4. ENVIRONMENTAL ANALYSIS

INTRODUCTION TO ENVIRONMENTAL ANALYSIS

Section 4 examines the potential environmental impacts of the Project and Project alternatives. This section includes analyses of the environmental issue areas listed below:

- 4.1 Air Quality
- 4.2 Commercial and Recreational Fisheries
- 4.3 Cultural Resources
- 4.4 Geology and Soils
- 4.5 Marine and Near-Coastal Biological Resources
- 4.6 Marine Water and Sediment Quality and Oceanography
- 4.7 Marine Vessel Traffic
- 4.8 Noise
- 4.9 Environmental Justice
- 4.10 Comparison of Alternatives

Each issue area section provides background information and describes the environmental setting (baseline conditions) to help the reader understand the conditions that would cause an impact to occur. In addition, each section describes how an impact is determined to be “significant” or “less than significant”. Finally, the individual sections recommend mitigation measures (MMs) to reduce significant impacts. Throughout Section 4, both impacts and the corresponding MMs are identified by a bold **letter-number designation**, e.g., Impact **BIO-1** and **MM BIO-1a**. Section 4.10 provides a comparison of the impacts of the alternatives and identifies the environmentally superior alternative.

Based on the analysis presented in Sections 4.1 through 4.10, it is likely that the proposed Project would have a less than significant impact, or no impact, in specific areas identified below for relevant environmental issues listed above. The primary reasons for these determinations are as follows:

- **Air Quality.** Emissions from the scientific traffic during Project operation would be relatively minor and limited to on-road mobile sources or smaller marine vessels. The MARS science ports would consume electricity provided by a

network of power plants connected to the electrical grid. The combined operational emissions would not exceed the significance thresholds established by the MBUAPCD.

- **Commercial and Recreational Fisheries.** No exclusions are proposed along the cable route during normal operations, so no interference would occur between MARS research vessels and commercial or recreational fisheries. Therefore, no long-term interference with activities of commercial or recreational fishing operators in the project area would occur.

  Potential interference with commercial fishing activities could occur during cable installation, but would be temporary (a few hours to several days) and localized (over a discrete area) such that effects would be less than significant.

  While the potential for snagging the unburied cable is less than significant, a Fishermen's Agreement, if established, would provide a mechanism to compensate fishermen for gear losses and fishing revenue losses due to gear loss from cable snags.

- **Geology and Soils.** The Project installation activities would not change any unique geological features.

  HDD activities may trigger terrestrial erosion; however, impacts would be minimized through implementation of an NPDES-mandated SWPPP and associated BMPs.

  Marine landslides and slumping triggered by cable installation would likely be minimal due to trenching on slopes no steeper than 8 degrees, as well as placement of the cable as perpendicular as possible to steep slopes.

  Subsea cable installation and cable repairs would not result in substantial alteration of bottom topography or cause submarine slope failures. Bottom materials displaced by the plow blade would be returned to the trench by an attachment mounted on the plow frame and just behind the cable, thus minimizing the potential for creating sidecast berms during trenching.

- **Marine and Near-Coastal Biological Resources.** Impacts on invertebrates and fishes would be minor because disturbance to bottom habitat would be localized and temporary.

  Most marine mammals tend to avoid vessels and areas of human activity and thus would be unlikely to approach the area close enough to become entangled in cables during installation or collide with cable lay or support vessels. In addition, cable lay and support vessel speeds would be limited and marine

mammal monitors would be stationed on the cable laying and support vessels to ensure that any marine mammal entering the established safety zone is sighted and that operations do not continue until the mammal(s) move(s) out of the area.

A marine mammal or other marine life would only be exposed to very high noise levels during cable installation if it came extremely close to the plow, which has an underwater noise level around 185 decibels. However, vessel traffic is common in the project area and most marine species are adapted to it. Any disturbance to marine life would be limited to period of cable installation (assumed to be a maximum of 14 days). Protective measures incorporated into the Project description would further reduce impacts of noise and disturbance to marine mammals and other marine life.

While there is a slight chance that another vessel could collide with the cable lay vessel resulting in a fuel spill to the marine environment, an approved Spill Prevention Control and Countermeasure Plan would be implemented for this Project. Additionally, established protective measures, such as maintaining a 1.15 mile (1 nm) separation from any vessel laying or repairing an undersea cable (47 CFR §76), as well as notifying mariners of the proposed cable-laying activities, would reduce the potential for a fuel spill to a less-than-significant level.

The long-term presence of the cable on the sea bottom would not significantly impede marine mammal migration since it would be buried along most of the route and represent a very low profile in hard-bottom areas.

The proposed cable laying would be offshore and would not disturb any seabird nesting colonies. Some seabirds may avoid the immediate vicinity of the cable laying operations. Temporary displacement from a limited area over a period of up to 14 days would have less than significant impact on seabirds.

- **Marine Water and Sediment Quality and Oceanography.** The Project would not alter currents or wave patterns in a manner that would promote erosion of local beaches or cause shoaling of navigational channels within the project area.

The Project would not alter natural mixing processes that could contribute to degradation of water quality or sediment quality or cause deleterious effects to marine organisms. Only the cable installation and recovery phases and repair operations would result in localized short-term changes to water quality. Once installed, use of the cable would not affect marine water quality along the cable route or landing areas, except in the event that the cable would have to be repaired and re-deployed.

- **Marine Vessel Transportation.** The presence of vessels used during cable installation, operation, and decommissioning would not cause a delay to other vessels in Monterey Bay. While Project construction and decommissioning would involve the presence of a cable laying vessel, an ROV, ROV support vessel, and dive boat in the waters of Monterey Bay, these vessels would not block any vessel infrastructure or any designated channel and, therefore, would not create a delay for other vessels. Similarly, Project-related vessels used during Project operations, e.g., a cable repair vessel or ROV, such as installing new equipment, inspecting the cable, and repairing the cable are not anticipated to interfere with existing vessel infrastructure or cause delay to vessel traffic.

- **Noise.** Boat trips traveling to the deployed instrumentation would be occasional, and the noise created by such activity would be consistent with the noise created in the existing setting by boat traffic at the Moss Landing Harbor and within the range of ordinary ambient levels. Noise from infrequent marine vessel traffic over the lifetime of the MARS observatory would not be substantially different from the ship traffic noise that presently occurs near Moss Landing Harbor.

  Although future plans for the MARS observatory would involve use of instruments that have not been developed yet, MBARI has indicated that at this time, all of the scientific instruments and units would be passive in nature. Because no new acoustic sources are anticipated, no impact would occur.

- **Environmental Justice.** Only low percentages of minority populations and low-income populations would be potentially affected by proposed Project. In addition, no Project impacts have been identified that cannot be reduced to a less than significant with mitigation. Therefore, no disproportionate impacts to minority populations and low-income populations would occur.

ASSESSMENT METHODOLOGY

Environmental Baseline

The analysis of each issue area begins with an examination of the existing physical setting [baseline conditions as determined pursuant to §15125(a) of the State CEQA Guidelines (14 CCR) and affected environment per CEQ regulation 40 CFR §1502.15)] that may be affected by the proposed Project. The effects of the proposed Project are defined as changes to the environmental setting that are attributable to Project components or operation.

Significance Criteria

Significance criteria are identified for each environmental issue area. The significance criteria serve as a benchmark for determining if a project action will result in a significant adverse environmental impact when evaluated against the baseline. Under the NEPA CEQ regulation 40 CFR §1508.27, the determination of significant effects is based on consideration of "context" and "intensity", including "the degree to which the effects on the quality of the human environment are likely to be highly controversial." According to the State CEQA Guidelines 14 CCR §15382, a significant effect on the environment means "…a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project…"

Impact Analysis

Impacts are classified as:

- Class I (significant adverse impact that remains significant after mitigation);
- Class II (significant adverse impact that can be eliminated or reduced below an issue's significance criteria with implementation of one or more mitigation measures);
- Class III (adverse impact that does not meet or exceed an issue's significance criteria); or
- Class IV (beneficial impact).

A determination is made, based on the analysis of any impact within each affected environmental issue area and compliance with any recommended mitigation measure(s), of the level of impact remaining in comparison to the pertinent significance criteria. If the impact remains significant, at or above the significance criteria, it is deemed to be Class I. If a "significant adverse impact" is reduced, based on compliance with mitigation, to a level below the pertinent significance criteria, it is determined to no longer have a significant effect on the environment, i.e., to be "less than significant" (Class II). If an action creates an adverse impact above the baseline condition, but such impact does not meet or exceed the pertinent significance criteria, it is determined to be adverse, but less than significant (Class III). An action that provides an improvement to an environmental issue area in comparison to the baseline information is recognized as a beneficial impact (Class IV).

Formulation of Mitigation Measures and Mitigation Monitoring Program

When significant impacts are identified, feasible mitigation measures are formulated to eliminate or reduce the intensity of the impacts and focus on the protection of sensitive resources. The effectiveness of a mitigation measure is subsequently determined by evaluating the impact remaining after its application. Those impacts meeting or exceeding the impact significance criteria after mitigation are considered residual impacts that remain significant (Class I). Implementation of more than one mitigation measure may be needed to reduce an impact below a level of significance. The mitigation measures recommended in this document are identified in the impact assessment sections and presented in a Mitigation Monitoring Program (MMP). The MMP is provided in Section 6.

If any mitigation measures become incorporated as part of a project's design, they are no longer considered mitigation measures under the CEQA and NEPA. If they eliminate or reduce a potentially significant impact to a level below the significance criteria, they eliminate the potential for that significant impact since the "measure" is now a component of the action. Such measures incorporated into the project design have the same status as any "applicant proposed measures." The CSLC's practice is to include all measures to eliminate or reduce the environmental impacts of a proposed project, whether applicant proposed or recommended mitigation, in the MMP.

Impacts of Alternatives

Section 3 provides a description and map that identify alternative landings to the proposed Project. Each issue area in Section 4 contains the impact analysis for each alternative scenario. A summary of the collective impacts of each alternative in comparison with the impacts of the proposed Project is included within Section 4.10.

Cumulative Projects Impact Analysis

Each issue area in Section 4 contains a discussion of cumulative impacts, the focus of which is to identify the potential impacts of the Project that might not be significant when considered alone, but that might contribute to a significant impact when viewed in conjunction with the other projects. The cumulative project scenario, on which the cumulative impact analyses are based, is described below.

CUMULATIVE RELATED FUTURE PROJECTS

This discussion provides a listing and map identifying other related future projects near the location of the proposed Project and alternatives.

Federal regulations implementing NEPA (40 CFR §1500-1508) require that the cumulative impacts of a Proposed Action be assessed. NEPA defines a cumulative impact as an “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions” (40 CFR §1508.7). Section 15130 of the State CEQA Guidelines (14 CCR) requires that an EIR discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in 14 CCR §15065(c). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable. As defined in §15355 of the State CEQA Guidelines (14 CCR), a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.

For the purposes of this Draft EIR/EIS, a list of past, present, and future projects has been used to evaluate cumulative impacts. The cumulative project list includes projects that are either reasonably foreseeable or are expected to be constructed or operated during the life of the proposed Project. This list was developed in consultation with the following agencies, organizations, county planners, and local developers:

- Monterey County Planning and Building Inspection Department (Monterey County 2004);
- California Coastal Commission (CCC 2004a);
- California State Parks (CSP 2004);
- Monterey Bay National Marine Sanctuary (MBNMS 2004, 2005);
- RBF Consulting (RBF 2004a); and
- MBARI (Paull 2004).

These agencies and organizations were requested to provide information on all projects that are being considered in their planning processes. The location of any current or future project identified by one of the above agencies, which is expected to occur within approximately 10 miles of the proposed Project, is depicted in Figure 4-1 and is briefly described in Table 4-1. Individual descriptions of these projects follow Table 4-1. In addition to the projects listed in Table 4-1, various ongoing activities contribute to current environmental conditions in Monterey Bay and have effects that could combine

Placeholder for Figure 4-1. Locations of Related Projects

Table 4-1. Summary of Related Projects

Name	Type	Description	Location	Status
IODP Borehole Project	Scientific research	Drill two boreholes in Monterey Bay to collect data on sea floor.	On Smooth Ridge at a water depth of 831 meters, northeast and southwest of the Project node.	Currently obtaining permits and establishing project schedule. Expected to begin construction end of 2005.
Coastal Water Project	Utility construction	Construct desalination plant in Moss Landing.	Less than 2 miles (3.2 km) east of the Project, off Dolan Rd.	PEA expected to be completed Spring 2005. Final EIR would begin early 2006, with construction beginning Fall 2006.
North Harbor Redevelopment Project	Harbor reconstruction	Demolish and rebuild abandoned structures; dredge harbor.	Approximately 0.6 miles (1 km) north of MBARI Building D, between Elkhorn Slough and Elkhorn Yacht Club.	Approved by the California Coastal Commission; construction must be completed by June 2006; dredging must be completed by June 2007.
Moss Landing Marine Lab Ocean Pier Replacement	Pier reconstruction	Reconstruct pier for the purposes of marine research and educational uses.	Approximately 60 feet (18.3 m) south of MBARI Building C.	Approved by the California Coastal Commission; construction must be completed by June 2006.
California State Parks Repair and Improvement Projects	Park facility repairs	Repairs to erosion damage at Moss Landing State Beach; new restroom construction at Moss Landing and Salinas River State Beaches.	Moss Landing SB: Less than 1 mile (1.6 km) north from Project Salinas River SB: 1 mile (1.6 km) south from Project.	Restroom construction pending County approval. Erosion repairs remain in initial planning stages and would not occur before Fall 2006.
SF-12 Dredge Disposal Site Operations	Dredge disposal activities	Dredged material would be released into the mouth of the canyon within an approximately 30,000 square feet (2,500 square meters) area.	Approximately 820 feet (250 m) west-northwest from the end of Moss Landing Marine Lab Pier.	Permitted disposal occurs approximately every 2 to 3 years. Disposal activities would likely occur in 2006 or 2007.

with the effects of the proposed Project. These activities include recreational and commercial fishing, e.g., bottom trawling, dredging and dredged material disposal, recreational boating, and scientific research.

Installation of Borehole Observatories in Monterey Bay

The Integrated Ocean Drilling Program (IODP) is composed of a consortium of 20 countries that use drilling techniques for scientific research. The IODP proposes to drill two boreholes within Monterey Bay, each of which would be approximately 1,148 feet (350 meters) deep. These boreholes would allow development of new instrumentation and the capability to monitor subsurface conditions and collect time series data on the natural changes that occur in the subsurface environment. One borehole would be configured for developing new tools and techniques necessary for monitoring subseafloor hydrological and geochemical conditions, as well as conducting marine hydrological and biological experiments. The second borehole would be configured for deployment and testing of downhole seismometers.

The boreholes would be located near the Project's science node on Smooth Ridge at a water depth of 831 meters, with one borehole to the northeast and one borehole to the southwest of the node. The boreholes would be designed with the capability of linking to the Project, which is advocated by proponents of the borehole installation project in order to facilitate data transmission from the boreholes and to provide a real-time link to the global seismic network. The IODP has completed its review process, which included an analysis of the project's potential to contribute to hydrocarbon seepage. The location of the boreholes was selected to avoid drilling in areas that may impact the seepage of hydrocarbons. The borehole installation project is currently obtaining the necessary permits, and construction is expected to begin approximately at the end of 2005 (Paull 2004). Detailed information on this project was not available at the time the analysis was prepared for this Draft EIR/EIS. The borehole project will be subject to a separate detailed environmental analysis.

Coastal Water Project

The Coastal Water Project is a proposed desalination plant that would be owned by the California American Water Company, and would be constructed along Dolan Road near the Moss Landing Power Plant (RBF 2004a). The desalination plant would capture approximately 42 mgd of the power plant's maximum 1.2 billion gallons per day (bgd) of sea water intake that is used for cooling purposes. The proposed desalination plant would desalinate approximately 18 mgd into potable water, and would discharge approximately 24 mgd of brine into the power plant's cooling outtake. The California

American Water Company would also construct approximately 24 miles (38.6 kilometers) of new pipeline to increase water supplies to the communities of Moss Landing, Castroville, Marina, Sand City, Seaside, Monterey, and Carmel.

The proposed Coastal Water Project is expected to complete the Proponent's Environmental Assessment, which will be included as part of an application to the California Public Utilities Commission, by Spring 2005. Construction is not anticipated to begin before Fall 2006 (RBF 2004b).

North Harbor Redevelopment Project

The Moss Landing Harbor District plans to redevelop the North Harbor area in order to improve public visitor and recreational services. The proposed redevelopment would include demolishing abandoned waterfront structures, rebuilding an interpretive center/commercial building/harbor district office building from an abandoned structure, installing riprap for shoreline protection, constructing a four-lane concrete boat ramp with three floating docks, constructing a new 15,000 square foot (1,393.5 square meter) public wharf, and creating a 10-foot (3.0-meter) wide coastal trail along the seaward edge of the wharf promenade. Construction of a Class I bike trail along Highway 1 and a coastal trail segment along the existing shoreline would also be incorporated into the project. The project would increase permanent public parking from approximately 226 car spaces to 384 spaces, which would include approximately 70 temporary spaces within the Caltrans right-of-way.

The redevelopment project would dredge approximately 5,000 cubic yards (3,822.8 cubic meters) of harbor sediments. Approximately 2,500 cubic yards (1,911.4 cubic meters) would be dredged from both the boat ramp area and the north transient dock area. Uncontaminated dredged materials that are less than 80 percent sand size would be disposed of at the offshore aquatic discharge site located in Monterey Bay, while dredged materials greater than 80 percent sand size would be disposed of at the approved beach renourishment site located on Moss Landing Beach, south of the harbor entrance. The 5-year dredging permit is for a one-time maintenance dredging, and is set to expire in June 2007.

The project was approved by the California Coastal Commission on June 9, 2004. The project must be constructed within 2 years of this approval date, at which time the Coastal Development Permit would expire (CCC 2004b).

Moss Landing Marine Lab Ocean Pier Replacement

The San Jose State University and Moss Landing Marine Laboratories plan to build a 500-foot (152.4-meter) long, 12,832 square foot (1,192.1 square meter) concrete pier (CCC 2004c) to replace the recently demolished Sandholdt Pier. The new pier would be constructed in the same location as the former pier, which was located west of Sandholdt Road, where the Sandholdt Road Bridge terminates and Sandholdt Road curves north.

The previous pier was historically used for commercial shipping, whaling, and recreational fishing. Since 1988, the pier had been used by the Moss Landing Marine Laboratories and the San Jose State University Foundation for marine research. The new pier would continue to be used for research, and would generally be closed to the public except during escorted tours and occasional open house events. However, the California Coastal Commission recommended that a public viewing deck be incorporated into the project plans for interpretive and educational use.

The project was approved by the California Coastal Commission on June 9, 2004. The project must be constructed within two years of this approval date, at which time the Coastal Development Permit would expire (CCC 2004b).

California State Parks Repair and Improvement Projects

Three projects are being planned at Moss Landing State Beach and one project is planned for Salinas River State Beach. Both parks would replace existing pump-out toilets with new restrooms (Monterey County 2004). Additional projects at Moss Landing State Beach would include erosion repairs to the parking lot adjacent to the jetty and erosion repairs to Jetty Road. The restroom project has not yet been approved by the Monterey County Planning and Building Inspection Department, and the erosion repair projects are not expected to begin for at least 2 years from the time of this writing (CSP 2004).

Moss Landing State Beach also recently completed a dune restoration project. Any future project that may negatively impact the dune ecosystem would need to incorporate appropriate mitigation (CSP 2004).

SF-12 Dredge Disposal Site Operations

The SF-12 Dredge Disposal Site is a roughly rectangular zone approximately 164 feet (50 meters) on a side, covering an area of approximately 30,000 square feet (2,500 square meters) that occurs 860 feet (250 meters) west-northwest of the end of the Moss Landing Marine Labs Pier. SF-12 is a disposal site recognized by the EPA and US

Army Corps of Engineers. Dredged materials are released within this zone at the mouth of the submarine canyon, where the material is eventually flushed out to sea. Permitted disposal occurs in this zone occurs every 2 to 3 years, with the next disposal anticipated to occur in 2006 or 2007 (MBNMS 2005).