	3	3	3	2	1										29	2,552
Trucks - Tandem Dump*	250					2	3		1	1																						7	123
Trucks – Concrete Mixing*	300								6	8	8	6	4				2	2														36	634
Trucks - 2 Ton***	225					2	1	1	1	1	1	1																				8	704
Trucks - Pickup***	175					2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2						42	3,696
Trucks - Winch 100 Ton**	200													1	1	1	1	1														5	220
Truck - Lube Oil*	350				1	1	1	1	1	1	1	1		1		1		1		1		1										13	229
Welding Machines - Portable***	70							2	2	2	2	2	2	2	1	1	1	1	1	1	1	1										22	1,936
Pittsburg Total		0	0	0	4	12	11	12	27	30	28	24	22	22	20	20	16	17	13	14	9	9	4	3	4	4	2	1	0	0	0	328	21,490
Marine Operations																																	
Cable Ship Giulio Verne****	2,268																						4	4								8	3,465
Cable Barge***	6,000																				1	1			1							3	1,188
Dredge***	6,000																				2											2	176

Notes: Equipment hours are based on 176 hours per month except for cable ship and cable barge, which equal 720 hours per month.
Equipment utilization is assigned as follows: * = 10%; ** = 25%; *** = 50%; **** = 100%.
Cable ship and cable barge Estimated Total Usage include Capacity Factors of 60% and 55%, respectively. See Air Quality Appendix D for more discussion.

TABLE A.4-4
CONSTRUCTION TRUCK DELIVERIES OF EQUIPMENT AND MATERIALS

	Months After Notice to Proceed																														
Construction Deliveries	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Total
San Francisco Converter Station																															
Contractor Mobilization					40	10	15																								65
Demolition Haul & Equipment	40	75	75	75	40	25	25	18																							373
Electrical Bulks													3	6	6	3	3	2													23
Reinforcing Steel									5	8	8	10	5	3																	39
Excavation for Structures							50	100	150	200	200	100	50	50																	900
Structural Fill/Stone								150	200	150	150	100	10	10	5							30	25	20							850
Electrical Equipment												75	75	75	75	25	25														350
Concrete											44	44	44	44	44	44	11	11		11											297
Mechanical Equipment												11	11	11	11	11	11	11	5												82
Piping/Hangers & Valves										11	11	11	11	11	5																60
Structural Steel										6	11	11	11	5																	44
Building Steel Framing										3	10	15	15	5																	48
Building Roofing and Siding											11	11	11																		33
Construction Consumables										15	22	22	22	22	22	22	15	10	10	7	6	6	5	5	3	3	3	3	3		226
Contractor Demobilization																												10	10	5	25
Construction Equipment							5	5	5	5	5	3	2													5	5	3	3		46
Directional Drilling Equipment							10	10																							20
Office Supplies/Miscellaneous									3	5	5	5	5	5	5	5	5	5	5	5	5	3	3	3							72
Piling							8	10	8																						26
San Francisco Total	40	75	75	75	80	35	113	293	371	403	477	418	275	247	173	110	70	39	20	23	11	39	33	28	3	8	8	16	16	5	3,579
Pittsburg Converter Station																															
Contractor Mobilization						10	15																								25

TABLE A.4-4 (CONTINUED)
CONSTRUCTION TRUCK DELIVERIES OF EQUIPMENT AND MATERIALS

Construction Deliveries	Months After Notice to Proceed																														Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Demolition Haul & Equipment				8	10	5																									23
Electrical Bulks													3	6	6																15
Reinforcing Steel									5	8	8	10	5	3																	39
Excavation for Structures							50	100	150	200	200	100	50	50																	900
Structural Fill/Stone										15	25	25	5	5	3							30	25	20							153
Electrical Equipment												75	75	75	75	25	25														350
Concrete											44	44	44	44	44	44	11	11		11											297
Mechanical Equipment												11	11	11	11	11	11	11	5												82
Piping/Hangers & Valves										11	11	11	11	11	5																60
Structural Steel										6	11	11	11	5																	44
Building Steel Framing										3	16	16	16	3																	54
Building Roofing and Siding											11	11	11																		33
Construction Consumables										15	22	22	22	22	22	22	17	17	17	17	11	11									237
Contractor Demobilization																												10	10	5	25
Construction Equipment										5	11	17	17	17																	67
Directional Drilling Equipment																		**10**	**10**												20
Office Supplies/Miscellaneous									3	5	5	5	5	5	5	5	5	5	5	5	5	3	3	3							72
Piling							8	10	8																						26
Pittsburg Total	0	0	0	8	10	15	73	110	166	268	364	358	286	257	171	107	69	54	37	33	16	44	28	23	0	0	0	10	10	5	2,522
San Francisco and Pittsburg Grand Total	40	75	75	83	90	50	186	403	537	671	841	776	561	504	344	217	139	93	57	56	27	83	61	51	3	8	8	26	26	10	6101

Note: All trips are round trips.

TABLE A.4-5
ESTIMATED LAND DISTURBANCE

Project Component Item	Unit Area: Construction	Unit Area: Operations	Proposed Length	Width of Disturbed Area
San Francisco Converter Station				
Site Boundary	5.6 Acres	5.6 Acres	N/A	N/A
Offsite Construction Laydown Used	7 Acres	N/A	N/A	N/A
Pittsburg Converter Station				
Site Boundary	7.5 Acres[1]	7.5 Acres[1]	N/A	N/A
Offsite Construction Laydown Used	7 Acres	N/A	N/A	N/A
Proposed 400 kV Submarine Cable System				
Submarine Cable	136 Acres	N/A	56 Miles	20 Feet[2]
Dredging	10 Acres	N/A	1,000 Feet	400 Feet
Proposed 400 kV HVDC and 12 kV Underground Cable (San Francisco and Pittsburg Combined)				
Underground[3]	6.1 Acres	N/A	1.0 Mile	50 Feet
Proposed Splice Pits (Pittsburg Converter Station)[4]				
Splice Pits (3 Assumed)	0.02 Acre		30 Feet	10 Feet
Proposed HDD Pits (Pittsburg Converter Station)[4]				
3 HDD Pits	1.4 Acres	N/A	200 Feet	100 Feet
Proposed 230 kV AC Single-Circuit Submarine Cable (Pittsburg Standard Oil Site Only)				
Submarine	10.2 Acres	N/A	4.2 Miles	20[2]
Proposed 230 kV AC Single-Circuit Land Cable (Pittsburg Standard Oil Site Only)				
Aboveground	3.6 Acres	1,600 SF/structure	2,100 Feet	75 Feet
Underground	6.1 Acres	N/A	1.0 Mile	50 Feet
Proposed 115 kV AC Double-Circuit Land Cable (San Francisco Only)				
Underground	2.2 Acres	N/A	0.3 Mile	50 Feet
Proposed Underground Potable/Fire Water Supply Lines				
San Francisco Converter Station	0.7 Acre	N/A	625 Feet	50 Feet
Pittsburg Converter Station	TBD	N/A	TBD	50 Feet
Proposed Underground Sanitary Sewer Lines				
San Francisco Converter Station	0.03 Acre	N/A	25 Feet	50 Feet
Pittsburg Converter Station	TBD	N/A	TBD	50 Feet
Proposed Stormwater Discharge Lines				
San Francisco Converter Station	0.03 Acre	N/A	25 Feet	50 Feet
Pittsburg Converter Station	TBD	N/A	TBD	50 Feet

1 Includes access roads.

2 Width of disturbed area for buried submarine cable is equal to the Hydroplow wheel base. Kedging anchor lateral deployment may be up to 800 feet from the barge. The cable system trench width is approximately 1 foot.

3 HVDC and MVDC/fiber optic cable system will be in the same right-of-way once onshore.

4 Splice pit(s) and HDD pits at San Francisco Converter Station (proposed HWC site) are within the converter station boundary.

N/A = Not Applicable; TBD = To Be Determined.

A.4.2 Converter Stations

The proposed Project would include installation of the Pittsburg Converter Station, near PG&E's Pittsburg substation, to convert HVAC power into HVDC power and deliver that power through a new approximately 56-mile-long HVDC submarine transmission cable system. The HVDC cable system would terminate at the San Francisco Converter Station, which would convert the HVDC power to HVAC power for delivery to PG&E's Potrero substation and subsequent distribution into the electrical grid in San Francisco.

A.4.2.1 Project Schedule and Workforce

Converter station onsite construction would be based on a 20-month schedule. Construction of the converter stations would be preceded by demolition of existing structures, which is expected to require approximately 3 to 6 months and be followed by 5 to 6 months of startup and commissioning activities.

Construction labor needs would be met using unionized craftspeople. The estimated construction schedule provides for construction craft, supervision, and startup activities, based on an assumed 6-day work week over a 20-month schedule.

While some tasks overlap in scheduling and coordination, converter station construction generally would be planned to be completed as follows:

- Site Preparation
  - Site boundaries are limited
  - Begin general clearing/grubbing activities for job trailers, parking areas, initial laydown yard, temporary access roads, as required
  - Placement of job trailers, supporting utility connections
  - Establishment of erosion and sedimentation controls
  - Demolition and site cleanup
  - Earthmoving vehicle staging and support
  - Main site access defined, with emergency egress points
  - Preliminary fencing of laydown areas
  - Dewatering or removal/relocation of existing utilities (above or belowground)
- Civil Work
  - Trenching/excavation for underground utilities (e.g., stormwater, electrical, underground piping, etc.)

  - Electrical grounding grid for immediate station area
  - Temporary power connection and distribution, as necessary

- Building/Equipment Foundations
  - Installation of piling (within fill areas), if necessary
  - Placement of general foundations

- Building Construction/Concrete and Steel Erection, as Required for:
  - Administration/control building
  - Valve hall building
  - DC hall building
  - Valve cooling building
  - Spare parts warehouse
  - Firefighting pump house
  - Electrical terminations
  - General utility installation
  - Further development of site laydown areas within switchyard, as required

- Equipment and Balance of Plant Placement and Erection
  - Heavy hauling/rigging/lifting of major station components
  - Liquid fuel storage tank erection, with containment dike and liner
  - Fire wall erection installed around converter transformers
  - Waste oil containment installed for converter transformers
  - Deluge system installed at converter transformers
  - DC cable connection
  - Utility interconnects
  - Initial fills

- Facility Enclosures
  - Buildings enclosed after major equipment placed
  - Erection completion, followed by readiness reviews for startup activities

- Station Startup
  - Commissioning and testing of equipment
  - Demineralized water treatment systems
  - Performance testing
  - Final grading and roads
- Final Grading and Roads
  - Restoration
  - Seeding/laying sod/landscaping
  - Gravel roads, asphalt pavement, as required
  - Final fencing

A.4.2.2 Construction Facilities

A.4.2.2.1 Access Roads. No vehicular access to the worksite areas would be permitted until temporary access routes had been defined and/or permanent roads had been constructed. Roads and worksite boundaries would be designated and construction activities would be limited to the designated areas.

Access to the proposed HWC converter station site in San Francisco would be via 23rd Street, which parallels the northern property boundary (refer to Figure A.1-2). No new offsite access road construction would be required. Access to the proposed laydown area (Western Pacific) in San Francisco would be via 25th Street and no new offsite access road construction is proposed. Truck traffic between the HWC site and the proposed laydown area (Western Pacific) would be via Illinois Street between 23rd Street and 25th Street. Expected non-local transportation routes to and from the proposed HWC site as well as the proposed laydown area are discussed in Section 4.10 (Traffic and Transportation).

Two access roads to the proposed Standard Oil Converter Station site and adjacent laydown area are planned. The first, a new permanent access road, would run south from the converter station site to the Pittsburg-Antioch Highway. Refer to Figures A.4-1 and A.4-2 for plan and elevation views, respectively, of this proposed access road. The new road would be approximately 30 feet wide with an asphalt concrete surface (refer to Figure A.4-1). The new road would be located on the existing Standard Oil parcel of land. The new road would require construction of a new bridge over Kirker Creek just north of the Pittsburg-Antioch Highway (refer to Figures A.4-1 and A.4-2). Use of the new access road (e.g., for truck deliveries) would require use of flagmen at the intersection of the new access road and the

Pittsburg-Antioch Highway for traffic control and safety during the construction for the converter station.

In addition to the proposed new access road, a second access road would run west from the site and connect the converter station site with Loveridge Road (refer to Figure A.1-3). This access road would likely be used to transport heavy loads (e.g., transformers). The road would be located adjacent to and south of the existing railroad ROW and cross 2 abandoned rail spurs. The road would be approximately 40 feet wide with an asphalt concrete surface. Expected non-local transportation routes to and from the proposed Standard Oil site are discussed in Section 4.10 (Traffic and Transportation).

A.4.2.2.2 Construction Offices. Office space, including mobile trailers, would be located on the San Francisco and Pittsburg converter station sites and would have adequate parking space for construction personnel.

A.4.2.2.3 Site Preparation. Site preparation activities would take place before the start of construction of the converter stations. For planning purposes, site preparation would be divided into 2 phases, pre-demolition and demolition.

***Pre-Demolition Activities*.** Pre-demolition activities would include:

- Geotechnical preparations for demolition (e.g., sheet piling for dewatering, shoring, etc.) as needed
- Disconnect/de-energize pre-existing utilities (e.g., gas, electric, water)
- Install interim firewater/service water tank(s), pumps, pipe, power, and controls, as needed
- Abatement of existing buildings (asbestos, lead paints, etc.) as needed

***Demolition Activities*.** Demolition of existing structures would commence following completion of the pre-demolition activities. Demolition would include the following activities:

- Mobilization
- Demolition/heavy wrecking
- Pull down existing structures
- Demolish at-grade and below-grade concrete
- Crush onsite asphalt/concrete rubble

- Mass haul asphalt/concrete to approved offsite disposal/recycling location
- Demobilization

Demolition would be followed by converter station construction. The transition from site preparation to construction would involve careful management of below-grade soils following excavation of all sub-grade structures and underground utilities. This phase may also include the removal of contaminated soil and/or groundwater, as applicable. Refer to Section 4.14 (Hazardous Materials Handling and Waste Management) for more information.

Removal of existing foundations would be required and the location of these foundations would be identified during detailed construction design. It is anticipated that groundwater control would be provided for these excavations such that the base would be stable for placing structural fill. Structural fill would be brought up to the new converter station finished grade. Some construction activities may take place prior to bringing structural fill to finished grade. These activities may include ground improvement measures, deep foundation construction or constructing foundation mats.

It is estimated that up to approximately 15,000 cubic yards of material would need to be excavated at each converter station site. Maximum excavation depths are estimated to be approximately 15 feet associated with foundation and sump installations under each of the four transformers at each converter station.

A.4.2.2.4 Erosion and Sediment Control. Temporary erosion control devices would be installed in accordance with the required Construction Storm Water Pollution and Prevention Plan (SWPPP) before initial site clearing and would be visually inspected during the regular site environmental compliance inspections.

Paved surfaces would be periodically washed to remove soil during dry periods and water would be applied to soil stockpiles and unpaved areas at regular intervals during the earth-moving and construction phases. Access roads/exits/entrances would be inspected regularly for spillage or carryout of loose dirt or mud. Corrective actions would be implemented as necessary to minimize any such spillage or carryout.

A.4.2.2.5 Spoil Control for Excavation. The boundaries of all ROWs and work areas would be identified.

Topsoil stripping would be undertaken on the area anticipated to be disturbed by excavation, grading, and/or piling of excavated subsoil/rock. Stripped topsoil would be segregated from subsoil and stockpiled in temporary storage areas on the property from which it was removed. All areas to be disturbed by excavation and backfilling would be enclosed within silt fencing or other temporary marker/barrier to define the allowable limits of disturbance.

Material removed from site grading and excavations would be stockpiled adjacent to the excavation. Material would be inspected and tested as necessary to determine its suitability for reuse. If the material were found to be reusable, silt fencing and/or other soil erosion controls would be used to prevent erosion of stockpiled material.

Excavated subsoil and rock would not be stockpiled or spoiled on unapproved sections of the converter station sites. Excess excavated subsoil and rock, or that which is not suitable as backfill, would be removed from the site.

Surface water "ponding" and soil erosion would be avoided. Backfill would consist of excavated subsoil and rock, whenever possible. If this material were determined to be unsuitable as backfill, engineered fill would be used.

A.4.2.2.6 Chemical and Waste Storage and Spill Prevention and Control. The onsite management and offsite disposal of non-hazardous solid wastes generated during construction of the converter stations would be governed by the regulations of a solid waste management plan for the Project. The onsite management and offsite disposal of hazardous wastes would be governed by the regulations of a hazardous waste management plan for the Project. Waste would be stockpiled temporarily before disposal offsite. The local fire departments and emergency management teams would be provided a list of the waste material expected to be generated and stored onsite.

All vehicles and construction equipment would be inspected to ensure that there are no leaking fluids (e.g., oil, hydraulic, lubricants, or brake fluid) and that all fuels and fluids are stored in proper, labeled containers. Any observation of spills, leaking fluids, or improperly stored fluids may trigger the issuance of a "stop work" notice until the problem is resolved, including the removal of any soil contaminated by vehicle fluids. All applicable regulations governing the storage, transport, use and disposal of fluids, and all reporting requirements for spills would be enforced.

A.4.2.2.7 Hazardous Materials Handling and Disposal. Petroleum products and chemical substances (termed "hazardous materials") would be managed in such a manner as to minimize the potential for threats to human health and the environment. Hazardous waste may be generated during the course of Project construction. The details regarding the management of hazardous waste onsite would be contained in the Hazardous Waste Management Plan.

A.4.2.2.8 Public Road Traffic Control and Safety. Construction (excluding 3 to 6 months for demolition of existing buildings at the San Francisco site) would be expected to take 20 months to complete, with the peak construction activity occurring over a 4- to 5-month period. During construction, two categories of vehicular trips would encompass the construction activity: 1) worker trips, and 2) equipment/supply deliveries. It is anticipated that during the 4- to 5-month peak period of construction activity, approximately 30 construction and equipment-related trips/deliveries to the converter station sites would occur on a daily basis. Peak morning traffic would likely occur between the hours of 7:00 and 8:00 a.m. and peak evening traffic would be expected to occur between the hours of 5:30 and 6:30 p.m.

Construction activities would occur over the course of 1 shift scheduled between the hours of 7:00 a.m. to 8:00 p.m**.** Extensions of the basic workday, or moderate amounts of evening work, where allowable, might occasionally occur. It is expected, however, that any evening activities would require only a small number of workers.

Truck movements for materials delivery and removal would be spread throughout the day on weekdays, and would generally occur between the hours of 7:30 a.m. and 6:00 p.m., depending on the period of construction and except to the extent required to accommodate oversized deliveries or nighttime work. In order to minimize the potential for Project-related traffic issues to occur, state and local transportation agencies would be consulted, not less than weekly, about traffic conditions near the converter station sites.

Detailed traffic controls (as necessary), parking (onsite and offsite), and equipment delivery plans to the converter station sites, including overweight and permit-required loads, would be developed and coordinated with local highway officials for submission with detailed construction drawings.

A.4.2.2.9 Pedestrian Access and Bikeway Traffic Control. The construction sites would be protected and secured with a temporary fence, to be replaced by permanent fencing and walls upon completion of construction. Access during both construction and operation would be only via designated, gated, and secured access points.

A.4.2.2.10 Nighttime Construction Provisions. Work at the sites would be restricted between the hours of 7:30 a.m. and 6:00 p.m., unless the work were entirely within an enclosed building. Work performed within an enclosed building outside of the normal work hours could be done between the hours of 6:00 p.m. and 10:00 p.m. without any additional lighting or noise controls. From 10:00 p.m. to 7:30 a.m., work done within an enclosed building could only be performed as long as the noise levels did not create a disturbance and lights did not illuminate adjacent property areas.

Cable installation in the bay would be carried out on a 24-hour basis, 7 days per week. Some onshore cable installation activities may be conducted on a 24-hour basis consistent with applicable regulations.

A.4.2.3 San Francisco Converter Station

The proposed San Francisco converter station at the HWC site would occupy 5.6 acres on the overall 6.8-acre parcel on 23rd Street, just south of the Mirant Potrero Power Plant. A 64-foot-high valve and converter transformer building would occupy approximately 23,000 square feet on the site. The balance would be occupied by outdoor-air cooled radiators, transformers, and AC filters. The proposed site currently has 3 structures that would need to be demolished as part of the site preparation. A fourth structure on the site is 1 of 4 structures on the Potrero Power Plant site included with Mirant's Application for Demolition Permit.

A.4.2.3.1 Laydown and Storage. An area of up to approximately 7 acres would be located on the approximately 11-acre Western Pacific site and would be devoted to equipment and materials laydown, storage, parking of construction equipment, small fabrication areas, and office trailers for the San Francisco Converter Station site. The site has no standing buildings or structures and lies on land that was reclaimed from San Francisco Bay early in the twentieth century.

A.4.2.3.2 Construction Parking. During construction, parking would be permitted outside of the active work zone in designated areas within the converter station site boundaries and/or offsite at adjacent properties. Onsite parking areas would be designated as necessary during construction activities. The parking areas would be fenced and controlled by security personnel during normal work hours.

A.4.2.3.3 Construction Utilities. During construction, temporary utilities would be provided for the Project sites and laydown areas. Temporary construction power would be supplied initially by generator and, when available, by a temporary connection to the local distribution system. Area lighting would be provided and strategically located for safety and security.

Water for construction would be provided by the City of San Francisco. Portable toilets would be provided throughout the site for sanitation purposes.

A.4.2.4 Pittsburg Converter Station

The proposed Pittsburg Converter Station would occupy 5.4 acres of a 7.5-acre parcel (the Standard Oil site) in the City of Pittsburg. The site is located within a developed industrial area with a mix of industrial and former industrial uses. The only structures on the site are 2 abandoned concrete wastewater storage tanks and a dilapidated building. The site was most recently occupied by an automobile storage yard. Before construction of the proposed converter station commenced, the site would be cleared of all structures and stored materials.

A 64-foot-high valve and converter transformer building would occupy approximately 23,000 square feet at the site. Outdoor air-cooled radiators, transformers, and AC filters would occupy the balance of the site. The site would receive an architecturally appropriate treatment in areas that are visible to the public on the south and west sides. An acoustical barrier approximately 10 feet high would be erected around a portion of the converter station and an acoustical barrier approximately 13 feet high would be erected around a portion of the emergency generator. If final design determined that an acoustical barrier were unnecessary, it would not be required.

A.4.2.4.1 Laydown and Storage. An area of up to approximately 7 acres would be located on vacant property adjacent to and north of the site and would be devoted to equipment and materials laydown, storage, parking of construction equipment, small fabrication areas, and office trailers for the Pittsburg Converter Station site. Temporary construction parking, staging, and storage areas would be developed by clearing/grubbing/ removing topsoil from unimproved areas that would receive vehicular traffic and laydown. Minor leveling of the laydown area would be performed, as necessary. Topsoil would be stockpiled in windrows or piles adjacent to the staging area. The exposed subsoil would be covered with stabilized fill, as necessary. Upon completion of construction, the temporary laydown area would be restored.

A.4.2.4.2 Construction Parking. General construction parking details would be similar to those described in Section A.4.2.3.2 for San Francisco.

A.4.2.4.3 Construction Utilities. During construction, temporary utilities would be provided for the Project sites and laydown areas. A portable generator would supply temporary construction power initially. When available, construction power would be supplied by a temporary connection to the local utility distribution system. Area lighting would be provided and strategically located for safety and security.

Water for construction would be provided by the City of Pittsburg. Portable toilets would be provided throughout the site for sanitation purposes.

A.4.3 Construction Equipment and Materials Delivery

Table A.4-3 provides an approximate tabulation of construction equipment to be used for the Project. Truck deliveries of equipment and materials would normally occur only during daylight hours. There could be need for offloading and or transporting to the sites on the weekend, but not as a general rule. The estimated average daily frequency of truck deliveries is presented in Table A.4-4.

Materials such as wire and cable, fuels, reinforcing steel, and small tools and consumables would be delivered to the site laydown areas by truck. The heavy equipment items would be transported by ship to the marine terminal at the Port of Oakland. Standard sized containers (approximately 700 total) would be used to the maximum extent possible. Containerized equipment and material would be off-loaded at the marine terminal and transported to the site by truck. Heavier and/or breakbulk items (e.g., transformers) would be offloaded at the marine terminal and transported by rail and/or truck to the site. Approximately 1,330 tons of equipment would be shipped for each converter station.

A.4.3.1 HVDC Cable Transportation

The Prysmian cable ship (C/S) Giulio Verne (refer to Figure A.4-3) is equipped with a state of the art turntable platform for the storage of the HVDC power cable and laying equipment, and would be rigged to allow the stowage of the medium voltage (MV) metallic return and optical cables. Upon completion of all the rigging operations the submarine cables would be loaded onboard the C/S Giulio Verne.

An installation barge could be used for cable laying in shallow water, therefore, part of the cables would be unloaded on board the cable installation barge before starting the laying activity.

In the event that the cables were to be shipped from the factory to the site by means of a transportation vessel other than the C/S Giulio Verne, a complete cable transfer to the laying vessel and/or to the installation barge would occur prior to starting the laying activity.

A.4.4 HVDC Transmission Lines

The Project would use a variety of construction methods for the HVDC transmission line. The particular method used for a specific segment of the project would depend upon several factors, including being landside or offshore, distance from shore, sediment characteristics, and depth of water and depth to bedrock.

The main HVDC, metallic return, and fiber optic cables would be bundled and laid simultaneously. Over the proposed route, protection to both the cable and the environment would be accomplished through:

- Horizontal directional drilling (HDD) for the San Francisco Bay-shore crossing
- Burial by Hydroplow to a typical target depth of 3 to 6 feet, with the potential for local burial to greater depths if required
- Direct cover with concrete or pillow mattresses (or other protective scheme) where it would not be possible to reach the target burial depth due to soil characteristics such as rocky sea bottom or obstacles along the cable route
- Burial to a target depth of 15 to 20 feet, with the potential for burial to be greater if required, below the existing bay floor at dredging across shipping channels at West Reach (MP 52.4) and at the east end of New York Slough (MP 56)

A.4.4.1 Submarine Cable Installation Equipment and Procedures

Specialized equipment and procedures developed for efficient installation of buried submarine cables would be utilized.

A.4.4.1.1 Submarine Cable Laying Vessels. The proposed Project would use Prysmian HVDC cable design and installation technology.

The C/S Giulio Verne would be used from San Francisco landfall to the west end of Pinole Shoals and from the east end of Pinole Shoals to the west end of Suisun Bay across the Carquinez Strait.

Cable installation across Pinole Shoals and from the west end of Suisun Bay to Pittsburg landfall would be carried out by a cable installation barge.

The above laying scenario involves the assembly at sea of 3 joints on the cable system: 1 joint at the west end of Pinole Shoals, 1 joint at the east end of Pinole Shoals and 1 joint at the west end of Suisun Bay.

Alternative cable laying scenarios are under consideration which may require a minor number of joints to be assembled in the bay (from 0 to 3 joints). One scenario includes the possibility of laying the cable across Pinole Shoals with C/S Giulio Verne (basically cable laying with C/S Giulio Verne from San Francisco landfall to the west end of Suisun Bay and laying with the installation barge from this point to Pittsburg landfall). Another scenario includes laying the cable across the Carquinez Strait with the installation barge up to the west end of Pinole Shoals (basically cable laying with C/S Giulio Verne from San Francisco landfall to the west end of Pinole Shoals and cable laying with the installation barge from this point to Pittsburg).

The final selection of the laying set-up would be defined once the marine survey data were available.

A.4.4.1.2 Submarine Trenching and Cable Burying Machines. The cable would be buried using the Hydroplow burial machine or other equivalent cable-laying technology whose sediment disturbances are similar to those of the Hydroplow. The working principle for the Hydroplow would be to fluidize the seabed materials in a narrow path and to a predetermined depth without displacing the majority of the material and therefore minimizing the suspension of sediment in surrounding waters. The fluidizing effect would provide relatively low and controlled towing forces. The method has been positively shown to place fiber optic cables and power cables at a consistent required depth of embedment in all jettable bottom conditions.

During cable installation (refer to Figures A.4-4 and A.4-5), the Hydroplow would straddle the cable, create a trench below the cable and guide the cable into the trench. The trench would then partially collapse after the passage of the burial machine and the remaining part would be generally filled by natural sediment deposition.

The Hydroplow is capable of both simultaneous lay and burial operations and post-lay burial operation. In the first case, the Hydroplow would be operated and towed by the cable laying vessel/installation barge. The cable would then be simultaneously laid and buried during the same operation. The sediment plume and local water turbidity levels created by the Hydroplow water jet cable burial machines vary with burial depth, tide, current, and soil characteristics. Additionally, natural turbidity is often prevalent in the areas where cables are to be installed. Typically, a light sediment plume surrounds the Hydroplow in full operation, and the plume quickly dissipates as the Hydroplow proceeds, leaving little or no spoil ridges alongside the trench. It is estimated that approximately 10-20 percent of the disturbed sediment would be dispersed into the bay. This percentage is an indicative figure which could vary depending on soil conditions, trench depth, etc.

The Hydroplow would be towed by the laying vessel/barge in case of simultaneous lay and burial operation or a support vessel/barge in case of post-lay burial operation. The support vessel/barge can be propelled with dynamic positioning or kedging on anchors.

A.4.4.1.3 Dredging. While there are several locations where the cable route would cross dredged shipping channels, there are only two locations where dredging would be required to bury the cable at an adequate depth to ensure that future dredging (e.g., by the U.S. Army Corps of Engineers [USACE]) does not encounter the cable. A standard clamshell dredge (or hopper dredge) could be used to create a deep trench at ship channel crossings. To obtain maximum efficiency and minimize interference with vessels using the shipping channels, this trenching would normally be completed before the cable-laying vessel began its work. If the dredged material was not replaced in the excavation, natural sediment deposition would likely completely fill the excavated areas in less than 2 years.

A.4.4.1.4 Direct Cover with Protective Mattresses. At several locations, the HVDC cable route would cross existing cable and pipeline crossings or rocky bottoms, where a trenching machine (e.g., Hydroplow) may not be used. In these locations, a protective cable cover would be provided by laying protective mattresses (e.g., concrete mattresses filled with mastic grout and internally lined with a geotextile) or other protective materials over the cable on the bay floor. Where an existing cable or pipeline would be exposed, mattresses may also be placed on the bay floor on top of the existing pipe or cable before the proposed Project cable system was laid in order to provide a physical separation between the utility to be crossed and the Proposed project cable system (refer to Figures A.4-6 and A.4-7). Separation sleeves installed directly on the proposed project cable system could also be used in place of mattresses to provide physical separation.

A.4.4.1.5 <u>Horizontal Directional Drilling (HDD) at Cable Landfall</u>. The method being considered for installing the HVDC cable as it crosses the shoreline is installation of conduits by means of HDD. Photos of typical HDD operations are shown on Figure A.4-8. At the landfall near Potrero Point in San Francisco, the proposed HDD operation is shown on Figure A.4-9. The proposed HDD installation of AC and DC cables at the landfalls at the east end of New York Slough and at the Mirant Pittsburg Power Plant site in Pittsburg are shown on Figures A.4-10 and A.4-11, respectively. The following typical HDD installation methodology is expected to be used subject to final engineering.

If this method were used, the DC and AC cables would have a clear passageway from the water to the land that would not disturb the sensitive environmental conditions that often exist along shorelines. Two holes would be drilled and a steel or high density polyethylene (HDPE) pipe installed to accommodate the HVDC, MVDC, and fiber optic cables at the Pittsburg landfall. A larger third bore would be drilled for the installation of the 3, 230 kV AC cables. A single hole would be drilled at the Mirant Pittsburg Power Plant crossing for bringing the 230 kV cables ashore to interconnect with the Pittsburg substation. If a single bore solution were infeasible due to final cable design and/or soil conditions, it could be necessary to use a 3-bore solution.

An area up to 100 feet by 200 feet would be required to set up the drilling rig and associated equipment. In the event the soil at the drilling site were found to be contaminated or to have too much concrete and metal debris content, a cofferdam consisting of a steel casing would be driven into the soil at a shallow angle. The interior of the casing would be excavated, limiting the volume of contaminated soil for disposal and isolating the bore hole from contamination. At the completion of the operation, the casing would be grouted and left in place, providing a barrier against contaminant migration.

Special fluid would be used to lubricate the drill head and remove the waste from the hole. There would be a system at the site for collecting the cuttings that came out of the drill hole and for recovering the drilling fluid (also known as drilling mud). A Spill Prevention Control and Countermeasures Plan would be prepared and implemented for all HDD operations.

Two rigs would be used, 1 ashore and 1 on a barge. A pilot hole would be drilled initially and a guidance and monitoring system would be used to control the direction of the pilot hole. With the pilot hole completed and the drill bit "punched out" onto the Bay floor, a small quantity of drilling fluid may be released. As an alternative, a conductor barrel can be installed in the Bay floor and the drilling fluid brought to the surface and collected on the barge. The drill stem would be recovered from the waterside. The pilot hole would be reamed out to the required size and the steel or HDPE pipe installed. Cuttings would be stored at the drilling site and disposed of at an approved waste facility. After completion of the reaming and the pipe installation, the ends of the pipes would be sealed until the cables were ready to be installed. Other containment systems (curtain system, etc.) may be considered as an alternative.

This technology would also be used to install a portion of the proposed AC/DC cable route between the proposed Standard Oil Converter Station site in Pittsburg and the crossing of Kirker Creek and adjacent wetlands (refer to Map A.2-1; Sheet 10 of 10 for approximate location).

A.4.4.2 Survey and Route Design

Surveying for construction of a transmission line segment would include engineering and property line surveys, and in this application, marine surveys. The engineering survey collects topographic and feature detail for use in the design of the transmission structures. Land surveys would be performed to develop legal descriptions of the ROW easements. The survey corridor covers a buffer area on either side of the centerline of the route.

A detailed survey of the bay floor will be performed along the proposed cable route to evaluate geology and topography as well as possible obstacles. To guide selection of cable burying equipment and procedures, a core-sampling program for bay floor sediments would be implemented. This sampling program would be used in conjunction with existing data and surveys (e.g., TBC environmental survey already performed, and USACE data associated with the bay maintenance-dredging program). Sonar devices would be used to detect both natural and man-made obstructions. Electromagnetic devices would be used to detect and precisely locate existing cables and pipelines that cross the cable path. The proposed cable route was selected to avoid shipping channels, anchorages, dredge disposal areas, and other known obstacles.

A.4.4.2.1 Pre-lay Grapnel Run. The pre-lay grapnel run would be carried out before the cable installation if deemed necessary during the detailed engineering process. Prior to cable installation, a small vessel would be equipped with grapnels designed to be towed along the cable route.

The grapnel would catch and remove small debris on the seabed surface, such as wire ropes and nets, that may interfere with the installation of the new cables. Discarded wire ropes would be caught with the grapnel and would either be parted at the seabed or be recovered to the surface and cut. Other debris would be caught and moved off the route centerline.

A.4.4.3 Submarine Cable Installation

The proposed HVDC cable would be buried underwater in San Francisco Bay, San Pablo Bay, the Carquinez Strait, Suisun Bay, and New York Slough. Typical target burial depths for the cable would be 3 to 6 feet, with the potential for local burial to greater depths if required, in areas of the bay containing soft sediments. Depths are expected to vary in response to the geophysical makeup of the bay floor sediments. If appropriate, as determined by existing conditions of the Bay floor, portions of the cable would be placed on the surface of the Bay floor and a system of concrete mattresses would be placed over the cable to provide added protection.

A preliminary description of the DC cable laying operation is presented in this section. The following assumptions are made:

- The initial cable installation direction would be from a point inside Suisun Bay to the landing in Pittsburg.
- An installation barge would be used from Suisun Bay through Honker Bay to the Pittsburg landfall and likely also across Pinole Shoals.
- The cable would be installed with a simultaneous laying and burial operation.
- Up to three joints (cable splices) would be assembled at sea between the cable installed by C/S Giulio Verne and the cable installed by barge.
- At this stage alternative installation scenarios are still under consideration (please refer to description in Section A.4.4.1.1 of this Appendix). If the cable were installed with the C/S Giulio Verne from the landing point in San Francisco up to Suisun Bay (no cable installation by barge across Pinole Shoals) a short portion of post lay burial is foreseen in the section across Pinole Shoals.
- Once detailed marine survey results are available, the final installation set-up will be defined.

Alternative cable laying scenarios are under consideration as discussed in Section A.4.4.1.1. Operations of the C/S Giulio Verne and the installation barge would be executed either simultaneously or one vessel first and the second one after depending on the laying scenario that was implemented.

During the final engineering process, detailed installation procedures would be developed for the chosen alternative (Refer to Section A.4.4.1.1). These may differ from the preliminary procedures described below.

A.4.4.3.1 **<u>Cable Laying with Installation Barge</u>.** Suisun Bay and probably Pinole Shoals are too shallow for the cable ship Giulio Verne to operate. In these areas cable installation by barge is foreseen.

A transportation vessel or the C/S Giulio Verne would arrive with the cables to be transferred to the cable installation barge. This loading would be performed continuously until the appropriate length of cable was aboard the cable installation barge.

***Mooring of Cable Installation Barge*.** The cable installation barge would be towed to the starting point of the barge laying operation. With the cable installation barge held in position by 1 tugboat, the second tug would receive an anchor from the cable installation barge. The tug would position the anchor in a pre-determined location as mooring wire attached to the anchor is deployed from the cable installation barge’s mooring winch. This anchor deployment would be repeated until all anchors were deployed. In addition to the cable installation barge mooring wire attached to the anchor shank, each anchor would have a wire leading to a buoy floating on the surface. These wires would allow the anchor tug to lift the anchor to the surface and re-position the anchor to a new location.

***Deployment of Cable Ends*.** The cable ends would be sealed with caps. A stopper would be applied on board on the cable end and connected to a steel wire of appropriate length. At the end of the steel wire a dead weight would be attached in order to keep the steel wire in position and to ease the recovery operation at the beginning of the following phase of the cable laying operation. The positions of cable end and dead weight would be logged.

The cable installation barge would deploy the dead weight first, then it would move along the cable route as the steel wire is paid out and laid on the seabed. The cable heads would be paid out as the cable installation barge continued to move along the cable route. This cable end deployment would allow the C/S Giulio Verne to return to the position of the steel wire and then recover the cables for splicing to the cables for the following cable laying operation.

***Simultaneous Barge Cable Lay and Burial*.** The cable installation barge would stop to deploy the Hydroplow on the cable route when an appropriate length of cable was laid on the seabed. The Hydroplow tow wire, water hose, and umbilical line would be connected to the Hydroplow before launching. A crane would lift the Hydroplow from the deck and place it on the Bay floor where divers would disconnect the crane and the Hydroplow would be prepared for cable burial.

The cable installation barge would tow the Hydroplow along the cable route, the water jets would be activated, and the stinger would be lowered down to full burial depth. The cables would be paid out through the cable chute positioned at the stern of the cable installation barge.

A combination of GPS and the telemetry system which provides all Hydroplow data (attitude, burial depth, location) would be monitored as the Hydroplow buries the cable system. As the cable installation barge was moved along the cable route, the anchor handling tugs would be recovering anchors and re-positioning them to accommodate cable installation barge movement. The mooring winches would be pulling and paying out the anchor wires in a coordinated sequence to move the cable installation barge along the route.

The navigation/survey computers would be displaying and recording positioning data of the cable installation barge and Hydroplow during the cable laying sequence. Telemetry parameters would also be displayed and recorded. This recorded data would be used to produce the as-built reporting.

***Ship Channels*.** A limited dredging effort would be required to install the HVDC and HVAC cables where the routes cross ship channels in New York Slough. The dredging would occur in 2 locations. The first location would be at the west end of the West Reach, northeast of the Mirant Pittsburg Power Plant at approximately MP 52.5 of the HVDC cable route (and approximately MP 1 of the HVAC cable route). The second location would be just east of the Dow Chemical Plant property in Pittsburg as shown on Map A.2-1, Sheet 10 of 10, at approximately MP 56 of the HVDC cable route (and approximately MP 4.5 of the HVAC cable route). At these locations, the 2 cables would cross the existing shipping channel in New York Slough. The channel in these areas is between 45 and 50 feet deep. The USACE routinely performs maintenance dredging of the channel in these areas to a depth of 37 feet and, therefore, dredging below the routine dredge depth would be required to allow installation of the cables at a safe depth.

The requirement to excavate a cable trench would be similar in both areas. At each location, it would be necessary for the dredge to excavate approximately 38,000 cubic yards of material. These excavations would provide a trench approximately 400 feet long by 30 feet wide at the bottom of the excavation by 15 - 20 feet deep beneath the bay floor, in which the 2 cables would be installed. The sides of the trenches would be sloped at 4 feet horizontal to 1 foot vertical. The trench would be backfilled after the cables were installed.

The dredging method would utilize a barge-mounted crane excavating with a clamshell bucket. Excavated material would be brought to the surface and deposited on a barge. The USACE and private firms regularly use this method to perform maintenance dredging of shipping channels and ship docks in the bay. An alternative would be to carry out dredging by using a hopper dredging system.

During the dredging process, material excavated and loaded on the barge would be sampled and tested in a laboratory to determine its acceptability for reuse as backfill. Preliminary results for sediment samples taken at the 2 proposed dredge locations as part of the TBC Bay Survey indicate that the material to be dredged would be acceptable for backfill in the excavated dredge areas. If the excavated material were ultimately determined to be acceptable, the material would be stored on the barge until the HVDC and HVAC cable installation was complete. At that time, the excavated material would be taken off the barge and returned to the sea bottom as backfill. If testing determined that the material was unacceptable for reuse as backfill, the material would be transported to an acceptable disposal site. One possible use for such material would be to support on-going wetland reclamation projects in the area.

A.4.4.3.2 Pittsburg Landfall. The cable installation barge would be maneuvered to start the final cable landing operation at the pre-installed conduit ends (as described in A.4.4.1.5 above). Each cable would be floated separately, 1 cable at a time. The distance to the end on land, including the conduit, would be measured. The length of cable required to reach the end on land would be calculated in order to cut the cable at the correct position.

Each cable would be paid out from the cable installation barge with floats attached. This floating cable would be in the shape of a circle or omega as the entire final length of cable was paid out from the cable installation barge. Small boats would manage the configuration of this floating cable. When the final end of the cable reached the stern of the cable installation barge, it would be connected to the pulling wire. Each cable would be pulled separately.

A shore-pulling winch would begin to pull the cable ends into the conduit. Divers would monitor the entry of the cable into the conduit. The divers would remove floats from the cable just before the cable reached the conduit end. The cables would be suspended in catenaries between the water surface and the conduit as the floats were removed and the cable pulled. When cable-pulling operations were completed, the offshore section of cable would be buried by Hydroplow or by divers using hand-jetting systems.

A.4.4.3.3 Cable Laying with C/S Giulio Verne. The C/S Giulio Verne would move to the location where the cable ends had been previously left on the seabed by the cable installation barge. The cable ends would be recovered by grappling the wire inserted between cable end and dead weight. The operation would be carried out directly by the lay vessel.

Once the cable ends were secured on board, the splicing operation between cable lengths from sea and cable lengths on board would take place. The splicing operation would take approximately 10 days.

***Simultaneous Lay and Burial*.** The Hydroplow would be launched as described above. The Hydroplow, towed by the C/S Giulio Verne, would activate the water jets and begin burial. The vessel would move along the cable route as the cables were paid out, laid on the seabed and buried by the Hydroplow. The C/S Giulio Verne would use dynamic positioning (DP) control system; anchors as described the cable installation barge method would not be required.

During the laying operation, the main parameters such as vessel position along the route, cable payout length, water depth, and cable tension would be monitored and recorded. Control of the cable laying operation would be based on the evaluation of the continuously monitored data.

The C/S Giulio Verne would continue the cable lay and burial operation up to MP 0 near Potrero Point in San Francisco.

A.4.4.3.4 **San Francisco Bay Shore End.** As the vessel approached the final landing position it would turn parallel to the bay shore. Once in position, the cable landing operation would start. The cable ship would be dynamically positioned at an approximate water depth of 35 feet (about 2,000 feet off shore) in line with the exit conduit coming from shore. The ship would maintain position using its own thrusters controlled by its dynamic positioning system. No anchors, spuds or other devices touching the sea bottom would be used.

The distance to the end point on land would be measured for the cable cut. Each cable would be floated separately. The cable would be paid out from the C/S Giulio Verne. Floats would be attached to each cable as it left the C/S Giulio Verne. These floating cables would be in the shape of circles or omegas as the entire final length of cables was paid out. Small boats would manage the position of the floating cables. It is possible that a barge would be used to assist C/S Giulio Verne during the cable floating operation.

When the ends of the cable reached the stern of the vessel the cable ends would be floated and taken to the conduit ends by a service boat. When the cable ends approached the conduit end each would be connected to the main pulling wire that would extend from a shore winch through the conduit.

The cables would be pulled to shore each through a conduit separately, 1 cable at a time. The shore-pulling winch would begin to pull the first cable end into the conduit. Divers would monitor the entry of the cable into the conduit. The divers would remove floats from the cable just before the cable reached the conduit end. The cable would be suspended in catenaries between the water surface and the conduit as the floats were removed and the cable was pulled.

A similar operation would be performed for the metallic return and fiber optic cables. When the cable pulling operation was completed, the section of cable remaining exposed on the Bay floor would be buried using the Hydroplow or by divers using hand-jetting systems.

A.4.5 Landside Underground HVDC Cable Installation

A short length of HVDC cable connecting the submarine cable to the landside cable is required. This connection would occur with a sea/land joint between submarine and land cable (close to the exit on land of the conduit) which would extend up to the cable termination at the converter station. In some cases, it may be possible to install the submarine cables up to the termination point at the converter. In this event, a joint would be unnecessary.

A.4.5.1 Landside Cable Trenching and Burial

The elements of typical landside underground construction include ROW clearing, excavation and/or trenching, shoring, bedding and laying of cable, backfill and compaction, and restoration.

Typical cut-and-cover trenching and burial techniques would be used to bury the cable to a depth of approximately 4 feet. Backfill with appropriate thermal properties would be installed up to a certain level to protect the cable and ensure heat dissipation during operation. The remainder of the trench would then be backfilled with indigenous excavated material.

A.4.5.2 HDD

HDD or comparable technology may be used in several locations to install landside cable (e.g., in areas between the proposed Standard Oil Converter Station in Pittsburg and south of the BNSF Railroad ROW). A drill pit approximately 75 feet square would be prepared on each end of the area to be drilled. HDD equipment would be placed in the pit and used to bore a hole from the pit to a predetermined point on the opposite end. A pipe casing would be pushed or pulled through the borehole to maintain the opening and provide a protective conduit and path for installation of the cable. The process would finish by pumping bentonite clay slurry to fill the annular space around the cable and to provide positive heat dissipation.

A.4.6 HVAC Interconnections Construction

The proposed Project would require HVAC interconnections between the San Francisco Converter Station and Pacific Gas and Electric Company's (PG&E) Potrero substation and between the Pittsburg Converter Station and PG&E's Pittsburg substation.

A.4.6.1 San Francisco

A.4.6.1.1 Three-phase Transmission Line. A double-circuit, 3-phase 115 kV underground transmission cable or above ground transmission line would deliver AC power approximately 0.3 mile from the AC switchyard at the San Francisco Converter Station to the PG&E Potrero Substation.

A.4.6.1.2 Tie-in to PG&E Potrero Substation. The double-circuit AC line would connect into the existing Potrero substation.

A.4.6.2 Pittsburg

A.4.6.2.1 Three-phase Underground and Submarine Transmission Cable. A new 3-phase 230 kV underground transmission cable would deliver AC power from the Pittsburg substation to the AC switchyard at the Pittsburg Converter Station. The 5.5-mile-long cable route includes 4 miles of offshore line and 1.5 miles of onshore line. Onshore and offshore portions would be installed using the same techniques as described previously for the HVDC cable.

A.4.6.2.2 Tie-in to PG&E Pittsburg Substation. The proposed HVAC cable would connect into the existing PG&E Pittsburg Substation. PG&E would be responsible for engineering and for construction oversight and approval. PG&E may procure equipment and construction or may have the Project Proponent provide procurement and construction.

A.5 OPERATION AND MAINTENANCE PROCEDURES

The HVDC technology proposed for the Project is highly reliable and requires minimal operation and maintenance. The 2 converter stations, at the ends of the cable route in San Francisco and Pittsburg, would normally operate with a minimal staff and/or be remotely operated. Personnel would support the stations by performing periodic inspections and routine maintenance.

At the commencement of system commercial operation, operation and maintenance procedures and critical spare parts would be in place to ensure that reasonably foreseeable problems with the cable or converter stations could be remedied quickly.

A.5.1 Operation

Operating parameters would be adjusted to maintain system operation within input settings supplied by the CAISO. A fiber optic communications cable would be installed with the HVDC cable to allow dedicated communication for the computer control systems operating at both of the converter stations. This would allow rapid response to changes in the AC transmission grid, converter station equipment, and/or the cable. The computer systems would alert an on-call operator on detection of an event requiring attention.

A.5.1.1 California Independent System Operator (CAISO)

The Project would transmit electrical power via a dedicated HVDC connection between Pittsburg and San Francisco. The cable system would be placed in service and operated under the direction of the CAISO. The proposed Project would provide the CAISO with the capability to better support electric power demand and stability requirements on the northern part of the San Francisco Peninsula.

A.5.2 Routine Maintenance

A.5.2.1 Converter Stations

The proposed electrical equipment and electronic controls at the converter stations would be expected to require a minimal amount of routine maintenance on a periodic basis. Planned routine maintenance activities include a general visual inspection for signs of external damage, leakage, or overheating, checks of insulating fluids levels and properties, lubrication of cooling fans, and electrical checks that are beyond those performed automatically by the station computer systems. Some of the proposed equipment would be expected to operate indefinitely, without maintenance, while other components have limited life expectancies and would require periodic service or replacement. Approximately 5 scheduled outage days would be required every year.

The station control systems would be designed to automatically alert on-call personnel if problems were detected with the cable or converter stations. The converter stations would be designed with redundant components and stocked with critical spare parts. Contractual arrangements would be in place for specialized services that may be required on short notice.

A.5.2.2 Cable Repair

With the exception of periodic cleaning of outdoor insulators, the proposed transmission cable would be expected to require no scheduled maintenance for the life of the Project. Specialized personnel and equipment would be required to repair any damage to the cable. Generally, the repair would require a new section of cable to be added by splicing.

A spare length of cable would be kept on hand to allow timely splicing and replacement of a damaged section of cable. The spare cable would be stowed directly on a boat or barge moored at Pittsburg Marina or other suitable local facility, or in a nearby onshore storage area, specifically for making emergency repairs. Contractual arrangements would be in place for specialized services that may be required.

A.5.3 Reliability and Availability

The HVDC system consists of 2 main systems: 1) the submarine cable system; and 2) the converter system.

Submarine electric cable technology is well established and has a long service record. The cable and main circuit equipment are all passive, reliable, and well-proven technologies. The converters are supplemented with well-proven electronics for control and protection, and standard motors for cooling, ventilation, etc.

A.5.3.1 Submarine Cable System

A.5.3.1.1 Insulation. Aging of HVDC insulation is slower than for HVAC due to lower operating temperature. It was reported in 1994 that no sign of aging insulation was observed for the Gotland cable or the Skagerrak 1 and 2 cables after 20 years of operation.

A.5.3.1.2 Erosion/Abrasion. The buried HVDC cable would be protected from erosion/abrasion due to wave action and water currents. In those areas where burial was not feasible, the cable would be protected by mattresses.

A.5.3.1.3 Corrosion. The HVDC cable is designed to impair corrosion, using bitumen and zinc coating of the armoring wires. Burial reduces exposure to oxygen which is necessary for corrosion to occur. Further, the cable would be expected to operate satisfactorily even if the armoring were to break down.

A.5.3.2 Converter Stations

Converters would use proven AC/DC conversion technology of thyristor valves, allowing the rapid control of power transfers and a fast response to changing system conditions.

All critical auxiliary equipment, controls, protections, metering, and communications would use redundant systems to maximize system availability and reliability.

The overall energy availability of both converter stations including scheduled outages and the related forced outage rate would be in accordance with the definitions given in CIGRE-Report 14-97 WG04, "Protocol for Reporting the Operational Performance of HVDC Transmission Systems" and is based on the following assumptions for the operation of the stations:

- The station is being operated within the design limits and according to the operating instructions.
- The preventive maintenance during operation is carried out with the frequency and procedures as specified in the maintenance instructions.
- The scheduled maintenance during shut-down would be planned and carried out as specified in the maintenance instructions (e.g., every year).
- The spare parts and maintenance equipment are available at the converter station as proposed, and the trained maintenance crew is available on short notice.

A.5.3.3 Redundancy in Systems

The proposed design includes redundancies of key components and systems to minimize outages in key components/systems, including:

- Converter transformer cooling
- Thyristors
- Control and protection systems
- AC filter banks/shunt capacitor banks
- Valve cooling system
- Station service supply

A.5.3.4 Availability of Spares of Major Equipment

A.5.3.4.1 Converter Transformer. One spare converter transformer is foreseen for each converter station. In the event of a transformer fault, a transformer can be replaced with the spare within approximately 4 or 5 days.

A.5.3.4.2 Smoothing Reactor. One spare smoothing reactor coil is foreseen for each converter station, as well as 1 insulator stack of the support insulators.

A.5.3.4.3 Circuit Breakers, Disconnects, and Ground Switches. One spare of each switch/breaker is foreseen for each converter station, as well as motor operated mechanisms and wearing parts.

A.6 PUBLIC SAFETY

A.6.1 Introduction

This section addresses the key aspects of the proposed Project that relate to protecting public safety during the construction and operational phases of the Project, including the converter stations and onshore and offshore HVDC and HVAC cables. Safety precautions and emergency systems would be implemented as part of the proposed Project to ensure safe and reliable operation of Project facilities.

A.6.2 Construction Phase

A.6.2.1 Converter Stations/Laydown Areas

The construction schedule for the proposed converter stations, including utilization of nearby laydown areas, is expected to require about 20 months (excluding demolition of existing structures). Construction activities at the converter station sites would include: demolition of existing structures on the converter station sites; remediation of any contamination (based on the results of Phase I and II Environmental Site Assessments and subsequent regulatory agency-approved remediation plans, as applicable, with an expected duration of 3 to 6 months); grading, excavation, and site preparation activities; and construction of the converter station facilities. All of these activities would involve truck traffic and heavy equipment operations. The converter station sites and associated laydown areas would be fenced to prevent unauthorized access and to protect the public from onsite activities. In addition, security personnel would protect the construction sites during non-work hours.

A.6.2.2 Onshore Cable Installation

The relatively short sections of onshore HVAC and HVDC cable would normally be installed via below-ground trenching. All pertinent Occupational Health and Safety (OSHA) standards required for all construction operations would be followed. In addition, any segments of trench left open during non-work hours would be secured to protect the public and vehicular traffic, as applicable. The bore pit locations near the shoreline (and other locations using HDD or comparable technology, as applicable) for the proposed HDD operations would also be shored and fenced to protect the public.

A.6.2.3 Offshore Cable Installation

Installation of the offshore portion of the transmission cables would involve use of the cable laying ship (Giulio Verne) and Hydroplow in deep water areas, and the cable laying barge (with tugboats) and the Hydroplow in shallow water areas (between Suisun Bay and Pittsburg and probably across Pinole Shoals). The offshore cable laying operation is expected to require approximately 4 to 5 months and would occur 24 hours a day, 7 days per week. In order to avoid potential conflicts with ship traffic (commercial, military, fishing, and recreational) and navigation hazards, the U.S. Coast Guard would be notified and kept abreast of the cable laying plans and progress in the bay and a San Francisco Bar Pilots representative would be onboard the cable laying ship at all times. The Coast Guard would issue a Notice to Mariners based on the information supplied by the Project Proponent/Prysmian in advance of the commencement of the offshore cable laying operation. In addition, the cable laying ship/barge and attendant vessels, as applicable, would be well lit and would be equipped with state of the art communication and navigation equipment and radar to ensure safety.

A.6.3 Operational Phase

During the operational phase, the potential exists for electric shock and electric and magnetic fields (EMF) exposure to workers and the public. The design of the proposed Project would protect the public from direct access to all components. The HVDC and HVAC cable would be buried underwater and under sediment or protective mattresses in the submarine portions, and in underground trenches (or on aboveground transmission poles) in the onshore portions of the proposed route. Warning marker tapes and a layer of concrete slab would protect against accidental contact due to construction or unauthorized digging in the underground land-based portions.

At each terminus of the proposed route, the cables would transition from the trench and be terminated within a secured area of the converter stations and PG&E substations, accessible only to trained, authorized personnel. Fencing and/or an enclosure wall would restrict vehicular access. Converter stations and all associated equipment would be contained within an enclosed area with a pass key-operated security gate. Additional security measures would include surveillance cameras and intrusion alarms.

The proposed state of the art communication facilities, including the fiber optic cable portion of the cable system, between the 2 converter stations would allow for real time, instantaneous monitoring of the overall system, and the ability to immediately identify any potential malfunctions. In the unlikely event that the HVDC cable was compromised, the system would shut down instantaneously (milliseconds) thereby preventing electrical shock.

The converter station designs would prevent unacceptable electric and magnetic emissions from the sites thereby protecting the public. The HVDC cable has very low electric and magnetic field values by design and both the HVDC and the short segments of HVAC cables would be installed to achieve minimum electric and magnetic field levels in public areas.

The programs to be implemented to protect worker health and safety would also benefit public safety. Facility design would include redundancy and controls and monitoring systems to minimize the potential for upset conditions. Potential public health impacts associated with facilities operation would be mitigated by development and implementation of Emergency Response Plans; a Spill Prevention, Control, and Countermeasures Plan; Containment Structures; safety programs; and employee training.

The converter stations would have onsite fire protection systems (including emergency backup systems) and would be supported by the local fire protection services. During the detailed design of the proposed Project, potential fire protection designs and systems would be reviewed with local agencies to finalize design details.

In general, the fire protection system would consist of automatic detection and firefighting equipment. The fire detection-control panel would be located in the control room and connected to the control and protection system for remote actuation. The fire alarm would be initiated automatically by smoke, heat, or flame detectors, or manually by push button. A combination of detectors would be used including infrared and ultraviolet detectors, ionization and optical smoke detectors, and rate-of-rise temperature-sensitive detectors, depending on the equipment and/or space being monitored.

Audible alarms and flashing lights would be activated in the event of an incident. The equipment or area where the alarm was triggered would be indicated on the control panel. The firefighting equipment would initiate automatically, using water or an appropriate gas-based extinguishing agent.

Fire detection and automatic firefighting equipment would be connected to a power supply within the fire-detection control panel, which would be connected to the mains via a power supply/battery charger unit with an internal battery. A pump house would be included within the facility with 2 diesel-driven firewater pumps.

Auxiliary power in the event of a power outage would be supplied by an emergency generator (diesel powered).

A.6.4 Waste Management

The proposed Project would generate a variety of wastes during construction and operations. Refer to Section 4.14, Hazardous Materials Handling and Waste Management, for more information. These wastes would include replaceable parts, rags, and other waste materials and chemicals produced from maintenance activities, equipment fluids, and waste oil.

A.6.4.1 Construction Wastes

Inert solid wastes resulting from construction activities may include lumber, excess concrete, metal and scrap, and empty non-hazardous containers. Management of these wastes would be the responsibility of the construction contractor(s). Typical management practices required for contractor waste include recycling when possible, proper storage of waste and debris to prevent wind dispersion, and weekly pickup of wastes for disposal at local Class III landfills. The total amount of solid waste generated by construction activities is expected to be similar to that for normal commercial construction.

A.6.4.2 Operations Wastes

Inert solid waste generated at the converter stations during operation would be predominantly office wastes and routine maintenance wastes such as scrap metal, wood, and plastic from surplus and deactivated equipment, and parts. Scrap materials such as paper, packing materials, glass, metal, and plastic will be segregated and managed for recycling. Non-recyclable inert wastes will be stored in covered trash bins in accordance with local ordinances and picked up by an authorized local trash hauler on a regular basis for transport and disposal in suitable landfill areas. Skim oil collected from equipment drains and other liquids from equipment would be transported by an authorized carrier to a certified recycling facility.

A.6.5 Chemical Management

The chemicals to be used, handled, or stored at the converter stations during operation are listed in Section 4.14, Hazardous Materials Handling and Waste Management. The storage, use, and handling of these materials would be in accordance with applicable laws, ordinances, regulations, and standards and would include:

- A Hazardous Materials Management Plan (HMMP) would be developed and implemented prior to turnover of site management from the construction contractor to the operating company.
- Facility personnel would be trained in hazardous materials and hazardous waste awareness, handling, and management as required for their level of responsibility.
- Bulk chemicals would be stored in aboveground storage tanks while all other chemicals would be stored in the original shipping container.
- Chemical storage areas and transfer areas would be equipped with secondary containment sufficient in size to contain the volume of the largest container or tank including an allowance for rainwater.
- Small quantity chemicals used for maintenance tasks would be kept in appropriate “flammable material” or “corrosive material” storage lockers.

Periodic inspections would ensure that all containers were secure and properly marked.

A.7 ABANDONMENT PROCEDURES

As discussed in Section 2.3 (Purpose and Need for Project), the proposed Project is proposed as a long-term, reliable energy source for San Francisco. It is expected that the Project would be an integral part of San Francisco’s energy supply for the foreseeable future. Project facilities would be maintained and/or replaced, as necessary, to allow for safe, reliable operation in the long term. The project is designed to have a useful life of at least 40 years. Upgrades and refurbishments would be expected to be accomplished to extend the life of the Project well past that time. Once the Project reached the end of its useful life, project facilities would be decommissioned in accordance with applicable regulations in place at that time. In the event that the Project is eventually decommissioned, it is currently envisioned that the submarine and onshore-buried cable segments would be abandoned in place. It is also envisioned that the converter stations in San Francisco and Pittsburg would be removed and the sites would be prepared for the subsequent land use appropriate for each site at that point in time.

A.8 ALTERNATIVES CONSIDERED

A.8.1 Introduction

As required by the California Environmental Quality Act (CEQA), a “range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the project objectives but would avoid or substantially lessen any of the significant effects of the project” (14 CCR. 15126.6[a]) has been considered. CAISO management and Board of Governors have determined the Trans Bay Cable Project is required to ensure reliable operation of the transmission system serving the San Francisco Bay area, and is preferred in comparison with alternate transmission projects (ISO Board of Governors Meeting, September 8, 2005).

The proposed Project includes installation of approximately 56 miles of HVDC submarine cable in the bottom of San Francisco Bay and Carquinez Straits from a converter station to be constructed in the City and County of San Francisco near Potrero Point to a converter station to be constructed in the City of Pittsburg in Contra Costa County.

The primary goal of the Project is to deliver electricity to San Francisco to meet demand projected for the period 2012 and beyond. The proposed Project is anticipated to meet the CAISO planning and reliability standards while creating economic benefit compared to Project costs. The Project would decrease transmission grid congestion in the East Bay, reduce transmission losses, increase the overall security and reliability of the electrical system, and provide potential savings to ratepayers.

The proposed submarine HVDC cable route was selected in coordination with applicable regulatory agencies and organizations (e.g., SF Bar Pilots) and avoids sensitive biological resources, known areas of contamination, anchorage areas, dredge areas, and sand mining areas, etc. No alternatives to the proposed submarine HVDC cable route are considered in this EIR.

This section summarizes the alternatives to the proposed Trans Bay Cable Project including:

- Alternative converter station sites (and associated onshore AC/DC cable routes) in San Francisco and Pittsburg
- Alternative temporary construction laydown areas
- Alternative converter station access roads
- Alternatives considered but eliminated from further consideration
- No project alternative

The balance of this section is organized as follows:

- A.8.2 – Alternative Converter Stations and Ancillary Facilities
- A.8.3 – Alternatives Considered But Eliminated From Further Consideration
- A.8.4 – No Project Alternative

A.8.2 Alternative Converter Station Sites

A.8.2.1 Introduction

Given that the primary objective of the Project is the delivery of electricity to San Francisco, a primary consideration in converter station site selection is to focus on parcels in proximity to major electrical substations. The proposed converter station site in Pittsburg (Standard Oil site) is presently under option to Trans Bay Cable LLC from the City of Pittsburg and would interconnect with the PG&E Pittsburg Substation via a single-circuit 230 kV AC transmission line. The proposed converter station site in San Francisco (HWC site) is presently under option to Trans Bay Cable LLC, and would interconnect via a double-circuit 115 kV transmission line with the PG&E Potrero Substation.

The Project Proponent has identified several alternative sites for the proposed converter stations. The suitability of the sites was evaluated considering:

- Availability of sufficient land area (approximately 5 acres minimum required)
- Proximity to existing electrical substations
- Ability to obtain site control
- Consistency with the General Plan and zoning ordinances for their respective communities
- Appropriateness of the location for industrial development
- Ability to avoid or reasonably mitigate potential environmental impacts

The proposed 5.4-acre converter station site in the City of Pittsburg (known as the Standard Oil Site) is located within a developed industrial area with a mix of industrial and former industrial uses. The site is zoned General Industrial.

The proposed 5.6-acre converter station site in San Francisco (the HWC Site) is located on 23rd Street south of the existing Mirant Power Plant and adjacent to San Francisco Bay. The site is zoned Major Industrial.

A summary discussion of the alternative converter station sites considered, including onshore AC/DC cable routes and construction laydown areas, follows.

A.8.2.2 San Francisco Converter Station Site Alternatives

The alternative converter station sites in southeastern San Francisco that are evaluated in detail in this EIR are the Mirant Potrero and Sheedy sites. The converter station facilities that would be constructed and operated at these alternative sites are the same as those described in Sections A.2, A.3, and A.4 of this Appendix.

A.8.2.2.1 Mirant Potrero. The San Francisco Mirant Converter Station site is within the Mirant Potrero Power Plant property that is east of Illinois Street and north of 23rd Street. The site is immediately adjacent to the PG&E Potrero Substation and north of the proposed HWC site. Three different converter station layouts are under consideration on the Mirant Potrero site as shown on Figures A.8-1 through A.8-15. In addition, the onshore AC/DC cable routes associated with the three Mirant Potrero layouts are also shown on the previously referenced figures. This site includes several old structures, however, Mirant is seeking a demolition permit and plans to remove them. A brief description of each of the three Mirant Potrero converter station alternative layouts follows.

***San Francisco Mirant Converter Station Alternative 1*.** This alternative site and layout are shown on Figures A.8-1 and A.8-2, respectively. This alternative layout is rectangular and is oriented east-west on the north side of 23rd Street and east of the PG&E Potrero Substation. This alternative would require removal of Station A on the Mirant Potrero property. This alternative layout avoids the existing Mirant units 4, 5, and 6 (peakers/jets). An elevation view of this alternative is shown on Figure A.8-3 and photosimulations are shown on figures A.-4 and A.8-5.

***San Francisco Mirant Converter Station Alternative 2*.** This alternative site and layout are shown on Figures A.8-6 and A.8-7, respectively. This alternative layout is "L" shaped and is oriented east-west on the north side of 23rd Street and east of the PG&E Potrero Substation. This alternative would require removal of Station A on the Mirant Potrero property. This alternative layout avoids the existing Mirant units 4, 5, and 6 (peakers/jets), and extends further to the east than alternatives 1 and 3. An elevation view of this alternative is shown on Figure A.8-8 and photosimulations are shown on figures A.8-9 and A.8-10.

***San Francisco Mirant Converter Station Alternative 3*.** This alternative site and layout are shown on Figures A.8-11 and A.8-12, respectively. This alternative layout is rectangular and is oriented north-south on the north side of 23rd Street and east of the PG&E Potrero Substation. This alternative would also require removal of Station A on the Mirant Potrero property. This alternative layout also avoids the existing Mirant units 4, 5, and 6 (peakers/jets). The Alternative 3 layout minimizes encroachment on the eastern portion of the Mirant Potrero property. An elevation view of this alternative is shown on Figure A.8-3 and photosimulations are shown on Figures A.8-14 and A.8-15.

A.8.2.2.2 Sheedy. The San Francisco Sheedy site is bounded by 24th and 25th streets to the north and south, respectively, with Michigan Street to the west and the Western Pacific site and then San Francisco Bay to the east (refer to Figures A.8-16 through A.8-19). The site is in an industrial area immediately south of the proposed HWC site. Several existing structures on the site would require demolition. One potential disadvantage of this site is the difficulty in routing the 115 kV transmission line from the Sheedy site to the PG&E Potrero Substation given the presence of buried utilities in Illinois Street. Another disadvantage of the San Francisco Sheedy site is that the Project proponent does not have site control.

A.8.2.3 Pittsburg Converter Station Site Alternatives

The alternative converter station sites in Pittsburg that are evaluated in detail in this EIR are a location in an industrial area in the vicinity of West Tenth Street, near PG&E's Pittsburg substation, as well as a location on the Mirant Pittsburg Power Plant site adjacent to the PG&E Pittsburg Substation. The converter station facilities that would be constructed and operated at these alternative sites are the same as those described in Sections A.2, A.3, and A.4 of this Appendix.

A.8.2.3.1 West Tenth Street. The alternative Pittsburg West Tenth Street sites (Alternative 1, E/W and Alternative 2, N/S) are located in an industrial area of Pittsburg, south of the existing PG&E Pittsburg Substation and Mirant Pittsburg Power Plant. The sites are in close proximity to the PG&E 230 kV substation. Use of these sites would require leasing or procuring and sub-dividing several parcels. These sites are in proximity to a new residential community on the south side of West Tenth Street. The City of Pittsburg is in the process of amending the existing CS-O (1171) zoning district [Service Commercial with Limited Overlay (Ordinance No. 00-1171)] for a group of parcels. The affected zoning district includes 085-270-016, 085-270-018, 085-270-019, 085-270-020, 085-270-022, 085-270-025, 085-270-026, 085-270-029, 085-270-032, 085-270-035, 085-270-036, 085-270-038, 085-270-039, and 085-270-040) and encompass an area larger than that required for either of the 2 alternative converter station layouts under consideration for the West Tenth Street sites. The details of the proposed Overlay Zoning Amendment would be as follows with respect to allowable uses, setbacks, and height limitation:

> "Utility, Major – L39" with the additional land use regulations: "L39 Limited, as a permitted use, to electrical substations of 50 megawatts or less, or AC/DC power converter stations with electrical transformers. Any structures must be located a minimum of 35 feet from the right-of-way of West Tenth Street and a minimum of 600 feet from the right-of-way of Beacon Street, and with the maximum height of any building not to exceed 65 feet and/or any ancillary structure/tower not to exceed 80 feet in height. The site perimeter must be planted with a substantial screen of evergreen trees and other landscaping in order to minimize the impact of the size, height and bulk of the structures."

This revised text to the City of Pittsburg General Plan is based on a Zoning Amendment proposed by the City in order to satisfy the needs of the Project Proponent. The language above does not apply to land use on West Tenth Street as it exists today.

The West Tenth Street sites, layouts under consideration, elevation views, and a photosimulation are presented on Figures A.8-20 through A.8-27.

A.8.2.3.2 <u>Pittsburg Mirant</u>. The Pittsburg Mirant site is located in unincorporated Contra Costa County within the Mirant Pittsburg Power Plant property, immediately adjacent to the PG&E Pittsburg Substation (Figures A.8-28 through A.8-31). The site is industrial and currently has an oil tank and several wooden and metal frame buildings, which would need to be demolished. The Project Proponent does not currently have a lease option agreement with the owner of this site (Mirant).

A.8.3 Alternatives Considered but Eliminated from Further Consideration

A.8.3.1 <u>Introduction</u>

The purpose of this Alternatives Analysis is to examine the different possibilities for meeting the Project's need and objectives (refer to Section 2.3 for more information). The analysis is needed to determine whether or not the Project objectives can be met by different means that avoid, minimize, or mitigate potential significant environmental effects of the proposed Project. Refer to Section A.8.2 (Alternative Converter Station Sites) and Section 5.0 for Project component alternatives that have been retained for further consideration in the environmental analysis. A comparative analysis of alternatives retained for further consideration, including the No Project Alternative, is presented in Section 6.0.

This Alternatives Analysis section supports the environmental review process required for the proposed Project. It is also intended to support agency review for the environmental permits and related approvals that would be required to construct and operate the proposed Project. For example, the Bay Conservation and Development Commission (BCDC) requires an analysis of alternatives prior to issuing a permit to allow construction activities that involve placement of fill within the Bay.

In accordance with the requirements of CEQA, this EIR must address Section 15126(a) of the CEQA Guidelines that states that a reasonable range of alternatives to the proposed project must be described and analyzed in the environmental review process to allow for a comparison by decision-makers. The Guidelines establish that the analysis should focus on alternatives capable of eliminating or reducing significant adverse environmental effects of a proposed project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly. However, the Guidelines establish that alternatives whose effects cannot be reasonably ascertained and whose implementation is remote or speculative need not be analyzed.

A.8.3.2 Project Objectives

The purpose and need for the Trans Bay Cable Project is discussed in Section 2.3 and is summarized as follows with respect to transmission system reliability objectives. Refer to Section 2.3.2.1 for a discussion of Project objectives relative to converter station and cable route locations (Objectives 5 and 6).

On September 8, 2005, the CAISO staff recommended and the Board of Governors approved the Trans Bay Cable Project as the preferred long term transmission alternative to address the identified reliability concerns in northern San Mateo County and San Francisco beginning in 2012. The CAISO staff and Board of Governors support the early implementation of the Project for operation in 2009. Refer to Appendix C of this EIR for a copy of the CAISO Decision.

Trans Bay Cable LLC identified the following Project objectives. These objectives are used to guide and evaluate the selection of the most feasible alternative in this EIR and to meet the CAISO's San Francisco Stakeholders Study Group (SFSSG) plan reliability project requirements dated September 2, 2005. The following web address provides the San Francisco Peninsula, Phase 2, Long-Term Electric Transmission Planning Technical Study, Final Report, November 14, 2005: http://www.caiso.com/14cd/14cd7bd415cb0ex.html (CAISO, 2005a).

The overall objective of the proposed Project is to assist in meeting the current and projected electricity needs in San Francisco. The overall objective is based on achieving the following four specific project objectives.

A.8.3.2.1 Transmission System Reliability Objectives.

***Objective 1: Create a More Diverse Transmission System in the Area*.** The objective is to increase transmission system reliability in the greater San Francisco Peninsula by providing a second independent major transmission route into the northerly end of the San Francisco Peninsula. This provides a long-term reliable access to a load-serving source of energy, provides access to more economically available energy in the East Bay, and decreases the San Francisco Peninsula's vulnerability and dependence over the single existing south-to-north transmission path.

***Objective 2: Comply with Planning Criteria*.** The objective is to ensure that the transmission system serving the City of San Francisco will continue to provide both the capacity and flexibility necessary to meet the planning standards and criteria established by the CAISO and the North American Electric Reliability Council (NERC). In addition, compliance with the San Francisco Peninsula Long Term Transmission Planning Study Phase 2 prepared by the SFSSG will result in an integrated transmission system capable of supplying the City of

San Francisco with the energy necessary to meet load demands in 2012 and beyond. See Appendix C of this EIR for relevant CAISO documents related to this study.

Objective 3: New Generation and/or Transmission Facilities**.** With no new generation anticipated to be built north of the Martin substation except the San Francisco Electrical Reliability Project, the CAISO plan to reliably serve the San Francisco load from 2012 and beyond requires a new transmission system to be installed. The singular and heavily loaded existing south-to-north transmission path serving San Francisco should be supported with the addition of new major transmission capacity. In addition, the installation of new transmission lines and pathways should be complementary to and compatible with allowing the San Francisco Peninsula access to available local generation as well as provide the CAISO the robust operating system necessary to effectively manage the area's transmission and generating systems.

Objective 4: Current Electric Supply and Demand**.** The objective is to supply northern San Mateo County and San Francisco County with a reliable, efficient, economic, and environmentally compatible source of energy from the East Bay. CAISO transmission studies estimate that the Project would allow the same load to be served with approximately 20 MW less generation because: 1) the Project would create a new, shorter transmission path into the northern San Francisco Peninsula; 2) the DC transmission line losses are less than a typical AC transmission line; and 3) congestion would be relieved in the transmission grid. The current transmission infrastructure within the San Francisco Peninsula area is insufficient to accommodate the CAISO-anticipated area load projections.

A.8.3.3 Alternatives Development and Screening Process

The alternative development and screening process applied to this Project involved the following steps:

- Based on the Project need and objectives, identify alternatives that are potentially capable of meeting the basic objectives
- Assess the ability of each alternative to meet the Project objectives
- Assess whether each alternative is feasible
- Evaluate the ability of each alternative to avoid or substantially reduce potential significant adverse impacts associated with the proposed Trans Bay Cable Project
- Retain any identified viable alternatives for further analysis in the EIR, as applicable

In order to screen alternatives by their ability to avoid or reduce potential adverse impacts, judgments of potential Project effects were made. As such, the screening process is based on the anticipated significant adverse project impacts of the proposed Project and other alternatives that were considered to be potentially capable of meeting the Project goals and objectives.

Most of the anticipated potentially significant impacts for the proposed Project and alternatives would pertain to short-term construction activities associated with different facilities sites and transmission routes.

A.8.3.4 Screening Process Criteria

The process used to screen alternatives to the Trans Bay Cable Project includes application of the following criteria:

- **Criteria #1 – Project Objectives:** Is the alternative capable of achieving all four of the Project reliability objectives specified in Section A.8.3.2?
- **Criteria #2 – Alternative Feasibility:** Is the alternative capable of meeting the following categories of feasibility?
  - *Legal Feasibility* – Does the alternative avoid lands or activities that are legally restricted or protected, or that otherwise prohibit implementation of the project for legal reasons?
  - *Regulatory Feasibility* – Can the alternative meet regulatory and related permitting requirements in a timely manner?
  - *Technical Feasibility* – Is the technology commercially available and applicable, and can it reasonably be implemented given the physical and operational parameters specific to the project area?
- **Criteria #3 – Environmental Impacts Avoidance and Minimization:** Is the alternative capable of avoiding or minimizing potential environmental impacts relative to the proposed Project?

A.8.3.5 Alternatives Analysis Presentation

As discussed previously, the CAISO Board of Governors approved the Trans Bay Cable Project on September 8, 2005 as the preferred long-term transmission alternative to address the reliability concerns in northern San Mateo County and San Francisco. The CAISO through the SFSSG evaluated four transmission alternatives that were considered potentially capable of meeting the reliability concerns in northern San Mateo County and San Francisco by 2012 (and beyond), as follows:

- Upgrade and Replace Existing Facilities
- Trans Bay Cable Project

- Moraga-Potrero 230 kV Line
- Tesla-Potrero 230 kV Line

The CAISO determined that the Trans Bay Cable Project is the only alternative capable of meeting the objective of establishing long-term reliable load serving capability by adding 400 MW of load serving capability upon its initial operation. Additionally, the CAISO identified the following three reinforcements, including the Trans Bay Cable Project, to meet the CAISO objectives:

- Jefferson-Martin Transmission Line
- San Francisco Electrical Reliability Project
- Trans Bay Cable 400 MW HVDC Project

Although the CAISO/SFSSG alternatives analysis focused on a much smaller list of potential alternatives, this alternatives assessment assesses a wider range of potential alternatives in order to comply with the requirements of CEQA. The sections below provide an analysis of potential alternatives to the Trans Bay Cable Project, including the proposed Project. The presentation for the alternatives analysis is as follows:

- Each potential alternative is briefly described
- The suitability of the alternative to meet the screening criteria provided above is assessed
- A conclusion is provided regarding whether or not the alternative meets the screening criteria and, thus, whether it is retained or eliminated from further evaluation in the EIR

Discussions of each alternative considered and the screening analysis results follow.

The following potential alternatives are assessed in this section, some of which were considered by the CAISO as non-transmission alternatives:

- Proposed Trans Bay Cable Project (Pittsburg-Potrero 400 MW DC)
- Pittsburg to SF 400 MW DC Land-based Route – New Transmission Corridor
- Pittsburg to SF 400 MW DC Land-based Route – Within Existing Utilities and Transportation Corridors
- Reconductor Option
- Moraga-Potrero 230 kV AC or HVDC
- Moraga-Embarcadero 230 kV AC
- Sobrante to Potrero 230 kV AC

- Tesla-Potrero 230 kV AC
- San Mateo to Martin 230 kV AC
- Jefferson to Various SF substations (230 kV AC)
- New Generation – Mirant Potrero LLC Potrero Power Plant Unit 7
- New Generation – Peaker Power Project
- Renewable Energy Sources – Wind, Solar, and Tidal Technologies
- System Enhancement – Demand Management Option (DMO)
- System Enhancement – Distributed Generation Option (DGO)
- Integrated Resource Alternatives
- Oregon-California Transmission: HVDC Underwater Cable From Oregon to San Francisco Bay Area

A.8.3.5.1 Proposed Trans Bay Cable Project (Pittsburg-Potrero 400 MW DC).

***Alternative Description*.** The proposed Project is the only alternative that is considered to be capable of meeting all of the screening criteria presented previously.

***Screening Process Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative meets the four specific project objectives for Criteria #1 - Project Objectives. It has been assessed by way of this EIR to meet the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility. The assessment pertaining to Criteria #3 - Environmental Impacts Avoidance and Minimization is a finding that the proposed Project would have a different set of impacts relative to the other alternatives under consideration but the overall level of significance would be equal or less.

***Alternative Conclusion*.** The proposed Trans Bay Cable Project meets the three Screening Process Criteria and is retained for further consideration.

A.8.3.5.2 Pittsburg to SF 400 MW DC Land-based Route – New Transmission Corridor.

***Alternative Description*.** A land-based approach for transmitting the electricity from Pittsburg to San Francisco could involve development of a new transmission corridor that would run over Willow Pass and then through Contra Costa County and Alameda County to the edge of the Bay. This overhead or underground route would probably require avoiding the U. S. Naval Magazine – Port Chicago, the U.S. Naval Weapons Station – Concord, the U.S. Naval Magazine – Concord, and the Avon Refinery. The new routing would also need to avoid Briones Regional Park, Wildcat Regional Park, Tilden Regional Park, and other open space areas. In addition, it would be necessary to minimize impacts to existing linear features, such as roadways and other transportation systems in Contra Costa and Alameda counties. Further, it would be desirable to avoid siting the corridor where sensitive receptors (e.g., residences, parks, schools, hospitals, etc.) are located. In addition, a new transmission corridor would still have to cross the Bay and address the constraints associated with the Moraga substation to Potrero substation alignment (see Section A.8.3.5.5 below) or the Sobrante substation to Potrero substation alignment (see Section A.8.3.5.7, below).

Screening Criteria Suitability**.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does meet the four specific project objectives for Criteria #1 - Project Objectives. It has been assessed to not meet the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility for the following two reasons: 1) while siting and developing a new transmission corridor is not impossible, it would be difficult to obtain all of the necessary permits and approvals in a timely manner, particularly given the potential for disruption to the public and to sensitive resources; and 2) it could be difficult, and possibly infeasible, to secure the required transmission ROW because of the varied land ownership and attendant constraints along a land-based route. Caltrans does not allow longitudinal encroachments within their ROWs thereby likely rendering this alternative infeasible. It is considered to be highly unlikely that this alternative could be sited, permitted, approved, and constructed in a timely manner. The assessment for Criteria #3 – Environmental Impacts Avoidance and Minimization, is a finding that the proposed Project would have a different set of impacts relative to this alternative but that the overall level of significance would be equal or less.

Alternative Conclusion**.** Development of a new land-based transmission route alternative was eliminated from further evaluation because: 1) it is considered that this alternative could not be sited, approved, permitted, built, and in operation in a timely manner (e.g., by 2009-2012) for Criteria #1; and 2) it does not meet the legal, regulatory, and technical feasibility categories for Criteria #2.

A.8.3.5.3 Pittsburg to SF 400 MW DC- Land-based Route – Within Existing Utilities and Transportation Corridors.

Alternative Description**.** The other potential land-based approach for the transmission of electricity from Pittsburg to San Francisco is use of portions or all of existing corridors established for such utilities as gas, water, and transit. There are eight primary categories of existing public and private utility corridors between Pittsburg and San Francisco that could potentially be used for the transmission system as described below.

Aboveground Routing**.** Aboveground routing requires power line infrastructure on which the cables are installed, except in specific cases (see discussion of BART, below) where the cable could potentially be attached onto other infrastructure for short and transitional intervals.

***Bay Bridge Crossing*.** A critical piece of all routing options is a means of crossing the Bay into San Francisco. The logical means of avoiding potential marine effects would be to cross the bay by routing the cable over the Bay. Caltrans, however, does not allow longitudinal encroachments in their ROWs, and has other issues that would likely preclude installation (e.g., lack of available space and concerns regarding public safety and homeland security). In addition, construction of the eastern span of the new Bay Bridge is currently underway and is not expected to be completed in time to meet the Project objectives.

***Electricity Corridors*.** Electricity corridors include primarily the PG&E routes that run through the East Bay. There is the possibility that the corridors of the East Bay Municipal Utility District or the San Francisco Public Utility District's Hetch Hetchy System could be used. However, these systems would require bringing the power across the Bay and, therefore, would not avoid Bay-related effects. The only existing electricity towers and lines that cross the Bay are south of San Francisco and using them would still require routing the electricity up the peninsula through San Mateo County. This would require using the existing San Mateo – Martin system or the Jefferson-Martin Project system corridor once it has been constructed.

***Gas Pipeline Corridors*.** Gas pipeline corridors in the East Bay are discontinuous and could only provide a corridor for a portion of the transmission line route. In addition, there could be ROW constraints with co-locating the two types of systems. If the transmission line could be routed to the Emeryville-Oakland area, there would still remain the need for bringing it across the Bay.

***Telecommunications Corridors*.** These corridors provide another alternative, with the same constraints as the previous two corridor options including the need for a Bay crossing.

***Roadway Corridors*.** The Federal Highway Administration (FHWA) has provisions for crossing highways and freeways, but prohibits the placement of utility lines in the Interstate Highway System ROW. In California, Caltrans handles encroachment permitting for both federal and state highways. FHWA and Caltrans policies would prohibit using the I-680 and I-80 corridors. The use of the State Highway System would require Caltrans approval, including granting of an exception to their longitudinal encroachment policy. Roadways such as San Pablo Avenue are permissible, although these do not provide a relatively direct route and would therefore lengthen the route and compound roadway and traffic disturbance.

***Private Rail Corridors*.** The UPRR and BNSF Railroad have ROW close to potential sites for the proposed Project Pittsburg Converter Station and/or the PG&E Pittsburg substation. The UPRR ROW runs all the way to the Emeryville-Oakland area, while the

BNSF ROW terminates in Point Richmond. The railroad ROW has been used in the past for linear projects, such as telecommunication cables and industrial pipelines, but the rail companies are trying to retain the integrity of their ROW so that they can expand their trackage to support increased passenger rail service in addition to maintaining their freight service. Caltrans has been funding numerous projects to double or triple track the existing alignments to support enhanced passenger service by the Capitol Corridor Joint Powers Authority and both Caltrans and the railroads are reluctant to release ROW for other uses. In 2004, Project representatives presented UPRR with a proposal to install the transmission line in the UP ROW. The UPRR reviewed and rejected this Project (Love, 2004) based on the following: 1) the UPRR corridor from Pittsburg to Oakland is a "core network" route; and 2) current and expected freight rail growth combined with current and future obligations to provide capacity for commuter trains make it not possible for the UPRR to accommodate additional encroachments in an already crowded corridor.

***Routing Within the BART System*.** The BART system provides a land-based route that appears more continuous than other corridors. Under this alternative, the location of the two converter stations would be unchanged from the Project, but the transmission route between the two converter stations in Pittsburg and San Francisco would go overland along the existing rail network of the BART system, from the Pittsburg Bay Point Station to the San Francisco Embarcadero Station. The route from the Pittsburg converter station to the Bay Point Station would require the underground installation of approximately 4.5 miles of cable in local surface streets. The route connecting the Embarcadero Station to the converter station in the vicinity of the Potrero substation would require the underground installation of approximately 4 miles of cable in local surface streets. Once in the BART system, the cables would be routed to accommodate all existing utilities, the varying ROW widths, and the constraints that would be encountered at the intermediate stations and differing trackage configurations. Between the Bay Point Station and Embarcadero Station, cable would be installed within five different trackage configurations, each requiring its own installation approach for each rail at grade, elevated rail, underground, Caldecott Tunnel, and the Trans Bay Tube. Other considerations and constraints identified for this alternative include:

- ***Underground sections*** of the route would require the positive identification of all existing buried utilities. Based on improvements and additions made to the BART system over the past 30 years, locating utilities would be a very slow and deliberate process. It could be expected that a large amount of this work would be performed by hand in the absence of as-built drawings.
- ***Elevated sections*** of the route would require special techniques for breaching track-at-grade abutments and for fastening the cables to the limited space along the concrete beams that support the rail. Construction on elevated sections would also require creating an adequate space around or through concrete supporting columns. Work on all elevated

sections would require protection to cars and pedestrians on the surface streets below, and associated traffic control.

- The ***Caldecott Tunnel*** section, through the Berkeley Hills, is a single bore and does not contain a separated utility tunnel. Cable installation through the Berkeley Tunnel would require fastening cables to the tunnel wall, outside of the train's "clear area." Available free area in this tunnel is very limited and would require routing to be done by a walk-down of the entire length of the tunnel to find space for the cables.
- The ***Trans Bay Tube*** is a unique structure and has successfully accommodated very large seismic movements. In addition to its one of a kind translational joints, the Trans Bay Tube was constructed with a separated center utility corridor. The upper utility corridor provides a reasonably unobstructed route for the DC cables; however, the DC cable might need to occupy the emergency compartment of the BART tube and would require careful routing to avoid interference with emergency evacuation routes. The engineering and design of this section of the line would need to provide both the strength and flexibility necessary to ensure compatibility with the seismic movements of the Tube. It is the Project Proponent's understanding that BART is preparing to make seismic upgrades to the Trans Bay Tube and, as currently designed, may not be capable of accommodating a DC cable.

In concert with the extreme difficulty of defining and planning the route, installing the cables within the BART ROW would place severe limits on the available construction window, thereby requiring a substantial amount of additional work to be performed. In addition, construction in the BART ROW would require continuous coordination and development of specially tailored construction procedures and methods. Safety of train operations is paramount, access to work areas is limited, and the available construction workday is expected to be a maximum of 3 to 5 hours for weekdays and weekends, respectively.

Unlike installation for an undersea cable, which can be accomplished with as few as zero to three splices, the number of splices for a land-based installation is determined by the capacity of "baskets" on the construction equipment that bring and lay-out the cable onsite. The maximum segment length on land is approximately 2/3 of a mile to 1 mile, thus requiring splicing at these intervals (and/or as defined by the work windows, as noted above). Each splice requires approximately 8 to 10 days to complete. This fact, combined with the 3 to 5 hour work windows, results in a construction schedule that is completely incompatible with the planned and safe BART operations. To make a comparison with fiber projects, the weight of the HVDC cable is approximately 50 pounds per foot and is approximately 10 inches in diameter. This means the HVDC cable can not be bent at a 90 degree angle and trying to hang the cable on the side of a wall means the structure would need to be able to support the weight of the cable. In comparison, fiber cable weighs approximately 5 pounds per foot and can be bent at a 90 degree angle. In the BART tunnel, the fiber optic cable is hung from the side wall; the cable diameter is about 2 inches and can be easily removed if it becomes necessary. In summary, while fiber optic cable can be readily installed in the BART tunnel, installation of a HVDC cable would be much more problematic.

Screening Criteria Suitability**.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria used in this assessment. The eight options for land-based transmission routing within existing corridors includes Aboveground Routing, Bay Bridge Crossing, Electricity Corridors, Gas Pipeline Corridors, Telecommunications Corridors, Roadway Corridors, Private Rail Corridors, and DC Routing Within the BART System. All eight options are considered potentially capable of meeting the four specific project reliability objectives for Criteria #1 - Project Objectives. However, it is considered unlikely that any of these alternatives could be sited, approved, and built in a timely manner. With respect to the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility, four of these eight options have been differentially assessed to not meet at least one of the three categories, whereas, the remaining four options have been assessed to likely meet all three categories of feasibility although the actual implementation would be regarded as difficult, as summarized below.

Aboveground Routing**.** Public opposition to power lines installed onto other infrastructure for short and transitional intervals has been intensive, as demonstrated in public comments received on the Jefferson-Martin DEIR. As such, this option would likely meet substantial opposition and be very difficult to permit in a timely manner.

Bay Bridge Crossing**.** According to Caltrans, the new eastern section of the bridge is designed to have all conduit (except water) internal to the bridge, and available space has already been allocated. Therefore, this option is considered technically infeasible.

Electricity Corridors**.** This option likely meets the legal, regulatory, and technical categories of feasibility although the actual implementation would be regarded as extremely difficult.

Gas Pipeline Corridors**.** For segments of the corridors, this option likely meets the legal, regulatory, and technical categories of feasibility although the actual implementation would be regarded as difficult with respect to co-locating the two different types of systems, including consideration of safety issues.

Telecommunications Corridors**.** This option likely meets the legal, regulatory, and technical categories of feasibility although the actual implementation would be regarded as difficult.

Roadway Corridors**.** The ability to secure a continuous ROW for the entire project length along roadway corridors is not considered likely related to the legal and regulatory categories of feasibility. Although technically feasible, construction and schedule impacts upon traffic circulation would likely render actual implementation difficult.

***Private Rail Corridors*.** Requests were placed by the Project Proponent with both BNSF and UPRR to evaluate the feasibility of routing the DC cables in the respective ROWs. BNSF was unwilling to consider a ROW based on several factors, including lack of space in the ROW, soil stability and wetland concerns, and declined to allow routing of cables in their tunnels (which would entail detours from the main rail route). BNSF responded that they were "respectfully denying" TBC's request to use a portion of the railroad ROW. UPRR similarly considered the conceptual ROW request and determined that there is insufficient space for the cable, given present and planned alignments and expansions, as noted above. The UPRR also rejected TBC's request to use a portion of their ROW due to expected growth in freight and commuter trains (Love, 2004). These alternatives are considered infeasible for legal and regulatory reasons (i.e., the Project Proponent cannot compel UPRR or BNSF to provide ROW). In addition, although potentially feasible from a technical standpoint, construction and schedule impacts pertaining to railroad company operations would likely render actual implementation of these alternatives difficult.

***Routing Within the BART System*.** This option likely meets the legal and regulatory categories of feasibility, but does not meet the technical feasibility criteria. Significant legal feasibility property challenges exist for a route that uses the BART system, even excluding property and land use issues in the surface streets connecting the converter stations to BART in Pittsburg and San Francisco. One challenge would be to successfully obtain property interests along the proposed route sufficient to obtain both financing for construction and operation of the transmission line and title insurance. The preferred property interest for the transmission line is an easement, which is both a financeable and insurable interest. Licenses and franchises, although they may be financeable, are not insurable real property interests.

A second challenge associated with regulatory feasibility is the likelihood that the developer of the transmission line would need to deal with a multitude of other parties in addition to BART, including, without limitation, state agencies, counties, municipalities, local agencies and private parties, to negotiate, document and pay for easements, franchises, permits and consents. There would be significant time and costs associated with this process. Negotiation and documentation would extend not only to obtaining the easements and/or licenses and franchises for the transmission line, but also to obtaining permits, franchises and consents from third parties who may have other interests in the route (e.g., other easement holders and/or licensees), all with no assurance of success.

The title and survey work for a transmission line route under this alternative would also be problematic. Regardless of what type of interest was obtained and regardless that a significant portion of the transmission line route would be within the BART ROW, title for the route would need to be analyzed to ascertain what interests may be obtained, from whom to obtain those interests, and what other parties may have an interest in the transmission line route.

Given unlimited time, the BART easement and physical/engineering constraints might be able to be resolved. It could take additional months of route verification to determine whether a route is in fact technically feasible. However, in a meeting on March 23 of 2004, BART clearly explained that their responsibility and mission is for safe public transit and that safety and transit scheduling issues would override the electrical transmission project objectives and milestones (BART, 2004). In addition, the construction schedule necessary to safely support BART operations is not feasible for installation of the proposed cable including consideration of the time needed to perform cable spices that would be needed every 2/3 of a mile to 1 mile as discussed previously.

For all eight options, the assessment for Criteria #3 - Environmental Impacts Avoidance and Minimization, is a finding that the proposed Project would have a different set of impacts from these alternatives but that the overall level of significance would be equal or less.

***Alternative Conclusion*.** Development of a land-based transmission route alternative within existing corridors was eliminated from further evaluation because: 1) it is considered highly unlikely that any of them could be sited, permitted/approved, and built in a timely manner; 2) all eight options fail one or more of the feasibility categories under Criteria #2; and 3) their relative impact significance would be expected to be equal to or greater than the proposed Project.

A.8.3.5.4 Reconductor Option.

***Alternative Description*.** Instead of building a new line to San Francisco, this alternative would involve reconductoring, and the development of operating solutions to eliminate overloads and increase the load serving capability of facilities serving the overall San Francisco Bay Area. The alternative assumes that the existing generating units at the Potrero and Hunters Point power plants are retired, the City/County of San Francisco (CCSF) Electric Reliability Project consisting of four 48.7 MW combustion turbine generating units are operational, and that no new major transmission line is built to San Francisco from year 2011 to year 2018. Three of the combustion turbine generating units would be located at a shared site with SF MUNI and one unit would be located near San Francisco International Airport. In addition to the four projects identified in the CAISO Revised Action Plan, this alternative would require eight other projects to increase Greater Bay Area transmission load serving capacity through 2018 (as specified in Attachment 1 in the document titled: *San Francisco Peninsula Long Term Transmission Planning Study, Phase 2, Draft Preliminary Results, Thermal Analysis Study, Reconductoring Alternative, 4 CCSF Generating Units Operational, Revised March 7, 2005)*(CAISO, 2005b).

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does not meet the four specific project reliability objectives for Criteria #1 - Project Objectives. It has been assessed as likely to meet the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility. Since the alternative would involve reconductoring and operational solutions to existing infrastructure, it is assessed as likely to avoid and/or reduce environmental impacts relative to the proposed Project and would, therefore, meet Criteria #3 – Environmental Impacts Avoidance and Minimization.

***Alternative Conclusion*.** This alternative was eliminated from further consideration because it does not meet all of the four specific project reliability objectives for Criteria #1 - Project Objectives. This alternative would not create a more diverse transmission system (Objective 1); it would not comply with the planning standards and criteria established by the CAISO and NERC (Objective 2); and this alternative would constitute a relatively short-term fix (through 2018), not a long-term solution as provided in part by the proposed Project.

A.8.3.5.5 Moraga-Potrero 230 kV AC/ HVDC.

The Moraga-Potrero alternative could involve installation of either a 230 kV AC line or a HVDC line, as discussed below.

***Moraga-Potrero 230 kV AC*.**

***Alternative Description*.** The Moraga substation to Potrero substation alignment would involve a minimum of 20 miles of transmission of 230 kV AC electricity from the Moraga substation in the City of Orinda in Contra Costa County, through Alameda County, and into San Francisco. The route would utilize an existing transmission corridor from the Moraga substation to the Claremont substation in Alameda County and would then largely follow a common corridor to the east side of the Bay. There would be four options for bringing the power across the Bay. It could involve running a cable through the BART service tunnel, running the cable on the Bay Bridge, laying a new submarine cable, or a combination of using the bridge and a submarine cable. The potential impacts associated with the Bay crossing are similar to those described previously in Section A.8.3.5.3 for the Land-based Route – Within Existing Utilities and Transportation Corridors. Since the Embarcadero Substation is an indoor substation with limited room to expand, it may not feasible to add another 230 kV line. This constraint leaves using the PG&E Potrero Substation site as the most feasible option for interconnection to the electrical grid.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does meet some of the four specific project reliability objectives for Criteria #1 – Project Objectives, such as increasing transmission system reliability in San Francisco by providing an alternative transmission pathway into the area. An assessment regarding this alternative’s ability to meet the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility is problematical, but regarded as likely not feasible at this time because of a range of potential issues associated with the Bay crossing and/or use of transportation and utilities ROWs similar to the discussion presented under Section A.8.3.5.3, above. The assessment for Criteria #3 – Environmental Impacts Avoidance and Minimization, is a finding that this alternative would likely result in equal or greater impacts than the proposed Project.

***Alternative Conclusion*.** This alternative was eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative and may not be completed by the 2012 need date specified by the CAISO; and 2) it does not meet most of the screening criteria under Criteria #2.

***Moraga-Potrero HVDC*.**

***Alternative Description*.** The Moraga substation to Potrero substation would be similar if not identical to the alignment for the Moraga-Potrero 230 kV AC option and would involve a minimum of 20 miles of transmission of HVDC electricity from the Moraga substation in the City of Orinda in Contra Costa County, through Alameda County, and into San Francisco. The route would utilize an existing transmission corridor from the Moraga substation to the Claremont substation in Alameda County and would then largely follow a common corridor to the east side of the Bay. Alternatively, the alignment could be along the BART or highway ROW. There would be four options for bringing the power across the Bay. It could involve running a cable through the BART service tunnel, running the cable on the Bay Bridge, laying a new submarine cable, or a combination of using the bridge and a submarine cable. The potential impacts associated with the Bay crossing are similar to those described previously in Section A.8.3.5.3 for the Land-based Route – Within Existing Utilities and Transportation Corridors. Additionally, a converter station would be required near the PG&E Potrero Substation and another near the PG&E Moraga Substation. The potential impacts associated with the Potrero converter station would be similar as that for the proposed TBC Project. The potential impacts associated with the Moraga converter station were not evaluated.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does meet some of the four specific project reliability objectives for Criteria #1 – Project Objectives, such as increasing transmission system reliability in San Francisco by providing an alternative transmission pathway into the area. An assessment regarding this alternative’s ability to meet the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility is problematical, but regarded as likely not feasible at this time because of a range of potential issues associated with the Bay crossing and/or use of transportation and utilities ROWs similar to the discussion presented under Section A.8.3.5.3, above. The assessment for Criteria #3 – Environmental Impacts Avoidance and Minimization, is a finding that this alternative would likely result in equal or greater impacts than the proposed Project.

***Alternative Conclusion*.** This alternative was eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative and may not be timely completed by the 2012 need date specified by the CAISO; and 2) it does not meet most of the screening criteria #2.

A.8.3.5.6 Moraga-Embarcadero 230 kV AC.

***Alternative Description*.** The Moraga substation to the Embarcadero substation alignment would involve a minimum of 20 miles of transmission of 230 kV electricity from the Moraga substation in the City of Orinda in Contra Costa County, through Alameda County, and into San Francisco. The route would utilize an existing transmission corridor from the Moraga substation to the Claremont substation in Alameda County and would then largely follow a common corridor to the east side of the Bay. Under this alternative, the same four options as set forth in Section A.8.3.5, would bring the power across the Bay. It could involve running a cable through the BART service tunnel, running the cable on the Bay Bridge, laying a new submarine cable, or a combination of using the bridge and a submarine cable. Addition of a 230 kV line at the Embarcadero Substation from a new source would require converting the existing bus to a transmission bus configuration with all facilities electrically connected on the 230 kV side. Several 230 kV breakers and switches would be needed. Space at the site is extremely limited and not available for the amount of equipment needed for such a conversion. As such, since the Embarcadero substation is an indoor substation with limited room to expand, it is technically not feasible to add another 230 kV line. This constraint leaves using the Potrero site as the only feasible option (see Section A.8.3.5.5, above).

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does meet some of the four specific project reliability objectives for Criteria #1 - Project Objectives, such as increasing transmission system reliability in San Francisco by providing an alternative transmission pathway into the area (Objective 1). An assessment regarding this alternative’s ability to meet the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility is problematical, but regarded as likely not feasible at this time because of a range of potential issues associated with the Bay crossing and/or use of transportation and utilities ROWs similar to the discussion presented under Section A.8.3.5.5, above. The assessment for Criteria #3 - Environmental Impacts Avoidance and Minimization, is a finding that this alternative would likely result in equal or greater impacts than the proposed Project.

***Alternative Conclusion*.** This alternative was eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative; and 2) it does not meet most of the screening criteria under Criteria #2 with respect to legal, regulatory, and technical feasibility.

A.8.3.5.7 Sobrante to Potrero 230 kV AC.

***Alternative Description*.** The Sobrante substation to Potrero substation alignment would be very similar to the Moraga substation to Potrero substation alignment as described under Section A.8.3.5.6, above. It would require an additional 3.3 miles of cable between the Sobrante substation and the Moraga substation and would have the same limitations with respect to crossing the Bay and the need to get to the Potrero substation for interconnection to the electrical grid.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does meet some of the four specific project reliability objectives for Criteria #1 – Project Objectives, such as increasing transmission system reliability in San Francisco by providing an alternative transmission pathway into the area. An assessment regarding this alternative's ability to meet the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility is problematical, but regarded as likely not feasible at this time because of a range of potential issues associated with the Bay crossing and/or use of transportation and utilities ROWs similar to the discussion presented under Section A.8.3.5.6, above. The assessment for Criteria #3 - Environmental Impacts Avoidance and Minimization, is a finding that this alternative would likely result in equal or greater impacts than the proposed Project.

***Alternative Conclusion*.** This alternative was eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative and may not be completed by the 2012 need date specified by the CAISO; and 2) it does not meet most of the screening criteria under Criteria #2 with respect to legal, regulatory, and technical feasibility.

A.8.3.5.8 Tesla-Potrero 230 kV AC.

***Alternative Description*.** This alternative would involve installing about 21 miles of new 230 kV circuit from the Tesla substation to the San Ramon substation, reconnecting lines so that there are two 230 kV circuits connecting the San Ramon and the East Shore substations, reconductoring the two 230 kV lines connecting San Ramon to East Shore substations in the vicinity of Hayward (about 14 miles), and installing a new 230 kV overhead and underground line (about 31 miles for the overland route) from the East Shore substation to the Potrero substation. The alternative assumes that the existing generating units at the Potrero and Hunters Point power plants are retired, and that the four CCSF 48.7 MW combustion turbine generating units are operational. Three of the combustion turbine generating units would be located at the SF MUNI site and one unit located near San Francisco International Airport. This alternative would require four other projects to increase greater Bay Area transmission load serving capacity through 2018, as identified in the CAISO Revised Action Plan (see *San Francisco Peninsula Long Term Transmission Planning Study, Phase 2, Draft Preliminary Results, Thermal Analysis Study, New 230 kV*

AC Line Alternative 2, Tesla-Potrero 230 kV Alternative, 4 CCSF Generating Units Operational, February 14, 2005)(CAISO, 2005c). This alternative would construct a new transmission line in parallel with the Jefferson-Martin Project.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does meet some of the four specific project reliability objectives for Criteria #1 - Project Objectives, such as increasing transmission system reliability in San Francisco. However, this alternative would still bring transmission into San Francisco via the peninsula and would not create a completely new transmission pathway as would the proposed Project. An assessment regarding this alternative's ability to meet the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility is problematical, but regarded as likely not feasible at this time because of a range of potential issues associated with the amount of new transmission line ROW required through developed areas (e.g., residential), including the anticipated need to use transportation and utilities ROWs similar to the discussions presented previously. It is also considered unlikely that this alternative could be sited, permitted/approved, and built in a timely manner. The assessment for Criteria #3 - Environmental Impacts Avoidance and Minimization, is a finding that this alternative would likely result in greater impacts than the proposed Project.

***Alternative Conclusion*.** This alternative was eliminated from further evaluation because:1) implementation of this alternative is remote or speculative and may not be completed by the 2012 need date specified by the CAISO; and 2) it does not meet many of the screening criteria under Criteria #1 and #2.

A.8.3.5.9 San Mateo to Martin 230 kV AC.

***Alternative Description*.** The San Mateo substation to Martin substation project would involve the development of a 14.3-mile underground cable through northern San Mateo County. It would use the same route as the existing 230 kV underground transmission line between the two substations. The San Mateo substation is currently the only source of externally generated power to northern San Mateo County and San Francisco.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does not meet some of the four specific project reliability objectives for Criteria #1 – Project Objectives such as increasing transmission system reliability in San Francisco because this alternative would still involve bringing power up the peninsula to San Francisco. Additionally, with this alternative, if there were to be a loss of power to the San Mateo substation, San Francisco would lose nearly all of its ability to import electricity. It has been assessed as likely to meet the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility. However this option would likely meet substantial public opposition (as demonstrated in public comments on the

Jefferson-Martin EIR) and be difficult to permit in a timely manner. Since the alternative would involve installation within an existing 230 kV underground transmission line ROW, it is assessed as likely to avoid and/or reduce environmental impacts relative to the proposed Project and would, therefore, meet Criteria #3 – Environmental Impacts Avoidance and Minimization.

***Alternative Conclusion*.** This alternative was eliminated from further evaluation primarily because it does not provide contingency for a San Mateo substation failure by providing an alternative transmission route into the San Francisco Peninsula area. In addition, it is considered unlikely that this alternative could be permitted, approved, and built in a timely manner.

A.8.3.5.10 Jefferson to Various SF Substations (230 kV AC).

***Alternative Description*.** The Jefferson substation to various San Francisco substations alignments would connect the Jefferson substation to either the Potrero substation, Hunters Point substation, Embarcadero substation, Bayshore substation, or Mission substation, but would not connect the Jefferson substation to the Martin substation. However, supplying power from the Jefferson substation to the Embarcadero, Bayshore, and Mission substations is regarded as infeasible because of upgrade and space constraint limitations at these substations. This leaves only Potrero and Hunters Point as feasible options because both are outdoor 115 kV transmission substations that have property available for substation facilities expansions.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does meet some of the four specific project reliability objectives for Criteria #1 – Project Objectives such as increasing transmission system reliability in San Francisco. However, this alternative would still bring transmission into San Francisco via the peninsula and would not create a completely new transmission pathway as would the proposed Project. It has been assessed potentially capable of meeting the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility, although the level of potential difficulty and time required to permit, approve, and build this alternative is considered to be very high as evidenced by PG&E’s Jefferson-Martin Project. The assessment for Criteria #3 – Environmental Impacts Avoidance and Minimization, is a finding that this alternative would likely result in greater impacts than the proposed Project.

***Alternative Conclusion*.** This alternative was eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative and may not be completed by the 2012 need date specified by the CAISO; and 2) it does not meet many of the screening criteria under Criteria #1 (i.e., Objective 1).

A.8.3.5.11 New Generation – Mirant Potrero LLC Potrero Power Plant Unit 7.

***Alternative Description*.** New generation capacity in San Francisco would be aimed at meeting electricity demand without the need to import capacity from outside the City and County. A new generation alternative in San Francisco that has been considered includes the Mirant Potrero LLC proposed Potrero Power Plant Unit 7. An application for the Potrero Unit 7 Project was filed in 2000 to develop a 540 MW natural gas-fired combined cycle power generating facility as an expansion of the existing Potrero Power Plant. The latest information available from the California Energy Commission (CEC), the agency responsible for approving the proposed project, is that on November 5, 2003 the applicant requested an indefinite suspension of the review proceedings. The CEC issued an Order terminating the Proceedings and the Docket closed on March 1, 2006.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does meet some of the four specific project reliability objectives for Criteria #1 – Project Objectives, such as providing increased system reliability and added capacity. While the Potrero Unit 7 Project is regarded as technically feasible, it has been assessed as potentially unlikely to meet the legal and regulatory technical feasibility categories for Criteria #2 – Alternative Feasibility. For example, siting and licensing of power plants has been problematic in San Francisco because of space constraints and community opposition (see Jefferson-Martin EIR, page Ap.1-194 and page AP.1-196)(CPUC, 2003). The assessment for Criteria #3 – Environmental Impacts Avoidance and Minimization, is a finding that this alternative would likely result in significantly greater impacts (especially in San Francisco) than the proposed Project. For example, this alternative would likely impact the bay if the cooling water source was bay water as is the case for the existing Potrero Power Plant operation, and this alternative would result in long-term air emissions in San Francisco.

***Alternative Conclusion*.** This alternative has been eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative and may not be completed by the 2012 need date specified by the CAISO; 2) it is considered highly unlikely that this alternative could meet Criteria #2 relative to regulatory feasibility, including obtaining necessary approvals from applicable local jurisdictions; and 3) would result in greater environmental impacts in San Francisco than the proposed Project.

A.8.3.5.12 New Generation - Peaker Power Project.

***Alternative Description*.** New generation capacity in San Francisco would be aimed at meeting electricity demand without the need to import capacity from outside the City and County. A new generation alternative in San Francisco that is under consideration is the San Francisco Electric Reliability Project (SFERP) proposed by the City and County of San Francisco (CCSF). The SFERP would consist of a 145 MW simple cycle power plant utilizing three natural-gas fired LM 6000 turbines and associated infrastructure. The currently proposed SFERP site is located south of 25th Street and east of Illinois Street about 0.25 mile south of the Mirant Potrero Power Plant. This project is currently being reviewed by the California Energy Commission.

Alternative Conclusion**.** The SFERP has been identified by the CAISO as one of three needed reinforcements to the electrical supply/distribution system in San Francisco (along with the Jefferson-Martin and Trans Bay Cable projects). As such, the SFERP is not considered to be an alternative to the Trans Bay Cable Project, but instead a potential complementary project to help meet the CAISO's objectives related to creation of a long-term, reliable energy solution in San Francisco.

A.8.3.5.13 Renewable Energy Sources – Wind, Solar, and Tidal Technologies.

Alternative Description**.** For the purposes of this Alternatives Analysis, the renewable energy sources considered were limited to those that could be applied within the City and County of San Francisco, thereby eliminating the need for transmission capacity. Potential renewable energy source alternatives to meet San Francisco's needs include wind, solar, and tidal technologies. There are two other renewable sources: geothermal and biomass. There are no proximate geothermal sources that could meet the identified needs and biomass is not feasible because there are no proximate fuel sources.

San Francisco has an approved Electricity Resource Plan that was developed as a result of the "Human Health and Environmental Protections for New Electric Generation" ordinance. The plan encourages the use of wind, solar, and tidal sources and identifies local project opportunities.

Wind Generation**.** Wind generation generally requires 40 to 50 acres per MW of power to be generated. Most of the best wind sources to meet the needs of San Francisco and the surrounding area have already been developed, primarily in the Altamont Pass area in Alameda County and in Solano County.

Solar Power Generation**.** San Francisco has proposed the use of solar power generated from sites such as the Moscone Center and the Southeast Water Pollution Control Plant. However, these sites have limited potential to meet the identified needs. The generation of power from a solar thermal power generation facility requires approximately 5 acres to produce 1 MW. Generation from a photovoltaic facility requires approximately 4 acres to produce 1 MW. Solar power generation is limited only to daylight hours and by the relatively high cost of solar panels and the large amount of surface area required for the panels.

Tidal Electricity Generation**.** Potential generating technologies for deriving electrical power from San Francisco Bay and the ocean include tidal power, wave power, ocean thermal energy conversion, ocean currents, ocean winds and salinity gradients. Of these, the three most currently well-developed technologies are tidal power, wave power and ocean thermal energy conversion. San Francisco has authorized analysis of tidal sources to help meet the identified needs. However, the technologies are new and it is not clear whether they would be feasible for the greater Bay Area and nearby ocean. For example, a possible tidal technologies application would include placement of underwater power generation (tidal) turbine units at the mouth of the Bay outside of the navigation zone.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria under this Alternatives Analysis. The three options for renewable energy sources include wind, solar, and tidal energy generation technologies. None of these three options are considered capable of meeting all of the four specific project reliability objectives for Criteria #1 – Project Objectives. For example, it is considered unlikely that any of these three options could meet Objective #2 (Comply with Planning Criteria). With respect to the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility, these three options have been differentially assessed to not meet at least one of the three categories as summarized below.

***Wind Generation*.** The large land requirement for generating wind power means that it technically is not a feasible option within the City and County of San Francisco. In addition, any electricity generated by wind power would need to be interconnected to the electrical grid in San Francisco via overhead and/or underground transmission lines.

***Solar Power Generation*.** This option is regarded as not technically feasible for two main reasons: 1) while solar projects contemplated by San Francisco would reduce the City's future reliance on fossil fuels, it is unlikely that enough power would be generated to meet the identified needs or that it would be available to meet the identified schedule; and 2) similar to the wind energy discussion, above, there is a large land requirement (i.e., 4-5 acres of facilities for 1 MW of generation, and the need for overhead or underground transmission interconnection to the electrical grid in San Francisco).

***Tidal Electricity Generation*.** The regulatory feasibility of this alternative is questionable because placing a system in the Bay and/or offshore would require obtaining permits from a number of agencies, including the USACE and the BCDC or the California Coastal Commission (depending on where a tidal generation facility would be located). The technical feasibility of developing a project for the greater Bay Area has not been fully evaluated. As such, the range and magnitude of potential environmental effects has not been assessed. However, it is considered likely that a tidal generation facility would have greater impacts to the marine and coastal environments relative to the proposed Project due to the required placement and operation of substantial equipment and facilities in the Bay or Pacific Ocean.

A detailed assessment for Criteria #3 – Environmental Impacts Avoidance and Minimization, is not rendered at this time due to the different issues and unknown magnitude of potential impacts associated with these potential renewable energy resources. For example, while wind, solar, and tidal generation technologies may avoid some of the environmental effects associated with the proposed Project, construction and operation of these renewable energy options would likely have other types of environmental effects that may exceed those of the proposed Project.

***Alternative Conclusion*.** Although renewable energy resources should be developed to the maximum extent feasible, development of a renewable energy resources option as an alternative to the project was eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative; and 2) it does not meet most of the screening criteria under Criteria #1 and #2.

A.8.3.5.14 System Enhancement – Demand Management Option (DMO).

***Alternative Description*.** The system enhancement alternative, Demand Management Option (DMO), involves techniques to reduce the overall use of electricity, as compared with techniques to increase supply. DMO programs consist of the planning, implementing, and monitoring activities of electric utilities that are designed to encourage consumers to modify their level and pattern of electricity usage. Techniques include end-user energy efficiency and conservation measures, load shifting and curtailment. In the past, the primary objective of most DMO programs was to provide cost-effective energy and capacity resources to help defer the need for new sources of power, including generating facilities, power purchases, and transmission and distribution capacity additions. However, due to changes occurring within the industry, electric utilities are also using DMO to enhance customer service.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does not meet the four specific project objectives for Criteria #1 – Project Objectives such as increasing transmission system reliability in San Francisco by providing an alternative transmission pathway into the area. It has been assessed to meet the regulatory feasibility category for Criteria #2 – Alternative Feasibility primarily because operational changes would occur to existing infrastructure. However, the development of this system enhancement alternative is beyond the capability and control of the proponents of the proposed Project. In addition, this alternative is likely not a feasible alternative to the Project because available energy savings from DMO programs are insufficient to supply necessary long-term needs. The alternative is assessed to potentially avoid and/or reduce environmental impacts relative to the proposed Project per Criteria #3 – Environmental Impacts Avoidance and Minimization.

***Alternative Conclusion*.** This alternative was eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative; and 2) it does not meet many of the screening criteria including Criteria #1 (Project Objectives).

A.8.3.5.15 System Enhancement – Distributed Generation Option (DGO).

***Alternative Description*.** The system enhancement alternative, Distributed Generation Option (DGO), involves the use of generation, storage, and demand-side management devices, measures, and/or technologies connected to the distribution level of the transportation and distribution grid, usually located at or near the intended place of use. These act to either reduce the load on the system or are applied as additional system generation.

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does not meet the four specific project objectives for Criteria #1 - Project Objectives, including increasing transmission system reliability in San Francisco by providing an alternative transmission pathway into the area. It has been assessed to meet the legal and regulatory feasibility categories for Criteria #2 – Alternative Feasibility primarily because it would involve operational and systems upgrade changes to existing infrastructure and through implementation of end-user strategies. However, it is likely not yet technically feasible to construct and operate in sufficient quantity to meet projected demand. The alternative is assessed to avoid and/or reduce environmental impacts relative to the proposed Project per Criteria #3 - Environmental Impacts Avoidance and Minimization.

***Alternative Conclusion*.** This alternative was eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative; and 2) it does not meet many of the screening criteria including Criteria #1 (Project Objectives).

A.8.3.5.16 Integrated Resource Alternatives.

***Alternative Description*.** Integrated resource alternatives involve use of several components, rather than consideration of a single component, to meet needs. The components could include a combination of the following:

- Demand-side management
- Transmission system upgrades
- Renewable resources
- DGO
- New generation or co-generation facilities

***Screening Criteria Suitability*.** Refer to Section A.8.3.4 for descriptions of the three Screening Process Criteria. This alternative does not meet all of the four specific project objectives for Criteria #1 - Project Objectives including increasing transmission system reliability in San Francisco by providing an alternative transmission pathway into the area. It has been assessed as unlikely to meet several aspects of the legal, regulatory, and technical feasibility categories for Criteria #2 – Alternative Feasibility as summarized by category below.

Legal Feasibility**.** If there were a system-wide proposal, it would likely legally require a programmatic EIR. The proposed project would then tier off of the programmatic EIR. In the absence of a system-wide plan and corresponding programmatic EIR, it is only appropriate under CEQA that projects be analyzed on a project-by-project basis. Furthermore, the development of a system-wide solution is beyond the capability and control of the proponents of the proposed Project.

Regulatory Feasibility**.** While it is important to address power needs with an integrated, coordinated solution, it is difficult to overcome regulatory obstacles if there is not a proposed system-wide solution.

Technical Feasibility**.** The technical feasibility of designing and implementing the integrated resource alternatives components specified above is uncertain due to lack of a clear understanding of the feasibility of the individual components. The strategic use of an integrated planning system is important, but it does not substitute for the need for tactical technological solutions such as the proposed Project.

The findings for Criteria #3 - Environmental Impacts Avoidance and Minimization, is problematic and speculative (i.e., unknown) due to the high degree of uncertainties associated with different scenarios for implementing an integrated resource alternative (i.e., selection of components).

Alternative Conclusion**.** This alternative was eliminated from further evaluation because: 1) implementation of this alternative is remote or speculative; and 2) it does not meet many of the screening criteria under Criteria #1 and #2.

A.8.3.5.17 Oregon-California Transmission: HVDC Underwater Cable from Oregon to San Francisco Bay Area.

Alternative Description**.** This alternative includes a 1,600 MW, HVDC, primarily underwater, transmission line which would stretch approximately 650 miles from a substation near Portland, Oregon to the San Francisco Bay Area (Sea Breeze Power, 2005). If completed, it would be the world’s longest undersea HVDC cable.

Screening Criteria Suitability**.** Refer to Section A.8.3.4 for descriptions of the three screening criteria. This potential project is under consideration by Sea Breeze Power Corporation and PG&E and would tap hydroelectric power and wind energy resources in Pacific Northwest and Western Canada. Due to the preliminary nature of this proposal, the expected long lead time required for permitting, approvals and construction, and unknown environmental effects, it is problematic to assess this potential alternative at this time. It is considered highly unlikely that this potential alternative could be approved and built in a timely manner (i.e., does not meet Criteria #1-Project Objectives). In addition, this line would be the longest such line in the world, and would consume major portions of the world-wide manufacturing capacity for such lines. Due to size of the project, it is unlikely that either the required converter station(s) could be sited in San Francisco or that the line could be interconnected with existing San Francisco substations.

***Alternative Conclusion*.** This potential alternative was eliminated from further consideration in this EIR due to: 1) implementation of this alternative is remote or speculative; and 2) it does not meet many of the screening criteria under Criteria #1 and #2.

A.8.3.6 Summary and Conclusion

This Alternative Analysis considered various potential alternatives to the proposed Project that were considered to be potentially capable of meeting the Project objectives. Based on the alternative screening analysis performed and presented herein, none of the various alternatives are considered to be capable of meeting all of the Project objectives and the related screening criteria for "feasibility" and "environmental impacts avoidance and minimization." Therefore, none of the aforementioned potential alternatives to the proposed Project were retained for further consideration in this EIR. Refer to Sections 5.0 and 6.0 of this EIR for an assessment of Project Alternatives that were retained for further consideration and full CEQA-level analysis in the EIR.

A.8.4 No Project Alternative

The No Project Alternative represents the status quo and under this alternative the proposed Trans Bay Cable Project would not be built. Under this alternative, the adverse and beneficial impacts associated with the Trans Bay Cable Project would not occur. Under this alternative, it is assumed that the transmission facilities planned to exist once the CAISO Revised Action Plan for San Francisco (Action Plan) is fully implemented by the end of 2007 would be utilized and relied on by San Francisco. Full implementation of the Action Plan is expected to provide adequate load serving capability to the San Francisco Peninsula area until the summer of 2011 when additional load serving capability will be needed to meet the anticipated power needs for the area. This alternative fails to meet San Francisco Bay Area long-term reliable load serving capability. The No Project Alternative also fails to meet the reliability planning standards. The No Project Alternative would be expected to have adverse effects on San Francisco's energy needs and supply beginning in 2012.

A.9 CAISO-RELATED PROJECTS

A.9.1 Background

The CAISO management determined that the Trans Bay Cable Project is needed to ensure reliable operation of the electrical transmission system within the San Francisco Peninsula area (CAISO, 2005d). Further, the CAISO management requested that the CAISO Board of Governors approve the Project as a necessary addition to the CAISO Controlled Grid. As such, the Project was assessed as a needed component of the CAISO's long-term transmission solution that includes several related projects to ensure a reliable load serving capability for the area, and to mitigate violation of reliability planning standards beginning in 2012. These related projects are identified in the *Revised Action Plan for San Francisco* and in the *San Francisco Peninsula, Long-Term Transmission Planning Study, Phase 2, Study Plan* (CAISO, 2004) which are summarized below.

A.9.2 Revised Action Plan for San Francisco

In 2004, the CAISO worked closely with the City and County of San Francisco (CCSF), PG&E, and interested stakeholders to establish a plan that describes the transmission and generation requirements necessary to reliably serve the San Francisco Peninsula area electrical load while allowing for the release of all existing generation at Hunters Point and Potrero Power plants from their Reliability Must-Run (RMR) Agreements. This Action Plan, was adopted by the CAISO Board of Governors in November 2004 and is currently being implemented by PG&E, the CCSF, and the CAISO (CAISO, 2004).

The Action Plan was designed to facilitate the retirement of old generation in San Francisco; it also contributes to increased flows on the transmission facilities that serve the load in the area. The increased reliance on this transmission infrastructure was addressed in the Action Plan through various transmission additions, upgrades, and re-rates. These related projects which are included in the Action Plan are summarized in Table A.9-1. However, the Action Plan did not assess the impact on the area's future load serving capability beyond 2007 which necessitated the initiation of the *Long-Term Transmission Planning Study* (see Section A.9.3) to evaluate the suitability of other identified related projects.

A.9.3 Long-term Transmission Planning Study

Recognizing the need to establish a longer-term (10-year) transmission plan once the Action Plan was implemented, the CAISO led the San Francisco Stakeholders Study Group (SFSSG) Phase II, initiating the *Long-Term Transmission Planning Study* in February 2004 to determine the transmission facilities necessary to reliably serve the electrical load in this area through at least 2018. The results of this study indicated that once the Action Plan was fully implemented, it would provide sufficient load serving capability for the San Francisco Peninsula area through 2011, including support for an additional 378 MW of San Francisco

TABLE A.9-1
CAISO-RELATED PROJECTS[1]

Project	Purpose	Estimated Completion Date/Status	Issue[2]	Resolution of Issue
Potrero Static VAR Compensator	Release Hunters Point Units 2 & 3 from their RMR Agreements	Completed	NERC/WECC/CAISO Planning Standards	This project allowed PG&E to meet planning requirements with Hunters Point Power Plant Units 2 and 3 released from their RMR Agreements.
San Mateo-Martin No. 4 Line Voltage Conversion	Release Hunters Point Units 1 & 4 from their RMR Agreements	Completed	NERC/WECC/CAISO Planning Standards	This project in combination with the other listed projects allows PG&E to meet planning requirements with Hunters Point Power Plant Units 1 and 4 released from their RMR Agreements.
Ravenswood 2nd 230/115 kV Transformer Project	Release Hunters Point Units 1 & 4 from their RMR Agreements	Completed	NERC/WECC/CAISO Planning Standards	This project in combination with the other listed projects allows PG&E to meet planning requirements with Hunters Point Power Plant Units 1 and 4 released from their RMR Agreements.
San Francisco Internal Cable Higher Emergency Ratings	Release Hunters Point Units 1 & 4 from their RMR Agreements	Completed: To Be Used Upon Completion of the Jefferson-Martin 230 kV Project	NERC/WECC/CAISO Planning Standards	These ratings are an interim solution that in combination with the other listed projects allows PG&E to meet planning requirements with Hunters Point Power Plant Units 1 and 4 released from their RMR Agreements. In 2007, a third Martin-Hunters Point 115 kV cable will replace the emergency ratings.
Tesla-Newark No. 2 230 kV Line Reconductoring	Release Hunters Point Units 1 & 4 from their RMR Agreements	Completed	RMR Criteria	This project in combination with the other listed projects allows PG&E to meet planning requirements with Hunters Point Power Plant Units 1 and 4 released from their RMR Agreements.
Ravenswood-Ames 115 kV Lines Reinforcement	Release Hunters Point Units 1 & 4 from their RMR Agreements	Completed	RMR Criteria	This project in combination with the other listed projects allows PG&E to meet planning requirements with Hunters Point Power Plant Units 1 and 4 released from their RMR Agreements.
San Mateo 230 kV	Release Hunters Point Units 1	Completed	Operations Requirement	Eliminate bus wash at San Mateo 230 kV bus will reduce the

TABLE A.9-1 (CONTINUED)
CAISO-RELATED PROJECTS[1]

Project	Purpose	Estimated Completion Date/Status	Issue[2]	Resolution of Issue
Bus Insulator Replacement	& 4 from their RMR Agreements		During San Mateo Bus Wash	400 MW generation operational requirement to less than 200 MW.
Potrero-Hunters Point (AP-1) 115 kV Cable	Release Hunters Point Units 1 & 4 from their RMR Agreements	December 2005, CPUC Permit Approval Granted	NERC/WECC/CAISO Planning Standards	This project in combination with the other listed projects allows PG&E to meet planning requirements with Hunters Point Power Plant Units 1 and 4 released from their RMR Agreements.
Jefferson-Martin 230 kV Line	Release Hunters Point Units 1 & 4 from their RMR Agreements	December 2005 to March 2006, Under Construction	NERC/WECC/CAISO Planning Standards	This project in combination with the other listed projects allows PG&E to meet planning requirements with Hunters Point Power Plant Units 1 and 4 released from their RMR Agreements.
Potrero 3 SCR Retrofit	Release Hunters Point Units 1 & 4 from their RMR Agreements	Completed	NERC/WECC/CAISO Planning Standards	This project ensures the availability of Potrero 3 at full capacity thereby reducing overall Greater Bay Area RMR requirements. This project or the reduced capacity available without the retrofit in combination with the other listed projects allows PG&E to meet planning requirements with Hunters Point Power Plant Units 1 and 4 released from their RMR Agreements.
San Francisco Electric Reliability Project and San Francisco Airport Electric Reliability Plant	Release Potrero Unit 3 from its RMR Agreements	December 2006 or Later	NERC/WECC/CAISO Planning Standards	These projects will allow PG&E to meet planning requirements with Potrero 3 released from its RMR Agreements. CEC permit suspended due to a change in where to site near Potrero.
Upgrade the Newark-Dumbarton 115 kV	Release Potrero Units 4, 5, & 6 from their RMR Agreements	May 2006, Engineering in	NERC/WECC/CAISO Planning Standards	This upgrade is needed in combination with the other listed mitigations to allow PG&E to meet planning requirements with

TABLE A.9-1 (CONTINUED)
CAISO-RELATED PROJECTS[1]

Project	Purpose	Estimated Completion Date/Status	Issue[2]	Resolution of Issue
Line	(assumes previous completion of Peaking Power Plants by the City of San Francisco)	Progress		Potrero Units 4, 5, and 6 released from their RMR Agreements.
Upgrade the Bair-Belmont 115 kV Line	Release Potrero Units 4, 5, & 6 from their RMR Agreements (assumes previous completion of Peaking Power Plants by the City of San Francisco)	Scheduled for May 2007	NERC/WECC/CAISO Planning Standards	This upgrade is needed in combination with the other listed mitigations to allow PG&E to meet planning requirements with Potrero Units 4, 5, and 6 released from their RMR Agreements.
Upgrade the Metcalf-Hicks & Metcalf-Vasona 230 kV Lines	Release Potrero Units 4, 5, & 6 from their RMR Agreements (assumes previous completion of Peaking Power Plants by the City of San Francisco	Scheduled for May 2007	NERC/WECC/CAISO Planning Standards	This upgrade is needed in combination with the other listed mitigations to allow PG&E to meet planning requirements with Potrero Units 4, 5, and 6 released from their RMR Agreements.
Add Voltage Support at Ravenswood Substation	Release Potrero Units 4, 5, & 6 from their RMR Agreements (assumes previous completion of Peaking Power Plants by the City of San Francisco)	Scheduled for May 2007	NERC/WECC/CAISO Planning Standards	This upgrade is needed in combination with the other listed mitigations to allow PG&E to meet planning requirements with Potrero Units 4, 5, and 6 released from their RMR Agreements.

[1] Source: CAISO, 2004.

[2] Abbreviations: NERC – National Energy Reliability Council; WECC – Western Electrical Coordinating Council.

Peninsula area load and a projected load growth of approximately 15 to 20 MW per year. However, this technical assessment concluded that there would be reliability planning standard violations that would occur in the greater San Francisco and northern San Mateo County area beginning in 2012.

Given the geographical location of the load in the San Francisco Peninsula area and the difficulty in locating new generation resources there, new transmission infrastructure and/or transmission upgrades are required to be constructed either from the south or from the east across San Francisco Bay. The technical aspects of five transmission alternatives were evaluated in the study to determine their viability for addressing the identified reliability planning standard violations. To be consistent with the CAISO Tariff, the Trans Bay Cable Project was included as one of the alternatives to be considered in the overall study effort. Accordingly, the five alternatives evaluated in the CAISO study included:

1. Status Quo – This alternative proposes to do nothing beyond utilizing the transmission facilities and generation planned to exist once the Action Plan for San Francisco is fully implemented by the end of 2007.
2. Upgrade and Replace Existing Facilities – This alternative proposes to utilize existing transmission infrastructure to support existing and anticipated load growth in the area. When needed, employ replacing, reconductoring, re-rating and operating alternatives to mitigate transmission system overloads and low voltages.
3. Trans Bay Cable Project – This alternative proposes to build a new 400 MW HVDC submarine DC cable proposed by an independent developer, Babcock & Brown, between PG&E's Pittsburg substation in the East Bay area and PG&E's Potrero substation in San Francisco for operation by 2009.
4. Moraga-Potrero 230 kV Line – This alternative proposes to build a new 230 kV AC line from the Moraga substation in the East Bay area to the Potrero substation in San Francisco. This new line would include a combination of overhead or underground facilities from Moraga to the San Francisco Bay and then run beneath San Francisco Bay to the Potrero substation.
5. Tesla-Potrero 230 kV Line – This alternative proposed to build a new 230 kV circuit from the Tesla substation to San Ramon substation, reconnection at the San Ramon substation, reconductoring of 230 kV circuits between San Ramon and East Shore substations, and installing a new 230 kV circuit from the East Shore to Potrero substations. The portion of the project between the East Shore and Potrero substations would include a new line across and above the San Francisco Bay and a new underground cable approximately parallel to the existing San Mateo - Martin 230 kV cable, which would extend to the Potrero substation.

The study concluded that all of the evaluated transmission alternatives, except for the "Status Quo" alternative, could address the identified reliability planning standard violations, provided they could be completed by the time they were needed. The study also concluded that constructing a new transmission line to San Francisco from across the San Francisco Bay would be preferred over alternatives that approached the San Francisco Peninsula area from the south through the peninsular corridor. The Trans Bay Cable Project and the Moraga – Potrero 230 kV line were the only alternatives that approach San Francisco from across the Bay. As such, these are the only “across the Bay” alternatives that were considered in the CAISO’s final analysis of the preferred long-term transmission solutions for the area.

The CAISO study determined that given the technical analysis results presented, there was no compelling evidence to conclude that constructing a new transmission line from Moraga (Moraga-Potrero alternative) would be technically superior over a new transmission line built from Pittsburg (Trans Bay Cable Project). The Trans Bay Cable Project was the only alternative being proposed as a viable project at that time. The study concluded that siting an alternative such as the Moraga – Potrero alternative through the City of Oakland, while not impossible, would likely be difficult to complete in a timely manner.

The study concluded that installation of the Trans Bay Cable Project in 2009 would significantly improve reliability of the San Francisco Peninsula area electrical system. Existing generation within San Francisco is expected to reduce significantly after implementation of the Action Plan in late 2007, which will increase San Francisco Peninsula’s operational constraints and locational capacity requirements. The proposed Project, with a 2009 in-service date, would significantly reduce expected locational capacity requirements and the need for special protection schemes that are currently in place to shed firm load for critical double contingency disturbances for the San Francisco Peninsula Area.

A.10 REFERENCES

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