

# EXECUTIVE SUMMARY

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## INTRODUCTION

The US Army Corps of Engineers (Corps) and County of Santa Cruz Redevelopment Agency (Redevelopment Agency) were originally cosponsors of the project analyzed in this document. Consequently, an Environmental Impact Statement/Environmental Impact Report (EIS/EIR) was prepared and released in 2003, in accordance with the National Environmental Policy Act (NEPA), 42 United States Code (USC) §§ 4321-4347 (1994); the Council on Environmental Quality (CEQ) regulations implementing NEPA, 40 Code of Federal Regulations (CFR) § 1500-1508; the US Army Corps of Engineers (Corps) NEPA Guidelines (33 CFR Part 230); the California Environmental Quality Act (CEQA) of 1970, as amended, California Public Resources Code (Cal. Pub. Res. Code) §§ 21000-21178.1, and implementing guidelines, California Code of Regulations, Title 14, §§ 15000-15387 (1999).

However, because the project no longer includes federal funds and would be funded entirely by local sources, the Redevelopment Agency and County Department of Public Works became the sole project sponsors. The Corps' authorization for the proposed bluff protection structure is now limited to approval under Nationwide Permit #13. This permit has already undergone NEPA review, so the NEPA analysis in this document is essentially superfluous, and CEQA requirements prevail. However, in an effort to avoid potential confusion over this procedural change, references to the EIS/EIR have not been removed from the document. Deleting the language at this point in the planning process could create confusion, while retaining the terminology is not detrimental.

As a project sponsor, Redevelopment Agency funds would be used to construct the project. The Santa Cruz County Planning Department is the CEQA lead agency and is responsible for overseeing preparation of the EIS/EIR. In order for the project to be approved, the Corps must affirm that the bluff protection structure is permitted under Nationwide Permit #13 of the Clean Water Act and the River and Harbors Act, which makes the Corps the NEPA lead agency for the project.

This document evaluates the impacts on the environment that could result from the proposed East Cliff Drive Bluff Protection and Parkway Project. The proposed activity is midway between the cities of Santa Cruz and Capitola in Santa Cruz County, California, which is approximately 75 miles south of San Francisco, on the north shore of Monterey Bay (Figure 1-1).

This proposal is unique in that it is composed of three separate but related projects. The proposed activity involves three separate construction projects that would be constructed and funded individually over approximately two years. Because the three projects are in close proximity to each other, the potential environmental impacts associated with each of the construction projects are addressed in this EIS/EIR.

The three construction projects that form the East Cliff Drive Bluff Protection and Parkway Project and that are analyzed in this EIS/EIR would be constructed in order and are referred to in this document as:

- Project 1—Construction of the main bluff protection structure between 33<sup>rd</sup> and 36<sup>th</sup> Avenues;
- Project 2—Parkway construction and improvements; and
- Project 3—Construction of The Hook bluff protection structure.

#### **PURPOSE AND NEED (CHAPTER 1)**

The purposes of the projects are: to increase the longevity of the public right-of-way; to protect the road and utilities from coastal bluff erosion; and to improve and enhance public access to the coast by constructing a parkway for pedestrians and cyclists. The public right-of-way includes the road (East Cliff Drive), parking areas, pedestrian/bicycle path, coastal access stairways, public utilities, and park areas.

The potential loss of East Cliff Drive has been a concern for many years, and in the 1990s it became clear that continued failures would undermine the road, utilities, and public access to the coast. In 1994, the Corps completed a draft study, concluding that stabilizing and protecting the bluffs along East Cliff Drive was critically needed. A more recent threat analysis, conducted by Sanders & Associates Geotechnical Engineering, Inc. in 2005, indicates that approximately 65 percent of East Cliff Drive between 33<sup>rd</sup> and 36<sup>th</sup> avenues is currently failing (13 percent) or may be unsafe to use within the next few years (52 percent).

The parkway component of the project (Project 2), which includes the park area, paths, restrooms, stairways, and beach and road improvements, helps to implement the California Coastal Act, Section 30001.5, which declares that one of the basic goals of the state for the coastal zone is to:

“Maximize public access to and along the coast and maximize public recreational opportunities in the coastal zone consistent with sound resources conservation principles and constitutionally protected rights of private property owners” (California Coastal Commission 2001).

The parkway component of the project would also help implement the Monterey Bay Sanctuary Scenic Trail system, which is envisioned to provide a multi-use recreational and alternate transportation trail system along Monterey Bay. The parkway project would contribute to the trail by constructing a bicycle and pedestrian path and other public access amenities along East Cliff Drive, between 32<sup>nd</sup> and 41<sup>st</sup> avenues. The vision is that, over time, such trail segments can be connected into a continuous regional trail system.

Additional benefits that have been identified through public input include the following:

- Make walking safer, especially along East Cliff Drive;
- Retain one-way eastbound vehicle access through the area to allow enjoyment by the community;
- Reduce unnecessary drive-through traffic, and where it is necessary to divert traffic within the neighborhood, spread it throughout the area, rather than concentrating it along one street; and
- Shift traffic away from the cliff edge to slow down the rate of cliff retreat.

## **PROJECT HISTORY**

The East Cliff Drive Bluff Protection Project was initially designed as a project co-funded by Santa Cruz County and the US Army Corps, with the County and the Corps holding discrete authority over separate elements of the project. Under this structure, the project was announced to the public and a draft EIS/EIR was released to the public on March 21, 2003. A public meeting was held on April 30, 2003, public comments were received, and the County and the Corps revised the EIS/EIR and distributed the final EIS/EIR in October 2003.

Project construction depends upon the approval of the California Coastal Commission (Commission), which has authority granted under the Coastal Zone Management Act (CZMA) to manage development within the coastal corridor. Before a project can move forward, the Commission must find it consistent with the California Coastal Management Program (CCMP). Commission staff participated in regulatory review of the draft EIS/EIR and provided extensive comments, which were replied to in the final EIS/EIR. However the Commission was not satisfied with the changes made to the project and, at its hearing on November 7, 2003, found the project inconsistent with the CCMP.

At this stage, the County Redevelopment Agency is the sole project sponsor; however the Corps remains involved as a regulatory agency with jurisdiction over the project, similar to the US Fish and Wildlife Service (USFWS) and Monterey Bay National Marine Sanctuary (MBNMS). It is this federal regulatory involvement that requires NEPA documentation for the project.

In the period since January 2004, the bluff along East Cliff Drive has continued to fail. As a result, the County undertook emergency stabilization efforts in order to protect the right-of-way and public safety. These stabilization efforts consisted of three sections of soil nail wall, totaling 290 linear feet, between 32<sup>nd</sup> and 35<sup>th</sup> avenues. The work was conducted over a period of three months during July, August and September of 2004, using the same techniques and best management practices (BMPs) described in the project description in Section 2. The soil nail

walls built as part of the emergency stabilization effort differ from the proposed projects in that only the top section of the wall was constructed, protecting only the terrace deposits above the Purisima Formation, and not the Purisima itself.

This Revised Draft EIS/EIR is designed to take into account the changes in the project area since the final EIS/EIR was distributed, and address and resolve the concerns of the public and the Commission about the original project.

### **PUBLIC INVOLVEMENT PROCESS**

Public involvement is a key part of the EIS/EIR process. Since 1995, the County of Santa Cruz has met with the public on many occasions to discuss the issues relating to the cliff erosion and failure of portions of East Cliff Drive. In addition to the community meetings, the County has issued “East Cliff Drive Update” newsletters (Santa Cruz County 1995a, 1995b, 1995c, 1996, 1997) to keep the public informed, to announce community meetings, and to receive input from the public on the long-range planning for this area.

As part of this EIS/EIR process, methods to involve the public have included or will include the following:

- Publishing notices of public meetings in newspapers with wide circulation and encouraging written comments.
- Advertising a notice of intent (NOI) under NEPA. For this document, the NOI was published in the Federal Register on Friday March 30, 2001, Vol. 66, No. 62 (Appendix B). The NOI also was sent to the California State Clearinghouse for distribution to state agencies. The purpose of the NOI is to notify the public that an EIS will be prepared (40 CFR § 1508.22). The County of Santa Cruz issued the notice of preparation (NOP) on January 29, 2001. Under CEQA, the purpose of the NOP is to notify the responsible, trustee, and involved agencies and the public that an EIR will be prepared. The NOP also solicited guidance from these agencies as to the scope and content of the environmental information to be included in the EIR (CEQA Guidelines § 15375).
- Sending scoping letters and project information to approximately 2,000 public agencies, public interest groups, and individuals.
- Holding public meetings to gather input from members of the local community and to discuss their concerns. Before submittal of the Coastal Zone and Grading Permit application, the County held a community meeting on December 12, 2000, where discussion included design elements, environmental concerns, and the next step in the planning process. This meeting was followed by a public scoping meeting, conducted by both the Santa Cruz County Redevelopment Agency and the US Army Corps of Engineers, on April 12, 2001. This meeting fulfills the NEPA requirement to receive input from the public on the scope of the project, including the scope of the issues to be addressed (40 CFR § 1501.7). The scope consists of the range of actions, alternatives, and impacts to be considered in the EIS (40 CFR § 1508.25).

- Creating and maintaining a mailing list to disseminate information about the decision-making process.
- Holding community meetings to discuss and present the analyses, conclusions, and recommendations of the revised draft EIS/EIR.

***Public Review***

The draft EIS/EIR was released on March 21, 2003, and the public review period ended on May 12, 2003. Comments received during the public review period were addressed in the final EIS/EIR, distributed in October 2003.

***Draft EIS/EIR***

As required under NEPA, the Corps' notice of availability for the draft EIS/EIR was published in the Federal Register by the EPA on March 28, 2003. The NOA was also published in the local press and public notices were mailed to those on the mailing list, and the County of Santa Cruz filed a Notice of Completion (NOC) (required under CEQA) with the State Office of Planning and Research and the County Clerk. The public was invited to review and comment on the draft EIS/EIR during the public comment period from March 21 to May 12, 2003. The draft EIS/EIR was available for review on the County Planning Department website, as well as in the County Planning Department office and local library branches. During the public review period, written comment letters were received from five agencies, eight environmental organizations, and fifty-seven individuals. The County held a public forum to discuss the project on April 7, 2003, and the Corps held a public meeting to discuss the project on April 30, 2003. Twenty-two individuals presented comments at the public meeting.

Copies of the Corps and the County's notices of availability for the draft EIS/EIR are reproduced in Appendix B, Public Involvement, along with the transcript of the public meeting hosted by the Corps on April 30, 2003.

***Final EIS/EIR***

The 2003 final EIS/EIR incorporated and responded to comments on the draft EIS/EIR and was published and made available for review. An NOA of the final EIS/EIR was published in the Federal Register and in the local press, and a public notice was mailed to all individuals, agencies, and organizations who commented on the draft EIS/EIR or who had requested to be notified.

Ordinarily, there would be a 30-day no action period under NEPA following distribution of the final EIS/EIR, during which the public could comment. At the end of this period, the federal agency would sign a record of decision (ROD), detailing its decisions about the project, and the County would present the final EIS/EIR to first the County Planning Commission and then the County Board of Supervisors for certification. However, because the CCC failed to find the project consistent with the LCP, no ROD was signed and the final EIS/EIR was not certified.

***Revised Draft EIS/EIR***

The Revised Draft EIS/EIR was public noticed and distributed in compliance with CEQA requirements. A 50-day public comment period was held from May 8 through June 26, 2006, and a public open house was conducted on June 8, 2006. Comments submitted on the Revised Draft

EIS/EIR, and responses to those comments are presented in Chapter 21 of this Revised Final EIS/EIR. Because the County Redevelopment Agency and Department of Public Works are now the sole project sponsors, the Corps' authorization for the bluff protection structure is limited to approving it under nationwide Permit #13. NEPA requirements have already been satisfied through the Corps' approval of the Nationwide Permit.

## **PROPOSED PROJECTS AND ALTERNATIVES CONSIDERED (CHAPTER 2)**

The three projects forming the East Cliff Drive Bluff Protection and Parkway Project would be constructed in order and would include the following features:

### **Project 1 (Main Bluff Protection Structure)**

- Constructing an engineered bluff protection structure from 33<sup>rd</sup> Avenue to 36<sup>th</sup> Avenue;
- Constructing both new and replacement beach access stairways (one at Pleasure Point Park and one at 35<sup>th</sup> Avenue);
- Demolishing an abandoned restroom, and
- Removing concrete rubble and rock riprap. (Riprap is a protective layer of rock placed to prevent erosion of a bluff.)

### **Project 2 (Parkway Improvements)**

- Constructing road improvements (new curb along southern edge), installing drainage structures, making pedestrian and multi-use path improvements, and making landscape improvements and installing railings as needed - from 32<sup>nd</sup> Avenue to 41<sup>st</sup> Avenue;
- Constructing a retaining wall near 38<sup>th</sup> Avenue; and
- Constructing a new restroom, developing a park site (to be referred to as Pleasure Point Park throughout this document), landscaping, and improving drainage.

### **Project 3 (The Hook Bluff Protection Structure)**

- Constructing a second engineered bluff protection structure near the end of 41<sup>st</sup> Avenue at The Hook; and
- Removing, repairing, and replacing wooden stairway near 41<sup>st</sup> Avenue.

This EIS/EIR covers the construction of all three projects by the Santa Cruz County Redevelopment Agency. The County of Santa Clara must first certify the EIR for these projects, which will also require a number of different permits and approvals from various local, state, and federal agencies. The bluff stabilization projects would require different permits than the parkway and upper bluff portions of the work. A summary is included here and in tables ES-3 and 2-5.

Project 1 (the bluff protection structure between 33<sup>rd</sup> and 36<sup>th</sup> avenues), because it involves construction below the high-water mark, triggers the Corps' Clean Water Act Section 404 jurisdiction; however the Corps has confirmed that it falls within Nationwide Permit Number 13 and therefore no other regulatory requirements are triggered. Project 3 (the construction at The Hook) would not trigger Corps regulatory requirements. Both bluff protection structures would,

in addition, require that various federal agencies be consulted, that a special use permit be obtained from the Monterey Bay National Marine Sanctuary, and that the State Lands Commission issue a permit. Additionally, the California Coastal Commission would need to issue a Coastal Zone Development Permit for the bluff protection structures.

Project 2 (roadway, parkway, and park improvements) would require the County of Santa Cruz to issue a Coastal Zone Development Permit, to approve the Master Site Plan for Pleasure Point Park, and to issue a Grading Permit. Construction may also require permits or approvals from the Monterey Bay Unified Air Pollution Control District (MBUAPCD) and the Central Coast Regional Water Quality Control Board (CCRWQCB).

### **No Action Alternative**

The No Action Alternative serves as a basis for comparing the other alternatives. Under this alternative, the project would not be built. Theoretically, this means that the current erosion and damage to the road section would continue, causing road closure and utility damage over time (Corps 2003). Historical rates of bluff erosion at the project site have been calculated as high as eight to twelve inches per year. However, bluff erosion does not occur at a regular rate, and individual occurrences can involve the loss of as much as six to nine feet in one episodic failure. In order to identify the risk of this kind of episodic failure, the County commissioned a threat assessment report in 2005. Sanders and Associates Geotechnical Engineering, Inc. (SAGE) conducted an evaluation of the bluff at East Cliff Drive; their results indicate that roughly 65 percent of the roadway between 33<sup>rd</sup> and 36<sup>th</sup> avenues is currently failing or in danger of immediate failure (SAGE 2005a). In addition, a SAGE slope stability analysis indicates that bluff failures from about 10 to 30 feet (3 to 9 m) could occur under static conditions or seismic loading (SAGE 2005b).

Based on this pattern of failure, as described in the SAGE report, it is clear that the No Action Alternative could result in the loss of significant portions of the roadway within the next two or three storm cycles. Loss of as little as ten feet of the bluff face could cause substantial disruption of motorized and pedestrian use of East Cliff Drive, even if the roadway were somehow to remain open. Additionally, utilities underneath East Cliff Drive would be affected very rapidly by bluff collapse.

Realistically, under this alternative, the County would continue to construct emergency bluff protection structures, where feasible, in response to future bluff failures and when public safety is threatened. However the County's efforts are unlikely to prevent erosion of the bluff, particularly where large volumes of the bluff face collapse unpredictably as a result of storms or seismic shaking.

### **Alternative 1: Full Bluff Armoring (Preferred Alternative)**

Under Alternative 1, two segments of the cliff face adjacent to East Cliff Drive would be fully armored with an engineered (soil nail and shotcrete) bluff protection structure: an 1,100-linear-foot segment, between 33<sup>rd</sup> and 36<sup>th</sup> avenues (Project 1), and a 300-foot segment at the end of 41<sup>st</sup> Avenue (The Hook [Project 3]). The bluff protection structure proposed is referred to as a soil nail wall. This soil nail wall would be supplemented with mechanically stabilized earth (MSE) retaining walls on an as needed basis in areas where the terrace deposits have failed. These walls

would support build-out areas needed for parkway development. Any MSE walls used in this alternative would be subsequently covered by the soil nail wall components.

Under Project 2, the travel lane on East Cliff Drive would be reconfigured to provide a 16-foot one-way vehicle lane, curb and gutter, additional parking spaces, and separate eight-foot bicycle and eight-foot pedestrian paths.

The two proposed bluff protection structures would be designed to protect the slope and to look natural. The proposed structures would be sculpted and stained to match the existing soils and rock layers and would follow closely or hug the natural cliff face.

### ***Soil Nail Construction***

The bluff protection structures design includes a series of horizontal metal tieback rods inserted into the vertical face of the terrace deposits (the upper 15 feet of the bluff) and the underlying Purisima Formation. The base of the soil nail structures would be founded in a formed concrete footing set three feet into the bedrock, with an apron extending four feet beyond the face of the wall. Excavation of the bedrock would be required to properly prepare for the footing and apron. The footing would extend downward to approximately -3 feet NGVD (National Geographic Vertical Datum). The tieback rods (grouted steel rebars) would be fastened at the bluff face to a wire mesh grid or other reinforcing material and covered with two layers of sprayed-on concrete. The first layer (10 to 12 inches) would be the structural component covering all the steel tiebacks and reinforcing the second layer. This second layer (6 to 12 inches) would be the sculptural element, and would be shaped and colored to replicate the natural appearance of the bluffs.

### ***Mechanically Stabilized Earth***

MSE walls (like those that would be used on the bluffs along East Cliff Drive) are constructed with reinforced soil. Reinforcing elements such as steel strips, steel or polymeric grids, or geotextile sheets are placed in the soil to improve resistance. Improved resistance reinforces and strengthens the soil significantly and allows very steep slopes or even vertical walls to be constructed without support from a massive structural system at the face of the slope.

The principal purpose for using MSE is to construct an embankment, or wall at an angle steeper than could otherwise be safely constructed with plain soil. The increase in stability allows for construction of steeper slopes on firm foundations for such features as new highways and as replacements for flatter un-reinforced slopes and retaining walls.

Additionally, using MSE at the edges of a compacted fill slope provides lateral resistance during compaction. The increased resistance increases soil density and provides increased confinement for the soil at the face. Even modest amounts of reinforcement in compacted slopes have been found to prevent sloughing and reduce slope erosion.

### ***Stairs and Abandoned Restroom (Projects 1 and 3)***

Access to the beach and surf area is a major concern, as expressed through public comments. The three existing stairways in the project area would be either replaced or repaired and a new stairway would be built. The abandoned restroom would be demolished and a new restroom

built at Pleasure Point Park. Table ES-1 below outlines how and which stairways would be affected.

**Table ES-1  
Stairway Locations**

| <b>Stairway Reference Number</b> | <b>Location</b>                          | <b>Stairway Conditions</b>                                                             | <b>Stairway Material</b>                                          |
|----------------------------------|------------------------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Stairway #1                      | 33rd Avenue (Pleasure Point Park)        | New stairway to be constructed.                                                        | Concrete (for Alternative 1); wood (for Alternatives 2, 3 and 4)  |
| Stairway #2                      | 35th Avenue, near the abandoned restroom | Stairway to be demolished and rebuilt a block from current location, near 36th Avenue. | Concrete (for Alternative 1); wood (for Alternatives 2, 3, and 4) |
| Stairway #3                      | 38th Avenue                              | Stairway to remain in place, unaffected by project.                                    | Wood                                                              |
| Stairway #4                      | 41st Avenue (The Hook)                   | Stairway to be temporarily removed, repaired, and reinstalled.                         | Wood                                                              |

#### ***Removal of Existing Concrete Rubble and Riprap (Project 1)***

The County has proposed removing approximately 4,000 to 6,000 cubic yards of concrete rubble from the beach. This would make more beach area available to the public and improve aesthetics. If possible, the rubble would be ground down (at another off site location) into smaller sizes and reused. If this is not possible, the rubble would be disposed of at the County landfill. The rock riprap in areas where the proposed protection structures would be erected would be either removed or relocated to the proposed stairways for protection during large storms. The riprap in the vicinity of the stairs at The Hook would remain as a protective armoring to the stair supports. Any riprap or other armoring located along portions of the project area in front of private parcels where no protection structure is proposed would remain.

#### ***Road Improvements (Projects 2 and 3)***

East Cliff Drive would be configured as a single, 16-foot-wide (5-meter-wide) lane, with one-way travel in the eastbound direction from 32<sup>nd</sup> Avenue to 41<sup>st</sup> Avenue, similar to the existing alignment. Pedestrian and bicycle paths would be constructed and additional public parking would be added. A rolled curb (a curb with a curved top that can be driven over by vehicles) between the roadway and the paved path would allow emergency use and would meet state standards for fire access. It would also control surface drainage (see below). Traffic guardrails would be removed and a new pedestrian guardrail would be installed in some locations. Some roadside signs would be required, but there would be no overall increase in signage along the proposed project site. At each of the intersections, cross walks and access ramps through the rolled curb would be installed. The width of the road in these areas would be widened to accommodate left turn requirements onto East Cliff Drive.

#### ***Pedestrian and Bicycle Improvements (Projects 2 and 3)***

Pedestrian and bicycle paths would be constructed on the south (ocean) side of East Cliff Drive. The pedestrian path would be eight feet wide, constructed of decomposed crushed granite (approximately two to three inches deep). The bicycle path would be eight feet wide, constructed

of asphalt, and would be between the pedestrian path and the car lane. The bicycle path would be separated from the car lane by a rolled curb and elevated six inches above the car lane. Where sufficient width is available, a landscaped buffer, composed of coastal vegetation, would be installed along the pedestrian and bicycle paths. Additionally, crosswalks would be installed on East Cliff Drive at 34<sup>th</sup>, 35<sup>th</sup>, 36<sup>th</sup>, 37<sup>th</sup>, and 38<sup>th</sup> avenues and at the parking lot at 41<sup>st</sup> Avenue.

### ***Parking Improvements (Project 2)***

Existing parking spaces would be relocated and reconfigured, and new parking would be added, resulting in a net gain of 10 new parking spaces, for a total of 37 on-street public parking spaces.

### ***Park Development (Project 2)***

Pleasure Point Park is a viewing area for the beach and the surf and is heavily used by surfers as an access point to the beach below. Proposed improvements to the park include the construction of a small restroom with an outdoor shower, landscaping, and outdoor seating and picnic tables. This would also be the location of a new beach access stairway (see Table ES-1).

### ***Storm Drainage (Projects 2 and 3)***

The park site and the road and roadside sections would be designed to drain away from the top of the bluff into new catch basins. New catch basins would be equipped with improved infiltration and water quality mechanisms, as per best management practices. The project would require capping and replacing several old storm drain outfalls, whose pipes protrude near the top of the bluff. All the new storm drain lines are designed to be embedded in the bluff and would release water at the base of the cliff through the bluff protection structures. These drains would discharge water over an energy dissipater in the base of the bluff structure to prevent erosion and to minimize turbidity. The outfall pipes would also be partially covered by the bluff and would be designed to blend with the surrounding bluff structure.

### **Alternative 2: Partial Bluff Armoring with Full Parkway Improvements**

Like Alternative 1, this alternative would also incorporate the construction of two soil nail bluff protection structures. But under this alternative, only the Purisima Formation (the bottom portion) of the bluffs would be armored, with the exception of washout areas. Only in the existing washout areas would the bluff armoring extend to the terrace deposits to support build-out areas for parkway development. This alternative also would incorporate MSE retaining walls with shotcrete and would be constructed as needed to retain terrace deposits and support the build-out areas. Repairs to existing retaining walls would be made on an as-needed basis. All other features of the projects, such as the parkway development and road improvements, would be the same as those described for Alternative 1.

### **Alternative 3: Partial Bluff Armoring with Limited Parkway Improvements**

As with Alternative 2, this alternative would partially armor the bluffs (Purisima Formation only) to protect them from erosion. This alternative differs from Alternative 2 in that no new retaining walls would be constructed and no repairs to existing retaining walls located within the terrace deposit zone of the bluff would be made. Because there would be no measures taken to protect the terrace deposits from further erosion, only one multi-use path (a minimum of eight feet in width), for both pedestrian and bicycle use would be constructed. As described for Alternative 2, after the abandoned restrooms are demolished, the affected upper bluff may require stabilization

or rebuilding, depending on its condition after demolition. Most other features of the projects, such as parkway improvements (landscaping and signage) and road improvements (parking, crosswalks, and drainage) would be the same as those described for Alternative 2.

#### Alternative 4: Groins and Notch Infilling

This alternative would not armor the bluffs but instead would use other means to protect the bluffs from erosion. Under this alternative, no retaining walls would be constructed; therefore no build-out would occur near the terrace deposits. As a result, only one multi-use path, with a minimum width of eight feet (depending on the amount of setback available) would be constructed. General parkway improvements would be made under this alternative, such as landscaping along East Cliff Drive and developing Pleasure Point Park, similar to Alternative 3.

Implementation of this alternative would involve the infilling of wave-cut notches at the base of the bluffs (between 33<sup>rd</sup> and 36<sup>th</sup> avenues) with concrete. Also included under this alternative would be the construction of several groins at strategic locations perpendicular to the shore. Groins are relatively short, shore-perpendicular structures that can be constructed of rock, concrete, or other materials and that stabilize a beach or that trap sand to form a protective beach. The groins would be designed to trap sand carried south by the long shore current and to create beaches along the 33<sup>rd</sup> to 36<sup>th</sup> avenue area.

Table ES-2 shows a comparison of the major features of each alternative.

**Table ES-2**  
**Summary of Project Alternatives**

| <b>Project Feature</b>                                                         | <b>Alternative 1—Full Bluff Armoring</b>                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Alternative 2—Partial Bluff Armoring with Full Parkway Improvements</b>                                                                                                                                                                                                                                                         | <b>Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements</b>                                                                                                                | <b>Alternative 4—Groins and Notch Infilling</b>                                                                                                                                                                                                                                                                                                      | <b>No Action Alternative</b>                                                                                                                                                 |
|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bluff Protection (in addition to emergency cribwall repairs conducted in 2004) | Install two bluff protection structures: 1,100-foot (335-m) segment, covering Purisima, and 810-foot segment, covering terrace between 33 <sup>rd</sup> and 36 <sup>th</sup> Avenues, and 300-foot (91-meter) segment near the end of 41 <sup>st</sup> Avenue. Armor the entire bluff face, including both the Purisima and terrace deposits. Install MSE reinforcement where needed to retain terrace deposits and support buildouts for parkway | Two bluff protection structures, same location and length as Alternative 1. Armor Purisima bedrock along entire area and armor the terrace deposits at the bluff top and over failing cribwalls in two washout areas. Install MSE reinforcement, same as Alternative 1. Fill existing undercut notches in Purisima with shotcrete. | Two bluff protection structures, same location and length as Alternative 1. Armoring Purisima bedrock only. No MSE reinforcement. Fill existing undercut notches in Purisima with shotcrete. | No protection structures constructed on the bluff. Three subtidal groins (between 33 <sup>rd</sup> and 36 <sup>th</sup> Avenues) approximately 100 feet (30 meters) long and perpendicular to shore to trap sand and form protective beaches. No groins would be constructed at The Hook. Fill existing undercut notches in Purisima with shotcrete. | No additional planned bluff protection. (Note: emergency repairs would be constructed in future, where feasible, in response to bluff failures and to assure public safety.) |

**Table ES-2  
Summary of Project Alternatives**

| <b>Project Feature</b> | <b>Alternative 1—Full Bluff Armoring</b>                                                                                                                                        | <b>Alternative 2—Partial Bluff Armoring with Full Parkway Improvements</b>                                                                                                                                                                                            | <b>Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements</b>                                                                                                                                                                                                                                         | <b>Alternative 4—Groins and Notch Infilling</b>                                                                                                                                                                                                                                                                                                            | <b>No Action Alternative</b>                                                                                                                                                                             |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | development.<br>Fill existing undercut notches in Purisima with shotcrete.                                                                                                      |                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                          |
| Cribwalls              | Cover one remaining cribwall by new bluff protection structure. New retaining wall near Manzanita and 38th Avenues would not be covered by proposed bluff protection structure. | Same as Alternative 1. New retaining wall near Manzanita and 38th Avenues would not be covered by proposed bluff protection structure. No new retaining walls are planned. New walls may have to be built on an emergency basis in response to future bluff failures. | One remaining cribwall would be covered by the bluff protection structure. New retaining wall near Manzanita and 38th Avenues would not be covered by proposed bluff protection structure. No new retaining walls planned. New walls may have to be built on an emergency basis in response to future bluff failures. | One remaining cribwall and soil nail walls would remain in place. New retaining wall near Manzanita and 38th Avenues would not be covered by proposed bluff protection structure. Same as Alternative 3. No new retaining walls planned. New walls may have to be built on an emergency basis in response to future bluff failures. Same as Alternative 3. | One remaining cribwall and soil nail walls would remain in place. New retaining wall near Manzanita and 38th Avenues would not be covered by proposed bluff protection structure. Same as Alternative 3. |
| Beach access           | Construct one stairway, retain one stairway, and replace two stairways.                                                                                                         | Same as Alternative 1, but with concrete piers or caissons as support.                                                                                                                                                                                                | Same as Alternative 1, but with concrete piers or caissons as support.                                                                                                                                                                                                                                                | Construct one stairway and retain three stairways, with concrete piers or caissons as support.                                                                                                                                                                                                                                                             | Retain and maintain three existing stairways.                                                                                                                                                            |
| Abandoned restrooms    | Demolish abandoned restrooms. Construct a replacement restroom and outdoor shower at Pleasure Point Park. Remove and dispose of all concrete rubble from project area.          | Demolish abandoned restrooms. Construct a replacement restroom and outdoor shower at Pleasure Point Park. Remove and dispose of all concrete rubble from project area.                                                                                                | Demolish abandoned restrooms. Upon demolition, affected bluff may require stabilization or rebuilding, depending on condition. Construct a replacement restroom and outdoor shower at Pleasure Point Park. Remove and dispose of all concrete rubble from project area.                                               | Retain restroom structure as is (closed). Construct a replacement restroom and outdoor shower at Pleasure Point Park. Remove and dispose of all concrete rubble from project area.                                                                                                                                                                         | Retain restroom structure as is (closed).                                                                                                                                                                |

**Table ES-2  
Summary of Project Alternatives**

| <b>Project Feature</b>                                              | <b>Alternative 1—Full Bluff Armoring</b>                                                                                                                                                                  | <b>Alternative 2—Partial Bluff Armoring with Full Parkway Improvements</b>                                                                                                                                      | <b>Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements</b>                                                                                                 | <b>Alternative 4—Groins and Notch Infilling</b>                                                                                                                               | <b>No Action Alternative</b>                                                                                                        |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Riprap/concrete rubble on beach                                     | Either remove rock riprap in areas of proposed protection structures or relocate it to where the structure terminates, near the O'Neill property; riprap may be used to protect the stairway at The Hook. | Riprap used to protect stairways and endwalls.                                                                                                                                                                  | Use riprap to protect stairways and endwalls.                                                                                                                                 | Use riprap to protect stairways. Some of the existing rock riprap could also be used in the construction of the groins.                                                       | Riprap and concrete rubble to remain on the beach.                                                                                  |
| Road improvements                                                   | Road to remain single-lane, one-way (eastbound). Narrow and improve road with a curb and gutter.                                                                                                          | Road to remain single-lane, one-way (eastbound), subject to competence of terrace deposits. Road expected to narrow over time as bluff fails. Bluff failures would be repaired based on feasibility evaluation. | Road improvements similar to Alternative 1, except where existing right of way width is insufficient. Bluff expected to continue to fail, eventually requiring road closure.  | Road improvements similar to Alternative 1, except where existing right-of-way width is insufficient. Bluff expected to continue to fail, eventually requiring road closure.  | No road improvements. Bluff expected to continue to fail, eventually requiring road closure.                                        |
| Utilities (lines to be upgraded as necessary prior to construction) | Cap potable and sanitary sewer lines at abandoned restroom at mains along East Cliff Drive. No changes to electrical, gas, sanitary sewer, or water lines under and along East Cliff Drive.               | Cap potable and sanitary sewer lines at abandoned restroom at mains along East Cliff Drive. Bluff expected to continue to fail, eventually requiring relocation of utilities.                                   | Cap potable and sanitary sewer lines at abandoned restroom at mains along East Cliff Drive. Bluff expected to continue to fail, eventually requiring relocation of utilities. | Cap potable and sanitary sewer lines at abandoned restroom at mains along East Cliff Drive. Bluff expected to continue to fail, eventually requiring relocation of utilities. | No changes or improvements to existing utilities. Bluff expected to continue to fail, eventually requiring relocation of utilities. |
| Bicycle and pedestrian paths                                        | Create separate pedestrian and bicycle paths (each eight feet [2.4 meters] wide, where feasible), one of asphalt and one of crushed granite.                                                              | Same as Alternative 1.                                                                                                                                                                                          | One multiuse path (minimum eight-foot [2.4-meter] width) would be constructed, its width depending on the amount of setback available.                                        | Same as Alternative 3.                                                                                                                                                        | Existing asphalt multiuse path to be maintained, pending irreparable bluff failure.                                                 |
| Park development                                                    | Develop Pleasure Point Park. Construct small restroom, install landscaping, picnic areas, and Monterey Bay Marine                                                                                         | Same as Alternative 1.                                                                                                                                                                                          | Same as Alternative 1.                                                                                                                                                        | Same as Alternative 1.                                                                                                                                                        | Park to be retained in present condition, with future park development subject to funding.                                          |

**Table ES-2  
Summary of Project Alternatives**

| <b>Project Feature</b> | <b>Alternative 1—Full Bluff Armoring</b>                                                                                                                                                                                                                                                                                                                              | <b>Alternative 2—Partial Bluff Armoring with Full Parkway Improvements</b>                        | <b>Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements</b> | <b>Alternative 4—Groins and Notch Infilling</b>                                                                                              | <b>No Action Alternative</b>                                                                               |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
|                        | Sanctuary Trail interpretive exhibit.                                                                                                                                                                                                                                                                                                                                 |                                                                                                   |                                                                               |                                                                                                                                              |                                                                                                            |
| Landscape improvements | Landscape shrubs and trees along path, with benches for viewing.                                                                                                                                                                                                                                                                                                      | Same as Alternative 1.                                                                            | Same as Alternative 1.                                                        | Same as Alternative 1.                                                                                                                       | No new landscaping.                                                                                        |
| Railings               | Fencing with wooden posts and metal railings measuring 42 inches (107 centimeters) high to be installed along a portion of the ocean side of the parkway where needed for pedestrian safety. Where sufficient setback is available, use wooden split-rail fence instead of railing.                                                                                   | Same as Alternative 1.                                                                            | Same as Alternative 1.                                                        | Same as Alternative 1.                                                                                                                       | No new railings except as needed in the future for public safety. Existing fences and guardrails retained. |
| Parking                | Create 8 new parking spaces, in addition to the existing spaces, for a total of 35 spaces.                                                                                                                                                                                                                                                                            | Same as Alternative 1, subject to continued bluff stability.                                      | Same as Alternative 1, subject to continued bluff stability.                  | Same as Alternative 1, subject to continued bluff stability.                                                                                 | Existing 27 parking spaces to remain, subject to continued bluff stability.                                |
| Crosswalks             | Install new crosswalks at six locations.                                                                                                                                                                                                                                                                                                                              | Same as Alternative 1.                                                                            | Same as Alternative 1.                                                        | Same as Alternative 1.                                                                                                                       | No new crosswalks installed.                                                                               |
| Drainage improvements  | Design street drainage system to minimize drainage over bluff face. Combine and connect new catch basins to upgraded filtering mechanism. Provide additional drainage to prevent groundwater retention behind soil nail structure. Replace storm drain lines that now protrude from the bluff face; stormwater would discharge through the face of the new structure. | Same as Alternative 1, except groundwater drainage system limited to drainage of retaining walls. | Same as Alternative 1, except no groundwater drainage system.                 | Same as Alternative 1, except no groundwater drainage system. Repair or consolidate storm drain lines protruding from bluff face, as needed. | Normal evaluation and maintenance or replacement of drainage system. Same as Alternative 3.                |

### **Environmentally Preferable/Superior Alternative**

Because the Army Corps was originally a project cosponsor, the 2003 EIS/EIR was required to identify an environmentally preferable alternative under NEPA and an environmentally superior alternative under CEQA. While NEPA and CEQA are quite similar, they are not identical and some differences exist. Consequently, the environmentally preferable/environmentally superior alternative identified in 2003 was primarily based on the Corps' procedures for implementing NEPA.

The Corps' criteria for selecting the environmentally preferable alternative for this project was based solely on the following criteria:

- It would result in the least physical disturbance to the project area and if
- It would result in the smallest physical footprint (the least amount of physical construction) in the project area.

Based on these criteria, the 2003 EIS/EIR identified Alternative 3 (Partial Bluff Armoring with Limited Parkway Improvements) as the environmentally preferable/environmentally superior alternative. While Alternative 3 best meets the Corps' criteria for implementing NEPA, this alternative would not fully achieve the project objectives. Under Alternative 3, only the Purisima Formation would be armored. This would reduce the project footprint but would provide less protection to the public right-of-way and infrastructure because the upper bluff terrace deposits would still be subject to erosion. The parkway footprint would also be reduced, but this would be accomplished by eliminating some of the improvements to public access.

Under CEQA, project objectives can be considered in identifying the environmentally superior alternative. In fact, only alternatives that "could feasibly attain most of the basic objectives of the project" need be examined in detail in an EIR (CEQA Guidelines Section 15126.6[f]). Because the Corps is no longer a project cosponsor and NEPA requirements would be satisfied through conformance with Nationwide Permit #13, CEQA requirements prevail in preparing the Revised EIS/EIR.

When taking the project objectives into consideration, a mitigated Alternative 1 (Full Bluff Armoring), as described in this Revised Final EIS/EIR, is the environmentally superior alternative. This alternative would protect the public right-of-way and infrastructure from coastal bluff erosion and would improve public access to the coast, while minimizing the associated environmental impacts. The specific mitigation measures that would be implemented with project approval are identified in subsequent chapters of this document.

### **PERMIT AND REVIEW REQUIREMENTS**

The proposed projects will require numerous permits and review requirements from various agencies. Required permits are listed in Table ES-3.

**Table ES-3  
East Cliff Drive Bluff Protection and Parkway Project  
Permit and Approval Requirements**

| Agency                                                                                  | Permit/Approval                                                                                                                                                             | Authority                                                                                                                       |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>Local Government</b>                                                                 |                                                                                                                                                                             |                                                                                                                                 |
| County of Santa Cruz                                                                    | EIR certification (the County will certify that the EIR is adequate). Adopt mitigation monitoring and reporting program.                                                    | CEQA, Cal. Pub. Res. Code § 21115; CEQA Guidelines § 15090.                                                                     |
| County of Santa Cruz                                                                    | County must determine if projects are consistent with its local coastal program. Construction in coastal zone requires County to issue coastal zone permit.                 | California Coastal Act of 1976, Cal. Pub. Res. Code § 30000 <i>et seq.</i>                                                      |
| County of Santa Cruz                                                                    | Grading approval, variance permit, master site plan, park master plan.                                                                                                      | County of Santa Cruz Code of Regulations.                                                                                       |
| <b>State Agencies</b>                                                                   |                                                                                                                                                                             |                                                                                                                                 |
| California Coastal Commission                                                           | Coastal Zone Development Permit and Coastal Commission Certification.                                                                                                       | California Coastal Act of 1976, Cal. Pub. Res. Code §§ 30000 <i>et seq.</i> ; Coastal Zone Management Act, 16 USCA §§1451-1465. |
| California State Lands Commission                                                       | A permit would be required for construction within tidelands trust property (land below mean high tide line).                                                               | California Public Resources Code § 6301; California Code Regulations, Title 2 §§2800-2803.                                      |
| Central Coast Regional Water Quality Control Board                                      | Construction of the proposed projects requires a general construction activity stormwater permit. A stormwater pollution prevention plan must be developed and implemented. | State Porter-Cologne Water Quality Control Act, Cal. Water Code §§ 13000-14958, Federal Clean Water Act, 33 USCA §1341.         |
| State Historic Preservation Office                                                      | No historic properties identified within the area of potential effect; SHPO concurred.                                                                                      | National Historic Preservation Act of 1966, as amended, 16 U.S.C. §§470-470x-6                                                  |
| California Department of Fish and Game                                                  | Interagency consultation not required because no listed species in project area.                                                                                            | California Endangered Species Act, Cal. Fish & Game Code § 2090 <i>et seq.</i>                                                  |
| Monterey Bay Unified Air Pollution Control District                                     | Coordination with district for use of any portable engines (used in construction) that are not exempted from district regulations.                                          | Cal. Health & Safety Code §§ 41750-41755 <i>et seq.</i>                                                                         |
| <b>Federal Agencies</b>                                                                 |                                                                                                                                                                             |                                                                                                                                 |
| USACE                                                                                   | Nationwide Permit #13 under Clean Water Act Section 404 Permit applies to construction.                                                                                     | 33 USC §401, Section 10: 1413, Section 404                                                                                      |
| US Fish and Wildlife Service                                                            | Interagency consultation, pursuant to Section 7 of the Endangered Species Act. No effects determination made so no formal consultation required.                            | Endangered Species Act. 16 USC. §1636; 50 CFR Part 402.                                                                         |
| US National Marine Fisheries Service                                                    | Interagency consultation, pursuant to Section 7 of the Endangered Species Act. No effects determination made, so no formal consultation required.                           | Endangered Species Act. 16 USC. §1636; 50 CFR Part 402.                                                                         |
| National Oceanic and Atmospheric Administration, Monterey Bay National Marine Sanctuary | Special use permits required for construction below the mean high water mark within the National Marine Sanctuary.                                                          | National Marine Sanctuaries Act, 16 USCA §1441; 15 CFR Part 922.                                                                |

### COMPARISON OF ALTERNATIVES, INCLUDING IMPACTS AND MITIGATION

Table ES-4 summarizes the impacts of each of the four action alternatives. Figure ES-1 is a summary illustration of the estimated 50-year erosion rates for each alternative and the No Action Alternative. Table ES-5 provides a more detailed discussion of the impacts of the action alternatives and the No Action alternative.

**Table ES-4  
Summary of Significant Impacts from Project Alternatives**

| <b>Impact Description</b>                                                                                             | <b>Alternative<br/>1</b> | <b>Alternative<br/>2</b> | <b>Alternative<br/>3</b> | <b>Alternative<br/>4</b> | <b>No Action<br/>Alternative</b> |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|----------------------------------|
| <b>Land Use</b>                                                                                                       |                          |                          |                          |                          |                                  |
| Conformity with Local Land Uses and Plans                                                                             | +                        | +                        | +                        | +                        | ●                                |
| <b>Recreation</b>                                                                                                     |                          |                          |                          |                          |                                  |
| Effect on Recreational Use during Construction (Land Uses and Public Access)                                          | ◐                        | ◐                        | ◐                        | ◐                        | ○                                |
| Effect on Recreational Use During Construction (Beach and Ocean Uses)                                                 | ⊖                        | ⊖                        | ⊖                        | ⊖                        | ○                                |
| Effect on Long-Term Recreational Use                                                                                  | +                        | +                        | +                        | ●                        | ●                                |
| <b>Visual Resources</b>                                                                                               |                          |                          |                          |                          |                                  |
| Effects on Scenic Views from Bluff Protection                                                                         | ◐                        | ◐                        | ◐                        | ⊖                        | ●                                |
| Effects on Scenic Views from Parkway Improvements                                                                     | ◐                        | ◐                        | ◐                        | ◐                        | ●                                |
| Effects on Scenic Views from Construction                                                                             | ⊖                        | ⊖                        | ⊖                        | ⊖                        | ⊖                                |
| Compatibility of Physical Features with Adjacent Development                                                          | ⊖                        | ⊖                        | ⊖                        | ⊖                        | ⊖                                |
| Consistency with General Plan and LCP                                                                                 | ⊖                        | ⊖                        | ⊖                        | ⊖                        | ⊖                                |
| Long-Term Impact on Scenic Views from Parkway Improvement and Beach Cleanup                                           | +                        | +                        | ◐                        | ○                        | ○                                |
| <b>Geological Resources</b>                                                                                           |                          |                          |                          |                          |                                  |
| Enhanced Bluff or Beach Erosion Adjacent to the Project Area and Other End Effects of the Bluff Protection Structures | ◐                        | ◐                        | ◐                        | ⊖                        | ●                                |
| Wave Overtopping                                                                                                      | ⊖                        | ⊖                        | ●                        | ●                        | ⊖                                |
| Long-Term Slope Stability                                                                                             | +                        | ●                        | ●                        | ●                        | ●                                |
| Sand Supply                                                                                                           | ⊖                        | ⊖                        | ⊖                        | ⊖                        | ⊖                                |
| Surfing Impacts                                                                                                       | ⊖                        | ⊖                        | ⊖                        | ⊖                        | ⊖                                |
| <b>Water Resources</b>                                                                                                |                          |                          |                          |                          |                                  |
| Flood Hazard                                                                                                          | ⊖                        | ◐                        | ◐                        | ◐                        | ●                                |
| Water Quality                                                                                                         | ⊖                        | ⊖                        | ⊖                        | ⊖                        | ⊖                                |

**Table ES-4**  
**Summary of Significant Impacts from Project Alternatives** *(continued)*

| Impact Description                                                   | Alternative 1 | Alternative 2 | Alternative 3 | Alternative 4 | No Action Alternative |
|----------------------------------------------------------------------|---------------|---------------|---------------|---------------|-----------------------|
| <b>Biological Resources</b>                                          |               |               |               |               |                       |
| Disturbance of Intertidal Habitat (Construction Related)             | ◐             | ◐             | ◐             | ●             | ⊖                     |
| Disturbance of Subtidal and Nearshore Habitat (Construction Related) | ◐+            | ◐+            | ◐+            | ●+            | ⊖                     |
| Disturbance of Special Status Species (Construction Related)         | ◐             | ◐             | ◐             | ◐             | ⊖                     |
| Disturbance of Intertidal Habitat (Loss or Alteration)               | ⊖+            | ⊖+            | ⊖             | ●+            | ⊖                     |
| Disturbance of Cliff Habitat                                         | ⊖             | ⊖             | ⊖             | ⊖             | ⊖                     |
| Disturbance of Offshore Habitat                                      | ⊖             | ⊖             | ⊖             | ⊖             | ⊖                     |
| <b>Traffic and Transportation</b>                                    |               |               |               |               |                       |
| Bicycle and Pedestrian access                                        | +             | +             | +             | +             | ●                     |
| Temporary Construction-Related Vehicle Trips                         | ◐             | ◐             | ◐             | ◐             | ○                     |
| Temporary Narrowing and Closing of East Cliff Drive                  | ◐             | ◐             | ◐             | ◐             | ○                     |
| Bicycle Safety at 32 <sup>nd</sup> Avenue Intersection               | ◐             | ◐             | ◐             | ◐             | ○                     |
| Increase in Vehicle Trips                                            | ⊖             | ⊖             | ⊖             | ⊖             | ○                     |
| Transit Impacts                                                      | ⊖             | ⊖             | ⊖             | ⊖             | ○                     |
| Increased Public Parking                                             | +             | +             | +             | +             | ○                     |
| <b>Emergency Services</b>                                            |               |               |               |               |                       |
| Restricted Access – Roadway (Construction Related)                   | ◐             | ●             | ●             | ●             | ○                     |
| Delayed Response (Construction Related)                              | ◐             | ●             | ●             | ●             | ○                     |
| Violation of the California Fire Code                                | ⊖             | ⊖             | ⊖             | ⊖             | ○                     |
| Restricted Access - Stairways                                        | ⊖             | ⊖             | ⊖             | ⊖             | ○                     |
| Long-Term Emergency Access and Response Time                         | +             | +             | +             | +             | ●                     |
| <b>Cultural/Paleontological Resources</b>                            |               |               |               |               |                       |
| Paleontological Resources                                            | ◐             | ●             | ●             | ●             | ●                     |
| Cultural Resources                                                   | ⊖             | ⊖             | ⊖             | ◐             | ●                     |

**Table ES-4**  
**Summary of Significant Impacts from Project Alternatives** *(continued)*

| <b>Impact Description</b>                                         | <b>Alternative 1</b> | <b>Alternative 2</b> | <b>Alternative 3</b> | <b>Alternative 4</b> | <b>No Action Alternative</b> |
|-------------------------------------------------------------------|----------------------|----------------------|----------------------|----------------------|------------------------------|
| Beneficial Impacts on Paleontological Resources                   | +                    | +                    | +                    | ○                    | ●                            |
| <b>Air Quality</b>                                                |                      |                      |                      |                      |                              |
| Short-Term Construction Emissions                                 | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ⊖                            |
| Long-Term Operational Emissions                                   | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ⊖                            |
| Effects on Sensitive Receptors                                    | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ⊖                            |
| Consistency with MBUAPCD Air Quality Management Plan              | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ⊖                            |
| <b>Noise</b>                                                      |                      |                      |                      |                      |                              |
| Short-Term Construction Noise                                     | ◐                    | ◐                    | ◐                    | ◐                    | ○                            |
| Long-Term Operational Noise                                       | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ○                            |
| Consistency with the Santa Cruz County General Plan Noise Element | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ○                            |
| <b>Utilities</b>                                                  |                      |                      |                      |                      |                              |
| Disruption of Utility Service - Construction                      | ◐                    | ◐                    | ◐                    | ◐                    | ○                            |
| Stormwater Facilities                                             | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ●                            |
| Water Supply and Wastewater Treatment                             | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ●                            |
| Solid Waste                                                       | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ●                            |
| Stormwater Collection System                                      | +                    | +                    | +                    | +                    | ●                            |
| <b>Cumulative</b>                                                 |                      |                      |                      |                      |                              |
| Land Use                                                          | +                    | +                    | +                    | +                    | ○                            |
| Recreation                                                        | +                    | +                    | +                    | +                    | +                            |
| Visual Resources                                                  | ◐                    | ◐                    | ◐                    | ●                    | ○                            |
| Geological Resources and Coastal Process                          | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ○                            |
| Water Resources                                                   | +                    | +                    | +                    | +                    | ○                            |
| Biological Resources                                              | ⊖                    | ⊖                    | ⊖                    | ⊖                    | ⊖                            |
| Transportation and Safety                                         | +                    | +                    | +                    | +                    | ○                            |
| Emergency Services                                                | +                    | +                    | +                    | +                    | ○                            |

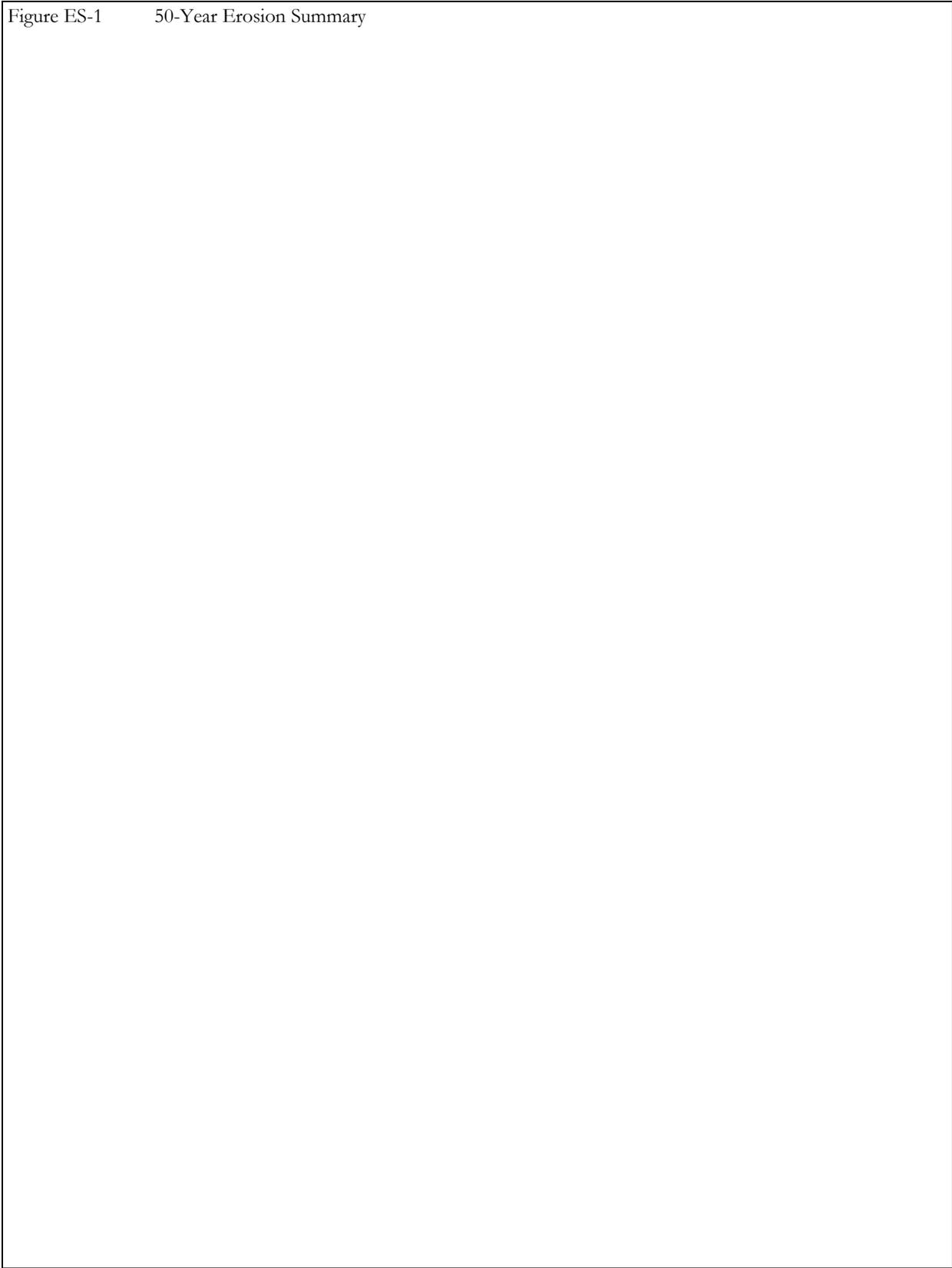
**Table ES-4**  
**Summary of Significant Impacts from Project Alternatives** *(continued)*

| Impact Description                     | Alternative 1 | Alternative 2 | Alternative 3 | Alternative 4 | No Action Alternative |
|----------------------------------------|---------------|---------------|---------------|---------------|-----------------------|
| Paleontological and Cultural Resources | ◐             | ◐             | ◐             | ◐             | ◐                     |
| Air Quality                            | ○             | ○             | ○             | ○             | ○                     |
| Noise                                  | ⊖             | ⊖             | ⊖             | ⊖             | ○                     |
| Utilities                              | +             | +             | +             | +             | ○                     |

- = Significant impact
- ◐ = Significant impact mitigable to less than significant
- ⊖ = No significant impacts
- + = Beneficial impacts
- = No impacts

Note: This summary of impacts does not reflect the potential impacts associated with future emergency repairs that would be constructed in response to bluff failures and to assure public safety.

Figure ES-1 50-Year Erosion Summary



**AFFECTED ENVIRONMENT (CHAPTERS 3 THROUGH 14)**

The Affected Environment section of each chapter describes the present physical conditions within the area of the proposed action. The region of influence is defined for each environmental issue based upon the overall extent of physical resources that may be affected directly or indirectly by the proposed action and appropriate guidelines of regulatory agencies or common professional practice. This section of the EIS/EIR describes the baseline conditions for each environmental resource against which the potential impacts of the proposed action are compared.

**ENVIRONMENTAL CONSEQUENCES (CHAPTERS 3 THROUGH 14)**

The Environmental Consequences section of each chapter, describes the potential significant environmental consequences, or impacts, of each alternative. Mitigation measures are also identified for any impact determined to be significant. The purpose of this section is to provide the public, interested agencies, and decision-makers with a clear understanding of the environmental impacts associated with the proposed bluff protection and parkway project along East Cliff Drive. Beneficial impacts are also described for each alternative.

**CUMULATIVE IMPACTS (CHAPTER 15)**

Chapter 15, Other Required Analyses, addresses cumulative effects, or what effects the proposed action would have on the environment, when combined with other past, present, and reasonably foreseeable actions. It also discusses Environmental Justice and the Protection of Children.

**CONSULTATION AND COORDINATION (CHAPTER 16)**

Federal, state, and local agencies were consulted prior to and during preparation of this EIS/EIR. Agencies were notified of the proposed projects by mailings; by scheduled public meetings, by publication of an NOI/NOP announcing preparation of a joint EIS/EIR, as required by NEPA and CEQA; and by public scoping meetings. The agencies' viewpoints were solicited with regard to activities within their jurisdiction.

**REFERENCES, LIST OF PREPARERS, GLOSSARY AND INDEX (CHAPTERS 17, 18, 19 AND 20)**

The final chapters of this EIS/EIR include a list of documents and personal communications used in the preparation of this document, a list of the preparers of this document and their qualifications, and a glossary and index to help facilitate the review of this document.

**SUMMARY OF POTENTIAL SIGNIFICANT ENVIRONMENTAL CONSEQUENCES AND MITIGATION****MEASURES**

Table ES-6 summarizes the potential significant environmental consequences and mitigation identified for each of the proposed alternatives and the No Action Alternative. It is important to recognize, however, that the environmental impacts associated with future emergency repairs are not reflected under the No Action Alternative.

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring<br>(Preferred Alternative)        | Alternative 2—Partial Bluff<br>Armoring with Full Parkway<br>Improvements | Alternative 3—Partial Bluff<br>Armoring with Limited Parkway<br>Improvements | Alternative 4—Groins and Notch<br>Infilling                         | No Action Alternative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Land Use</b>                                                     |                                                                           |                                                                              |                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>No significant impacts were identified for this alternative.</p> | <p>No significant impacts were identified for this alternative.</p>       | <p>No significant impacts were identified for this alternative.</p>          | <p>No significant impacts were identified for this alternative.</p> | <p><u><i>Consistency with General Plan and LCP.</i></u> The No Action Alternative would not create direct conflicts with objectives and policies in Chapter 2, Land Use, of the general plan and LCP, as outlined in Section 3.1.2 of this EIS/EIR, but it also would not promote uses fully consistent with these policies. While the project area’s recreational priority use for the area would be maintained (Policy 2.22.2 Maintain Priority Uses), the general plan and LCP objectives to reserve coastal priority sites and expand these sites for public benefit would not be fulfilled (Policy 2.23.2 Designation of Priority Sites). As described in Chapter 1, the project area is expected to degrade over time, resulting in portions of the project area eventually being lost to erosion. Santa Cruz County would address bluff erosion along East Cliff Drive through emergency repairs, where feasible. However, segments of the road, including public overlooks, utilities, and trails, would eventually be lost.</p> <p><u><i>Compatibility with Uses in the Project Area.</i></u> Under the No Action Alternative, recreational use of the project area would continue to be compatible with the current and planned use. However, continued erosion of the project area under the No Action Alternative would not be compatible with the planned, long-term recreational use of the project area. Public facilities, such as stairways and bathrooms would eventually be lost to erosion and access to the beach would become less safe.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | No Action Alternative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <b>Recreation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><u>Impact 4.1 Effect on Recreational Use during Construction (Land Uses and Public Access).</u> Under Alternative 1, land-based recreation would be disrupted during construction of projects 1, 2, and 3. Disruptions during construction of projects 1 and 3 would result from partial blockage or closure of East Cliff Drive and portions of the bluff for construction and construction staging. Disruptions during Project 2 also would be similar to Project 1 but may be more substantial because construction activities for the parkway would occur over a larger part of the bluff top. This would be a significant short-term impact.</p> <p>While access to the sea would be improved in the long term by replacing stairs and constructing additional stairs at Pleasure Point Park, access to the sea would necessarily be limited during construction when stairs may be blocked by construction or when stairs are being reconstructed. This would be a significant short-term impact.</p> <p><u>Mitigation 4.1.</u> To minimize the effects on recreational use during</p> | <p><u>Impact 4.2 Effect on Recreational Use during Construction (Land Uses and Public Access).</u> Impacts to land-based recreation and public access during construction under Alternative 2 and potential mitigation measures would be similar to those described under Alternative 1. Where the construction period is shorter under Alternative 2 than Alternative 1, impacts would be correspondingly less. Construction time, however, is not expected to be substantially different.</p> <p><u>Mitigation 4.2.</u> Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> | <p><u>Impact 4.3 Effect on Recreational Use during Construction (Land Uses and Public Access).</u> Impacts to land-based recreation and public access during construction under Alternative 3 and potential mitigation measures would be similar to those described under Alternative 2. Where the construction period is shorter under Alternative 3 than Alternative 2, impacts would be correspondingly less. Construction time, however, is not expected to be substantially different.</p> <p><u>Mitigation 4.3.</u> Mitigation measures would be the same as those described under Alternative 2. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> | <p><u>Impact 4.4 Effect on Recreational Use during Construction.</u> Impacts to land-based recreation and public access to the sea during construction under Alternative 4 and potential mitigation measures would be similar to those described under Alternative 1. While there would be no bluff stabilization, construction equipment would be using East Cliff Drive and lowering construction materials over the bluff, thereby limiting public access points. Impacts to beach and ocean use under Alternative 4 would be different but comparable in degree to those under alternatives 1, 2, and 3. There would be less construction work on bluff protection structures allowing some continued access to those areas. However, because additional work in the beach and intertidal areas would be required for groin construction, the construction impacts to these recreational uses would be greater than for other alternatives.</p> <p><u>Mitigation 4.4.</u> In addition to those mitigation measures described under Alternative 1, to minimize impacts to public access during construction, the Santa Cruz County Redevelopment</p> | <p><u>Effect on Recreational Use.</u> Under the No Action Alternative, improvements to beach access, parking, the parkway, and Pleasure Point Park would not occur. The quality of beach and water-oriented recreation would be largely unaffected. However, the quality of land-based recreational opportunities would decline over time as a result of continued bluff erosion. The existing bicycle and pedestrian lane along East Cliff Drive, portions of the overlook at the Hook, and other portions of the bluff used for passive recreational activities, such as viewing, would likely be lost to bluff failure. While Santa Cruz County would address such erosion through emergency repairs, where feasible, portions of these sites would nevertheless be lost to erosion in the near future. Further, rubble would not be cleared off the beach under this alternative.</p> <p><u>Consistency with General Plan and LCP.</u> Under the No Action Alternative, present access to the area for a variety of recreational opportunities would continue, consistent with several general plan</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | No Action Alternative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
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| <p>construction, including both land uses and public access, the following measures shall be included in the construction planning of the bluff protection structures and parkway development:</p> <ul style="list-style-type: none"> <li>• Implement the mitigation measures for recreational access, including pedestrian and bicycle use of the path along East Cliff Drive as described in Mitigation 9.1, Transportation.</li> <li>• The Santa Cruz County Department of Public Works Construction Inspector, in conjunction with the contractor(s) for the projects, shall ensure that, to the maximum extent feasible, access to key locations for viewing, such as Pleasure Point Park, the bluff near 35<sup>th</sup> Avenue, the overlook near Larch Lane, and the overlook at The Hook, is maintained during construction.</li> <li>• The Santa Cruz County Department of Public Works Construction Inspector, in conjunction with the contractors for the projects, shall ensure that all stairs remain open, to the extent feasible, and that at least one stairway will remain open and accessible at all times during construction.</li> </ul> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> |                                                                     |                                                                        | <p>Agency, in conjunction with the contractors for the projects, shall comply with the following:</p> <ul style="list-style-type: none"> <li>• To the extent feasible, groins shall be constructed sequentially (one at a time rather than all at once) to avoid excessive obstruction of the beach and near-shore areas that would impede access to the beach and waves.</li> <li>• Construction activities and equipment shall be restricted in number and area to avoid impeding access to waves or interference with recreational use of waves.</li> </ul> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 4.5 Effect on Long-Term Recreational Use.</u></b> Although the loss of bluff and associated recreational facilities would occur at a slower rate as a result of protection from wave action provided by the groins, no bluff protection would be provided near The Hook. Over the long-term, periodic closures of the beach and bluff top would be necessary to address slope failures and portions of the bluff and, ultimately, recreational facilities in this area would be lost. The impact to long-term recreational use at The Hook would be significant and unmitigable.</p> <p><b><u>Mitigation 4.5.</u></b> No mitigations have been identified that would reduce this impact to less than significant. This is a significant, unavoidable impact.</p> | <p>policies and objectives (Policy 7.1a Parks and Recreation Opportunities; Objective 7.7a Coastal Recreation; Objective 7.7b Shoreline Access). However, future objectives and programs aimed at providing safe public access at Pleasure Point Park (7.7.15 Areas Designated for Primary Public Access; Policy 7.7.19 Improvements at Neighborhood Access Points; Policy 7.7.24 Environmentally Damaging Trails Policy; 7.7.25 Unsafe Trails), providing scenic vista improvements at Pleasure Point Park (Policy 7.7.1 Coastal Vista), and improving parking in the area could not be implemented if continued bluff erosion is not addressed.</p> <p><b><u>Effect on Recreational Use during Construction.</u></b> Under the No Action Alternative, no construction activities would be conducted and, therefore, there would be no impacts to land-based recreation, beach use, ocean use, or public access to the sea.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| <b>Visual Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| <p><u><b>Impact 5.1 Long-Term Effect on Scenic Views from Bluff Stabilization Structures.</b></u> The bluff stabilization structures proposed under Alternative 1 represent the largest modification to the visual quality of the project area. Visual simulations of the project area following implementation of Alternative 1 are presented in Figures 5-2a and 5-2b. The stabilization structures would be constructed in two layers, with the second layer being a sculptural element that would be shaped to replicate the form, texture, and scale of the existing bluffs. The concrete would be stained to match the color of the terrace deposits along the top of the bluffs and the color of the Purisima sandstone below.</p> <p>While the project design would minimize changes to the visual elements of the bluff, the bluff stabilization structures would nevertheless impact middle ground and foreground views by creating a bluff face that is more uniform in appearance than currently. Some textural variation from natural vegetation and bluff composition and some color variation would be lost. However variations in color would be incorporated into the design, and would be expected to develop over time as staining applied to the concrete takes effect.</p> <p>The structures also would represent a noticeable change in close foreground views where fine distinctions of texture, color, and form can be made</p> | <p><u><b>Impact 5.3 Long-Term Effect on Scenic Views from Bluff Stabilization Structures.</b></u> Impacts to scenic views under this alternative would be similar to but slightly less than those described under Alternative 1. There would be less bluff armoring under Alternative 2 and, despite the potential for additional interfaces among the structure and the bluff and the additional retaining walls required, the natural variation of the bluff face would be maintained to a greater degree. Visual simulations of the appearance of the project area under this alternative are depicted in Figures 5-3a and 5-3b.</p> <p>Bluff stabilization under Alternative 2 would be limited to the Purisima Formation, except in limited areas where it would extend to the bluff top, and would therefore take advantage of the natural geologic strata for visual integration of the stabilization structure with the natural bluff face or beach. The structures would nevertheless represent a noticeable change in foreground views where fine distinctions of texture, color, and form can be made and the artificial nature of the structure would be apparent to viewers. The bluff stabilization structures would have to be horizontally integrated with the natural bluff face along the length and top of the structure, in addition to at the ends of the structures and in areas where they extend to the bluff top.</p> <p>Existing retaining walls would be covered by the bluff protection</p> | <p><u><b>Impact 5.5 Long-Term Effect on Scenic Views from Bluff Stabilization Structures.</b></u> Impacts to scenic views under Alternative 3 would be less than those described for Alternative 1 and slightly less than those described under Alternative 2. Visual simulations of the appearance of the project area under this alternative are depicted in Figures 5-4a and 5-4b. Bluff stabilization under Alternative 3 would be limited to the Purisima Formation and would therefore take advantage of the natural geologic strata for visual integration of the stabilization structure with the natural bluff face or beach. The structures under Alternative 3 would nevertheless represent a noticeable change in foreground views where fine distinctions of texture, color, and form can be made and the artificial nature of the structure would be apparent to viewers. Because bluff stabilization would be limited to the Purisima Formation, the margins where they intersect with the adjacent bluff stabilization structures or the natural bluff face would be limited and therefore the potential visual impact would be less than under alternatives 1 or 2. Existing retaining walls would not be covered by the bluff stabilization protection structure so new retaining walls may have to be built on an emergency basis in response to future bluff failures.</p> <p><u><b>Mitigation 5.5.</b></u> To minimize visually distinct meeting points, the project design and construction plans for the bluff protection structures shall</p> | <p><u><b>Impact 5.7 Long-Term Effect on Scenic Views from Parkway Improvements.</b></u> Although parkway modifications proposed under Alternative 4 would be slightly different, improvements would still be similar and impacts to scenic views would be comparable to those described for Alternative 3. Because there would be no armoring of the bluffs and no groins constructed at The Hook under Alternative 4, the designated scenic overlook at 41<sup>st</sup> Avenue (The Hook) and segments of the designated scenic route along East Cliff Drive that are threatened by bluff erosion eventually would be lost. Such erosion would be addressed through emergency repairs by Santa Cruz County, but these actions would not be adequate to preserve the bluff.</p> <p><u><b>Mitigation 5.7.</b></u> Mitigation proposed for this impact is the same as that described for Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> | <p><u><b>Effect on Scenic Views.</b></u> Under the No Action Alternative, no bluff protection structures would be constructed and the natural appearance of the bluff would be retained. The quality of scenic views in the project area would continue to degrade under the No Action Alternative as a result of continued erosion. The designated scenic overlook at 41<sup>st</sup> Avenue (The Hook) and segments of the designated scenic route along East Cliff Drive would continue to be threatened by bluff erosion. While such erosion would be addressed through emergency repairs by the Santa Cruz County, portions of these sites would nevertheless be lost to erosion in the near future. Efforts to maintain the site would likely include additional retaining walls, which, as discussed above, would be visually inconsistent with the natural surroundings and uses.</p> <p><u><b>Consistency with Local Plans and LCP.</b></u> The No Action Alternative would not be inconsistent with objectives and policies of the general plan and LCP, as outlined in Section 5.1.2. While the No Action Alternative would lead to further degradation of the visual character of the East Cliff Drive area, as well as eventual loss of designated scenic views and roads, no actions would be taken that would conflict with the general plan. Objectives and policies of the general plan and LCP related to enhancing visual resources along East Cliff Drive would not be implemented (Objective 5.10a Protection of Visual Resources,</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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                         | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        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| <p>and the artificial nature of the structure would be apparent to viewers. The structures may be most apparent at the margins where they intersect with the adjacent bluff stabilization structures or the natural bluff face. The western end of each stabilization structure would abut existing walls beneath private residences. The eastern end of the 32nd Avenue/35th Avenue stabilization structure would abut rock riprap.</p> <p>The eastern end of the 41st Avenue stabilization structure would abut the natural bluff face. These termination points would be the most visually distinct segments of the structures because there may be color contrast, differences in texture, and creation of distinct points of intersection, all of which would increase visual awareness of the structure. Because of the substantial amount of viewing along East Cliff Drive and the high degree of sensitivity to changes in the visual character of the project area, construction of the stabilization structure would have a significant impact on scenic views in the project area.</p> <p><b>Mitigation 5.1.</b> To minimize visual impacts the Santa Cruz County Department of Public Works shall prepare a final parkway design plan that incorporates the measures included in Mitigations 5.1 and 5.2 below. The final design plan shall be submitted to the County Redevelopment Agency and Planning Department for review and approval prior to any ground disturbance.</p> <ul style="list-style-type: none"> <li>Vegetation shall be planted along</li> </ul> | <p>structure, except for the retaining wall near Manzanita and 38<sup>th</sup> avenues. New retaining walls may have to be built on an emergency basis in response to future bluff failures. These retaining walls would generally be highly geometric and structured and would contrast sharply with the varying line and texture of the natural bluff.</p> <p><b>Mitigation 5.3.</b> In order to minimize the impacts from bluff retaining structures proposed under Alternative 2 and their long-term effects on scenic views, mitigation measures identified under Mitigation 5.1 are also proposed for Alternative 2. In addition, new retaining walls shall be constructed to be visually compatible with the natural features of the shoreline. Retaining walls should be colored to blend with the adjacent bluff.</p> <p>Implementation of these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b>Impact 5.4 Long-Term Effect on Scenic Views from Parkway Improvements.</b> Because parkway improvements, such as recreational paths, landscaping, and railings, are the same under alternatives 1 and 2, the same mitigation is proposed. The only difference between the two alternatives is that the stairs proposed under Alternative 2 would be constructed of wood rather than concrete where they are adjacent to the bluff protection structure.</p> <p><b>Mitigation 5.4.</b> Mitigation measures would be the same as those described under Alternative 1. Implementing</p> | <p>include the following components:</p> <ul style="list-style-type: none"> <li>The bluff stabilization structures shall be modified at the interface with existing walls, riprap, or natural bluff face to gradually transition the color, texture and other design features of the wall to match the appearance of the adjacent material.</li> <li>Before the public hearing on certification of the EIR for the projects, the Santa Cruz County Redevelopment Agency shall submit to County Planning staff for review and approval written or pictorial information on how this measure would be accomplished.</li> </ul> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b>Impact 5.6 Long-Term Effect on Scenic Views from Parkway Improvements.</b> Although parkway modifications proposed under Alternative 3 would be of a slightly different design, improvements would still be similar and impacts to scenic views would be comparable to those described for Alternative 1. Also, improvements to scenic views from parkway modifications would not last as long as those in Alternative 1 because of the lower level of bluff protection.</p> <p><b>Mitigation 5.6.</b> Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> |                                          | <p>Policy 5.10.3 Protection of Public Vistas, and Policy 5.10.10 Designation of Scenic Roads).</p> <p><b>Effect on Scenic Views during Construction.</b> No planned construction would occur under the No Action Alternative. Minor maintenance and upkeep would be anticipated but the timing and frequency of these activities cannot be predicted. Although these activities may at times require large equipment, the presence of such equipment would be sporadic and the length of time would be minimal.</p> <p><b>Compatibility of Physical Features with Adjacent Development.</b> No construction would occur under the No Action Alternative, and therefore it would not have a significant impact on surrounding developed areas. The visual landscape would remain the same in regard to existing infrastructure, including the views of exposed drainpipes, guardrails, and concrete rubble and riprap on the beach.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                               | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>the top of the bluff stabilization structure so as to replicate the pattern of natural vegetation that hangs over the bluff. These plantings shall be permanently maintained by the County Parks Department with appropriate drought-tolerant native vegetation.</p> <ul style="list-style-type: none"> <li>At the ends of the bluff stabilization structure, the color, texture and other design features of the stabilization structure shall be designed to match the bluff face, while minimizing visually distinct meeting points.</li> </ul> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 5.2 Long-Term Effect on Scenic Views from Parkway Improvements.</u></b> Alternative 1 also would include construction of many new features, such as the stairway at 33<sup>rd</sup> Avenue, and benches, railings, and signs along the parkway. Most of these features would be definite and regular in shape and contrast with the natural form of the bluff and beach.</p> <p>Railings would be distinct geometric features that would be inconsistent with natural color, line, and form of the surrounding features. This is especially true of the railing at the edge of the bluff, where the geometric elements would be most visible in silhouette against the ocean and where it would contrast with the uneven line of the bluff top. The proposed new metal railing would be less visually</p> | <p>these mitigation measures would reduce this potential significant impact to a less than significant level.</p> |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>obtrusive than the existing guardrails, temporary support railings, and temporary white wood barriers because these features lack any visually cohesive qualities in their design, placement, or construction. The proposed metal railing also may be less visible under certain ambient light conditions, such as bright sunlight or fog, when the distinct line and form of the railings would be softened by the highly reflective quality of the metal. Nevertheless, the use of metal for the railing would be visually inconsistent with the surrounding natural environment and materials. Signs located along the parkway also would be distinct foreground features that, depending on their attributes and placement, would contrast with the surrounding organic features of the parkway design and bluff top.</p> <p>Alternative 1 would result in minor obstructions to views along East Cliff Drive and from the designated scenic overlooks at 32<sup>nd</sup> Avenue and 41<sup>st</sup> Avenue. In most cases, these modifications would represent a replacement of existing obstructions with newer features better suited to the visual character of the project area.</p> <p>While developing the area as a whole and including extensive design features would mostly ensure a unified visual character, improvements proposed as part of Alternative 1, such as the railings, benches, retaining walls, and new parking facilities, would have a significant impact on scenic views. The mitigation described below is proposed to minimize this impact to a less than significant level.</p> |                                                                     |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring<br>(Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Alternative 2—Partial Bluff<br>Armoring with Full Parkway<br>Improvements | Alternative 3—Partial Bluff<br>Armoring with Limited Parkway<br>Improvements | Alternative 4—Groins and Notch<br>Infilling | No Action Alternative |
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| <p><i>Mitigation 5.2.</i> To minimize the visual impact of parkway-related improvements, the County would incorporate the following design and construction elements into the proposed parkway development:</p> <ul style="list-style-type: none"> <li>• Resin stabilized decomposed granite would be used for paving instead of asphalt wherever feasible, particularly near the bluff.</li> <li>• Wood, recycled, and other natural appearing materials shall be used to the extent possible and where appropriate for all stairways, benches, railings, and signs. Although wood has a greater bulk than other materials, such as metal, and its use in construction can result in greater obstruction of views, wood is more visually compatible with the colors and textures of the surrounding natural features and therefore is a more visually integrated building material. The stairs adjacent to the bluff protection structures will be concrete to better match the structures where feasible. The proposed railing shall also be designed and placed to maximize gaps and openings to avoid obstruction of views. Split rail fencing shall be used where there is landscaping between the path and the top of the bluff; otherwise, wooden posts with metal railings shall be used. Low-growing natural vegetation or setbacks shall be used instead of railings whenever possible.</li> <li>• A final sign plan shall be developed</li> </ul> |                                                                           |                                                                              |                                             |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring<br>(Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Alternative 2—Partial Bluff<br>Armoring with Full Parkway<br>Improvements | Alternative 3—Partial Bluff<br>Armoring with Limited Parkway<br>Improvements | Alternative 4—Groins and Notch<br>Infilling | No Action Alternative |
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| <p>for the project area to ensure that the number of signs are minimized, and that signs are appropriately sized, compatible with the surrounding design and natural features, and located to avoid obstruction of scenic views. A single signpost shall be used for all signs, whenever possible, to minimize the placement of multiple signs.</p> <ul style="list-style-type: none"> <li>• New trees planted along the bluff shall be located to preserve scenic vistas and, whenever possible, to obstruct views of surrounding human-made features. New landscape plantings shall be installed as part of the parkway improvements.</li> </ul> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> |                                                                           |                                                                              |                                             |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| <b>Geological Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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| <p><b><u>Impact 6.1 Enhanced Bluff or Beach Erosion Adjacent to the Project Area and Other End Effects of the Bluff Protection Structures.</u></b><br/>The ends of the proposed bluff protection structures are a potential focus of continued or enhanced erosion (outflanking). The ability to design against and control these effects would be limited in areas where the proposed structure abuts an existing structure, for example on private property. The failure of an existing adjacent bluff protection structure could make the proposed bluff protection structure more vulnerable to wave attack. If improperly designed, a bluff protection structure could direct wave energy toward an adjacent bluff protection structure. The effects of outflanking would be significant because they could either render the proposed structure less effective over time or result in damage to neighboring properties.</p> <p>At the 36<sup>th</sup> Avenue end, adjacent to the west side of the O’Neill property, the County property extends to within about eight feet of the home. The end of the bluff protection structure at this termination would be 13 feet (4 meters) back from the property line and would be configured as a catenary curve, as recommended by Haro, Kasunich and Associates. Existing rip rap might have to be rearranged at this end of the wall. This leaves the possibility that end effects could still occur, which would be a significant impact.</p> | <p><b><u>Impact 6.2 Long-Term Slope Stability</u></b> Under Alternative 2, the Purisima bedrock underlying the terrace deposits would be protected to prevent undercutting and retreat. Unprotected terrace deposits would be subject to erosion processes and would continue to retreat, ultimately encroaching upon East Cliff Drive. This retreat is likely to be accelerated during storms in El Niño years, but the timing and rates of retreat are unpredictable, and due to the episodic nature of wave erosion, impacts on East Cliff Drive could occur within the next few years. Failure of slopes in the terrace deposits that result in damage to East Cliff Drive and associated structures or underground utilities would be a significant impact.</p> <p><b><u>Mitigation 6.2.</u></b> No mitigation is identified that would reduce this impact to less than significant levels. This would be an unavoidable adverse impact.</p> <p><b><u>Impact 6.3 Outflanking Effects for Fully Armored Segments over Existing Retaining Walls.</u></b> As discussed for Alternative 1, the ends of the full-bluff protection structures are sites where continued erosion of the adjacent exposed bluffs could expose the ends of the bluff protection structure to wave attack from the back or sides, eventually resulting in failure of the structure. Short structures may fail more quickly than long structures, since there would be fewer soil nails holding the structures in place. An eroded or failed adjacent bluff, or a</p> | <p><b><u>Impact 6.4 Long-Term Slope Stability.</u></b> Under Alternative 3, existing repaired walls would be left in place and only the Purisima Formation would be armored. No new repairs would be made to the existing walls and no new retaining walls would be constructed. As a result, the current retaining walls would fail over time, due to exposure to wave run-up from large storms. The road and bluff top structures would eventually be threatened or lost completely.</p> <p>Because the terrace deposits would be allowed to fail, rather than being supported by new walls, Alternative 3 provides slightly less protection for East Cliff Drive than Alternative 2. However, as with Alternative 2, the primary mechanism for failure of the slope would be the removal of terrace deposit material from the toe of the slope, and the repaired walls provide little more slope protection from large waves than is afforded by the unprotected terrace deposits.</p> <p>Eventually, a severe storm or seismic shaking would cause major damage to the existing retaining walls. A major seismic event capable of causing unrepaired retaining walls to collapse is likely to occur within the 100-year planning period. To the extent that the existing unrepaired retaining wall is relied upon to support new bluff top improvements, this would be considered a significant and unmitigable impact.</p> <p><b><u>Mitigation 6.4.</u></b> No mitigation is identified that would reduce this</p> | <p><b><u>Impact 6.6 Long-Term Slope Stability.</u></b> Under Alternative 4, bluff protection would come directly from filling the existing undercut notches in the Purisima Formation at beach level and indirectly from the formation of pocket beaches as a result of construction of three low profile sand-trapping groins that would extend seaward approximately 100 feet from shore. Filling the existing undercut notches in the Purisima would greatly reduce the rate of retreat of the Purisima but would not prevent it because the exposed portion of the formation would continue to be attacked by wave action. Eventually, new notches would be cut, and if not filled, would result in collapse of the Purisima, as under the No Action Alternative. Under Alternative 4, the bluff would continue to retreat, but probably at an average annual rate less than under the No Action Alternative. This would result in a significant impact, similar to that described for the No Action Alternative.</p> <p>Under this alternative, no groins would be constructed at The Hook, although any notches in the Purisima would be filled. Under this alternative the bluff would continue to retreat at average annual rates of about six inches to one foot per year, resulting in a significant impact because it would present a hazard to existing structures and infrastructure and to people living in or using the project area. As a result, the impacts at The Hook under Alternative 4 would be significant and unmitigable.</p> | <p><b><u>Slope Stability.</u></b> Under the No Action Alternative, the bluff would continue to retreat at average annual rates of about six inches to one foot per year. These existing conditions would not present an immediate hazard to existing structures and infrastructure and to people living in or using the project area. In some areas, bluff top retreat has already caused segments of the road to fail, requiring road or lane closures and emergency repairs. Over time, the Purisima Formation would continue to be undercut by wave action, resulting in incremental collapse and failure of the overlying terrace deposits. Based on the SAGE report, the bluff is marginally stable under static conditions and the wedge-type failure is the most likely mode of failure at the site. Even if a circular failure occurred, according to SAGE analysis, it would most likely be truncated to a similar shape as the wedge failures (SAGE 2005b).</p> <p>Based on average historical rates of retreat and the recent SAGE threat analysis, failures along parts of East Cliff Drive could occur within the next few years, and most of East Cliff Drive would be lost in the next 50 years. Bluff failure from undercutting of the Purisima can result in sudden collapse of blocks as much as five to 10 feet wide. Utilities would eventually be undermined and would need to be relocated. Public access to and use of this portion of the coast would be reduced. Existing protected portions of the bluff would protrude farther from the shore and might gradually</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| <p>Additionally, the west end of the 41<sup>st</sup> Avenue bluff protection structure would abut an existing bluff protection structure built in 1984 with a projected life expectancy of 17 to 50 years. Based on observed rates of scouring, the structure is near the end of its expected life. Incident waves hitting this outcrop would be split, with part of the incident wave energy directed to the west, at the masonry structure below the private property, and part of the wave energy directed to the east. Should the existing structure to the west fail, it would allow wave action to continue to erode the bluff face, eventually outflanking the bluff protection structure and eroding the bluff behind the structure. This would result in a significant impact.</p> <p>The adjacent bluff to the east is not currently protected. Protecting the overlying terrace deposits would not prevent the retreat of the Purisima. Retreat of the Purisima could lead to the proposed bluff protection structure being outflanked. This would result in a significant impact.</p> <p>Each of the potential outflanking areas described above represents a point of potential failure of the structure within the 100-year design life of the structure. This is considered to be a significant impact because it would prevent the structure from stabilizing the bluff for the required period.</p> <p><b>Mitigation 6.1a.</b> To mitigate potential end effects associated with the termination of the bluff protection structure adjacent to the O’Neill property, the bluff protection structure shall be extended as close as is feasible</p> | <p>failed segment of full bluff armoring would be difficult to repair. Therefore, this impact would be considered significant and unmitigable.</p> <p><b>Mitigation 6.3.</b> No mitigation is identified that would reduce this impact to less than significant levels. This would be an unavoidable adverse impact.</p> | <p>impact to less than significant levels. This would be an unavoidable adverse impact.</p> <p><b>Impact 6.5 Wave Overtopping .</b> As discussed under Alternative 2, the Terrace deposits would retreat relative to the Purisima Formation under Alternative 3. However, unlike Alternative 2, there would be no reinforcement of the terrace deposits from new walls and partial armoring to the bluff tops. This lack of reinforcement combined with continuing erosion of the terrace deposits would likely make the slope less vertical over time compared to the existing slope. As a result, the lower angle of slope would present less obstruction to wave run-up, making it more likely for large waves to hit the slope and overtop the bluff. Because the impacts of wave overtopping could be severe if it occurs, and because wave run-up calculations for Alternative 1 suggest that wave run-up could occur to the top of the bluff under existing conditions, the increased potential for overtopping presented by Alternative 3 would be considered significant.</p> <p><b>Mitigation 6.5.</b> Mitigation is limited to implementation of precautionary public safety actions, such as warning residents, closing the road, and evacuation of the affected area if conditions warrant. These measures would also be available under the No Action Alternative or other alternatives if needed, but they would not reduce the impacts of wave overtopping to less than significant levels. Therefore, wave overtopping is considered an</p> | <p><b>Mitigation 6.6.</b> No mitigation is identified that would reduce this impact to a less than significant level. This would be an unavoidable adverse impact.</p> <p><b>Impact 6.7 Wave Overtopping .</b> As discussed under Alternative 3, protection of the Purisima bedrock (in this case by filling the notches at beach level) without protecting the terrace deposits would result in a less vertical slope in the terrace deposits and potentially greater wave run-up elevations than under the No Action Alternative, where the entire bluff face remains relatively vertical. As with Alternative 3, this would result in a significant impact.</p> <p><b>Mitigation 6.7.</b> As under Alternative 3, this alternative precludes construction of engineering controls to protect the terrace deposits from wave erosion. As under Alternative 3, mitigation would be limited to implementing precautionary safety measures, such as warning residents, prohibiting public access to the bluffs, and evacuation of the affected area. Since these measures would not reduce the impacts to less than significant levels, wave overtopping is considered an unavoidable adverse impact of Alternative 4.</p> | <p>become cut off from the shore.</p> <p><b>End Effects of Existing Bluff Protection Structures.</b> End effects could continue to occur as a result of existing bluff protection structures. Among these effects is passive erosion, the potential loss of beach in the “shadow” of the projecting protection structure, and growth of beach upcoast of the protection structure where it acts as a groin to trap sand.</p> <p>Additionally, the existing shotcrete structures may focus wave run-up onto an adjacent bluff face, eroding the adjacent areas. This effect can also occur without a structure, due to the natural shape of the shoreline. This focusing effect results in uneven rates of bluff retreat. The armoring of small portions of the bluff, instead of addressing the entire bluff as an integral unit, has the potential to reduce the useful life of the bluff overall.</p> <p><b>Wave Overtopping.</b> The profile of the bluff face would remain very similar to its current profile as the Purisima bedrock continues to fail and the bluff recedes. While wave overtopping has been observed in other areas, overtopping has not been reported in the project area. Therefore, although wave overtopping is considered to be possible, it is expected to occur very infrequently.</p> <p><b>Reduction in Sand Contribution to Downcoast Beaches.</b> Bluffs would continue to retreat at approximately the current rate, producing about 308 cubic yards of beach sand per year. No</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                                                                                                                                                                                                                                                               | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements                                                                                                                                                                                                                                                                                    | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                    | No Action Alternative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
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| <p>to the edge of the O'Neill property. To protect this termination, the riprap shall be removed, the bluff protection structure shall be completed to the property line, and then the riprap shall be replaced only as necessary to arm the transition area. This would provide a high degree of protection to the bluff in the transition area and should reduce the potential impacts of outflanking to less than significant levels. Removing and replacing the riprap would require coordinating with the property owner.</p> <p><b>Mitigation 6.1b.</b> To minimize bluff or beach erosion problems adjacent to the project area and associated outflanking of the bluff protection structures, the County Department of Public Works shall implement an annual program of inspection, maintenance, and repair (as needed) of the bluff protection structures, with particular emphasis on the ends of the structures.</p> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> |                                                                                                                                                                                                                                                                                                                                                   | <p>unavoidable adverse impact of Alternative 3.</p>                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                             | <p>additional downcoast effects on beach development are expected.</p> <p><b>Impacts on Recreational Wave Breaks.</b> The recreational wave breaks would be unchanged from current conditions. However, the reduction in sand contribution would slowly change the way waves breaks over the next 30 or 50 years.</p> <p><b>Seismic Effects.</b> Rock slides were observed in many locations along the coast, and the Purisima is subject to failure along joints and fractures, especially where it has been undercut by wave action. The sudden collapse of the bluff face during an earthquake, either because of collapse of the Purisima or liquefaction of the terrace deposits, represents a potential safety hazard and could result in economic loss if it damaged bluff top structures. However, the magnitude of the hazard is low, relative to other seismic risks.</p> |
| <b>Water Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>No significant impacts were identified for this alternative.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <p><b>Impact 7.1 Hazard of Flooding.</b> Partial armoring of the Purisima Formation may lead to an increase in the 100-year wave run-up elevation along portions of the project area because the slope of the terrace deposits would decrease as the bluff top continues to retreat, allowing waves to “ramp” up the slope, rather than being</p> | <p><b>Impact 7.2 Hazard of Flooding.</b> The impacts associated with flooding under this alternative are similar to those described for Alternative 2. Some flood protection would be provided by improved drainage along the bluff top. Under Alternative 3, an increase in wave run-up is considered a potentially significant impact, although the</p> | <p><b>Impact 7.3 Hazard of Flooding.</b> Although the No Bluff Armoring Alternative would not involve armoring the Purisima Formation along the entire bluff face, it would include filling the existing undercuts at the foot of the bluff to prevent the bedrock foundation of the bluff from failing. The effect would be similar to</p> | <p><b>Hazard of Flooding.</b> The bluffs would continue to retreat, retaining its existing variable profile in the project area. The bluff top would remain in the 100-year wave run-up zone, and if the bluff top were to retreat, more structures would be endangered over time by the greater proximity to waves. The storm sewer system would be</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative) | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements                                                                                                                                                                                                                          | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | No Action Alternative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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|                                                           | <p>reflected by higher angle slopes. In the absence of modeling of wave run-up for particular bluff profiles and wave conditions, the significance of the increase cannot be accurately evaluated.</p> <p>The Partial Bluff Armoring Alternative may still provide some protection of the bluff top from flooding and erosion by waves because wave energy would be dissipated as waves run up onto the slope and because the drainage system within the parkway on the bluff top would be improved to more efficiently drain the bluff top and street. An increase in wave run-up elevation is considered a potentially significant impact of this alternative, although the magnitude of the increased hazard of flooding has not been quantified.</p> <p><b>Mitigation 7.1.</b> To minimize the impacts associated with flooding under this alternative, the County of Santa Cruz will evaluate existing flood warning plans and flood emergency response procedures and will implement those measures identified to reduce threats to life and property. It is not known whether this mitigation would reduce the impacts to insignificant levels.</p> | <p>magnitude of the increased hazard of flooding has not been quantified.</p> <p><b>Mitigation 7.2.</b> Mitigation under this alternative would be the same as that proposed under Alternative 2. It is not known whether this mitigation would reduce the impacts to insignificant levels.</p> | <p>bluff armoring, although the Purisima retreat would be slowed rather than prevented. The upper bluff would continue to retreat, and no additional retaining walls would be constructed on the upper bluff.</p> <p>Therefore, as described for Alternative 2, the slope of the terrace deposits would be reduced, and wave run-up might extend to a higher elevation on the bluff. The flooding hazard would be increased. Bluff top drainage systems would be improved, but the hazard of flooding due to wave run-up would be the same or greater than that under alternatives 2 or 3, representing an increase in the hazard relative to the No Action Alternative. This is considered a potentially significant impact.</p> <p><b>Mitigation 7.3.</b> Mitigation under this alternative would be the same as that proposed under Alternative 2. It is not known whether this mitigation would reduce the impacts to insignificant levels.</p> | <p>repaired, as needed, but no substantial change in drainage design would occur. The hazard of flooding due to wave run-up would increase in the long-term as sea levels rise.</p> <p><b>Water Quality.</b> There would be no direct construction impacts to water quality from the No Action Alternative. However, this alternative does not preclude constructing emergency bluff protection measures in the future, in the same way that these measures have been performed in the past. The impacts on water quality from emergency construction, with less time available for planning, could result in a greater risk of spills, for example, than for a well-planned alternative. Although many of the same Best Management Practices may be adopted for any construction project in the coastal zone, a SWPPP would not be required for a project involving less than five acres.</p> <p>The long-term impacts of the No Action Alternative on water quality would be similar to those of alternatives 2, 3, and 4. However, the rate of retreat of the bluff is likely to be faster, and the bluff is likely to be vulnerable to smaller and more frequent storms, accelerating the occurrence of impacts related to slope failure (for example broken utility lines and generation of debris).</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| <b>Biological Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            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| <p><b><u>Impact 8.1 Disturbance to Intertidal Habitat (Construction Related).</u></b> The proposed action and its associated construction would negatively affect the intertidal habitat, especially the high tide zone, and the species that utilize this habitat. Most of the construction would be staged from East Cliff Drive, near the top of the coastal bluff and would be done with the use of bucket trucks and cranes. The soil nail structure design allows for much of the drilling and construction operations to take place from above. This would reduce construction impacts to the beach and near-shore marine environment.</p> <p>However, the foundations of the protection structures would be built on the beach and would require the use of bulldozers and backhoes. A portion of the beach is expected to be temporarily disturbed during construction of the seawall's foundation. Cranes stationed at the top of the bluff would remove the concrete rubble and rock riprap.</p> <p>Before or during construction of the bluff protection structures, the abandoned restroom and stairway would be demolished. The demolition would occur from the top of the bluff and would most likely involve the use of a backhoe with a hoe ram. The debris would be removed by a crane and transported to an approved disposal site. A significant increase in siltation during construction or fuel spills could affect intertidal areas. This impact would be significant without appropriate mitigation.</p> | <p><b><u>Impact 8.4 Disturbance to Intertidal Habitat (Construction Related).</u></b> Construction related impacts to intertidal habitat under Alternative 2 would be the same as those described under Alternative 1, with the exception that the construction period would be shorter because less armoring would be performed, resulting in slightly less impact.</p> <p><b><u>Mitigation 8.4.</u></b> Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 8.5 Disturbance to Subtidal and Nearshore Habitat.</u></b> Impacts to subtidal and nearshore habitat during construction under Alternative 2 would be the same as those described under Alternative 1, with the exception that the construction period would be shorter because less armoring would be performed, resulting in slightly less impact.</p> <p><b><u>Mitigation 8.5.</u></b> Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 8.6 Disturbance to Special Status Species.</u></b> Impacts to special status species during construction under Alternative 2 would be the same as those described under Alternative 1.</p> | <p><b><u>Impact 8.7 Disturbance to Intertidal Habitat (Construction Related).</u></b> Construction related impacts to intertidal habitat during construction under Alternative 3 would be the same as those described under Alternative 1.</p> <p><b><u>Mitigation 8.7.</u></b> Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 8.8 Disturbance to Subtidal and Nearshore Habitat.</u></b> Impacts to subtidal and nearshore habitat during construction under Alternative 3 would be the same as those described under Alternative 1.</p> <p><b><u>Mitigation 8.8.</u></b> Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 8.9 Disturbance to Special Status Species.</u></b> Impacts to special status species during construction under Alternative 3 would be the same as those described under Alternative 1.</p> <p><b><u>Mitigation 8.9.</u></b> Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> | <p><b><u>Impact 8.10 Disturbance to Intertidal Habitat (Construction Related).</u></b> Alternative 4 would have substantial construction related impacts on intertidal habitat. Groins would be placed directly in the intertidal area, affecting the areas covered and the areas disturbed during construction. This alternative would also result in the annual development of a broader beach in front of the project area. Groins would extend approximately 100 feet from the existing shore and as a result, would create wide enough beaches to protect the bluffs under some conditions.</p> <p>Under this alternative, all construction would take place directly on the beach and in the water. As a result, the potential for short-term siltation and spilled fuel to affect intertidal habitat, including tide pools, during construction would be higher than that under alternatives 1, 2, and 3. Construction under alternatives 1, 2, and 3 would be focused on an area of beach closer to the bluff face; therefore, it would be possible to separate the activity from sensitive intertidal areas by placing riprap and barriers between the construction area and the intertidal area. In the case of Alternative 4, however, all construction would occur in the intertidal area. As a result, potential fuel spills and short-term siltation would be more likely to enter the intertidal and offshore habitats under Alternative 4. As a result of these activities, significant, short-term adverse impacts on the intertidal habitat would be more likely to occur.</p> <p><b><u>Mitigation 8.10.</u></b> To minimize</p> | <p><b><u>Disturbance of Intertidal Habitat</u></b></p> <p>Under the No Action Alternative, sections the beach and cliff would continue to erode and would continue to contribute to sedimentation of intertidal habitat. This impact would result in a decrease in water quality which diminishes the quality of the habitat to intertidal species. Increased sediment load could occur as large portions of the cliff fail and after severe storms, which would result in lowered visibility and primary production. These effects would be short-term and are part of normal erosion patterns.</p> <p><b><u>Disturbance of Subtidal and Nearshore Habitat</u></b></p> <p>Under the No Action Alternative, subtidal and nearshore habitat are expected to have lowered water quality at times, and would be impacted in a similar manner as intertidal habitat. Disturbance of Special Status Species</p> <p>Special status species foraging in intertidal, subtidal and nearshore habitats within the ROI are expected to face reduced visibility at times which may impair their foraging success. This impact would be limited in duration to after severe storms and cliff failure and would not likely have a demonstrable affect on their reproductive fitness and in their local population levels.</p> <p><b><u>Disturbance of Cliff Habitat</u></b></p> <p>Under the No Action Alternative, sections of the bluffs in the project area are expected to continue to erode if no measures are taken to prevent future</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                         | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | No Action Alternative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| <p>The project area, including intertidal habitat, is already subjected to high levels of human activity in association with recreation use and is considered a highly disturbed habitat. Due to the relatively small footprint of the projects and the current condition of the area, only a minor loss of intertidal habitat is expected.</p> <p><b>Mitigation 8.1.</b> To minimize the impacts to intertidal habitat during construction, the Department of Public Works, with assistance from the County Redevelopment Agency, shall ensure that the following measures are included in the construction plans for the bluff protection structures prior to issuance of a Grading Permit:</p> <ul style="list-style-type: none"> <li>• A qualified biologist shall review final construction plans immediately prior to the commencement of construction and monitor the site periodically during construction to ensure that the loss of habitat due to armoring is minimal.</li> <li>• The project biologist shall be present when beach rubble and riprap are removed to determine whether the work is creating a problem by displacing rats. If the biologist determines that a problem exists, a rat removal program shall be implemented by the Project Contractor before any rubble or riprap is further removed.</li> <li>• Concrete rubble and rock riprap shall be pulled away from the base of the cliff to construct a temporary rock riprap water barrier to the extent feasible. The purpose of this barrier is to help keep the trench</li> </ul> | <p><b>Mitigation 8.6.</b> Mitigation measures would be the same as those described under Alternative 1.</p> |                                                                        | <p>disturbances to intertidal habitat during construction, mitigations proposed for the intertidal habitat under Mitigation 8.1 (under Alternative 1) shall be implemented under this alternative when applicable. However, while implementing these mitigation measures may help reduce some potentially significant impacts to a less than significant level, overall, the short-term impacts related to intertidal habitats would be an unavoidable adverse impact.</p> <p><b>Impact 8.11 Disturbance to Subtidal and Nearshore Habitat.</b> A significant increase in siltation during construction or fuel spills that enter the waters of the MBNMS could adversely affect the kelp habitat adjacent to the project area. This impact is more likely under Alternative 4 because most construction activity would occur directly on the beach (intertidal area) and in the water. The addition of three subtidal groins to trap sand and form protective beaches would alter the subtidal and nearshore habitat and may negatively affect use of this area by fish, invertebrates, and marine mammals.</p> <p><b>Mitigation 8.11.</b> To minimize disturbances to subtidal and nearshore habitat during construction, mitigations proposed for the offshore habitat under Mitigation 8.1 shall be implemented under this alternative when applicable. Additionally, if shotcrete is used to cover the surface of the groin, it shall be applied only at periods of low tide, so as not to affect water quality in the area.</p> | <p>erosion. The cliff face in the project area is of limited ecological value due to the abundance of non-native species, including invasives such as ice plant, and regular exposure to high impact human activities. Therefore, loss of this habitat coupled by the creation of new cliff surfaces that would occur as the water line advances would result in a neutral impact on cliff habitat and the species that utilize this area.</p> <p><b>Disturbance of Offshore Habitat</b></p> <p>Under the No Action Alternative, siltation entering waters of the MBNMS would increase, due to the expected increased rate of bluff retreat. Erosion could affect habitat offshore of the project area by increasing turbidity and decreasing water quality. This effect is likely to continue indefinitely if erosion in the area is left unchecked. However, the difference between overall sedimentation between the No Action Alternative and the proposed action would be small. This is due to the limited size of the project area and because the largest sediment load comes from streams, such as the San Lorenzo River and Soquel Creek.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | No Action Alternative |
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| <p>and equipment out of the tidal waters during construction and ultimately would be removed, along with the concrete rubble and a portion of the riprap.</p> <ul style="list-style-type: none"> <li>• A silt fence or other barrier shall be installed to the extent feasible to prevent smaller grained material from affecting intertidal and offshore areas.</li> <li>• BMPs shall be implemented as part of a program to reduce and prevent pollutant and sediment discharges. Spill cleanup procedures, prevention measures, and protocols for storing construction materials and wastes shall be developed by the Construction Contractor before work begins in the intertidal area.</li> <li>• A construction stormwater pollution prevention program shall also be developed for the projects. This program shall address the BMPs used to prevent, respond, and monitor potential sources of pollution to intertidal and offshore habitats.</li> <li>• Any construction equipment used on the beach for the footing shall be scheduled for the dry season (April 15 to October 15) to reduce the risk of fuel or siltation reaching the water column.</li> <li>• If a fuel or oil spill were to occur during construction the spill shall be addressed in accordance to the spill response plan developed by the Construction Contractor for the project area and the following actions should be taken:</li> </ul> |                                                                     |                                                                        | <p>However, while implementing these mitigation measures may help reduce some potentially significant impacts to a less than significant level, overall, the short-term impacts related to subtidal and nearshore habitats would be an unavoidable adverse impact.</p> <p><b><u>Impact 8.12 Disturbance to Special Status Species.</u></b> Impacts to special status species during construction under Alternative 4 would be the same as those described under Alternative 1.</p> <p><b><u>Mitigation 8.12.</u></b> Mitigation measures would be the same as those described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 8.13 . Disturbance of Intertidal Habitat (Loss or Alteration)</u></b></p> <p>The most significant impact on the intertidal area from Alternative 4 is the destruction of portions of the intertidal habitat. Groins would be placed directly in intertidal habitat, and would extend approximately 100 feet from the existing shore. The trapped sand would extend the beach out to an estimated maximum of 75 feet in the summer immediately upcoast of each groin, replacing intertidal habitats with upland beach habitat. During the winter, the beach is expected to narrow under average winter conditions. During normal summer/winter beach changes, summer beaches widen, covering part of the intertidal zone with sand. Flora and fauna have adapted to this natural process, either by withstanding some</p> |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | No Action Alternative |
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| <ul style="list-style-type: none"> <li>- The source and the cause of the spill shall be identified and the spill source stopped;</li> <li>- Prevent spill migration using equipment in the on-site spill response kits (such as absorbent socks, pumps, or floating booms);</li> <li>- Clean up the spill (call in emergency response personnel for large spills);</li> <li>- Monitor impacts of the spill; and</li> <li>- Document the nature of the spill and the corrective actions taken, and report to appropriate agencies.</li> </ul> <p>These measures shall be incorporated into the construction contract for the firm selected to construct the projects. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><i>Impact 8.2 Disturbance to Subtidal and Nearshore Habitat.</i></b> Significantly increased siltation during construction or spilled fuel entering the waters of the MBNMS could affect the kelp habitat near the project area. A substantial increase in suspended solids could reduce or eliminate kelp photosynthetic based growth. This habitat is considered one of the most vital in coastal California in that it supports juvenile stages of numerous fish species and provides habitat for numerous other species. This habitat also is critical for the survival of the</p> |                                                                     |                                                                        | <p>burial by sand, by migrating, or by recolonizing. Any materials generated from groin construction would be from existing bluff materials, such as Purisima Formation or terrace deposits. These materials would be similar to the natural materials added to the beach and intertidal zone during normal bluff erosional processes (Griggs 2002).</p> <p><b><i>Mitigation 8.13.</i></b> To minimize disturbances to intertidal habitat during construction, mitigations proposed for the intertidal habitat under Mitigation 8.1 shall be implemented under this alternative when applicable. The loss of intertidal habitat that is part of the Alternative 4 design would naturally result in the development of intertidal habitat further from the existing intertidal habitat. This would reduce the extent of long-term habitat loss and alteration, however, there would be unavoidable adverse impacts on intertidal habitat.</p> |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>southern sea otter, a federally threatened species. An impact to this habitat would be considered significant, without the appropriate mitigation measures.</p> <p><i>Mitigation 8.2.</i> To minimize disturbances to the subtidal and nearshore habitat during construction, mitigations proposed for the intertidal habitat shall be implemented.</p> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><i>Impact 8.3 Disturbance to Special Status Species.</i> Construction noise may affect special status species in the area, including the southern sea otter, a federally threatened species, and the California brown pelican, a federally endangered species. Some migratory bird species, particularly shorebirds, would be deterred from their use of the area due to the elevated noise levels and visual presence of humans. Other special status species that could be affected by noise include the harbor seal, California sea lion, Steller sea lion, harbor porpoise, and other species protected under the Marine Mammal Protection Act (MMPA). Cliff nesting bird species with the potential of breeding in the ROI include the cliff swallow, belted kingfisher, Northern rough-winged swallow, pigeon guillemot, and pelagic cormorant. These species would lose potential nesting areas. Harbor seals and sea lions would be deterred from hauling out in the project vicinity because of the noise and visual presence of humans during construction and maintenance of the bluff protection. However, this area is already a poorly</p> |                                                                     |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>suited location for haulouts due to the existing human activity level, and the difference in the value of this habitat to MMPA species such as the Pacific harbor seal would be small.</p> <p><b>Mitigation 8.3.</b> To minimize the effects of noise caused by construction on special status species, the County Department of Public Works and Project Biologist shall ensure that the following measures are implemented prior to and during construction of the bluff protection structures:</p> <ul style="list-style-type: none"> <li>• To avoid impacts to migratory birds, their young, and nests, a qualified biologist shall survey immediately before and during project activities that occur within the California bird breeding season, which extends from February through August (Tate-Hall 2002). Surveys shall be conducted along the cliff and intertidal project areas. Nests identified on the premises during the pre-breeding season surveys shall be removed, with the exception of eagles’ nests, in order to prevent their use during the breeding season. Additional surveys of buildings and natural areas directly affected by project activities shall be conducted throughout the California breeding season. Nests found during these surveys, with the exception of eagles’ nests, shall be removed, as long as no eggs were present. If a nest with eggs is found, activities in the immediate vicinity shall be halted until the eggs hatch and the young fledge or until the USFWS gives its approval.</li> <li>• Surveys to detect the presence of</li> </ul> |                                                                     |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring<br>(Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Alternative 2—Partial Bluff<br>Armoring with Full Parkway<br>Improvements | Alternative 3—Partial Bluff<br>Armoring with Limited Parkway<br>Improvements | Alternative 4—Groins and Notch<br>Infilling | No Action Alternative |
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| <p>other sensitive species shall be initiated prior to the start of construction and continue periodically during the construction period.</p> <ul style="list-style-type: none"> <li>• BMPs for noise reduction shall be used to minimize and monitor potential sources of noise pollution.</li> <li>• Site personnel shall be instructed how to recognize sensitive species (harbor seals for example) and how to manage encounters if they do occur.</li> <li>• Reduce construction-related noise (limiting the number of heavy equipment in any one construction area, for example) and maintain maximum distances from sensitive species.</li> </ul> <p>These measures shall be incorporated into the construction contract for the firm selected to construct the projects. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> |                                                                           |                                                                              |                                             |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| <b>Transportation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  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| <p><b><u>Impact 9.1 Temporary Construction-Related Vehicle Trips.</u></b> The proposed project construction would involve a temporary increase in vehicle trips to and from the project area. Vehicle trips would be required for bringing construction equipment, materials, and workers to and from the area and for removing construction debris and concrete rubble and rock riprap along the beach. Construction vehicles would include cars, pickup trucks, dump trucks, transfer (trailer) dump trucks, and flatbed trailer trucks used to haul heavy stationary equipment, such as cranes and lifters (Rodrigues 2001).</p> <p>Construction-related traffic is expected to use 41<sup>st</sup> Avenue for access to and from Highway 1, which provides the most direct route to the project area. For construction from 32<sup>nd</sup> to 36<sup>th</sup> avenues, vehicles would likely use Portola Drive to 30<sup>th</sup> Avenue for access. For construction at 41<sup>st</sup> Avenue (The Hook), trucks would likely use Portola Drive to 38<sup>th</sup> Avenue for access. It also could be necessary during some portions of construction at The Hook to allow wrong-way construction vehicle access to The Hook via 41<sup>st</sup> Avenue.</p> <p>Project 1 (construction of the main bluff protection structure) would be the most vehicle-intensive segment of the project, involving debris removal, footing preparation for soil nail structures, fitting of soil nails, and</p> | <p><b><u>Impact 9.4 Temporary Construction-Related Vehicle Trips.</u></b> Significant impacts and proposed mitigation related to temporary construction-related vehicle trips are identical to those described for Alternative 1.</p> <p><b><u>Impact 9.5 Temporary Narrowing and Closing of East Cliff Drive.</u></b> Significant impacts and proposed mitigation related to the temporary narrowing and closing of East Cliff Drive are identical to those described in Alternative 1.</p> <p><b><u>Impact 9.6 Bicycle Safety at 32<sup>nd</sup> Avenue Intersection.</u></b> Significant impacts and proposed mitigation related to bicycle safety at 32<sup>nd</sup> Avenue intersection is identical to those described in Alternative 1.</p> <p><b><u>Impact 9.7 Potential Future Loss of Pedestrian and Bicycle Improvements.</u></b> Under Alternative 2, large storms would continue to erode the upper terrace deposits, causing them to fail, and would damage the pedestrian and bicycle pathways and roadway. Loss of the pathways would necessitate reconfiguring the remaining roadway to accommodate pedestrians and bicyclists. Continued severe erosion of the terrace deposits would eventually damage the vehicle lanes, requiring closure of the road to through-traffic or its eventual abandonment. In this worst-case scenario, all through-traffic would need to be rerouted onto other local streets. Because it cannot be predicted if or when such roadway damage</p> | <p><b><u>Impact 9.8 Temporary Construction-Related Vehicle Trips.</u></b> Significant impacts and proposed mitigation related to the temporary construction-related vehicle trips are identical to those described for Alternative 1.</p> <p><b><u>Impact 9.9 Temporary Narrowing and Closing of East Cliff Drive.</u></b> Significant impacts and proposed mitigation under Alternative 3 related to temporary narrowing and closing of East Cliff Drive are identical to those described in Alternative 1.</p> <p><b><u>Impact 9.10 Bicycle Safety at 32<sup>nd</sup> Avenue Intersection.</u></b> Significant impacts and proposed mitigation under Alternative 3 related to bicycle safety at 32<sup>nd</sup> Avenue is identical to those described in Alternative 1.</p> <p><b><u>Impact 9.11 Potential Future Loss of Pedestrian and Bicycle Improvements and Roadway.</u></b> Alternative 3 proposes no armoring or retaining walls on the upper portions of the cliff (terrace deposits), with bluff protection achieved through armoring of the lower Purisima bedrock.</p> <p>Under Alternative 3, impacts and proposed mitigation for the potential future loss of pedestrian, bicycle and roadway improvements are the same as those described in Alternative 2, except that they may occur at a more rapid rate due to the lack of retaining walls.</p> | <p><b><u>Impact 9.12 Temporary Construction-Related Vehicle Trips.</u></b> Significant impacts and proposed mitigation under Alternative 4 related to temporary construction-related vehicle trips are identical to those described for Alternatives 1, 2, and 3.</p> <p><b><u>Impact 9.13 Temporary Narrowing and Closing of East Cliff Drive.</u></b> Significant impacts and proposed mitigation under Alternative 4 related to temporary narrowing and closing of East Cliff Drive are identical to those described in Alternative 1.</p> <p><b><u>Impact 9.14 Bicycle Safety at 32<sup>nd</sup> Avenue and 41<sup>st</sup> Avenue Intersections.</u></b> Significant impacts and proposed mitigation under Alternative 4 related to bicycle safety at the 32<sup>nd</sup> Avenue intersection is identical to those described in Alternatives 1, 2, and 3.</p> <p><b><u>Impact 9.15 Potential Future Loss of Pedestrian and Bicycle Improvements and Roadway.</u></b> Alternative 4 proposes no armoring of the cliffs and would protect the bluff by installing subtidal groins to create protective beaches. Under Alternative 4, roadway and parking improvements would be implemented as proposed under Alternative 1, but a single multiuse path would be constructed to allow some buffer for continued erosion, as under Alternative 3. All other impacts and proposed mitigation associated with the potential loss of pedestrian and bicycle improvements</p> | <p><b><u>Potential Future Loss of Pedestrian and Bicycle Improvements and Roadway.</u></b> Under the No Action Alternative, the project would not be built and the bluffs would continue to retreat, causing further loss of the roadway. Without reinforcement, at some point the roadway conceivably would experience a major washout, as happened in the winter of 1994. Such a washout would require temporary, or possibly permanent, closure of the roadway to through-traffic and the rerouting of certain traffic movements through the neighborhood. Under the most likely scenario, east-west through traffic would be diverted to Portola Drive, and East Cliff Drive would be utilized only for local vehicular access to individual houses, emergency access, and for bicycle and pedestrian circulation. This scenario would result in an increase in traffic on Portola Drive and 30<sup>th</sup> Avenue, as well as an increase in circulation on the other residential avenues by motorists seeking ocean views or direct access to the cliff areas. Such a road closure could also limit the size of emergency vehicles that could use East Cliff Drive, due to weight concerns or turning radius restrictions. This would be a significant unmitigable impact of this alternative.</p> <p><b><u>Bicycle and Pedestrian Circulation.</u></b> Under the No Action Alternative, bicycle and pedestrian circulation could be affected, as the bicycle/pedestrian lane is on the segment of the roadway most vulnerable to erosion. If major</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                                                                                                                                                                                                                                                                                                                                              | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling                                       | No Action Alternative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <p>application of the shotcrete layer. Most heavy truck operations would occur during concrete rubble and rock riprap removal along the beach, when dump trucks would remove as much as 6,000 cubic yards of material. In addition, during structure construction, approximately 1,800 cubic yards of excavation material would be brought in for the structure footing. These activities are expected to take six to eight weeks, during which there could be up to 10 heavy truck trips per day (Pages, F. Personnel Communication 2001). Additional daily truck and vehicle trips would be required for equipment and materials to haul and transport workers throughout Project 1 and Project 2 construction activities.</p> <p>The number of construction vehicle trips temporarily added to the local roadway network would not be substantial, compared to the total number of vehicles traveling in the area, (recent traffic counts documented between 3,100 and 3,700 vehicles per day) and would not be expected to affect service levels at any intersections along the major access roads, such as 41<sup>st</sup> Avenue and Portola Drive. However, in the absence of a plan of designated routes through the residential neighborhood to construction zones, the addition of construction vehicles could result in a general disruption of local traffic. This would be a temporary significant impact.</p> <p><i>Mitigation 9.1.</i> To minimize impacts of construction-related traffic and staging on normal vehicle traffic and area roadway use, the County of Santa</p> | <p>would occur under Alternative 2, quantification of the pedestrian, bicycle, and traffic impacts is considered speculative. However, the potential eventual loss of the pedestrian and bicycle improvements and roadway is considered a potentially significant unmitigable impact of Alternative 2.</p> <p><i>Mitigation.</i> No mitigations have been identified that would reduce this impact to less than significant.</p> |                                                                        | <p>and roadway are the same as those described under Alternatives 2 and 3.</p> | <p>roadway loss were to occur, it is likely that the traffic lane would need to be further narrowed to accommodate the pedestrian/bicycle lane. At some point, if roadway damage were severe enough, there may not be sufficient room to accommodate both the traffic lane and the pedestrian/bicycle lane. At this point, a solution such as closing the roadway entirely to through-traffic might be required, and only local traffic shared with pedestrian/bicycle traffic would be permitted on the roadway. This would necessitate the installation of signs and barriers and possibly traffic calming devices to ensure that vehicular speeds were compatible with bicycle and pedestrian activity on the roadway. There also could be indirect impacts from rerouting traffic through the adjacent residential neighborhood, as noted above.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>Cruz Department of Public Works Construction Contractor shall prepare a construction traffic mitigation plan to address impacts related to construction traffic routes, construction equipment staging, construction vehicle parking, lane closures and blockages, detours, resident access to homes along East Cliff Drive, and emergency vehicle access during construction. This plan shall be reviewed and approved by the Department of Public Works prior to any construction or site preparation activities. Elements of a mitigation plan shall include, but not be limited to, the following:</p> <p><u>Designated Access Routes.</u><br/>Appropriate construction vehicle routes shall be identified from Highway 1 to East Cliff Drive for each phase of the project. All traffic shall use primary arterial and collector streets to the maximum extent feasible. For construction at the upcoast end of the project area, traffic shall use Portola Drive to 30<sup>th</sup> Avenue. For construction at the downcoast end of the project area (The Hook), traffic shall use Portola Drive to 38<sup>th</sup> Avenue.</p> <p><u>No Weekend Construction.</u><br/>Construction activities shall be prohibited on East Cliff Drive on Saturdays, Sundays, and holidays.</p> <p><u>Limited Travel During Commute Times.</u> Construction vehicles shall avoid, to the extent feasible, the peak commute hours of 7 AM to 9 AM and 3 PM to 6 PM.</p> <p><u>Pedestrian and Bicycle Access.</u> Bicycle</p> |                                                                     |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>and pedestrian access along East Cliff Drive shall be maintained during construction to the maximum extent feasible.</p> <p><u>Fencing and Barricades.</u> Construction areas shall be blocked off from vehicle, pedestrian, and bicycle traffic by such measures as temporary barriers or fencing.</p> <p><u>Lane Closure/Blockage Timing.</u> Lane closures shall be limited to noncommute times, to the extent feasible, such as between 8:30 AM to 4:30 PM.</p> <p><u>Lane Closure/Blockage Monitor.</u> A public safety monitor or flag person shall be present during all lane closures/blockages to regulate vehicle, pedestrian, and bicycle traffic through the construction zone.</p> <p><u>Signage.</u> Warning signage shall be visible during construction to alert motorists of potential lane closures/blockages and detours and to alert pedestrians and bicyclists of any safety hazards along the roadway.</p> <p><u>Lane Closure Detour Plans.</u> Detour plans shall be developed for periods when segments of East Cliff Drive must be completely closed to through-traffic.</p> <p><u>Local Resident Access.</u> Provisions shall be made to provide vehicular access to residences along East Cliff Drive with minimum delays during construction.</p> <p><u>Staging Areas.</u> Policies shall be</p> |                                                                     |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>developed for storing construction equipment, materials, and vehicles along East Cliff Drive. To the extent feasible, trucks and vehicles shall not be stored overnight on East Cliff Drive.</p> <p><u>Phone Number for Complaints.</u> The County Department of Public Works Construction Inspector shall post at least one sign during active construction containing the name and telephone number of the staff person the public may contact to register complaints about construction traffic or access. The Department of Public Works shall keep a written record of all such complaints and investigate the problems registered by the public within 48 hours of receiving the complaints.</p> <p><u>Emergency Vehicle Access.</u> Emergency vehicle access shall be provided along East Cliff Drive at all times during construction. The local fire and police departments shall be notified of the approximate time and duration of planned lane closures and appropriate detour routes at least 48 hours in advance of any road closures or detours.</p> <p><u>Impact 9.2 Temporary Narrowing and Closing of East Cliff Drive.</u> During Project 1, there would need to be a construction staging area on the ocean side of East Cliff Drive, adjacent to the area of construction. This staging area would provide a site for storing materials and equipment and for parking trucks and other vehicles during the day. Heavy equipment, including a crane, forklifts, worker lifts,</p> |                                                                     |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>and concrete pumps, would be operated along the cliff top from the staging area.</p> <p>Setting up a construction staging area may require reconfiguring the current roadway and bicycle/pedestrian lane on East Cliff Drive. It is possible that the area adjacent to the O'Neill property may be used for this purpose. At a minimum, the bicycle/pedestrian lane is expected to be eliminated in the immediate area of construction, and a single lane would be available for vehicles, bicyclists, and pedestrians. Some delays could occur as traffic stops to allow for construction vehicle and equipment movement. During certain construction activities, such as crane operation, segments of East Cliff Drive may have to be closed completely, requiring traffic to detour completely around the construction zone. This would result in temporary traffic increases on detour roadways.</p> <p>During Project 2, construction would occur directly on the roadway, as the East Cliff Drive travel lane would be reconfigured to provide pedestrian and bicycle paths and additional parking along the roadway. During construction, segments of the roadway may need to be temporarily blocked or completely closed to through-traffic. This would be a temporary significant impact.</p> <p><b>Mitigation 9.2.</b> The implementation of a construction traffic plan detailing safety measures and detour routes shall be used during lane blockages and closures as described above under</p> |                                                                     |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>Mitigation 9.1.</p> <p>All temporary impacts related to construction-related trips and narrowing/closure of East Cliff Drive during construction would be reduced to a less-than-significant level with the implementation of Mitigation 9.1.</p> <p><b><i>Impact 9.3 Bicycle Safety at 32<sup>nd</sup> Avenue Intersection.</i></b> Bicyclists who want to travel westbound on the proposed bicycle pathway would be required to cross to the ocean side of East Cliff Drive at 41<sup>st</sup> Avenue to access the pathway, then cross back to the inland side of East Cliff Drive at 32<sup>nd</sup> Avenue to connect to bicycle lanes.</p> <p>The proposed project would construct a raised crosswalk at The Hook, between the public parking lot and the bicycle and pedestrian paths. No traffic controls are proposed for this location. A sign is currently posted at this location stating “Bikes Must Cross” with an arrow pointing toward the pathway. In addition, a sign is posted along the East Cliff Drive travel lane near Larch Lane facing the westbound (wrong-way) direction that states “No Bicycles.” The presence of these signs helps to ensure that bicyclists heading westbound cross to the pathway and do not ride wrong-way along the East Cliff Drive travel lane. Given this signage, no bicycle safety conflicts are anticipated at this location.</p> <p>“Bikes Must Cross” signage has not been installed at the intersection of East Cliff Drive/32<sup>nd</sup> Avenue/Pleasure</p> |                                                                     |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>Point Drive, where westbound cyclists must cross back over to the north side of the roadway to the existing bike lanes west of Pleasure Point Drive. In the absence of clear directional signage, westbound bicyclists exiting the pathway at 32<sup>nd</sup> Avenue/Pleasure Point Drive may continue riding against traffic on the ocean side of the roadway. Given that as many as 300 to 400 cars and 100 to 150 bikes may travel through each of these intersections during a peak hour, the possibility of bicycle/vehicle conflict is considered a potentially significant long-term operational safety impact (Higgins Associates, 2001). Measures to address bicycle safety at this location are outlined in mitigation 9.3, below.</p> <p><b>Mitigation 9.3.</b> To minimize bicycle safety impacts at 32<sup>nd</sup> Avenue/Pleasure Point Drive, signs shall be installed by the County Public Works Department at the intersection of 32<sup>nd</sup> Avenue/Pleasure Point Drive/East Cliff Drive similar to the existing signs at The Hook stating “Bikes Must Cross.” These signs shall be installed facing westbound to ensure that bicyclists continuing westbound from the proposed bicycle path obey the stop sign at Pleasure Point Drive before crossing to the existing bicycle lanes across the roadway.</p> <p>All impacts related to bicycle safety at 32<sup>nd</sup> Avenue/Pleasure Point Drive/East Cliff Drive would be reduced to a less-than-significant level with the implementation of this mitigation.</p> |                                                                     |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| Emergency Services                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     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| <p><b><u>Impact 10.1 Restricted Access – Roadway.</u></b> Closing segments of East Cliff Drive during periods of construction would limit access to structures, fire hydrants, and beaches along the drive, resulting in a significant adverse impact. Segments of East Cliff Drive would be closed during Project 1 to allow heavy equipment to access the bluff, and these segments would be closed during Project 2 to make improvements to the road. These closures would limit access to structures and fire hydrants adjacent to the closed segment. Limited access could delay emergency services and cause the providers to exceed their response time goals.</p> <p><b><u>Mitigation 10.1.</u></b> To minimize impacts related to restricted access for emergency services during periods of construction, the following measures shall be included in the construction plan:</p> <ul style="list-style-type: none"> <li>The restricted access impacts shall be addressed by the construction traffic mitigation plan described in Mitigation 9.1. Santa Cruz County Department of Public Works and its Construction Contractor shall implement those mitigation measures to reduce the restricted access impacts to less than significant.</li> <li>A copy of the mitigation measures shall be provided to the Central Fire Protection District and to American Medical Response.</li> </ul> <p>Implementing these mitigation</p> | <p><b><u>Impact 10.3 Restricted Access – Roadway.</u></b> The significant restricted access impacts under this alternative would be similar to those described under Alternative 1.</p> <p><b><u>Mitigation 10.3.</u></b> Proposed mitigation for this alternative would be similar to that described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 10.4 Delayed Response.</u></b> The significant delayed response impacts under this alternative would be similar to those described under Alternative 1.</p> <p><b><u>Mitigation 10.4.</u></b> Proposed mitigation for this alternative would be similar to that described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 10.5 Restricted Access and Delayed Response.</u></b> Under this alternative, East Cliff Drive may be closed or rerouted in response to future continued bluff top erosion. Closing the road or rerouting traffic would have a significant adverse impact by impeding emergency access and delaying emergency response to emergency situations in the area. Emergency access to the beach would also be lost due to continued erosion; however, loss of beach access also would substantially reduce use of the beach and ocean in this area,</p> | <p><b><u>Impact 10.6 Restricted Access – Roadway.</u></b> The significant restricted access impacts under this alternative would be similar to those described under Alternative 1.</p> <p><b><u>Mitigation 10.6.</u></b> Proposed mitigation for this alternative would be similar to that described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 10.7 Delayed Response.</u></b> The significant delayed response impacts under this alternative would be similar to those described under Alternative 1.</p> <p><b><u>Mitigation 10.7.</u></b> Proposed mitigation for this alternative would be similar to that described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 10.8 Restricted Access and Delayed Response.</u></b> The significant restricted access and delayed response impact under this alternative would be similar to those described under Alternative 2.</p> <p><b><u>Mitigation 10.8.</u></b> No mitigation has been identified to reduce this impact to a less-than-significant level.</p> | <p><b><u>Impact 10.9 Restricted Access – Roadway.</u></b> The significant restricted access impacts under this alternative would be similar to those described under Alternative 1.</p> <p><b><u>Mitigation 10.9.</u></b> Proposed mitigation for this alternative would be similar to that described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 10.10 Delayed Response.</u></b> The significant delayed response impacts under this alternative would be similar to those described under Alternative 1.</p> <p><b><u>Mitigation 10.10.</u></b> Proposed mitigation for this alternative would be similar to that described under Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> <p><b><u>Impact 10.11 Restricted Access and Delayed Response.</u></b> The significant restricted access and delayed response impact under this alternative would be similar to those described under Alternative 2.</p> <p><b><u>Mitigation 10.11.</u></b> No mitigation has been identified to reduce this impact to a less-than-significant level.</p> | <p><b><u>Restricted Access and Delayed Response.</u></b> Under this alternative, East Cliff Drive eventually would be closed due to continued bluff erosion. Protected properties along the East Cliff Drive would protrude further from the receding bluff and may gradually become isolated from the bluff. The eventual closing of East Cliff Drive would impede emergency access to the area and delay emergency response time. Based on estimated erosion rates, road damage would occur within 25 years. However, the continued erosion of the bluffs would result in abandonment of properties along the drive and loss of beach access, substantially reducing the need for emergency access to the area.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                                                                                                          | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling | No Action Alternative |
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| <p>measures would reduce this potential significant impact to a less than significant level.</p> <p><b><i>Impact 10.2 Delayed Response.</i></b><br/>Closing segments of East Cliff Drive during periods of construction could delay emergency service provider response to emergencies along or in the vicinity of East Cliff Drive. These closures could delay response by requiring emergency service providers to use a less direct route or by increasing traffic congestion such that emergency vehicles are forced to reduce their speeds. These delays could cause emergency service providers to exceed their response time goals. Santa Cruz County shall minimize these effects by notifying the emergency service providers at least 48 hours in advance of any road closures and detour routes.</p> <p><b><i>Mitigation 10.2.</i></b> To minimize impacts related to restricted access for emergency services during periods of construction, the following measures shall be included in the construction plan:</p> <ul style="list-style-type: none"> <li>• The restricted access impacts shall be addressed by the construction traffic mitigation plan described in Mitigation 9.1. Santa Cruz County Department of Public Works and its Construction Contractor shall implement those mitigation measures to reduce the restricted access impacts to less than significant.</li> <li>• A copy of the mitigation measures shall be provided to the Central Fire Protection District and to American</li> </ul> | <p>substantially reducing the need for emergency access.</p> <p><b><i>Mitigation 10.5.</i></b> No mitigation has been identified to reduce this impact to a less-than-significant level.</p> |                                                                        |                                          |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              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| <p>Medical Response.</p> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                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| <b>Cultural and Paleontological Resources</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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| <p><b><u>Impact 11.1 Impacts to Paleontological Resources.</u></b> Both the marine terrace deposits and the Purisima Formation contain sensitive and significant paleontological resources. Extensive public use and modification of the cliffs and platforms in the project area has already occurred and as a result, fossils have already been both destroyed and covered over in the project area.</p> <p>Bluff protection measures contained in Alternative 1 would affect sensitive and significant fossils in both the Purisima Formation and the overlying marine terrace deposits on the two proposed protection structure locations (33<sup>rd</sup> to 36<sup>th</sup> avenues and near the terminus of 41<sup>st</sup> Avenue). Because this project area is deemed to have high paleontologic sensitivity and is slated to undergo considerable construction and disturbance, this would be considered a significant impact.</p> <p><b><u>Mitigation 11.1.</u></b> To mitigate impacts from the proposed alternatives, a mitigation plan shall be developed and implemented by the Santa Cruz County Redevelopment Agency prior to any ground disturbance. The following actions are suggested requirements for a site-specific mitigation plan and may serve as</p> | <p><b><u>Impact 11.2 Impacts to Paleontological Resources.</u></b> Impacts to fossil resources during construction under Alternative 2 would be nearly the same as those described under Alternative 1. Construction impacts would be slightly less because armoring would not be as extensive, although significant fossil finds within the Purisima layer and fossil remains within the terrace layer will be impacted under this alternative. Areas not protected within the marine terrace that are left exposed to the elements, however, will continue to erode from wave damage. Pedestrian traffic and unauthorized fossil collection will continue to have adverse impacts on fossil resources in the non-armored areas.</p> <p><b><u>Mitigation 11.2.</u></b> Mitigation will be the same as described for Alternative 1. However, the mitigation measures would concentrate only on the areas where the bluff would be armored, or where construction would disturb the cliff.</p> <p>To mitigate the impacts on the non-armored areas, the County of Santa Cruz Redevelopment Agency shall prepare a preservation plan to monitor and record fossil resources in the exposed areas. However, long-term impacts to exposed paleontological</p> | <p><b><u>Impact 11.3 Impacts to Paleontological Resources.</u></b> Impacts to fossil resources during construction under Alternative 3 would be similar to those described under Alternative 1. Construction impacts would be less because armoring would not be as extensive, although significant fossil finds within the Purisima layer will be impacted under this alternative. Larger areas not protected within the marine terrace that are left exposed to the elements, however, would continue to erode from wave damage. Pedestrian traffic and unauthorized fossil collection would continue to have adverse impacts on fossil resources in the non-armored areas.</p> <p><b><u>Mitigation 11.3.</u></b> Mitigation will be the same as described for Alternative 1, however, the mitigation measures would concentrate only on the areas where the bluff would be armored, or where construction would disturb the cliff. Alternative 3 leaves more marine terrace exposed to the elements.</p> <p>To mitigate the impacts on the non-armored areas including the marine terrace formation, the County of Santa Cruz Redevelopment Agency shall prepare a preservation plan to monitor and record fossil resources in the exposed areas. However, long-term impacts to exposed paleontological</p> | <p><b><u>Impact 11.4 Impacts to Paleontological Resources.</u></b> Non-armoring measures contained in Alternative 4 would create the least adverse impacts due to construction on paleontological resources. Filling wave-cuts, however, would constitute an adverse impact in the Purisima Formation where fossils are present. Bluff areas not protected within the Purisima and marine terrace that are left exposed to the elements, however, will continue to erode from wave damage. Pedestrian traffic and unauthorized fossil collection would continue to have adverse impacts on fossil resources in the non-armored areas.</p> <p><b><u>Mitigation 11.4.</u></b> To minimize impacts of groin construction on fossil resources for Alternative 4, the same mitigation measures as described for Alternative 1 shall be used with preconstruction survey, collection, and construction monitoring limited to areas where there would be infilling of wave cuts and other construction-related disturbance. Alternative 4 leaves most of the Purisima and marine terrace deposits that contain fossil resources exposed to the elements. To mitigate the impacts on the non-armored areas, the County of Santa Cruz Redevelopment Agency shall prepare a preservation plan to monitor and record fossil resources in</p> | <p><b><u>Paleontological Resources.</u></b> Continued erosion, wave damage, pedestrian traffic, and unauthorized fossil collection could have adverse affects on paleontologic resources in the future if they are not protected.</p> <p><b><u>Cultural Resources.</u></b> There are no known cultural resources within the project area. Continued erosion, however, may in time reveal un-recorded sites within the cliff face and below East Cliff Drive.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | No Action Alternative |
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| <p>permit conditions. The measures recommended below conform to guidelines established by the Society of Vertebrate Paleontology (1995), and also incorporate suggestions from Perry (1996) that address the unique conditions at the project area. Nevertheless, even full compliance with the mitigation recommendations will not prevent the irretrievable loss of unique paleontologic data once seawall construction begins. Implementing the mitigation measures described below, however, shall reduce the potential adverse effects to less than significant.</p> <ul style="list-style-type: none"> <li>• Conduct paleontologic survey and surface collection (salvage) by a qualified paleontologist immediately before construction and after removal of existing riprap.</li> <li>• Preserve fossil-rich Purisima Formation boulders from the base of the cliffs between 33<sup>rd</sup> and 35<sup>th</sup> avenues.</li> <li>• Conduct paleontologic monitoring and salvage during construction.</li> <li>• Prepare salvaged samples.</li> <li>• Store salvaged samples.</li> <li>• Prepare a final report.</li> </ul> | <p>resources would still be significant.</p>                        | <p>resources would still be significant.</p>                           | <p>the exposed areas. However, long-term impacts to exposed paleontological resources would still be significant.</p> <p><b><u>Impact 11.5 Impacts to Cultural Resources.</u></b> As stated above, there are no known cultural resources in the road of East Cliff Drive. The area offshore, however, has not been surveyed for submerged cultural resources so it is not known if prehistoric or historic sites exist in the submerged proposed groin areas. Construction of artificial groins has the potential to damage or destroy unrecorded cultural sites.</p> <p><b><u>Mitigation 11.5.</u></b> To minimize impacts of construction on cultural resources, Santa Cruz County Redevelopment Agency shall ensure that any areas to be disturbed by groin construction are surveyed by a qualified archaeologist and potential cultural sites are avoided. The plan to mitigate the possible disturbance of unrecorded submerged sites shall include the following measures:</p> <ul style="list-style-type: none"> <li>• <b><u>Project Area Survey.</u></b> Prior to any offshore disturbance, the area where the groins will be placed or where construction equipment has the potential to disturb the seabed shall be surveyed by a maritime archaeologist that qualifies under the Secretary of the Interior’s Standards. If no sites are found, then a negative report would be the only additional required task.</li> <li>• <b><u>Site Recording.</u></b> If sites are found, they will be recorded according to current professional standards by a qualified archaeologist.</li> </ul> |                       |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)    | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | No Action Alternative                                        |
|--------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
|                                                              |                                                                     |                                                                        | <ul style="list-style-type: none"> <li>• <u>Regulatory Consultation</u>. Recorded sites will be evaluated for eligibility to local, state, or federal historical resource registers in consultation with appropriate regulatory agencies.</li> <li>• <u>Preservation Plan</u>. A plan to avoid and preserve discovered sites shall be developed in consultation with appropriate local, state, and federal agencies.</li> <li>• <u>Final Report</u>. A final report of the findings meeting all regulatory requirements shall be submitted to the County Planning Department, the Corps, and the State Historic Preservation Office.</li> </ul> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> |                                                              |
| <b>Air Quality</b>                                           |                                                                     |                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                              |
| No significant impacts were identified for this alternative. | No significant impacts were identified for this alternative.        | No significant impacts were identified for this alternative.           | No significant impacts were identified for this alternative.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | No significant impacts were identified for this alternative. |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | No Action Alternative                                                                                                                           |
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| <b>Noise</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                 |
| <p><b><u>Impact 13.1 Short-Term Construction Noise.</u></b> Construction and demolition noise would cause significant short-term impacts to sensitive land uses. Residences are approximately 50 feet north of the bluff, and three residences are between East Cliff Drive and the bluff. Open space and recreation uses occur along the bluff and beach area. Construction noise would be temporary and intermittent, and noise levels would vary depending on the construction project.</p> <p><b><u>Mitigation 13.1.</u></b> To minimize impacts associated with short-term construction noise, the County Department of Public Works and its Construction Contractor shall ensure that the following noise control measures are incorporated into the final construction and design plans for the projects:</p> <ul style="list-style-type: none"> <li>• Limit construction that involves motorized equipment to Monday through Friday from 7:30 AM to 4:30 PM to avoid the times of day and the days of the week when noise effects would cause the greatest annoyance to residents and to those using the area for recreation;</li> <li>• Allow exceptions to the specified construction hours only for construction emergencies and when requested by the Department of Public Works Construction Inspector and approved by County Planning; and</li> </ul> | <p><b><u>Impact 13.2 Short-Term Construction Noise.</u></b> Construction and demolition noise would cause significant short-term impacts to sensitive land uses similar to those described under Alternative 1. Construction noise levels described in Table 13-1 would occur under this alternative, though the length of the construction may be slightly less. The duration of use for the pneumatic equipment to apply concrete to the bluff protection structure also would be shorter, lessening the annoyance effects.</p> <p><b><u>Mitigation 13.2.</u></b> Mitigation measures would be the same as those described for Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> | <p><b><u>Impact 13.3 Short-term Construction Noise.</u></b> Construction and demolition noise would cause significant short-term impacts to sensitive land uses. These impacts would be to a slightly lesser degree than under alternatives 1 and 2 because less bluff protection work would occur. Construction noise levels described in Table 13-1 may occur at times under this alternative. The duration of use for the pneumatic equipment would be shorter than under alternatives 1 and 2.</p> <p><b><u>Mitigation 13.3.</u></b> Mitigation measures would be the same as those described for Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> | <p><b><u>Impact 13.4 Short-Term Construction Noise.</u></b> Construction and demolition noise would cause significant short-term impacts to sensitive land uses. These impacts on residents would be to a lesser degree than those under alternatives 1, 2, and 3 because there would be less bluff protection work. Additionally, groins construction would take place below the bluff, and therefore, away from houses. However, heavy equipment would be used and this would disrupt, temporarily, recreational uses of the parkway and the beach. Construction noise levels described in Table 13-1 could occur under this alternative, though levels would be lower much of the time. The duration of use for the pneumatic equipment would be much shorter than under the other alternatives. However, the duration of use of heavy equipment could be as longer as under alternatives 1, 2, and 3.</p> <p><b><u>Mitigation 13.4.</u></b> Mitigation measures would be the same as those described for Alternative 1. Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p> | <p>No direct or indirect noise effects would result from the No Action Alternative because there would be no change to existing conditions.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements                                                                                                                                                                                                                                                                                                                                                                                              | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                                                                                                                                                             | No Action Alternative                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
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| <ul style="list-style-type: none"> <li>Post a sign that is clearly visible to users on East Cliff Drive that provides the phone number for the public to call to register complaints about construction-related noise problems. A single “disturbance coordinator” shall be assigned to log in and respond to all calls. All verified problems shall be resolved within 24 hours of registering the complaint.</li> </ul> <p>Implementing these mitigation measures would reduce this potential significant impact to a less than significant level.</p>                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Utilities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b><u>Impact 14.1 Disruption of Utility Service – Construction.</u></b> Drilling into the face of the bluff to construct the protection structures could disturb underground utility pipelines, disrupting service for those served by the water, wastewater, and natural gas infrastructure. Potential damage to the stormwater infrastructure would not disrupt service but would affect the integrity of the stormwater collection system.</p> <p><b><u>Mitigation 14.1.</u></b> Santa Cruz County Department of Public Works shall minimize the potential for encountering utility infrastructure by coordinating with the local utility service providers prior to beginning the projects. These providers shall be consulted to determine both the horizontal and vertical locations of all underground infrastructure within the corridor of the projects. Design of the structures and the drilling locations shall be planned to avoid the</p> | <p><b><u>Impact 14.2 Disruption of Utility Service – Construction.</u></b> The significant disruption of utility service impact and proposed mitigation for this alternative would be similar to those described under Alternative 1. In areas where the bluff protection structure would not extend to the top of the bluff, drilling to install the structure would not likely disturb underground infrastructure.</p> <p><b><u>Mitigation 14.2.</u></b> To minimize impacts associated with the disruption of utility service under this alternative, the County of Santa Cruz Redevelopment Agency shall install replacement infrastructure outside the affected area prior to damage or loss of infrastructure along East Cliff Drive. Therefore, this alternative would need to be modified to include infrastructure relocation as a component of the projects. Implementing this mitigation measure would reduce this potential significant</p> | <p><b><u>Impact 14.4 Disruption of Utility Service – Erosion.</u></b> The significant disruption of utility service impact for this alternative would be the same as those described under Alternative 2.</p> <p><b><u>Mitigation 14.4.</u></b> Mitigation under this alternative would be the same as that proposed under Alternative 2. Implementing this mitigation measure would reduce this potential significant impact to a less than significant level.</p> | <p><b><u>Impact 14.5 Disruption of Utility Service – Erosion.</u></b> The significant disruption of utility service impacts for this alternative would be the same as those described under Alternative 2.</p> <p><b><u>Mitigation 14.5.</u></b> Mitigation under this alternative would be the same as that proposed under Alternative 2. Implementing this mitigation measure would reduce this potential significant impact to a less than significant level.</p> | <p><b><u>Disruption of Utility Service from Erosion.</u></b> No direct disruption of utility service is expected under the No Action Alternative. However, the foundation of East Cliff Drive would be undermined in the future due to continued bluff erosion, which would damage utility infrastructure beneath the road. Continued erosion also could affect the overhead utility lines by destabilizing the utility poles. This damage to the utility infrastructure would disrupt service for those served by that infrastructure.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring (Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                | Alternative 2—Partial Bluff Armoring with Full Parkway Improvements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Alternative 3—Partial Bluff Armoring with Limited Parkway Improvements                | Alternative 4—Groins and Notch Infilling                                                                                                                                                                                                                                                                                | No Action Alternative                                                                                                                                                     |
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| <p>infrastructure beneath the road.</p> <p>Implementing this measure would reduce the impacts to less than significant.</p>                                                                                                                                                                                                                                                                                                                                                                              | <p>impact to a less than significant level.</p> <p><b><u>Impact 14.3 Disruption of Utility Service – Erosion.</u></b> Under this alternative, the foundation of East Cliff Drive may be undermined due to future continued bluff top erosion, which could damage utility infrastructure beneath the road. Continued erosion also could affect the overhead utility lines by destabilizing the utility poles. This damage to the utility infrastructure could disrupt service for those served by that infrastructure.</p> <p><b><u>Mitigation 14.3.</u></b> To minimize impacts associated with the disruption of utility service under this alternative, the County of Santa Cruz Redevelopment Agency shall install replacement infrastructure outside the affected area prior to damage or loss of infrastructure along East Cliff Drive. Implementing this mitigation measure would reduce this potential significant impact to a less than significant level.</p> |                                                                                       |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                           |
| <b>Cumulative Impacts</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                       |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                           |
| <p>Cumulative impacts under Alternative 1 would include the following:</p> <ul style="list-style-type: none"> <li>• Adverse significant cumulative impact on visual resources from ongoing coastal armoring and shoreline development;</li> <li>• Beneficial cumulative effect on water quality by implementation of more effective coastal armoring to prevent erosion and from new filtration/storm drainage system;</li> <li>• Long-term beneficial cumulative effects on the provision of</li> </ul> | <p>Cumulative impacts would be similar to but less than those from Alternative 1.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Cumulative impacts would be similar to but less than those from Alternative 2.</p> | <p>Cumulative impacts would be similar to those from alternatives 1, 2, and 3. While the visual effect is different from this alternative, the cumulative effect in combination with other coastal armoring projects in the ROI would remain significant because of substantial changes to the natural environment.</p> | <p>Potential for cumulative impacts within the region as a result of loss of utilities and infrastructure, and coastal access for recreation, due to coastal erosion.</p> |

**Table ES-5  
Summary of Potential Significant Impacts and Mitigations**

| Alternative 1—Full Bluff Armoring<br>(Preferred Alternative)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Alternative 2—Partial Bluff<br>Armoring with Full Parkway<br>Improvements | Alternative 3—Partial Bluff<br>Armoring with Limited Parkway<br>Improvements | Alternative 4—Groins and Notch<br>Infilling | No Action Alternative |
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| <p>emergency services by the use of more effective coastal erosion projects to protect the right-of-way and prevent catastrophic bluff failures;</p> <ul style="list-style-type: none"> <li>• Long-term beneficial cumulative effects on utilities by ensuring the security of the utility infrastructure;</li> <li>• Beneficial cumulative impact on land use from compliance with local plans to protect and enhance recreational opportunities;</li> <li>• Beneficial cumulative impact on recreational resources from parkway and beach access improvements;</li> <li>• Beneficial cumulative effects on parking, on the network of bicycle and pedestrian facilities in the region, and on coastal access.</li> </ul> |                                                                           |                                                                              |                                             |                       |

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