

**CALIFORNIA COASTAL COMMISSION**

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**W13b**

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**COASTAL DEVELOPMENT PERMIT APPLICATION**

Application number .....3-02-107, Podesto Revetment and Seawall

Applicant.....Gary Podesto

Project location.....Manresa State Beach, at the toe of the bluff area below the residence at 1443 San Andreas Road (the first residential structure immediately downcoast of the beach access ramp at the Manresa parking lot).

Project description .....Temporary retention of a rip-rap revetment (that was installed without a coastal development permit in February 1998) and subsequent replacement of the revetment with a sculpted concrete vertical seawall with rip-rap wave-splash wedge along roughly 250 linear feet of shoreline.

File documents.....Coastal Development Permit (CDP) application file 3-02-018; Santa Cruz County Certified Local Coastal Program (LCP); California Coastal Commission Monterey Bay ReCAP.

Staff recommendation ...Approval with Conditions

**Summary:** The proposed project is located at the base of the bluffs backing Manresa State Beach in the unincorporated La Selva Beach area of south Santa Cruz County. The bluff area is located where an unnamed intermittent stream meets the beach and, as a result, forms a wrapped headland (with part of the bluff facing the Monterey Bay and part running perpendicular to the shoreline facing the channel area immediately downcoast of the Manresa State Beach parking lot). The base of the bluffs involved is currently occupied by an un-engineered rock revetment that the Applicant had installed in February 1998 without a coastal development permit (CDP).

The Applicant proposes to construct a 250 linear foot sculpted concrete seawall founded in deep piers at the base of the bluffs with a 6-foot tall wedge of rip-rap at its top (to address potential wave runup and overtopping of the seawall). The existing revetment would be retained as a temporary measure until the seawall is constructed, and then a portion used for the wave splash wedge, and the remainder removed and disposed of off-site. The upper portion of the seawall would be faced with sculpted concrete to resemble the natural bluff face in color and texture, the rip-rap slope above it would be covered with sandy soils and vegetated, and sand backfill would be brought in to hide the seawall from view.

**California Coastal Commission****August Meeting in Huntington Beach**

Staff: D.Carl Approved by:

3-02-107 Podesto revetment and seawall strpt 8.6.2003.doc

The Coastal Act limits the use of shoreline structures in this case to those required to protect existing endangered structures. The Applicant's residence is located as close as 13 feet (seaward side) and 7 feet (channel side) from the blufftop edge. The historical photographic record indicates that there was little or no erosion at this site between 1928 and 1998. The winter storms of 1997-98 scoured the base of the bluffs and removed the 3-4 foot tall vegetated sand terrace that had previously acted to protect from wave attack the nearly cohesionless and highly erodable sandy bluff soils that make up the bluffs at this site. Lacking the natural protection, the erodable soils are more vulnerable to erosion from wave and stream attack. The Applicant's geotechnical consultants indicate that the site is now subject to regular and routine wave attack. They have presented slope stability and wave attack modeling analyses that indicate that, without armoring, the existing residence could be threatened in one storm event.

The Commission's Geologist and Coastal Engineer have reviewed the slope stability, geologic analyses, and engineering evaluations and have concluded that, although based on fairly conservative assumptions, the conclusions are valid in light of the extremely erodable bluff soils at this location and the evidence of increased frequency of storm wave attack. The Commission's Geologist also has concluded that the evidence is borderline regarding whether the existing structure is "in danger from erosion" at this time. But the fact that waves now routinely impact an area that consists of poorly consolidated nearly cohesionless sand indicates that, absent some form of shore protection, a clear danger from erosion would exist in the very near future were the existing revetment to be removed. To err on the side of protecting life and property, Staff have concluded that it is prudent to assume in this case that the existing structure is in danger from erosion in a Coastal Act sense.

The only feasible non-shoreline armoring alternative to protect the endangered residence is to partially demolish and to relocate/reconstruct it inland on the site, and remove the existing revetment. This alternative, however, is made more complicated by the fact that the site is oddly configured and defined to the north and south by steep slopes and retaining walls. While the structure could be relocated as described, it would need to be substantially moved inland and rotated, resulting in a significantly different residential structure, orientation, and surroundings than the existing structure. Moreover, the slope erosion danger exists along the entire northern property line, and the LCP requires a minimum 25 foot setback to address geologic hazard safety issues along this slope. In other words, the variances necessary would not just be of the side and front yard variety, but would be to geologic hazard minimum setbacks established to protect against erosion and other hazard threats. In sum, relocation in this case would be a significant physical undertaking, and it is unclear that the required variances to inland location setbacks would be appropriate. Staff has concluded that, in this case, based on the site constraints and the existing development present on site, a relocation option does not appear to be a feasible alternative for protecting this existing threatened structure.

Some impacts from such a project cannot be avoided, but they can be reduced and mitigated by conditions designed to: ensure that the sculpted concrete closely mimics natural bluff characteristics of the area over the life of the project; to require vegetation of the bluff above the seawall with non-invasive native species; to collect and control bluff drainage; to put existing bluff drainage pipes underground; to restore the beach, bluff area, and beach access point after construction; to commit to no



further seaward encroachment in relation to the approved seawall profile; to prohibit further development on the bluff; to commit to long-term monitoring and maintenance of the seawall structure, and all vegetation, drainage, and irrigation approved; to assume all risks for developing in light of the known hazards present at this bluff location; to require all other agency approvals; and to mitigate for remaining project impacts through an easement/fee-title offer of the small beach area held in fee-title by the Applicant, and the restoration/enhancement of the Manresa State Beach parking lot beach access ramp.

As so conditioned, and as further detailed in the conditions and findings below, Staff believes that the approved project is consistent to the degree feasible with the Coastal Act, and Staff recommends approval.

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## **I. Staff Recommendation on CDP Application**

The staff recommends that the Commission, after public hearing, **approve** a coastal development permit for the proposed development subject to the standard and special conditions below.

**Motion.** I move that the Commission approve Coastal Development Permit Number 3-02-107 pursuant to the staff recommendation.

**Staff Recommendation of Approval.** Staff recommends a **YES** vote. Passage of this motion will result in approval of the coastal development permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

**Resolution to Approve a Coastal Development Permit.** The Commission hereby approves the coastal development permit on the grounds that the development as conditioned, will be in conformity with the policies of Chapter 3 of the Coastal Act. Approval of the coastal development permit complies with the California Environmental Quality Act because either: (1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment; or (2) there are no feasible mitigation measures or alternatives that would substantially lessen any significant adverse effects of the development on the environment.

## **II. Conditions of Approval**

### **A. Standard Conditions**

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the Permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.



5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the Permittee to bind all future owners and possessors of the subject property to the terms and conditions.

## **B.Special Conditions**

1. **Final Seawall Plans.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit Final Engineered Seawall Plans to the Executive Director for review and approval. The Final Plans shall be substantially in conformance with the plans submitted to the Coastal Commission (*Site Plan for Podesto Residence* by Ifland Engineers, Inc. dated received in the Coastal Commission's Central Coast District Office April 3, 2003) but shall show the following changes to the project:
  - (a) **Temporary Rip-Rap Allowed.** The project plans shall indicate that the existing rip-rap may be retained until the seawall project construction commences. Unless extraordinary conditions warrant altering this date due to extenuating circumstances (as determined by the Executive Director), the temporary rip-rap shall be removed and the new seawall installed as soon as possible but in no event later than August 6, 2005.
  - (b) **Permanent Base of Seawall Rip-Rap Prohibited.** Retaining wall note number 2 on page 2 of the plans shall indicate that rip-rap is prohibited on the seaward and/or channel side of the seawall notwithstanding the 2001 geotechnical report recommendations.
  - (c) **Top of Seawall Rock Slope.** The rock slope topping the seawall and extending inland of it shall be as shown on the Haro, Kasunich and Associates, Inc. detail dated received in the Coastal Commission's Central Coast District Office June 19, 2003 (see page 4 of exhibit B).
  - (d) **Sand Import.** The plans shall clearly state that all sand imported to cover the base of the seawall structure shall be beach quality sand consistent with the quality of the existing beach sand at Manresa State Beach.
  - (e) **Cross-Sections.** The cross-sections and the expanded profile of the seawall structure shown on page 3 of the submitted plans shall also clearly identify: (1) the lowest elevation of the base of the pier elements; (2) the lower edge of the concrete facing to be applied to the seawall; (3) the wave return; and (4) the rock slope protection inland and on top of the seawall.
  - (f) **Seawall Surfacing.** The seawall shall be faced with a sculpted concrete surface that mimics the natural bluffs in the immediate vicinity. The surfacing shall completely hide the vertical pier elements so that the surfaced wall does not appear to be concrete-faced equidistant piers, but rather a natural undulating bluff in integral color, texture, and undulation. The integral color, texture, and undulation shall be maintained through-out the life of the structure. The project plans shall include a materials palette and/or brochures and photo examples describing the seawall facing techniques that will be applied and the expected finished facing product.



The Permittee shall undertake development in accordance with the approved Final Engineered Seawall Plans. Any proposed changes to the approved Final Plans shall be reported to the Executive Director. No changes to the approved Final Plans shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is necessary.

2. **Construction Plan.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit a Construction Plan to the Executive Director for review and approval. The Construction Plan shall identify the specific location of all construction areas, all staging areas, all storage areas, all construction access corridors (to the construction sites and staging areas), and all public pedestrian access corridors in site plan view. All such areas within which construction activities and/or staging are to take place shall be minimized to the maximum extent feasible in order to minimize construction encroachment on the beach and to have the least impact on public access. The Plan shall specify all construction methods to be used, including all methods to be used to keep the construction areas separated from beach recreational use areas (including using the blufftop space available on the Permittee's property inland of the revetment for staging, storage, and construction activities to the maximum extent feasible) and shall include a final construction schedule. All erosion control/water quality best management practices to be implemented during construction and their location shall be noted. Silt fences, or equivalent apparatus, shall be installed at the perimeter of the construction site to prevent construction-related runoff and/or sediment from entering into the Pacific Ocean. The Construction Plan shall, at a minimum, include the follow required criteria specified via written notes on the Plan:

- (a) All work shall take place during daylight hours. Lighting of the beach area is prohibited.
- (b) Construction work or equipment operations shall not be conducted below the mean high water line unless tidal waters have receded from the authorized work areas.
- (c) Grading of intertidal areas is prohibited with one exception as follows: existing rock that has migrated seaward of the revetment, that is naturally exposed, and that can be retrieved without substantial excavation of the surrounding sediments, shall be retrieved and reused or removed to an appropriate disposal site offsite. Any existing rock retrieved in this manner shall be recovered by excavation equipment positioned landward of the waterline (i.e., excavator equipment with mechanical extension arms).
- (d) Any construction materials and equipment that cannot be delivered to the site from the blufftop above, shall be delivered to the beach area by rubber-tired construction vehicles. When transiting on the beach, all such vehicles shall remain as high on the upper beach as possible and avoid contact with ocean waters and intertidal areas.
- (e) All construction materials and equipment placed on the beach during daylight construction hours shall be stored beyond the reach of tidal waters. All construction materials and equipment shall be removed in their entirety from the beach area by sunset each day that work occurs. The only



exceptions shall be for: (1) erosion and sediment controls (e.g., a silt fence at the base of the revetment) as necessary to contain rock and/or sediments at the revetment site, where such controls are placed as close to the toe of the revetment/seawall as possible, and are minimized in their extent; and (2) storage of larger materials (i.e., steel I-beams, lagging members, large forms, etc.) beyond the reach of tidal waters for which moving the materials each day would be extremely difficult. If larger materials are to be left on the beach area overnight, the Construction Plan shall clearly specify what types of materials are to be so stored, the difficulty associated with moving them each day, the methods to be taken to ensure they are completely encased (i.e., not in contact with beach sands and completely covered), and the contingency plan for moving said materials in the event of tidal/wave surge reaching them.

- (f) Construction (including but not limited to construction activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas.
- (g) No work shall occur on the beach during the summer peak months (start of Memorial Day weekend to Labor day) unless, due to extenuating circumstances, the Executive Director authorizes such work.
- (h) Equipment washing, refueling, and/or servicing shall not take place on the beach.
- (i) The construction site shall maintain good construction site housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the beach).
- (j) All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each work day.

A copy of the approved Construction Plan shall be kept at the construction job site at all times and all persons involved with the construction shall be briefed on its content and meaning prior to commencement of construction.

The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office at least 3 working days in advance of commencement of construction, and immediately upon completion of construction.

The Permittee shall undertake construction in accordance with the approved Construction Plan. Any proposed changes to the approved Construction Plan shall be reported to the Executive Director. No changes to the approved Construction Plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is necessary.

**3. Bluff Plan.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee





shall submit a Bluff Plan to the Executive Director for review and approval. The Bluff Plan shall at a minimum apply to the area extending from a 5-foot setback line (measured inland from the blufftop edge) to the top of the seawall (the "upper bluff area" for the purposes of this condition), and shall have three related and overlapping elements: a revegetation plan, an irrigation plan, and a drainage plan. These are more specifically described as follows:

(a) **Revegetation Plan.** The revegetation plan shall provide for the removal of all non-native and/or invasive plant species (e.g., iceplant) present on the upper bluff area above the seawall, and the planting of native species along the full linear extent of the upper bluff area above the seawall in a manner designed to completely cover all exposed soils with vegetation. For that upper bluff area located directly above the seawall, the rock slope protection shall be completely covered with soil, and appropriate trailing vegetation shall be planted to provide for a dense cascading screen of vegetation to completely cover the upper 3 vertical feet of the seawall. Any imported soil shall match the sandy soils present in the bluff, and shall be free of impurities that could affect the success of the native revegetation effort or would otherwise result in beach area degradation. For the area where sand is to be placed to cover the base of the seawall (below the seawall and both towards the channel and the sea), vegetation capable of success in sand shall be planted in plugs in the five-foot area extending down the sand slope from the top of the seawall in a manner designed to provide a slow transition from the heavily vegetated slope above to the sandy beach below (i.e., reduced density of plants extending down from the top of the seawall). The revegetation plan shall clearly identify in site plan view the type, size, extent and location of all native plant materials to be used as chosen from the following native planting palette (substitutions of appropriate non-invasive native bluff edge plants to complement this planting palette may be allowed upon written consent from the Executive Director):

- *Achillea millefolium* – yarrow
- *Artemisia californica* – California sagebrush
- *Bromus carinatus* var. *maritimus* – seaside brome
- *Ceanothus griseus* var. *horizontalis* – "Carmel creeper"
- *Ceanothus griseus* var. *horizontalis* – "Yankee Point"
- *Dudleya caespitosa* – live forever
- *Dudleya farinosa* – live forever
- *Elymus glaucus* – blue wild rye
- *Erigeron glaucus* – seaside daisy
- *Eriogonum latifolium* – buckwheat
- *Eriogonum parvifolium* – dune buckwheat
- *Eriophyllum staechadifolium* – lizard tail





- *Fragaria chiloensis* – beach strawberry
- *Grindelia stricta* – gumweed
- *Leymus pacificus* – beach wild rye
- *Mimulus aurantiacus* – sticky monkey flower
- *Myrica californica* – wax myrtle
- *Poa douglasii* – maritime bluegrass
- *Rhamnus californica* – coffeeberry

The revegetation plan shall include maintenance and monitoring parameters, and shall require that: all plants above the top of the seawall are replaced as necessary to maintain the dense screen of vegetation to completely cover the bluff area and rock slope between the blufftop edge and the seawall, and to cover the top 3 feet of the seawall. Plants installed below the top of the seawall (i.e., in the imported back-fill sand) do not have to be replaced if they are removed by tidal action.

- (b) **Irrigation Plan.** The irrigation plan shall provide for irrigation (e.g., drip emitters) as necessary to ensure that the revegetation plan is successful. All irrigation elements necessary for planting success shall be clearly identified in site plan view. All other irrigation elements present in the blufftop area shall be identified.
- (c) **Drainage Plan.** The drainage plan shall clearly identify all permanent measures to be taken to collect and direct blufftop area drainage. Such drainage may be used for landscape irrigation, including for the native planting revegetation, provided such irrigation use does not contribute to bluff instability in any way. Any drainage not used for on-site irrigation purposes shall be collected and directed to the drainage pipe extending down the channel side of the property that is to be moved underground. Drainage shall not be allowed: to pond at the blufftop edge; sheet flow over the bluff seaward or channelward; or otherwise be directed seaward.

The Bluff Plan shall be developed with input from a landscape professional experienced in invasive plant eradication and native bluff planting efforts, and shall be submitted with evidence of the review and approval of a licensed engineering geologist and/or a licensed civil engineer with experience in coastal structures and processes to ensure that the Plan is consistent with promoting bluff stability. The Plan shall include maintenance and monitoring parameters designed to ensure revegetation, irrigation, and drainage success. The Plan shall include site plans and cross-sections that clearly identify all above-described elements in relation to the approved project and all property lines.

The approved Bluff Plan shall be implemented immediately upon completion of seawall construction. WITHIN ONE (1) MONTH OF COMPLETION OF SEAWALL CONSTRUCTION, all non-native and/or invasive plant species (e.g., iceplant) on the upper bluff area above the seawall shall be removed, all native species identified in the Plan shall be planted, and all drainage and



irrigation facilities shall be installed and shall be in working order.

The Permittee shall undertake development in accordance with the approved Bluff Plan. Any proposed changes to the approved Bluff Plan shall be reported to the Executive Director. No changes to the approved Bluff Plan shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is necessary.

The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office when all native species identified in the Plan have been planted and all drainage and irrigation facilities have been installed and are in working order consistent with the approved Plan. Initial implementation of the Bluff Plan shall be considered complete, and this condition satisfied, upon written indication of same from planning staff of the Coastal Commission's Central Coast District Office.

4. **Manresa State Beach Access Ramp Repair.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit an Access Ramp Repair Plan to the Executive Director for review and approval. The Ramp Repair Plan shall apply to the access ramp providing vehicular access from the Manresa State Beach parking lot to the beach below. The Plan shall provide for restoration of the entirety of the access ramp to its pre-construction state, and shall also provide for a repair of the 40-foot base section of it nearest the beach. The objective of the 40-foot base repair shall be to improve the stability of the base of the ramp, and to prevent scour and other damage during storm events. Such repair shall not increase the ramp's footprint (unless a narrow (approximately 6 inch) wall-type structure along the channel side of the base of the ramp is part of the repair plan), and shall not involve rip-rap. Rather, the Plan shall provide for a repair of the ramp's concrete foundation through pouring new concrete and/or by pumping sand and/or sand slurry within its undermined footprint, and resurfacing the ramp itself when the foundation repairs are complete. Any new exposed surfaces along the side of the base of the ramp along the channel (e.g., an exterior wall along the channel) shall be camouflaged with a surface treatment that mimics the natural bluffs in the immediate vicinity (e.g., with facing similar to the approved seawall) and/or non-invasive native vegetation. Any ramp-area landscaping impacted by construction access and/or ramp repair shall be replaced with non-invasive native bluff species specified in the list shown in special condition 3. The Permittee's total expense for the 40-foot ramp repair, including costs to have plans prepared, shall not exceed \$20,000. The Ramp Repair Plan shall include an estimate of the cost to implement the 40-foot ramp repair, and an identification of the cost expended by the Permittee to have the 40-foot ramp repair portion of the Ramp Repair Plan prepared. The Ramp Repair Plan shall be submitted with evidence of approval, or evidence of disapproval, from the California Department of Parks and Recreation's Santa Cruz District. In the event that the California Department of Parks and Recreation does not consent to a ramp repair project consistent with the parameters of this condition, then the Permittee shall be released from further obligation to implement the Ramp Repair Plan and this condition shall be deemed satisfied upon verification by the Executive Director of said disapproval.

WITHIN THIRTY (30) DAYS OF COMPLETION OF SEAWALL CONSTRUCTION, or within



such additional time as deemed appropriate by the Executive Director if there are extenuating circumstances, the Permittee shall restore and repair the ramp consistent with the approved Access Ramp Repair Plan. The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office upon completion of ramp repair activities to arrange for a site visit to verify that all ramp repair activities are complete. The ramp shall be considered repaired and restored, and this condition satisfied, upon written indication of same from planning staff of the Coastal Commission's Central Coast District Office.

5. **Temporary Revetment.** The existing rip-rap placed without benefit of a coastal development permit may be retained on a temporary basis until construction on the permitted seawall commences. The temporary rip-rap shall be removed as soon as possible but in no event later than August 6, 2005.
6. **Seawall Facing Verification.** PRIOR TO SURFACING THE SEAWALL, the Permittee shall arrange to have a small test section of the seawall faced consistent with the seawall surfacing component of the approved plans specified in special condition 1. The small test section shall be located at the end of the seawall (to allow direct comparison between the natural bluff and the seawall) and shall include at least one pier element, the wall on both sides of the pier element(s), and a complete vertical section of the wave return and top of the seawall. After the small test section has been faced and allowed to cure to its final expected integral color, configuration, and texture, the Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office to arrange for a site visit to verify that the seawall facing approximates the approved expected finished facing product shown in the approved plans and is consistent with their objective for this design element (i.e., it mimics the natural bluffs in the immediate vicinity, completely hides the vertical pier elements so that the surfaced wall does not appear to be concrete-faced equidistant piers, and approximates a natural undulating bluff). At the Executive Director's discretion, the Permittee may submit photos of the test section to planning staff of the Central Coast District Office in lieu of the site visit. If planning staff should identify additional reasonable measures necessary to modify the facing in order to achieve consistency with the approved expected finished facing product and design objectives identified in the approved plans, then such measures shall be applied to the test section or a new test section. In such a case, after the small test section (or a new test section subject to the same criteria) has been faced and allowed to cure to its final expected color, configuration, and texture, the Permittee shall again notify planning staff of the Coastal Commission's Central Coast District Office to review the new or re-faced test section. The Permittee shall arrange for as many iterations of the facing and review process as necessary to achieve consistency with the objective of the approved plans for this design element. The seawall shall not be faced until planning staff of the Coastal Commission's Central Coast District Office has indicated in writing to the Permittee that the test section is consistent with the approved expected finished facing product and design objectives identified in the approved plans. After the Permittee has received written verification that the test section is in conformance, the Permittee shall face that portion of the remainder of the seawall to which facing is to be applied (pursuant to the approved plans) consistent with the approved test section facing. The approved integral color, configuration, and texture of the seawall facing shall be maintained throughout the life of the structure.



7. **Seawall Facing at Base of Seawall.** The Permittee shall view the seawall at least one time per month during the non-winter months (i.e., March through November) and shall immediately contact planning staff of the Coastal Commission's Central Coast District Office if any portion of the base of the seawall for which seawall facing is not required per the approved plans specified in special condition 1 (i.e., that portion of the seawall extending below -5 NGVD (National Geodetic Vertical Datum)) should become visible at any time during the non-winter months. If any such portion of the base of the seawall should become visible at any time during non-winter months (based on the Permittee's monthly checks and/or based on identification of same by planning staff of the Coastal Commission's Central Coast District Office), then the Permittee shall within one-month of such discovery submit a Seawall Facing Augmentation Plan to the Executive Director for review and approval. The Augmentation Plan shall provide for facing that portion of the seawall that is visible during non-winter months or the entire base of the seawall consistent with the facing parameters defined in the approved plans (specified in special condition 1) and subject to all of the seawall facing parameters specified in special condition 6. If, at some point, the entire seawall becomes faced in this process, then the monthly monitoring pursuant to this condition shall no longer be required after that time.
8. **Beach Area Restoration.** WITHIN THREE (3) DAYS OF COMPLETION OF SEAWALL CONSTRUCTION, the Permittee shall restore all beach areas and all beach access points impacted by construction activities to their pre-construction condition. Any beach sand impacted shall be filtered as necessary to remove all construction debris from the beach. The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office upon completion of beach restoration activities to arrange for a site visit to verify that all beach restoration activities are complete. If planning staff should identify additional reasonable measures necessary to restore the beach and beach access point, such measures shall be implemented immediately. The beach and beach access point shall be considered restored, and this condition satisfied, upon written indication of same from planning staff of the Coastal Commission's Central Coast District Office.
9. **Beach Access Easement.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall execute and record a document, in a form and content acceptable to the Executive Director, irrevocably offering to dedicate to a political subdivision, public agency or private association approved by the Executive Director either fee title or an easement for beach access (Beach Dedication). The Beach Dedication shall apply to that portion of the Permittee's property (APN 046-321-06 ) that is located to the west of the seawall location (see area identified as "OTD Area" on exhibit G) (Beach Dedication Area). The recorded document shall include a legal description and a site plan of the easement area and APN 046-321-06. The recorded document shall indicate that no development, as defined in Section 30106 ("Development") of the Coastal Act, shall occur in the easement area except for: (1) appropriately permitted construction activities associated with construction, maintenance, or repair of the seawall, the rock slope area above the seawall, the vegetative screening, and all irrigation and drainage structures approved by coastal development permit 3-02-107; and (2) standard beach maintenance activities undertaken by the California Department of State Parks.



The offer to dedicate a beach access easement shall be recorded free of prior liens and encumbrances which the Executive Director determines may affect the interest being conveyed. The offer shall run with the land in favor of the People of the State of California, binding all successors and assignees, and shall be irrevocable for a period of 21 years, such period running from the date of recording.

- 10. As-Built Seawall Plans.** WITHIN TWO (2) MONTHS OF COMPLETION OF SEAWALL CONSTRUCTION, the Permittee shall submit to the Executive Director for review and approval As-Built Plans of the seawall structure in 11" x 17" format with a graphic scale that include one or more permanent surveyed benchmarks inland of the seawall for use in future monitoring efforts. The As-Built Plans shall identify the seawall structure, the rock slope protection above it, the bluff, all property lines, the blufftop edge, and all blufftop development in site plan and cross-section views. The benchmark elevation(s) shall be described in relation to National Geodetic Vertical Datum (NGVD). The As-Built Plans shall indicate vertical and horizontal reference distances from the surveyed benchmark(s) to survey points located along the top edge (on the edge closest to the sea/channel) of the seawall at each pier location and at each point where the seaward edge of the seawall crosses a property line (in site plan view) for use in future monitoring efforts. The survey points shall be identified through permanent markers, benchmarks, survey position, written description, et cetera to allow measurements to be taken at the same location in order to compare information between years.

The As-Built Plans shall be submitted with certification by a licensed civil engineer with experience in coastal structures and process, acceptable to the Executive Director, verifying that the seawall has been constructed in conformance with the approved project plans described by special condition 1 above.

- 11. Monitoring.** The Permittee shall ensure that the condition and performance of the as-built seawall (including the rock slope above it) is regularly monitored by a licensed civil engineer with experience in coastal structures and processes. Such monitoring evaluation shall at a minimum address whether any significant weathering or damage has occurred that would adversely impact its future performance, and identify any structural damage requiring repair to maintain the as-built seawall (including the rock slope above it) profile. At a minimum, the Permittee shall submit to the Executive Director for review and approval a monitoring report once every five years by May 1<sup>st</sup> (with the first report due May 1, 2008) for as long as the seawall exists at this site. Each such report shall be prepared by a licensed civil engineer with experience in coastal structures and processes and shall cover the monitoring evaluation described in this condition above. Each report shall contain recommendations, if any, for necessary maintenance, repair, changes or modifications to the as-built seawall (including the rock slope above it). All monitoring reports shall include sections on both: (a) the bluff elements (i.e., vegetation, irrigation, and drainage) consistent with the parameters for monitoring, maintenance, and success established in the approved Bluff Plan described in special condition 3 above; and (b) the seawall facing and potential for augmentation required pursuant to the approved plans (special condition 1), seawall facing verification (special condition 6), and potential seawall facing augmentation (special condition 7).



**12. Shoreline Development Stipulations.** By acceptance of this permit, the Permittee acknowledges and agrees, on behalf of itself and all successors and assigns that:

- (a) **No Further Seaward or Channel Encroachment.** Any future response to coastal hazards (including but not limited to coastal hazards associated with shoreline erosion, stream erosion and scour, landslides, wave attack, etc.) requiring the placement of any type of shoreline structure, including, but not limited to, modifications to the as-built seawall and associated rock-slope, shall be constructed inland (i.e., toward the blufftop) of the location of the seawall. An As-Built Seawall Plan has been approved pursuant to coastal development permit 3-02-107 that defines the location of the seawall.
- (b) **Bluff Vegetation.** A Bluff Plan has been approved pursuant to coastal development permit 3-02-107 that provides for the removal of invasive plants and the planting with non-invasive native bluff plants in the bluff area above the seawall and extending inland 5 feet past the blufftop edge. The full linear extent of the upper bluff area above the seawall shall be completely covered by native vegetation so that exposed soils are not visible. For that upper bluff area located directly above the seawall, the upper 3 vertical feet of the seawall shall be completely screened from view (as seen from the beach and/or channel area) by a dense cascading screen of native vegetation. To allow for initial growth, the required screening shall be initially achieved within two years of the construction of the seawall, and shall thereafter be maintained for the life of the seawall. A Bluff Plan has been approved pursuant to coastal development permit 3-02-107 that specifies the allowed native planting palette and the required vegetation maintenance parameters. All native plantings shall be maintained in good growing conditions, including the use of appropriate irrigation and drainage apparatus, and shall be replaced as necessary to maintain the bluff vegetation consistent with the approved Bluff Plan.
- (c) **Bluff Development Prohibition.** Development, as defined in Section 30106 ("Development") of the Coastal Act, shall be prohibited in the area located between the seawall and the blufftop edge, and below the blufftop edge where there is not seawall, except for existing permitted development and approved repair and/or maintenance thereto.
- (d) **Maintenance.** It is the Permittee's responsibility to maintain the seawall, rock slope protection above the seawall, and all irrigation, drainage, and vegetation approved pursuant to coastal development permit 3-02-107 in a structurally sound manner and its approved state. An As-Built Seawall Plan has been approved pursuant to coastal development permit 3-02-107 that defines the profile and footprint of the constructed seawall. A Bluff Plan has been approved pursuant to coastal development permit 3-02-107 that provides for vegetation, irrigation, and drainage standards and criteria. Future maintenance as specified in special condition 15 is authorized pursuant to the parameters of coastal development permit 3-02-107, but this does not obviate the need to obtain permits from other agencies for any future maintenance and/or repair episodes. Special condition 15 (Future Maintenance) is incorporated here in its entirety by reference.
- (e) **Rock Retrieval.** Any rocks that move seaward of the as-built seawall shall be immediately





retrieved and either: (1) restacked within the approved rock slope profile inland of the seawall; or (2) removed off the beach to a suitable disposal location. An As-Built Seawall Plan has been approved pursuant to coastal development permit 3-02-107 that defines the profile and footprint of the as-built seawall (including the rock slope above it). Any existing rock retrieved in this manner shall be recovered by excavation equipment positioned landward of the waterline (i.e., excavator equipment with mechanical extension arms).

- (f) **Debris Removal.** The Permittee shall immediately remove all materials and/or debris that may fall from the blufftop area inland of the seawall onto the bluff, beach, or channel below.
- (g) **Assumption of Risk, Waiver of Liability and Indemnity Agreement.** The Permittee acknowledges and agrees, on behalf of itself and all successors and assigns: (i) that the site is subject to hazards from episodic and long-term bluff retreat and coastal erosion, stream erosion and scour, wave and storm events, bluff and other geologic instability, and the interaction of same; (ii) to assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards; and (v) that any adverse effects to property caused by the permitted project shall be fully the responsibility of the landowner.
- (h) **Future Shoreline Planning.** The Permittee acknowledges, on behalf of itself and all successors and assigns, that there may be future shoreline armoring planning efforts that involve the seawall (including the rock slope above it) approved pursuant to coastal development permit 3-02-107. Such planning efforts may involve consideration of a shoreline armoring management entity meant to cover the larger shoreline that includes the shoreline structure here, and may involve consideration of potential modifications and/or programs designed to reduce public viewshed and beach access impacts due to shoreline armoring. Acknowledgement in no way binds the Permittee (and all successors and assigns) to any particular outcome of such planning efforts, and in no way limits the ability of Permittee (and all successors and assigns) to express their viewpoint during the course of such planning efforts.
13. **Other Agency Review.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the Permittee shall submit to the Executive Director written evidence that all necessary permits, permissions, approvals, and/or authorizations for the project as approved by coastal development permit 3-02-107 have been granted by the: (1) the California Department of Parks and Recreation; (2) Santa Cruz County; and (3) Monterey Bay National Marine Sanctuary.
14. **Public Rights.** The Coastal Commission's approval of this permit shall not constitute a waiver of any public rights which may exist on the property. The Permittee shall not use this permit as





evidence of a waiver of any public rights which may exist on the property.

- 15. Future Maintenance.** Coastal development permit 3-02-107 authorizes future maintenance as described in this special condition. The Permittee acknowledges and agrees, on behalf of itself and all successors and assigns that: (a) it is the Permittee's responsibility to maintain the as-built seawall, the rock slope area above the seawall, the vegetative screening, and all irrigation and drainage structures in a structurally sound manner and their approved state; (b) to immediately retrieve rocks that move seaward of the as-built seawall and either restack them (within the approved rock slope profile inland of the seawall) or dispose of them at a suitable inland disposal location; and (c) remove all debris that may fall from the blufftop area inland of the seawall onto the bluff, beach, or channel below. Any such development, or any other maintenance development associated with the as-built seawall, the rock slope area above the seawall, the vegetative screening, and all irrigation and drainage structures, shall be subject to the following:
- (a) Maintenance.** "Maintenance," as it is understood in this condition, means development that would otherwise require a coastal development permit whose purpose is: (1) to repair, reface, and/or otherwise maintain the approved seawall structure in its approved configuration (as shown on the approved As-Built Seawall Plan); (2) to reestablish or place rock within the permitted footprint and/or profile of the approved rock slope area above the seawall (as shown on the approved As-Built Seawall Plan); (3) to reestablish the permitted upper bluff drainage, vegetation, and/or irrigation elements of the approved Bluff Plan; and/or (4) to retrieve any rocks that move seaward of the footprint and/or profile of the approved rock slope area above the seawall (as shown on the approved As-Built Seawall Plan).
  - (b) Maintenance Parameters.** Maintenance shall only be allowed subject to the parameters of the approved construction plan required by special condition 2. All beach areas shall be restored subject to the beach restoration parameters of special condition 8 above. Any proposed modifications to the approved construction plan and/or beach restoration requirements associated with any maintenance event shall be reported to planning staff of the Coastal Commission's Central Coast District Office with the maintenance notification (described below), and such changes shall require a coastal development permit amendment unless the Executive Director deems the proposed modifications to be minor in nature (i.e., the modifications would not result in additional coastal resource impacts).
  - (c) Other Agency Approvals.** The Permittee acknowledges that these maintenance stipulations do not obviate the need to obtain permits from other agencies for any future maintenance and/or repair episodes.
  - (d) Maintenance Notification.** At least 2 weeks prior to commencing any maintenance event, the Permittee shall notify, in writing, planning staff of the Coastal Commission's Central Coast District Office. The notification shall include a detailed description of the maintenance event proposed, and shall include any plans, engineering and/or geology reports, proposed changes to the maintenance parameters, other agency authorizations, and other supporting documentation



describing the maintenance event. The maintenance event shall not commence until the Permittee has been informed by planning staff of the Coastal Commission's Central Coast District Office that the maintenance event complies with this coastal development permit.

- (e) **Maintenance Coordination.** Maintenance events shall, to the degree feasible, be coordinated with other maintenance events proposed in the immediate vicinity with the goal being to limit coastal resource impacts, including the length of time that construction occurs in and around the beach area and beach access points at Manresa State Beach. As such, the Permittee shall make reasonable efforts to coordinate the Permittee's maintenance events with other events (such as those of the California Department of Parks and Recreation), including adjusting maintenance event scheduling as directed by planning staff of the Coastal Commission's Central Coast District Office.
- (f) **Non-compliance Proviso.** If the Permittee is not in compliance with the conditions of this permit at the time that a maintenance event is proposed, then the maintenance event that might otherwise be allowed by the terms of this future maintenance condition shall not be allowed by this condition.
- (g) **Emergency.** Nothing in this condition shall serve to waive any Permittee rights that may exist in cases of emergency pursuant to Coastal Act Section 30611, Coastal Act Section 30624, and Subchapter 4 of Chapter 5 of Title 14, Division 5.5, of the California Code of Regulations (Permits for Approval of Emergency Work).
- (h) **Duration of Covered Maintenance.** Future maintenance under this coastal development permit is allowed subject to the above terms for five (5) years from the date of approval (i.e., until August 6, 2008). Maintenance can be carried out beyond the 5 year period if the Executive Director extends the maintenance term in writing.

**16. Deed Restriction.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit to the Executive Director for review and approval documentation demonstrating that the applicant has executed and recorded against the parcel(s) governed by this permit a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, the California Coastal Commission has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property; and (2) imposing the special conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction is in addition to, and not a substitute for, the dedication required by special condition 9. The deed restriction shall include a legal description and site plan of: the entire parcel or parcels governed by this permit; the Bluff Development Prohibition area specified in special condition 12; and the Beach Dedication Area specified in special condition 9. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the terms and conditions of this permit shall continue to restrict the use and enjoyment of the subject property so long as either this permit or the development it authorizes, or any part, modification, or amendment thereof, remains in existence on or with respect



to the subject property.

### **III. Findings and Declarations**

The Commission finds and declares as follows:

#### **A. Project Location and Description**

The proposed project is located on the bluffs fronting Manresa State Beach in the unincorporated La Selva Beach area of south Santa Cruz County (see exhibit A).

##### **Santa Cruz County Regional Setting**

Santa Cruz County is located on California's central coast and is bordered to the north and south by San Mateo and Monterey Counties (see exhibit A). The County's shoreline includes the northern half of the Monterey Bay and the rugged north coast extending to San Mateo County along the Pacific Ocean. The County's coastal zone resources are varied and oftentimes spectacular, including the Santa Cruz Mountains coastal range and its vast forests and streams; an eclectic collection of shoreline environments ranging from craggy outcrops to vast sandy beaches (in both urban and more rural locations); numerous coastal wetland, lagoon and slough systems; habitats for an amazing variety and number of endangered species; water and shore oriented recreational and commercial pursuits, including world class surfing areas; internationally renowned marine research facilities and programs; special coastal communities; vast State Park lands; and the Monterey Bay itself. The unique grandeur of the region and its national significance was formally recognized in 1992 when the area offshore of the County became part of the Monterey Bay National Marine Sanctuary – the largest of the 12 such federally protected marine sanctuaries in the nation.

Santa Cruz County's rugged mountain and coastal setting, its generally mild climate, and its well-honed cultural identity combine to make the area a desirable place to both live and visit. As a result, the County has seen extensive development and regional growth over the years that the California Coastal Management Program has been in place. In fact, Santa Cruz County's population has more than doubled since 1970 alone with current census estimates indicating that the County is home to over one-quarter of a million persons.<sup>1</sup> This level of growth not only increases the regional need for housing, jobs, roads, urban services, infrastructure, and community services, but also the need for park areas, recreational facilities, and visitor serving amenities. For coastal counties such as Santa Cruz where the vast majority of residents live within a half-hour of the coast, and many closer than that, coastal zone resources are a critical element in helping to meet these needs. Furthermore, with the shoreline itself (and its parks, beaches, trails, etc.) attracting visitors into the region, an even greater pressure is felt at coastal recreational areas and destinations like Manresa State Beach. With the Santa Cruz County shoreline and

<sup>1</sup> Census data from 1970 shows Santa Cruz County with 123,790 persons; California Department of Finance estimates for the 2000 census indicate that over 255,000 persons reside in Santa Cruz County.



beaches providing arguably the warmest and most accessible ocean waters in all of Northern California, and with the large population centers of the San Francisco Bay area and the Silicon Valley nearby, this type of resource pressure is particularly evident in coastal Santa Cruz County.

### **La Selva Beach Area**

The unincorporated La Selva Beach area is located in the southern portion of Santa Cruz County just downcoast of the Seascapes residential and resort development that marks the southernmost end of the County's urban services line (again, see exhibit A). La Selva Beach proper, just upcoast of the site, is developed to semi-urban residential densities. Downcoast of La Selva Beach, coastal agriculture still predominates in the County's coastal zone, with some large-lot residential development nearest the coast, including a few semi-isolated subdivision communities (e.g., Place de Mer, Sand Dollar, Pajaro Dunes, etc.). This area is decidedly less urban than the portion of the County's coastal zone surrounding the Cities of Santa Cruz and Capitola upcoast (i.e., Live Oak and Aptos-Seacliff-Rio Del Mar).

### **Proposed Development Site**

The proposed project is located on the bluffs and back beach area of the California Department of Parks and Recreation's (DPR's) Manresa State Beach unit on the seaward side of San Andreas Road. Part of the land area involved is publicly owned (by Santa Cruz County), and part is owned by the Applicant (see exhibit C).<sup>2</sup> The bluff area is located where an unnamed intermittent stream meets the beach and, as a result, forms a wrapped headland (with part of the bluff facing the Monterey Bay and part running perpendicular to the shoreline facing the channel area immediately downcoast of the Manresa State Beach parking lot). The Manresa State Beach parking lot is located on the blufftop immediately on the upcoast side of the unnamed intermittent stream from the Applicant's property; another private residence is located downcoast. A culvert passes under San Andreas Road and discharges immediately on the beach upcoast of the Applicant's property. The culvert has been protected by rip-rap consisting of small rock (less than ½ ton) at its discharge point.<sup>3</sup> The Applicant's residence sits atop the roughly 40 foot tall bluff next to the channel and facing the ocean. The bluff has been shaped dominantly by subaerial, rather than marine, erosion and has a gradient of less than 45 degrees (1:1).

The base of the bluffs at this location is currently occupied by an un-engineered rock rip-rap revetment that the Applicant installed in February 1998 without a CDP (see alleged violation finding).<sup>4</sup> The revetment is made up of an estimated 800 tons (or 500 cubic yards) of rock stretching roughly 250 linear feet around the headland with a footprint extending horizontally up to about 10 feet from the base of the

<sup>2</sup> A portion of sandy beach within the primary project area is held in fee-title by the Applicant. This sandy beach area, however, is indistinguishable from the rest of Manresa State Beach and has been used by the public for many years as if it were public lands. A formal State Lands determination has not been completed for this area.

<sup>3</sup> The culvert was repaired and the rip-rap authorized by emergency CDPs issued by the County for the main body of work, and by the Commission for the stockpiling of rock and equipment on the beach in support of the County emergency permit operation (Commission emergency permit 3-98-014-G). The culvert work was made permanent by regular County coastal permit number 98-0408 approved in 1999.

<sup>4</sup> The revetment that was installed without CDP is referred to in the report as "existing" where existing is understood to mean physically in place but not recognized by a CDP.



bluff. The rock is partially on DPR property, partially on Santa Cruz County property, and partially on the Applicant's fee-title property (again, see exhibit C). The existing revetment is an anomaly inasmuch as there is no armoring up and downcoast other than the culvert rip-rap, and limited armoring (pre-Coastal Act) in the overall larger Manresa State Beach area.

The beach area fronting the Applicant's property is part of a roughly 15 mile unbroken stretch of beach reaching from New Brighton State Beach in Capitola down to the Pajaro River. The beach here is generally fairly wide, a width of 100 yards or more, and is part of DPR's Manresa State Beach unit.

See exhibit A for location map, and exhibit D for before and after (revetment placement) photos of the site, and exhibit E for additional photos of the site and surrounding area.

### **Proposed Project**

The Applicant has applied to construct a 250-foot long shotcrete seawall that would be founded in steel I-beams that are set in concrete piers extending to -6 NGVD at the base of the bluff (near the inland edge of the existing revetment), with tie back anchors fastening the wall against the bluff itself. The wall would extend from the existing culvert mouth and rip-rap, around the headland, and downcoast to the neighboring property line. The height of the proposed structure would vary from +17 NGVD along the ocean side to +13 feet NGVD nearest the culvert (equaling a structural vertical dimension ranging from 19 to 23 feet in height from top to bottom), with the solid concrete wall element extending from +1 NGVD to its top (i.e., the space between the piers would be open below +1 NGVD). The upper two-thirds of the solid portion of the wall, roughly, would be faced with 6 inches of sculpted concrete designed to match the color and texture of the surrounding bluff materials. The uppermost 2½ feet of the wall would have a small wave recurve along the approximately 170 feet of it fronting the ocean and the headland "nose" itself, and would be topped with ¼ to 1 ton rip-rap stones in a 4 by 6 foot wedge covered with sand and landscaping. Imported sand would be used to cover the seawall and approximate the slope gradient (beach sand would not be harvested and used for this purpose).

The Applicant also has applied to retain the existing revetment as a temporary measure until the seawall is constructed.<sup>5</sup> At that time it would be removed. The Applicant proposes to use some of the retained rip-rap to construct the rock slope proposed atop the new seawall structure (roughly 100 cubic yards). The Applicant has indicated that rip-rap would not be placed at the toe of new seawall.<sup>6</sup>

See exhibit B for proposed project plans.

### **Standard of Review**

Since the proposed project falls within the Commission's retained jurisdiction, the standard of review is

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<sup>5</sup> See alleged violation finding.

<sup>6</sup> Note that the original geotechnical report for the project recommends that some of the larger rip-rap stones be retained and placed at the toe of new seawall. Although the plan notes require that the project comply with the geotechnical report recommendations, the Applicant (through his geotechnical consultants) has subsequently indicated the proposed project does not include any rip-rap at the base of the structure (April 2, 2003 letter report from Rogers Johnson & Associates and Haro, Kasunich and Associates).



the Coastal Act. As relevant, the County's LCP can provide non-binding guidance. Given that the Coastal Act and LCP policies are very similar as regards allowing shoreline armoring and protecting against its impacts, the LCP's relevance in this regard is limited.

## **B.Coastal Development Permit Determination**

### **1. Geologic Conditions and Hazards**

Coastal Act Section 30235 addresses the use of shoreline protective devices:

*30235. Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply. Existing marine structures causing water stagnation contributing to pollution problems and fish kills should be phased out or upgraded where feasible.*

Coastal Act Section 30253 addresses the need to ensure long-term structural integrity, minimize future risk, and to avoid landform altering protective measures in the future. Section 30253 provides, in applicable part:

*Section 30253. New development shall:*

- (1) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.*
- (2) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.*

Coastal Act Section 30235 acknowledges that seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" methods designed to forestall erosion also alter natural landforms and natural shoreline processes. Accordingly, with the exception of new coastal-dependent uses, Section 30235 limits the construction of shoreline protective works to those required to protect existing structures or public beaches in danger from erosion. The Coastal Act provides these limitations because shoreline structures can have a variety of negative impacts on coastal resources including adverse affects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach.

In addition, the Commission generally has interpreted Section 30235 to apply only to existing *principal* structures. The Commission must always consider the specifics of each individual project, but has generally found that accessory structures (such as patios, decks, gazebos, stairways, etc.) are not required to be protected under Section 30235, or can be protected from erosion by relocation or other means that do not involve shoreline armoring. The Commission has generally historically permitted at-grade





structures within coastal erosion setback areas recognizing that they are expendable and capable of being removed rather than requiring a protective device that would alter natural landforms and processes along bluffs, cliffs, and beaches.

Under Coastal Act Section 30235, a shoreline structure must be approved if: (1) there is an existing structure; (2) the existing structure is in danger from erosion; (3) shoreline-altering construction is required to protect the existing threatened structure; and (4) the required protection is designed to eliminate or mitigate its adverse impacts on shoreline sand supply. The first three questions relate to whether the proposed armoring is necessary, while the fourth question applies to mitigating some of the impacts from it.

### **A. Existing Structure to be Protected**

The Applicant proposes shoreline armoring to protect the residence located on the blufftop at this location. County Assessor records indicate that the existing residence was originally constructed in 1961, prior to the coastal permitting requirements of both Proposition 20 and the Coastal Act. As such, the blufftop residence qualifies as an existing structure for purposes of Section 30235.

### **B. Danger from Erosion**

The Coastal Act allows shoreline armoring to protect existing structures in danger from erosion, but it does not define the term "in danger." There is a certain amount of risk in maintaining development along a California coastline that is actively eroding and can be directly subject to violent storms, large waves, flooding, earthquakes, and other hazards. These risks can be exacerbated by such factors as sea level rise and localized geography that can focus storm energy at particular stretches of coastline. As a result, some would say that all development along the immediate California coastline is in a certain amount of "danger." It is a matter of the degree of threat that distinguishes between danger that represents an ordinary and acceptable risk, and danger that requires shoreline armoring per 30235. Lacking Coastal Act definition, the Commission's long practice has been to evaluate the immediacy of any threat in order to make determinations as to whether an existing structure is "in danger." While each case is evaluated based upon its own particular set of facts, the Commission has generally interpreted "in danger" to mean that an existing structure would be unsafe to occupy within the next two or three storm season cycles (generally, the next few years) if nothing were to be done (i.e., in the no project alternative).

The Applicant has submitted the following geotechnical evidence to support the allegation that the existing residence is in danger from erosion:

- *Geologic Investigation Podesto Property* by Rogers E. Johnson & Associates, dated February 25, 2001 (RJA);
- *Geotechnical and Coastal Engineering Investigation for Proposed Seawall Podesto Property* by Haro, Kasunich & Associates Inc., dated June 2001 (HKA 2001);





- *Podesto Proposal Alternatives Analysis*, by Haro, Kasunich & Associates Inc., dated March 18, 2002 (HKA 2002).
- *California Coastal Commission request for additional information*, by Rogers E. Johnson & Associates and Haro, Kasunich & Associates Inc., dated April 2, 2003 (RJA & HKA 2003);

The Applicant's geotechnical consultants conclude that the Applicant's residence is in danger from erosion as that term is understood in the Act.

The existing residence is located between roughly 13 and 25 feet from the blufftop's edge along its seaward side, and between 7 and 15 feet along its channel side. The bluff is a semi-steep slope (HKA and RJA identify a roughly 33 to 40 degree gradient), but does not contain a vertical or near-vertical sea cliff. The bluff materials are made up of Aromas sand and marine terrace deposits, which are difficult to distinguish and together constitute a single poorly consolidated unit. Bedrock, as that term is commonly understood, is not present in the bluff.

#### **Bluff Retreat**

RJA evaluated aerial photographs spanning the years from 1928 through 1997 and noted that there was no retreat of the bluff over this time frame. The photos indicated that the toe of the bluff was continuously vegetated over this interval, indicating that there was no surf scour over this time period; a time period that included the severe 1982-83 El Niño storms that pounded the California Coast and resulted in tremendous shoreline damage within the Monterey Bay. RJA indicates that only limited slope weathering, resulting in minor slumps, was identified from the aerial photo analysis. In sum, between 1928 and 1997, the bluff did not retreat noticeably. This is probably at least partly due to the approximately 100-yard wide beach that may have served to protect the bluffs in this area from ongoing erosion and direct wave attack.

During the winter storms of February 1998, the culvert beneath San Andreas Road (that conveys the intermittent stream to its outlet at the beach immediately adjacent to the bluff at this location) failed during an intense rain storm. RJA notes that a combination of scour (from the intermittent stream that breached the failed culvert), and wave attack eroded away a 3-4 foot tall vegetated sand terrace that fronted the base of the bluff on the ocean side. This vegetated terrace historically kept waves from impacting directly onto the poorly consolidated bluff materials. HKA further indicates that the same storms also eroded roughly 10 to 15 horizontal feet of the toe of the bluff leaving a 15 foot high vertical scarp along the channel and a 8 to 10 foot near vertical scarp on the seaward side of the bluff.

RJA indicates that the site is now subject to regular and routine surf attack, and has submitted corroborating photos and a video of such storm events (see exhibit F for photos). Absent the previously existing toe support afforded by the sand terrace, and absent any shoreline armoring, the highly erodible sandy bluff soils are now more vulnerable to surf attack. With sea level rise bringing deeper waters closer to the shoreline, larger and more frequent waves are expected to impact both the ocean and channel side of the bluff.



Thus, the concept of using a long-term erosion rate to help estimate the degree of threat in this case has little relevance. There was essentially no erosion for 70 years, then there was one episodic event that removed the terrace at the toe of the slope and exposed the sandy bluff slope itself. Over that time, and most recently, the site conditions have changed from a wide protective beach to one where the bluffs are regularly attacked by waves. With the change in geologic conditions, and the change in the way the ocean interacts with this site, it would be somewhat misleading to attempt to estimate a long-term erosion rate. Further, the long-term erosion rate is less important in this case to assessing the risk posed to structures than the amount of erosion that can occur over a single episodic event. As demonstrated by the 1997-1998 erosion, this bluff can erode as much as 10 to 15 feet in a single winter season. Absent toe protection, the exposed sandy soils are highly erodible and storms now more frequently reach them.

### **Slope Stability**

In addition to the erosion and bluff retreat process described above, coastal bluffs are subject to landslides, which have the capacity to place structures on bluffs at risk. Measuring the degree of threat thus also requires evaluating the stability of the bluff materials themselves and their ability to resist failure.

A landslide occurs because a number of factors come together; these include the overall geometry of the hillside (or bluff), decreases in the effective normal stress at depth caused by increased water in the slope (buoyancy forces); and the strength of the bluff materials themselves. Landslides on coastal bluffs occur at least partly because marine erosion continually undermines the toe of the bluff, creating an unsupported geometry that is prone to landsliding. The risk of landslide can be quantified, to some extent, by taking the forces resisting a landslide (principally the strength of the materials along a potential slide plane) and dividing them by the forces driving a landslide (principally the weight of the materials as projected onto the potential slide plane). If the quotient, called the factor of safety, is 1.0, failure is imminent. The factor of safety should never, in theory, be below 1.0, as a slide would have already occurred. Factors of safety greater than 1.0 lead to increasing confidence that the bluff is safe from failure.

Slope stability can be evaluated quantitatively by a "slope stability analysis." In practice, hundreds of potential slide planes are typically evaluated. The one with the lowest factor of safety is the one on which failure will occur. So the potential slide plane with the minimum factor of safety is the appropriate one to design for. If one steps back far enough from the edge of the bluff, potential slide planes intersecting the top of the bluff generally will have higher and higher factors of safety. A factor of safety of greater than or equal to 1.5 is the industry standard for new development to be "safe" from a landslide. During an earthquake, additional forces act on the bluff, and a landslide is more likely. To test for the stability during an earthquake, a "pseudostatic" slope stability analysis can be performed. This analysis is rather crude, but the standard methodology is to apply a "seismic coefficient" of 15% of the force of gravity (0.15g), the force of which is added to the forces driving the landslide. The standard for new development in California is to assure a minimum factor of safety greater than or equal to 1.1 in the pseudostatic case.



As indicated, the slope at this location is semi-consolidated Aromas sand material, with the degree of cohesion/density increasing as the distance below the surface of the slope increases (RJA, HKA). The HKA slope stability analysis concludes that slope failures extending from 5 to 20 feet back of the blufftop edge are probable during an extreme event. One such event would be enough to undermine the existing residence.

In sum, RJA concludes that in a worst case scenario (where all of the beach sand and 2 feet of the underlying Aromas sand has been scoured, and storm waves are attacking the base of the bluff) there is the potential for bluff retreat at this location; if the scour were to reach a depth of 1 foot NGVD at the base of the bluff in this worst case scenario, RJA indicates that the residence would be undermined. This is reiterated by HKA's slope stability analysis that uses RJA's worst case scenario and assumes correspondingly conservative soil saturation, soil strength, and earthquake values to validate the conclusion that the residence could be undermined in one such event. The Commission's Geologist has reviewed the slope stability and geologic analyses and has concluded that, although based on very conservative assumptions,<sup>7</sup> the conclusions are valid in light of the extremely erodible bluff soils at this location and the evidence of increased frequency of storm wave attack.

### Conclusion

This site presents some unique geologic conditions and facts that complicate the degree of threat evaluation. The soils at the site are highly erodible, consisting almost entirely of nearly cohesionless sand. These erodible soils are no longer protected from wave attack by the vegetated terrace that historically supported the base of the slope (though they are currently keyed into the existing revetment). Because of this, there is little margin for error in determining risk in a no project (including no revetment) scenario. For example, with the absence of the sand terrace (and without the revetment), it is reasonable to assume that one moderate wave event could result in some bluff failure. An erosion event similar to that of the 1997-1998 El Niño, even without the contributory stream-induced erosion, could quite possibly lead to erosion and slope failure that could undermine the residence. If such an event were to occur in tandem with a larger than usual flow from the culvert on the channel side (as would be expected in a winter storm event), this effect could be exacerbated on the wrapped headland. Second, the residence is set back approximately 7 feet from the blufftop edge at its minimum point. Given the low soil cohesion, even an event that didn't undermine the residence could make the residence itself unsafe to occupy because of the nature of the loose soils underlying the foundation. Major storms (i.e., storms including "either high seas, strong winds, and/or damage to at least some portion of the Monterey Bay region") have historically occurred in the Monterey Bay area every 1.5 years on average, with those directed at this location (i.e., approaching from the south or southwest, generally leading to more damage on this portion of the Bay's coast) occurring roughly every 5.3 years (RJA).

<sup>7</sup> Slope stability analyses are typically based on the worst case assumptions during the most severe of geologic conditions. In other words, failure planes are typically evaluated based upon a hypothetical scenario where, simultaneously, there is a rainstorm, ocean waves have stripped all of the beach sands down to their deepest scour and are attacking the base of the bluffs, when an earthquake hits. In this case, the HKA analyses use fairly high seismic coefficients and fairly high groundwater estimates to arrive at the factors of safety described. The Commission's Geologist indicates that the analyses thus show a slope stability "danger" when these conservative values are used.



Although historically (at least from 1928 until 1998) the bluff at this location was stable and did not measurably erode, the winter 1997-98 storms removed the toe of the poorly consolidated bluff slope making the bluff more vulnerable to storm attack. Although a broad sandy beach effectively protected the bluffs from erosion for many years,<sup>8</sup> photographic and video evidence submitted by the Applicant's geotechnical consultants indicate that the bluffs are now subject to more frequent wave attack. With sea level rise bringing deeper waters closer to the shoreline, larger and more frequent waves are expected to impact both the ocean and channel side of the bluff. When these factors are considered together, and evaluated in the context of an extreme storm event, the Applicant's consulting geotechnical engineers and geologist have concluded that the existing residence is in danger of being undermined. The Commission's Geologist has concluded that the evidence is borderline regarding whether the existing structure is "in danger from erosion" at this time. But the fact that waves now routinely impact an area that consists of poorly consolidated nearly cohesionless sand indicates that, absent some form of shore protection, a clear danger from erosion would exist in the near future. To err on the side of protecting life and property, it is prudent to assume in this case that the existing structure is in danger from erosion.

As such, the blufftop residence qualifies as an existing structure in danger from erosion for purposes of Section 30235.

### **C. Feasible Protection Alternatives to a Shoreline Structure**

The next Section 30235 test that must be met before a shoreline protective device can be approved is that the proposed armoring must be "required" to protect the existing threatened structure. In other words, shoreline armoring shall be permitted if it is the only feasible alternative capable of protecting the structure.<sup>9</sup> Other alternatives typically considered include: the "no project" alternative; abandonment of threatened structures; relocation of the threatened structures; sand replenishment programs; drainage and vegetation measures on the blufftop itself; and combinations of each. The Applicant has developed an analysis directed to this question (HKA) where the following alternatives to the proposed project were considered: (1) remove the existing revetment; (2) remove the existing revetment and relocate the existing residence inland; (3) permanently retain the existing revetment (and either re-engineer it or leave in its un-engineered state); (4) construct a retaining wall structure in the upper bluff (roughly 15 feet in height); and (5) construct a sheet pile seawall at the base of the bluffs. Only the first two HKA alternatives evaluate non-shoreline structure alternatives, with the other alternatives evaluating alternative shoreline structure designs. Since the first part of the question revolves around whether a shoreline structure is necessary, the first question is whether these non-shoreline structure alternatives (or others) can effectively protect the existing threatened structure.<sup>10</sup> Other applicable non-shoreline structure alternatives also include drainage and landscaping measures, and, reestablishment of the

<sup>8</sup> RJA indicating that it was only "during rare and violent storm events" that wave runup was capable of reaching the bluff at this location historically.

<sup>9</sup> Note that Coastal Act Section 30108 defines feasibility as follows: "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

<sup>10</sup> Only the non-shoreline structure alternatives are relevant to the current 30235 test; alternative armor designs is a discussion relevant if armoring is deemed necessary.



vegetated sand terrace that was lost in the 1998 storms.

### **Drainage and landscaping**

Although not analyzed by HKA, another non-shoreline structure alternative typically considered by the Commission to respond to erosion is the use of selected bluff plantings and improved blufftop drainage controls. In this case, the Applicant's geologic and geotechnical reports do not clearly identify current drainage controls and whether blufftop drainage improvements could help protect the slope, although this is typically the case.<sup>11</sup> The proposed project plans indicate that the site is extremely level at the building pad, and that drainage in the driveway area (directly inland of the residence) is collected and directed down the slope to the adjacent channel by a 12-inch diameter pipe outletting at the rip-rap.<sup>12</sup> The Applicant indicates that the drainage in the patio area seaward of the residence is collected and directed to the 12-inch pipe as well. It generally appears that blufftop drainage is essentially controlled and it is not clear that additional drainage controls would lead to greatly improved bluff stability.

As to vegetation, HKA notes that the slope has been stripped of ice-plant and vegetated with long-rooted native species meant to help stabilize the slope. So, some landscaping measures have been taken. It doesn't appear that the plantings have yet established themselves (see site photos in exhibits D and E), and there may be some augmentation that would be appropriate.

In any case, the alternative of plantings and bluff drainage controls (in some combination) is not necessarily meant to be considered an equal alternative to a seawall or other more major form of bluff altering armor. In fact, this alternative is not generally seen as the ultimate "fix" or as a replacement for a "hard" armoring project such as that proposed. Rather, these types of "soft" alternatives can serve to greatly extend the design life of setbacks by increasing bluff stability and slowing erosion. Thus, they must be understood as alternatives that can allow for natural processes to continue while simultaneously providing continued stability to the bluff. Given the active forces of erosion taking place unabated along the unarmored California coast, erosion will eventually (over the long-term) result in bluff retreat. At that point, in some cases, plantings and bluff drainage controls may not be adequate to address the erosion problem of themselves (particularly if they have already been implemented previously and their effect on bluff stability already factored into the analysis), and other alternatives could become more feasible (including wholesale relocation out of danger and even armoring of the coast).

In this case, given the highly erodable bluff materials at this location, and the narrow bluff setbacks (13 feet along the ocean side and 7 feet along the channel side at the minimum), it doesn't appear that additional drainage controls and/or additional plantings by themselves would be able to stabilize the bluff to such a degree as to protect against a relatively severe bluff failure in one major storm event. This alternative alone would be insufficient to protect the existing threatened structure in this case. That said,

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<sup>11</sup> The project plans do identify weep holes in the proposed structure to drain the area behind the proposed seawall, but this type of drainage is to mitigate a project impact as opposed to a drainage measure relevant to increasing bluff stability by controlling blufftop drainage.

<sup>12</sup> It is not clear if the pipe outlet is leading to localized erosion at its outlet. It is fair to assume that it could in a no project/remove rip-rap scenario, but isn't currently because the rip-rap would be expected to somewhat dissipate the energy of water coming from the pipe.



such measures have a utility in all other alternative project scenarios and should be included in any approval of a project here.

#### **Reconstruct vegetated sand shelf**

Not considered by HKA in their original alternatives analysis, another non-shoreline structure alternative would be to recreate the vegetated sand shelf that existing prior to 1998 and that appears to have acted as protection of sorts for the bluff slope during that time. This alternative would require import of a sand-soil mix, and intensive planting. It is likely that some form of temporary structural retaining wall would be required until the sand shelf became self-sustaining and cohesive. This option can be considered a permutation of a type of single property sand replenishment program (not typically considered a feasible option of itself because sand replenishment programs need to target much larger areas – up to entire littoral cells; see also sand supply discussion below) with the added element that the imported sand here would be vegetated to form a more stable back beach area.

In the April 2003 report, HKA and RJA considered this alternative and concluded that replacing the vegetated sand terrace may indeed offer some protection from surf attack, but because storm surf reaches the base of the bluff much more frequently now than it did prior to the 1997-1998 winter, future storm surf would quickly remove the sand terrace and once again attack the bluff.

Although this alternative is attractive because it directly addresses the main problem identified by the Applicant's geotechnical consultants (that the previous sand shelf eroded) and it provides a solution consistent with the natural landform, it is not clear that such a solution could protect the existing threatened structure. First, it isn't clear that such a bench could be recreated that effectively mimicked the natural toe buttress previously provided, nor that it could be constructed to a similar degree of stability; particularly in the short term when the plants were establishing their roots and the bench "solidifying." In addition, the previous natural bench already eroded and it seems likely that the same fate could befall a recreation, particularly in the short term. During the short term, the threatened structure would not be protected; the same could be said even were it to establish and then wash out as the previous shelf did. RJA concludes that future storm surf would quickly remove the sand terrace and attack the bluff, thus making this inadequate to protect the residence (RJA 2003). Even in combination with incremental drainage and vegetation improvements, it is not likely that this alternative could effectively protect the existing threatened structure.

#### **Remove revetment**

Because this application is for after-the-fact retention of the existing revetment until such time as a new wall were installed, this alternative is conceptually the "no project" alternative as that term is commonly understood. As indicated above, there is an existing structure in danger from erosion (per 30235) at this location. The 'no-project, remove the revetment' alternative would not provide any protection to the threatened structure and cannot alone suffice as the approvable alternative in this case, even were it considered in tandem with drainage and landscaping (as detailed above).





**Remove revetment and relocate residence**

The only non-shoreline structure alternative capable of protecting the existing endangered structure is to the alternative of relocating the existing residence to a more inland blufftop location on the Applicant's property, combined with the removal of the existing revetment, as evaluated by HKA.<sup>13</sup> Although there appears to be adequate inland space on the property with which to accommodate a relocation episode, depending on the final footprint established, it appears that a relocation of this type would require one or more variances to inland setback requirements (including, potentially, front (30-foot), side (15-foot), and coastal bluff (25-foot minimum) setback requirements). The Applicant estimates that this option would cost roughly \$800,000, while the proposed project is estimated to cost roughly \$450,000.<sup>14</sup>

The relocation of the residence would be located within the County's coastal permitting jurisdiction and thus would be subject to LCP review and approval via an appealable coastal permit.<sup>15</sup> It could ultimately result in a residence sited inland, further removed from the beach viewshed, and further removed from the most geologically unstable portions of the site. Such inland location would make the structure more visible from San Andreas Road, but would also increase the life of any seaward bluff setback so established because natural erosion could take place for some period of time. Of course, eventually, the relocated structure would itself be threatened and the same armoring questions might arise at that time. In any case, such an alternative could be combined with effective drainage controls and appropriate blufftop and bluff vegetation so as to help further extend the useful life of any blufftop setbacks so established. A more detailed analysis of such an alternative project in a typical coastal permit review would be necessary to ultimately determine the parameters of this option, particularly the necessary modifications and/or variances that would be necessary to accommodate the moved structure.

Relocation is a reasonable and feasible alternative to consider in some cases, particularly where the relocation envisioned is relatively minor in relation to the structure and the site, and the geologic hazard is confined to the ocean side of the property. In some cases, inland setback variances could be appropriate to avoid shoreline erosion dangers on the seaward side of properties. In this case, the site is oddly configured and defined to the north and south by steep slopes and retaining walls. While the structure could be relocated as described, it would need to be substantially moved inland and rotated, resulting in a significantly different residential structure, orientation, and surroundings than the existing structure. In addition, the slope erosion danger exists along the entire northern property line, and the LCP requires a minimum 25-foot setback to address geologic hazard safety issues along this slope. In other

<sup>13</sup> HKA describes this alternative as demolition and reconstruction. However, the bid estimate (from Mid-Cal Constructors) is to move the residence 25 feet inland. The Applicant has more recently indicated that this alternative involves demolition of the foundations, and moving and reconstruction of structures whatever amount is necessary to provide space for them inland (including rotating and realigning the structures because the blufftop portion of the lot narrows and then widens again as one moves inland towards San Andreas Road, and the house in its current configuration could not likely be moved directly backwards since it is wider than the blufftop area immediately inland - see exhibit B). Thus, "relocation" in this case is really a term of art inasmuch as relocation would include some demolition and reconstruction, and some relocation.

<sup>14</sup> April 3, 2003 letter indicates a bid amount of \$760,100 and an estimated permit fee amount of \$18,737. Removal of the revetment alone is estimated by HKA to cost 25,000 to \$30,000.

<sup>15</sup> The removal of the revetment would still require a coastal permit directly from the Commission in this scenario because it is located within the Commission's retained permitting jurisdiction.





words, the variances necessary would not just be of the side and front yard variety, but would be to geologic hazard minimum setbacks established to protect against erosion and other hazard threats. Furthermore, when the Commission has considered moving residential structures in response to identified 30235 danger, it has not typically considered the degree of relocation that would be necessary in this case. Part of the reason for this is that part of the what is being protected is the orientation of the threatened structure to the site, and its surroundings. In other words, long before the Coastal Act or Proposition 20 were conceived, this residence was present at this location on the site. It is surrounded by complementary residential amenities including pathways, elaborate ponds, decorative walls, and mature landscaping.

In sum, relocation in this case would be a significant physical undertaking, with technical hazard difficulties, for which it is not clear that the required variances to inland location setbacks would be appropriate. Therefore, in this case, based on the site constraints and the existing development present on site, a relocation option does not appear to be a feasible alternative for protecting this existing threatened structure.

#### **Conclusion**

Absent a Statewide planned retreat policy (or some other form of similar legal measures designed to address such pre-Coastal Act development), a hard armoring project is necessary in this case. There are a number of armoring possibilities, some evaluated by the Applicant in their alternatives analysis. However, it seems clear that a lower bluff structure is necessary in this case due to the nature of the bluff materials and the configuration of the bluffs here. An upper bluff structure could be constructed closer to the Applicant's property on the channel side (though not likely on the Applicant's property since the property line is near to the top of the bluff; see exhibit C), thus leading to less impact over time. However, an upper bluff and/or buried wall alternative would, over time, lead to an artificial vertical bluff roughly 40 feet tall that would be completely different than the natural bluffs in this stretch of coast. As to lower bluff solutions, a vertical wall would occupy a lesser amount of beach space than would a revetment. Its height and location relative to the toe of the bluff become critical to balance protection (based on expected storm up-rush) versus height and increased visibility. In this case, the seawall structure proposed has struck an appropriate balance in this sense, and is an appropriate armoring project if one must be approved due to Section 30235.

The project, therefore, meets the third test of Section 30235 of the Coastal Act.

#### **D. Sand Supply Impacts**

The fourth test of Section 30235 (previously cited) that must be met in order to allow Commission approval is that shoreline structures must be designed to eliminate or mitigate adverse impacts to local shoreline sand supply.

#### **Shoreline Processes**

Beach sand material comes to the shoreline from inland areas, carried by rivers and streams; from



offshore deposits, carried by waves; and from coastal dunes and bluffs, becoming beach material when the bluffs or dunes lose material due to wave attack, landslides, surface erosion, gullyng, et cetera. Coastal dunes are almost entirely beach sand, and wind and wave action often provide an on-going mix and exchange of material between beaches and dunes. Many coastal bluffs are marine terraces – ancient beaches which formed when land and sea levels differed from current conditions. Since the marine terraces were once beaches, much of the material in the terraces is often beach quality sand or cobble, and a valuable contribution to the littoral system when it is added to the beach. While beaches can become marine terraces over geologic time, the normal exchange of material between beaches and bluffs is for bluff erosion to provide beach material. Bluff retreat and erosion is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When the back-beach or bluff is protected by a shoreline protective device, the natural exchange of material either between the beach and dune or from the bluff to the beach will be interrupted and, if the shoreline is eroding, there will be a measurable loss of material to the beach. Since sand and larger grain material is the most important component of most beaches, only the sand portion of the bluff or dune material is quantified as beach material.

These natural shoreline processes affecting the formation and retention of sandy beaches can be significantly altered by the construction of shoreline armoring structures since bluff retreat is one of several ways that beach quality sand is added to the shoreline. Bluff retreat and erosion is a natural process resulting from many different factors (such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration); shoreline armoring directly impedes these natural processes.

The subject site is located within the Santa Cruz Littoral Cell. The Santa Cruz Cell is a high volume cell with annual longshore transport estimated between 300,000 and 500,000 cubic yards of beach quality materials annually.<sup>16</sup> The dominant direction of longshore transport in this sand supply system is north north-west to south south-east (roughly from up top downcoast in relation to the site).<sup>17</sup> Materials in this system have been estimated to come mainly from coastal streams (roughly 75%), with 20% coming from bluffs, and 5% coming from coastal ravines and sand dunes.<sup>18</sup>

Some of the effects of engineered armoring structures on the beach (such as scour, end effects and modification to the beach profile) are temporary or are difficult to distinguish from all the other actions that modify the shoreline. Others are more qualitative (e.g., impacts to the character of the shoreline and visual quality). Some of the effects that a shoreline structure may have on natural shoreline processes can be quantified, however, including: (1) the loss of the beach area on which the structure is located (as described above); (2) the long-term loss of beach which will result when the back beach location is fixed on an eroding shoreline; and (3) the amount of material which would have been supplied to the beach if

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<sup>16</sup> United States Army Corps of Engineers (USACOE), San Francisco District, 1994.

<sup>17</sup> USACOE, San Francisco District, 1994.

<sup>18</sup> Griggs and Best, 1991.



the back beach or bluff were to erode naturally. In this case, the sand supply impacts relate to both the temporary placement of the revetment, and the long-term placement of the seawall.<sup>19</sup>

### **Fixing the back beach**

Experts generally agree that where the shoreline is eroding and armoring is installed, as is the case here, the armoring will eventually define the boundary between the sea and the upland. On an eroding shoreline fronted by a beach, the beach will be present as long as some sand is supplied to the shoreline. As erosion proceeds, the profile of the beach also retreats. This process stops, however, when the retreating shoreline comes to a revetment or a seawall. While the shoreline on either side of the armor continues to retreat, shoreline retreat in front of the armor stops. Eventually, the shoreline fronting the armor protrudes into the water, with the mean high tide line fixed at the base of the structure. In the case of an eroding shoreline, this represents the loss of a beach as a direct result of the armor.

In addition, sea level has been rising slightly for many years. In the Monterey Bay area, the trend for sea level for the past 25 years has been an increase resulting in a 100 year rate of nearly 1 foot per 100 years.<sup>20</sup> Also, there is a growing body of evidence that there has been a slight increase in global temperature and that an acceleration in the rate of sea level can be expected to accompany this increase in temperature. Mean water level affects shoreline erosion several ways and an increase in the average sea level will exacerbate all these conditions. On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore. On a relatively flat beach (such as that found at Manresa), with a slope of 40:1, every inch of sea level rise will result in a 40-inch landward movement of the ocean/beach interface.<sup>21</sup> This, too, leads to loss of the beach as a direct result of the armor.

The Commission has established a methodology for calculating the long-term loss of public beach due to fixing the back beach, this impact being equal to the long-term erosion rate multiplied by the width of property which has been fixed by a resistant shoreline protective device.<sup>22</sup> However, in this case, the Applicant's consulting engineers and geologists have not been able to identify a long term erosion rate. This is due to the unusual erosion history of the site where there was no noticeable erosion from 1928 until 1997, and then one event, and then the site was armored. The Applicant's geologist indicates that, because of this history, there is no geologic basis for establishing a long-term rate in this case. The Commission's Geologist and Coastal Engineer concur that although a rate could be developed in a number of ways, it is not clear which methodology makes the most sense in this case. Ultimately, the Applicant's and Commission's technical experts have concluded that an erosion rate is meaningless at

<sup>19</sup> The sand supply impact refers to the way in which the project impacts creation and maintenance of beach sand. Although this ultimately translates into beach access impacts, the discussion here is focused on the first part of the equation and the way in which the proposed project would impact sand supply processes.

<sup>20</sup> NOAA, National Ocean Service.

<sup>21</sup> In other words, a one-inch rise in sea level can result in over 3 landward feet of dry sandy beach loss.

<sup>22</sup> The area of beach lost due to long-term erosion ( $A_w$ ) is equal to the long-term average annual erosion rate ( $R$ ) times the number of years that the back-beach or bluff will be fixed ( $L$ ) times the width of the property that will be protected ( $W$ ). This can be expressed by the following equation:  $A_w = R \times L \times W$ .



this location.

Therefore, it can be concluded that the both the proposed seawall and the rip-rap revetment (for the time since it was installed in February 1998 until the seawall were to take its place), would result in some incremental loss of beach due to fixing the back beach.

### **Encroachment on the Beach**

Shoreline protective devices such as the seawall and revetment proposed are all physical structures that occupy space. When a shoreline protective device is placed on a beach area, the underlying beach area cannot be used as beach. This generally results in a loss of public access as well as a loss of sand and/or areas from which sand generating materials can be derived. The area where the structure is placed will be altered from the time the protective device is constructed, and the extent or area occupied by the device will remain the same over time, until the structure is removed or moved from its initial location, or in the case of a revetment, as it spreads seaward over time. The beach area located beneath a shoreline protective device, referred to as the encroachment area, is the area of the structure's footprint.

In this case, the seawall would not have a beach footprint because it would be constructed in the bluff itself inland of the beach area (roughly at the inland edge of the existing revetment). As to the revetment, its footprint is roughly 2,500 square feet. That said, it was placed on top of beach sand. This sand would have (had the revetment not been placed) been part of the overall sand supply system. It can be assumed that some portion of the underlying sand has migrated out of, and some into, the encroachment area during tidal events. It is reasonable to presume that some amount of underlying sand materials did not migrate during this time due to the presence of the revetment, but it is difficult to quantify what portion this is. It might be easier to quantify if the revetment were placed on sandstone bedrock, and the rate of erosion of the bedrock were known, but that is not the case here.<sup>23</sup> In any case, there wouldn't be a permanent encroachment impact because the revetment would be removed.

Therefore, it can be concluded that the rip-rap revetment (for the time since it was installed in February 1998 until the seawall were to take its place), has resulted (and would result) in some minor loss of beach sand that would have been delivered into the system due to encroachment onto it.

### **Retention of Potential Beach Material**

If natural erosion were allowed to continue (absent the proposed armoring), some amount of beach material would be added to the Manresa State Beach and larger littoral cell sand supply system from the bluffs. The volume of total material that would have gone into the sand supply system over the lifetime of the shoreline structure would be the volume of material between (a) the likely future bluff face location with shoreline protection; and (b) the likely future bluff location without shoreline protection. Since the main concern is with the sand component of this bluff material, the total material lost must be multiplied by the percentage of bluff material which is beach sand, giving the total amount of sand

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<sup>23</sup> In that case, one could estimate the amount of sandstone bedrock that would have eroded and placed sand generating materials into the system had the revetment not been present.



which would have been supplied to the littoral system for beach deposition if the proposed device were not installed. The Commission has established a methodology for identifying this impact.<sup>24</sup>

As with the fixing the back beach calculation from above, this calculation is dependent on an erosion rate, and an erosion rate cannot be accurately established at this location.

Therefore, it can be concluded that the both the proposed seawall and the rip-rap revetment (for the time since it was installed in February 1998 until the seawall were to take its place), would result in some incremental loss of beach due to retention of beach material.

### **Sand Supply Impacts Conclusion**

As detailed above, it is difficult to quantify the shoreline sand supply impact in this case due to the unusual erosion facts that make an erosion rate less meaningful at this site than is typically the case. Suffice it to say that there would be some incremental sand supply impact from both the revetment and the seawall. The Applicant has designed the project to reduce some of these impacts (e.g., by placing the base of the wall inland of the beach-bluff interface), but they cannot be eliminated. Furthermore, the revetment has already resulted in these adverse impacts over the past 5½ years. Therefore, some form of mitigation is necessary to offset these impacts for the project to be found consistent with the third test of Section 30235.

Note that mitigation typically required by the Commission for such direct sand supply impacts have been in-lieu fees and/or beach nourishment. With regards to beach nourishment, a formal sand replenishment strategy can introduce an equivalent amount of sandy material back into the system over time to mitigate the loss of sand that would be caused by a protective device over its lifetime. Obviously, such an introduction of sand, if properly planned, can feed into the Santa Cruz Littoral Cell sand system to mitigate the impact of the project. However, there are not currently any existing beach nourishment programs directed at this beach area. Absent a comprehensive program that provides a means to coordinate and maximize the benefits of mitigation efforts in the area now and in the future, the success of such piecemeal mitigation efforts is questionable. Moreover, as detailed above, the lack of a defined erosion rate makes it extremely difficult in this case to quantify the amount of the sand supply impact in order to specify the amount of nourishment that would be necessary to offset it over time.

<sup>24</sup> The equation is  $V_b = (S \times W \times L) \times [(R \times h_s) + (1/2 h_u \times (R + (R_{cu} - R_{cs})))]/27$ . Where:  $V_b$  is the volume of beach material that would have been supplied to the beach if natural erosion continued (this is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structure);  $S$  is the fraction of beach quality material in the bluff material;  $W$  is the width of property to be armored;  $L$  is the design life of structure (100 years assumed per HKA, though its lifetime can also be considered indefinite) or, if assumed a value of 1, an annual amount is calculated;  $R$  is the long term average annual erosion rate;  $h_s$  is the height of the shoreline structure;  $h_u$  is the height of the unprotected upper bluff;  $R_{cu}$  is the predicted rate of retreat of the crest of the bluff during the period that the shoreline structure would be in place, assuming no seawall were installed (this value can be assumed to be the same as  $R$  unless the Applicant provides site-specific geotechnical information supporting a different value);  $R_{cs}$  is the predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming the seawall has been installed (this value will be assumed to be zero unless the Applicant provides site-specific geotechnical information supporting a different value); and divide by 27 (since the dimensions and retreat rates are given in feet and volume of sand is usually given in cubic yards, the total volume of sand must be divided by 27 to provide this volume in cubic yards, rather than cubic feet).



As an alternative mitigation mechanism, an in-lieu fee is oftentimes used by the Commission when in-kind mitigation of impacts is not available. In situations where ongoing sand replenishment programs are not yet in place, the in-lieu sand mitigation fee is deposited into an account until such time as an appropriate program is developed and the fees can then be used to offset the designated impacts. Again, it is not possible to clearly quantify the amount of sand supply impact in this case, and thus specifying the fee that would be applied is also problematic. Moreover, the sand supply mitigation fees that have been collected in the past in the Central Coast District area have not yet been applied to any sand nourishment programs to date, and have not yet resulted in any physical sand supply mitigation as a result.<sup>25</sup>

The Applicant has proposed importing approximately 726 cubic yards of beach quality sand to cover the seawall and to recreate the base of bluff slope so that it appears that there is not a seawall here. Although this serves partially as a visual impact mitigation, it also serves to somewhat offset sand supply impacts that are not eliminated by project design by increasing the supply of sand in the overall system. It is difficult to assess the degree to which this one-time placement of sand can offset the long-term sand supply impacts at this location due to this project. This effectively constitutes the type of individual beach nourishment effort described above that is typically not pursued, with the added element that it would be done one time.

That said, the sand import mitigation proposed by the Applicant is not inconsequential. Based on the cost estimates to supply sand to this location, the 726 cubic yards of sand translates into a cost ranging from \$18,709 to \$27,697. This cost range is generally similar to the amount of the two past sand supply fees imposed as mitigation by the Commission in the Central Coast District area (i.e., \$25,066 required in the Motroni-Bardwell case, and \$26,783 in the Panattoni case).<sup>26</sup>

Therefore, in this case, because it is not possible to quantify more precisely the sand supply impact in a well-supported (factually) manner, this sand import mitigation proposed by the Applicant (as conditioned to ensure it is clean, beach quality sand similar to that present at Manresa State beach – see special condition 1) at least partially mitigates the sand supply impact. Since this impact is ultimately a beach recreational access impact, additional access mitigation can also offset sand supply impacts (see access and recreation findings that follow).

The project thus satisfies the fourth test of Section 30235 to the degree the adverse impact and its required mitigation can be understood in this case, and is thus consistent to the degree feasible with this Section of the Coastal Act.

<sup>25</sup> The Motroni-Bardwell case upcoast of this site in Capitola (CDP 3-97-065), the Panattoni case downcoast in Carmel (CDP 3-98-102). These fees were collected in 1998 and 1999 respectively.

<sup>26</sup> The cost identified is significantly less than the fee calculated for a seawall proposed upcoast in Santa Cruz County that the Commission is currently reviewing (Medeiros, CDP application 3-02-060). In that case, the sand supply impact calculation turned out to be 1,081 cubic yards the first year and the 171 cubic yards per year thereafter (based on the same type of methodology used here, but where an erosion rate was available). Using the sand delivery costs identified by the Applicant (roughly \$25 per cubic yard delivered to the beach), the fee in that case would translate to \$27,025 the first year and \$4,275 per year for the life of the project; if a 100 year design life were presumed (as stated by the project engineers in that case), the fee would total \$454,525.





### **E. Long Term Structural Stability and Assumption of Risk**

Pursuant to Coastal Act Section 30253 (previously cited), development is to be designed, sited, and built to allow for natural shoreline processes to occur without creating a need for additional more substantive armoring. Coastal development permittees for new shorefront development thus are essentially making a commitment to the public (through the approved action of the Commission, and its local government counterparts) that, in return for building their project, the public will not lose public beach access, sand supply, ESHA, visual resources, and natural landforms, and that the public will not be held responsible for any future stability problems. Coastal Act Section 30253 requires that the proposed project assure structural stability without the need for additional armoring. The project has been designed by engineers with experience in coastal armoring projects to provide protection for 100 years or more (HKA).

#### **Off-site Impacts**

Oftentimes there are also concerns that installing shoreline armoring where adjacent properties are not armored, such as is the case here at the downcoast (southern) end of the project, can result in increased erosion or other "end effects" at that location. This can lead to structural stability issues off-site. In this case, the Applicant's geologist indicates that such effects have not been documented in the five and a half years since the revetment has been in place, and would appear to be insignificant at this location. Thus, based on the Applicant's geotechnical consultant's conclusions in this regard, and absent any evidence to the contrary, the proposed project would not be expected to result in any significant offsite end effects.

#### **Assumption of Risk**

The experience of the Commission in evaluating the consistency of proposed developments with Coastal Act policies regarding development in areas subject to problems associated with geologic instability, flood, wave, or erosion hazard, has been that development has continued to occur despite periodic episodes of heavy storm damage, landslides, or other such occurrences. Oceanfront development is susceptible to bluff retreat and erosion damage due to storm waves and storm surge conditions. Past occurrences statewide have resulted in public costs (through low interest loans, grants, subsidies, direct assistance, etc.) in the millions of dollars. As a means of allowing continued development in areas subject to these hazards while avoiding placing the economic burden on the people of the state for damages, the Commission has regularly required that Applicants acknowledge site geologic risks and agree to waive any claims of liability on the part of the Commission for allowing the development to proceed.

There are inherent risks associated with development on and around seawalls and eroding bluffs in a dynamic coastal bluff environment; this applies to the project proposed as well as for the development landward of the bluffs themselves. The seawall project site, and all development inland of it, is likely to be affected by shoreline erosion in the future.

Although the Commission has sought to minimize the risks associated with the development proposed in this application, the risks cannot be eliminated entirely. Given that the Applicant has chosen to pursue





the development despite these risks, the Applicant must assume these risks. Accordingly, this approval is conditioned for the Applicant to assume all risks for developing at this location (see special condition 12).

#### **No Seaward Encroachment**

Coastal Act Section 30253 requires that the seawall structure not create the need for additional more substantive armoring in the future. Such potential future armoring could include seaward encroachment that would give rise to another level of potential Coastal Act inconsistency inasmuch as it would occupy recreational sandy beach and increase the amount of armoring within the beach area public viewshed. Further, to allow a project that would itself require additional armoring seaward of that existing revetment would not be consistent with Section 30253 because stability and structural integrity must be assured without reliance on future armoring. Therefore, to protect the beach area seaward and channelward of the seawall consistent with the Coastal Act, and in order to find this project consistent with Coastal Act Section 30253 requiring that development not require additional armoring in the future, the Commission finds that no further seaward encroachment is allowed in the future (see special condition 12).

#### **Monitoring, Maintenance, and Long-Term Stability**

If the seawall was damaged in the future (e.g. as a result of wave action, storms, landsliding, etc.) it could threaten the stability of the site, which could lead to need for more bluff alteration and/or additional or more substantive armoring. In addition, the upper bluff soils must be adequately stabilized with vegetation, and upper bluff drainage controlled, to ensure overall stability. Long-rooted non-invasive native plant species should be used for this purpose.<sup>27</sup> In a bluff setting, these species can help to stabilize bluff soils, minimize irrigation of the bluff (again helping to stabilize the bluff), and can help to avoid bluff failure and sloughing in some cases (e.g., mats of iceplant can become so heavy that they rip out of the bluff, particularly in saturated situations, taking bluff materials with them). They also help to create a more natural (to the bluff area) looking natural landform, helping to offset visual impacts of unnatural structures along bluffs (see also visual findings below).

Therefore, in order to find the proposed project consistent with the Coastal Act, the Commission finds that the condition of the seawall, the rock slope wedge on top of the seawall, the bluff plantings, and the drainage controls in their approved state must be maintained for the life of the seawall. Further, in order to ensure that the Permittee and the Commission know when repairs or maintenance are required, the Permittee must monitor the condition of the seawall and the bluff over the long term. The monitoring will ensure that the Permittee and the Commission are aware of any damage and can determine whether repairs or other actions are necessary to maintain the seawall and bluff measures in their approved state before such repairs or actions are undertaken. Finally, such future monitoring and maintenance activities

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<sup>27</sup> Non-native invasive plants invade native habitat areas and vastly alter the ecological landscape by outcompeting and excluding native plants and animals; altering nutrient cycles, hydrology, and wildfire frequencies, and hybridizing. Rare species are particularly vulnerable to the changes brought about by non-native invaders. The most effective and efficient way to deal with weedy species is to prevent invasions. Preventing invasion is of greater conservation benefit in the long run than the far more costly and difficult efforts to control a widespread pest species.



must be understood in relation to clear as-built plans.

Therefore, special conditions are attached to this approval for the submittal of as-built plans (to define the footprint and profile of the permitted structures) with surveyed reference points to assist in evaluation of future proposals at this site (see special condition 10) and drainage and non-invasive native vegetation parameters for the bluff area (see special condition 3). For monitoring, the Applicant is responsible for ensuring adequate monitoring of the seawall and is required to submit a monitoring report on five year intervals that evaluates the condition and performance of the seawall, and related drainage and vegetation elements, and to submit the report with recommendations, if any, for necessary maintenance, repair, changes or modifications to the project (see special condition 11). All monitoring and maintenance commitments must be recorded as property restrictions to ensure long-term compliance, and to ensure that any future landowners are clearly notified of these commitments (see special condition 16). Finally, this approval is structured to allow future standard maintenance to the approved project to maintain it in its approved state subject to the same construction and restorations parameters of the initial development; the term of this future maintenance is indefinite until there are changed circumstances that require its reevaluation (see special condition 15).

#### **Future Shoreline Management**

Although none are known or anticipated at this time, it is possible that in the future there may be a regional shoreline management project designed to address shoreline armoring issues in a more comprehensive regional manner. It is unknown what form such a planning initiative may take, or whether it will happen at all for this portion of the shoreline. This approval is conditioned for the Applicant to acknowledge that such future planning initiatives may involve this property (see special condition 12).

#### **Conclusion**

As conditioned for final engineered plans (that can be peer-reviewed by the Commission's coastal engineer), long-term monitoring and maintenance to ensure the permitted structure remains effective and in its approved state, a prohibition on additional armoring seaward of the seawall structure, and for the Applicant to assume all risk and responsibility for development at this shoreline location, and as discussed above, the proposed project is consistent with Coastal Act Section 30253.

#### **F. Geologic Conditions and Hazards Conclusion**

As discussed above, the facts of this particular case show that the proposed project is required to protect existing structures in danger from erosion and that it is the only feasible alternative to do so in this case. The proposed project has been designed to minimize (to the extent feasible) sand supply impacts, and includes mitigation, as implemented by special condition, to offset impacts that are unavoidable in this regard. Conditions have been applied for monitoring, long-term maintenance, prohibition on future seaward or channel encroachment, and assumption of risk. As conditioned, the proposed project can be found consistent with Coastal Act Sections 30235 and 30253 as discussed in this finding.



## 2. Public Access and Recreation

Coastal Act Section 30604(c) requires that every coastal development permit issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreation policies of [Coastal Act] Chapter 3." The proposed project is located seaward of the first through public road (San Andreas Road). Coastal Act Sections 30210 through 30214 and 30220 through 30224 specifically protect public access and recreation. In particular:

*30210. In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*

*30211. Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

*30213. Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. ...*

*30221. Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*

*30223. Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.*

Coastal Act Section 30240(b) also protects parks and recreation areas, such as the adjacent Manresa State Beach area. Section 30240(b) states:

*30240(b). Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

These overlapping policies clearly protect the public beach, and access to and along it, for public access and recreation purposes, particularly free and low cost access such as that provided at Manresa State Beach. For the purposes of the discussion that follows, there is little distinction made between the seaward side of the site and the channel side of the site because both of these areas can, and have been in the past, used for public access. Clearly the seaward side of the site provides for the more generally recognized type of public beach access, but the channel side provides for some such access as well.



**Loss of Back Beach Recreational Area**

The proposed seawall has been designed so that it doesn't encroach onto existing beach area. It would, however, be placed in an area (seaward side) that would eventually become beach area over time were the bluffs allowed to erode naturally, and it would be placed on lands both owned by the County and that would also become beach area over time if natural erosion continued (channel side). The seawall would not be placed on lands owned in fee-title by State Parks, and the County has given permission for the Applicant to pursue the proposed project in relation to the County-owned property in this case. The impact of this future encroachment is difficult to measure without a clear erosion rate (as discussed previously), but it would appear likely that it would lead to some loss of back beach recreational area over the life of the seawall.

The revetment has been placed over a beach area representing approximately 2,500 square feet. This area has been occupied since 1998 and would be so occupied until the seawall were installed. For impact calculation purposes (this and others that are evaluated that follow), the time frame during which the existing revetment would remain in place in any approval scenario is assumed to be 5½ years.<sup>28</sup>

Therefore, the proposed project has and would result in an incremental reduction in useable beach area at Manresa State Beach. This can be offset somewhat by the Applicant's proposal (as implemented by special condition) to import beach sand to cover the base of the seawall, and by the requirement that no future armoring be placed seaward or channelward of the seawall, but these mitigations respond to other impacts (sand supply and long-term stability) and their value as an additional compensatory mitigation tool for the loss of useable beach space is limited as a result. Nonetheless, the additional sand imported should result in a return, in the short term, of the beach space that had been occupied by the revetment. And the prohibition of future armoring expansion should ensure that the beach space recreated is kept clear of incompatible structures. In terms of compensating for the 5½ years and the long-term impacts identified above, additional public beach access mitigation is required.

In this case, the Applicant owns in fee-title a triangular area of beach, approximately 1,100 square feet in size, that would be seaward of the proposed seawall location (see exhibit G). To mitigate for the beach recreational access loss, this area can be dedicated directly to an appropriate entity (like DPR) or the Applicant can record an offer to dedicate this area. Although the value of such a dedication (in a public beach access sense) is limited because the area held in fee title by the Applicant is already a de facto part of the existing public beach access area, and it cannot be distinguished from the surrounding beach areas, deeding fee title helps in perfecting a public fee-title legal ownership of the beach area in question. Therefore, this approval is conditioned for a dedication, either outright or an offer, to an appropriate management entity of the triangular beach area that would be seaward of the seawall (see exhibit G and special condition 9).

In addition, as indicated by the Applicant and in the County's consent to allow the Applicant to proceed

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<sup>28</sup> Five and a half years is a conservative estimate inasmuch as the August 2003 hearing is 5½ years after February 1998, and the project wouldn't commence immediately. It is possible that it could remain in place for longer should there be permitting (or other) difficulties encountered.



with an application that would place development on County property (i.e., along the channel side), the Applicant will need to formalize an easement or other legal right to develop on County property. It is assumed that the County will require commensurate lease fees in any such arrangement given the extremely high value of coastal real estate in the County, but this is at the County's discretion.<sup>29</sup> Given the long-term planned nature of the seawall and the way that beach and other circumstances change, it may be wise for any such arrangements made to include reevaluation clauses at regular intervals (such as every five years) to respond to changing circumstances and property holding costs (including recreational uses foregone because the wall is located on the County property). In any event, this approval is conditioned for evidence of County approval and authorization for any development on County property (see exhibit C and special condition 13).

This approval also includes a deadline for project completion designed to get the project completed as soon as possible, acknowledging that summer season limitations and winter season storms may conspire to put off construction (see special conditions 1 and 5). In this way, continuing impacts can be further limited to the degree feasible.

#### **Construction Impacts**

The project would involve large equipment that would drive over the recreational beach area and the main Manresa State Beach beach entrance point and parking lot area, occupy a construction zone of recreational beach area (at the immediate project area), and generally intrude and negatively impact the aesthetics, ambiance, serenity, and safety of the recreational beach experience at this State Park. The public would bear the burden of the negative construction impacts associated with roughly 3 months of construction on this State beach. Any future maintenance episodes would lead to similar construction impacts. During such construction times, the immediate beach construction area will not be available for public access. Although this impact can be minimized by appropriate construction controls (such as limiting the width of construction corridors, limiting the times when work can take place, clearly fencing the minimum construction area necessary, keeping equipment out of high use areas, storing equipment off of the public beach at night, and clearly delineating and avoiding to the maximum extent feasible public use areas, etc., see required construction plan – special condition 2), it cannot be eliminated. Manresa State Beach is a very popular beach recreational area and project construction will not only remove beach area from being potentially used, but it will negatively impact the beach recreational experience by introducing construction (including large equipment, noise, etc), into what is a fairly tranquil natural area. The Applicant will be required to restore all beach areas and beach access points following construction (see special condition 8), but cleaning up one's construction mess does not compensate for the negative public access impacts over the duration of construction. In order to mitigate this impact, the Applicant shall be required to do up to \$20,000 of repair to the currently damaged concrete access ramp (used by State Parks for emergency and ranger access to Manresa State Beach) consistent with DPR's standards for such repairs as part of beach and beach access restoration (see

<sup>29</sup> Note for example, that State Lands recently leased similar coastal beach area to a private applicant for a revetment and sheetpile wall at Pelican Point (Pajaro Dunes). In that case, the cost to the applicant to lease the property from State Lands for a one-year period was \$58,370.



special condition 4).<sup>30</sup> Such repair shall not increase the ramp's footprint, and shall not involve rip-rap.<sup>31</sup> If DPR should not consent to such a project, then the Applicant's responsibilities in this regard shall be waived (again, see condition 4).

As conditioned, the Commission finds that the proposed project has been designed in such a way as to minimize public access and recreation impacts and, as such, is consistent with Coastal Act Sections 30210 through 30214, 30220 through 30224, and 30240(b) as discussed in this finding.

### 3. Visual Resources and Landform Alteration

Coastal Act Section 30251 states:

*Section 30251. The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.*

Coastal Act Section 30240(b), previously cited, also protects the aesthetics of parks and recreation areas such as those involved in this application. Section 30240(b) states:

*Section 30240(b). Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.*

The proposed project has (via the revetment that would be retained until replaced) and would introduce a decidedly unnatural and artificial structure into the significant public recreational viewshed at Manresa State Beach. This includes public views from the beach, from offshore, and from the parking lot and overlook at the Manresa parking lot. The initial sand cover proposed to be placed in front of the seawall should help to camouflage the structure in the short-term (i.e., until it is washed away by normal and storm tidal action), but its effectiveness is limited in the long-run. In addition, the photo-simulations provided by the Applicant show that such an initial sand cover might look fairly unnatural itself (see

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<sup>30</sup> Although DPR has indicated that they are very interested in having the ramp repaired to address scour issues, DPR is uncertain as to the what would be necessary to repair the ramp. The \$20,000 cost cap is provided to ensure that the Applicant's commitment is not without limit, and this figure was derived from consultation with the Applicant's engineers on measures that may be necessary to so repair the base of the ramp. It may be that the up to \$20,000 worth of repairs is partially to have the ramp assessed by a civil engineer and a repair plan developed.

<sup>31</sup> The ramp should be able to be repaired by redoing its concrete foundation and/or by pumping sand and/or sand slurry within its undermined footprint, and resurfacing the ramp itself when the foundation repairs are complete.





photo-simulation on page 5 of exhibit B).

The Applicant has proposed to face the seawall with a sculpted concrete cover, although the details of this approach are not clear in the proposal. If done correctly, such sculpting can help to camouflage large slabs of concrete; when done poorly, however, they just reinforce the unnatural element present in the back beach area. This approval is conditioned to ensure the proposed facing is done in a way that clearly approximates, to the extent feasible, a natural landform (see special conditions 1 and 6). In addition, the facing is proposed down to an elevation of +5 NGVD. Although this is likely sufficient to camouflage the wall during all but the most significant winter scour events, it would result in an additional summer impact were the facing not to extend far enough towards the base of the structure. This approval is conditioned to ensure that the facing extends to an adequate depth so that all seawall visibly exposed during the non-winter times of the year is so faced (see special condition 7).

Such camouflaging, however, cannot completely hide a seawall such as this. Based on the elevation at which it would be installed and the beach profiles provided by the Applicants geologist (RJA), the top 5 feet or so of the seawall would be expected to be visible in a typical winter, and potentially summer, beach profile. This would be the case even though the Applicant would bring in a sand to cover the seawall initially because the sand at the base of the structure would ebb and flow along with the winter and summer beach profiles. In severe winter seasons, much more of the structure is likely to be visible. The proposed design also includes a recurve that is unlike the bluff formations found in this area; even if properly faced with sculpted concrete, the recurve would also serve to emphasize the unnatural nature of the structure. The rip-rap proposed along the top of the seawall may also become visible if its sand/soil and vegetation cover is not maintained or is washed out. In sum, the adverse impact to the public viewshed would be significant.

In addition, the existing revetment proposed for retention has degraded the public viewshed since February 1998, and it will continue to do so until removed. The revetment is an unsightly pile of white dolomite rock of uneven sizes placed in a cluttered configuration. Likewise, the bluff slope itself appears denuded, though HKA indicates that it has been vegetated with native species. See photos of the site in exhibits D and E.

Furthermore, and as with access and recreation, the project would introduce large construction equipment and activities that are antithetical to shoreline viewshed qualities during construction. The same would apply to any future maintenance episodes, although their duration would be expected to be less than the initial construction.

These viewshed impacts require visual mitigation. In this case, there are measures available that can work to minimize and mitigate for such visual impacts, at the same time as helping to promote bluff stability. This approval is conditioned: to ensure that the seawall is faced with sculpted concrete that approximates the natural landforms in this areas, and extends to an adequate depth to cover all exposed portions of the seawall in a non-winter beach condition (as discussed above); to require that the small revetment wave splash atop the seawall is covered with sand and vegetation, and recovered if it becomes exposed; as proposed by the applicant, to consolidate and underground the drainage pipes along the



channel side of the site; to implement a bluff drainage and vegetation plan designed to control drainage and vegetate the bluff slope above the seawall with non-invasive native bluff species (as discussed in preceding findings); to require that the vegetation planted directly atop the seawall is trailing vegetation capable of screening the upper 3 feet of the seawall structure; to require the sand cover to be planted with appropriate vegetation meant to provide a slow visual transition from the heavily vegetated slope above to the sandy beach below (i.e., reduced density of plants extending down from the top of the seawall); to prohibit additional development in the bluff area below the blufftop edge where such development would further diminish the viewshed and alter the natural landform and mitigation planting established; and to require that all such measures are monitored and maintained over the life of the project.

As conditioned, the Commission finds that the proposed project has been designed in such a way as to minimize public view impacts and to be visually compatible with the character of surrounding area; and, as such, is consistent with Coastal Act Sections 30240(b) and 30251 as discussed in this finding.

#### 4. Cumulative Impacts

Coastal Act Section 30250(a) addresses cumulative impacts, stating in part as follows:

*New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located...where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. ...*

The proposed project would introduce shoreline armoring into a fairly rural stretch of coast for which there is very limited armoring in place to date. The armoring that does exist in this area is overwhelmingly pre-Coastal Act. Shoreline armoring generally begets more shoreline armoring. The reasons for this are many including the fact that armoring on one site can lead to increased and/or more focused erosion at adjacent properties due to end scour and eddying at the point where the unarmored coastline abuts the armor.<sup>32</sup> More generally, as the shoreline continues to actively erode around the now hardened stretch of coast, there can be pressure to extend the existing armoring to cover adjacent areas. Over time, the armoring slowly stretches down the coast until it comes to a headland of other armor.

Moreover, if and when unarmored sites adjacent to armored sites propose their own armoring, one of the salient facts of the specific case will be that the adjacent site is already similarly armored and it is just a continuation of that trend, not something atypical because there is already armoring next door. In other words, installing armoring on an essentially unarmored stretch of coastline, as is proposed here, may prejudice future decisions in the immediate area. Moreover, it can start in motion a series of projects that not only individually result in significant adverse impacts to beach area resources (for example, as detailed above for the proposed project in this case), but can cumulatively lead to overall degradation of the resource on a much grander scale.

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<sup>32</sup> These end effects are not expected in this case (based on the Applicant's geologist's findings), but this is a known issue with shoreline armoring.



In any case, however, this cumulative impact is difficult to measure, particularly when it involves a stretch of coast for which armoring projects are not currently pending. It is unclear what may be proposed in the future nearby, and what effect that may have on coastal resources cumulatively. Ultimately, when the back beach is fixed due to armoring, and the shoreline continues to erode, and the sea level continues to rise, the end result is that beaches may eventually no longer exist. In any case, this project has been conditioned to reduce to the extent feasible the coastal resource impacts associated with it (as discussed above). Accordingly, this project can be found consistent with Section 30250(a) cumulative impact requirements. The same may not necessarily be the case in future applications in this area, and the Commission's action in this application does not set a precedent nor should it be used as justification for future armoring projects in this area. The facts of this particular case dictate that shoreline armoring is necessary to protect an existing endangered structure. The Applicant has attempted to develop a project that responds to the coastal resource impacts inherent in such projects, and specific to this one, and conditions have been applied to further reduce these impacts and/or mitigate proportionately for them. Future project will likewise be dependent on the set of facts applicable in those cases.

## **5. Other**

### **Other Agency Approvals**

A portion of the conditioned project would take place on County-owned lands (the channel portion of the seawall), a portion would take place on DPR-owned lands (the access ramp and construction area at the base of the bluffs), and all of the proposed project would require construction access on both County and DPR-owned lands. In addition, the project area is sometimes occupied by waters of the Monterey Bay and may require Monterey Bay National Marine Sanctuary approval. These agencies will need to consent to the approved project. In addition, due to enforcement issues associated with the existing revetment, the requirement of preliminary Santa Cruz County approvals was waived in this case. Thus, the County will need to provide evidence that they have reviewed and approved the project approved here. See special condition 13.

### **Clarifications**

The applicant has modified the project plans in several ways through project description text submitted. However, the project plans themselves show different things than the text, and this could lead to interpretation confusion on several points. Therefore, this approval is conditioned to: ensure that the base of seawall rip-rap is not a part of the project; modify the rock slope wedge at the top of the wall so that it is inland of the seawall piers; ensure that the plan cross-sections accurately reflect the base of the seawall piers (currently, the cross sections do not show this element – see page 3 of exhibit B) (see special condition 1).

### **Future Notice**

The terms and conditions of this approval are meant to be perpetual. In order to inform future owners of the requirements of the permit, and add a level of legal implementation of this fact, this approval is



conditioned for a deed restriction designed to record the project conditions against the affected property (see special condition 16).

## **6. Coastal Development Permit Conclusion**

There exists an existing endangered structure for which the only feasible alternative is a shoreline structure. In order to meet Coastal Act policy requirements as cited in these findings, the shoreline structure needs to be revised from that proposed, the unavoidable impacts from it need to be reduced and mitigated, long term maintenance and stability need to be assured and responsibility for it assumed by the Applicant, and all other approvals necessary need to be granted. Special conditions have been applied for these purposes as discussed above. As so conditioned, the approved project is consistent to the degree feasible with the Coastal Act.

## **C. Alleged Violation**

In February 1998, the existing revetment was installed at the base of the bluff fronting the Podesto property on Manresa State Beach. The Applicant contends that this was done after verbal permission for the placement of the rip-rap as an emergency measure was granted by Santa Cruz County. However, the Applicant has not to date provided, and the Commission has not to date otherwise obtained, any evidence that such a verbal authorization from an appropriate Santa Cruz County official was so obtained, nor any evidence that a written emergency permit ever followed (as would have been the case were there to have been a verbal emergency authorization), nor any evidence of a regular follow-up CDP (as is required to make any development authorized by County emergency authorization permanent).

Moreover, Commission staff were present at the site on February 5, 1998. Commission staff were responding to an emergency permit request by the County for stockpiling of rock and equipment on the beach in support of the County emergency permit operation to repair a blow out in the culvert running under San Andreas Road. Commission staff issued emergency permit 3-98-014-G to the County at that time.<sup>33</sup> During the February 5, 1998 site visit, Commission staff declined to issue an emergency permit for work on the bluff fronting the Applicant's property when requested by persons apparently representing the Applicant at that time. Subsequently, the rip-rap was placed nonetheless. The rip-rap has been in place continuously since that time; a period of roughly 5½ years.

The proposed project has been evaluated based upon the acknowledged existence of the unpermitted rip-rap in the project area. In fact, the Applicant applied for the retention of the existing rip-rap on a temporary basis until a seawall is constructed. In other words, the Applicant applied after the fact for partial (i.e., temporary) retention of the rip-rap.

---

<sup>33</sup> The culvert work was made eventually made permanent by regular County coastal permit number 98-0408 approved in 1999.



Although this application has been considered based upon the policies of Chapter 3 of the Coastal Act, consideration of this application does not constitute an admission as to the legality of any development undertaken on the subject site without benefit of a coastal development permit and shall be without prejudice to the California Coastal Commission's ability to pursue any legal remedy available under Chapter 9 of the Coastal Act.

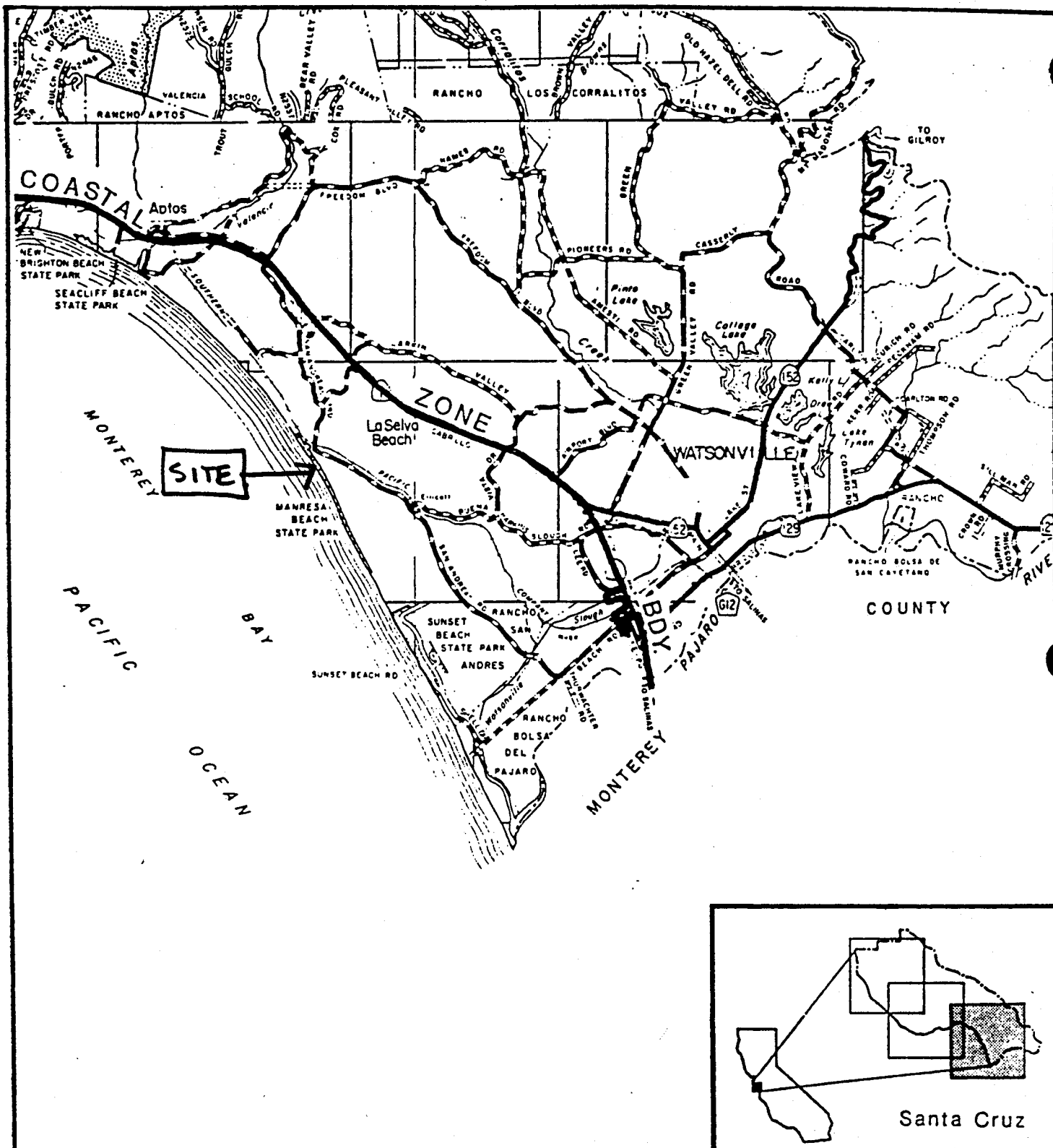
### **D. California Environmental Quality Act (CEQA)**

Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

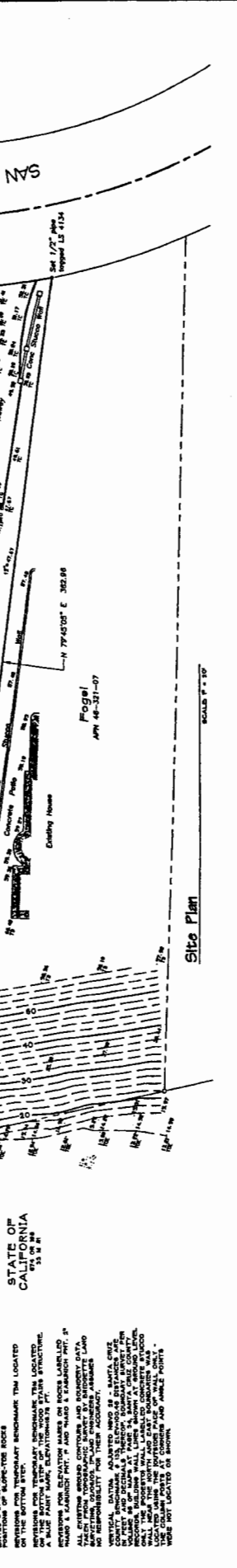
The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. This staff report has discussed the relevant coastal resource issues with the proposal, and has recommended appropriate suggested modifications to avoid and/or lessen any potential for adverse impacts to said resources. All public comments received to date have been addressed in the findings above. All above Coastal Act findings are incorporated herein in their entirety by reference.

As such, there are no additional feasible alternatives nor feasible mitigation measures available which would substantially lessen any significant adverse environmental effects which approval of the proposed project, as modified, would have on the environment within the meaning of CEQA. Thus, if so modified, the proposed project will not result in any significant environmental effects for which feasible mitigation measures have not been employed consistent with CEQA Section 21080.5(d)(2)(A).









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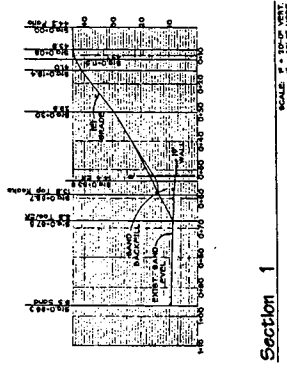
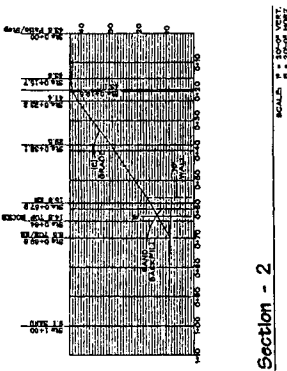
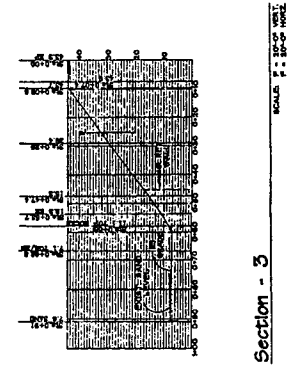


Erosion Control Notes:

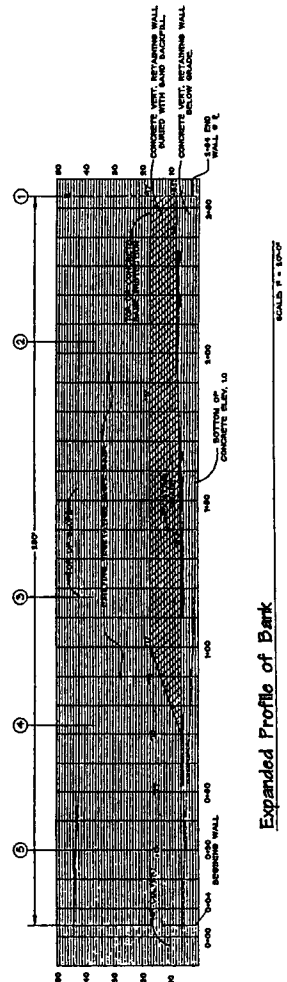
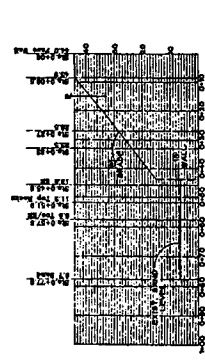
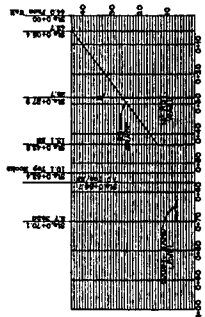
- Retaining Wall Notes:

1. All work shall comply with the 1997 Uniform Building Code.
2. All work shall comply with the requirements of the geotechnical report by HNTB, Kansas City, Kansas, dated 12/1/97, and the 2000 Uniform Building Code, Kansas City, Kansas, dated 2000.
3. Paid supply all materials prior to beginning the work.
4. All plans shall be placed into firm submittal record wall.
5. Submittal shall be submitted to OBE at maximum density.
6. All concrete shall develop a minimum compressive strength of 2800 PSI, at 28 days.
7. Fiber fabric to be "Hy-Grip" S-60K.
8. Rebar and post-tension are neither for 48 hours, in presence of the Geotechnical Engineer prior to commencing work.
9. Structures shall comply with the requirements of specifications for "Steel for Bridges and Buildings", AISC 310, 3rd Edition, 1989.
10. All steel shall be thoroughly cleaned with Z.P.C. rust remover and coated with zinc rich primer. All concrete to joints shall be cleaned, prepared and sealed up with compatible primer and finish coats after installation of the steel.
11. All welding electrodes shall be E70C62.

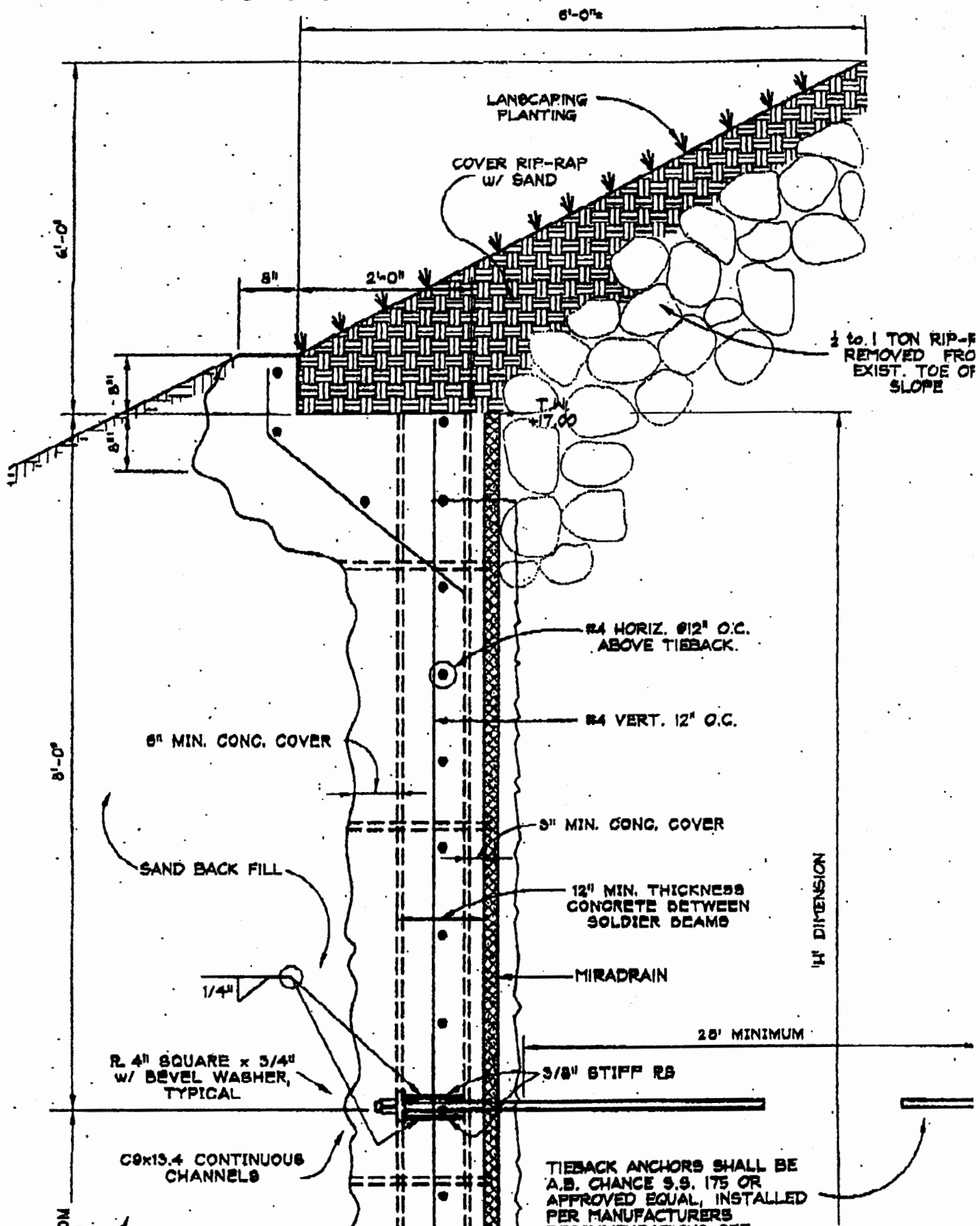
### Retaining Wall Detail



NOTE: Delete: Adjusted MWD 25 = 100.00  
Delete: Adjusted MWD 25 = 100.00  
Delete: Adjusted MWD 25 = 100.00  
Delete: Adjusted MWD 25 = 100.00



### REVISED TOP OF WALL DETAIL



**LANDSCAPING  
PLANTING**

COVER RIF.-RAP  
W/ SAND

1/2 to 1 TON RIP-F  
- REMOVED FROM  
EXIST. TOE OF  
SLOPE

24 HORIZ. @ 12" O.C.  
ABOVE TIEBACK.

8-4 VERT. 12" O.C.

**6<sup>th</sup> MIN. CONC. COVER**

- 3" MIN. CONC. COVER

- 12" MIN. THICKNESS  
CONCRETE BETWEEN  
SOLDIER BEAMS

**-MIRADRAIN**

**20' MINIMUM**

3/8" STIFF RS

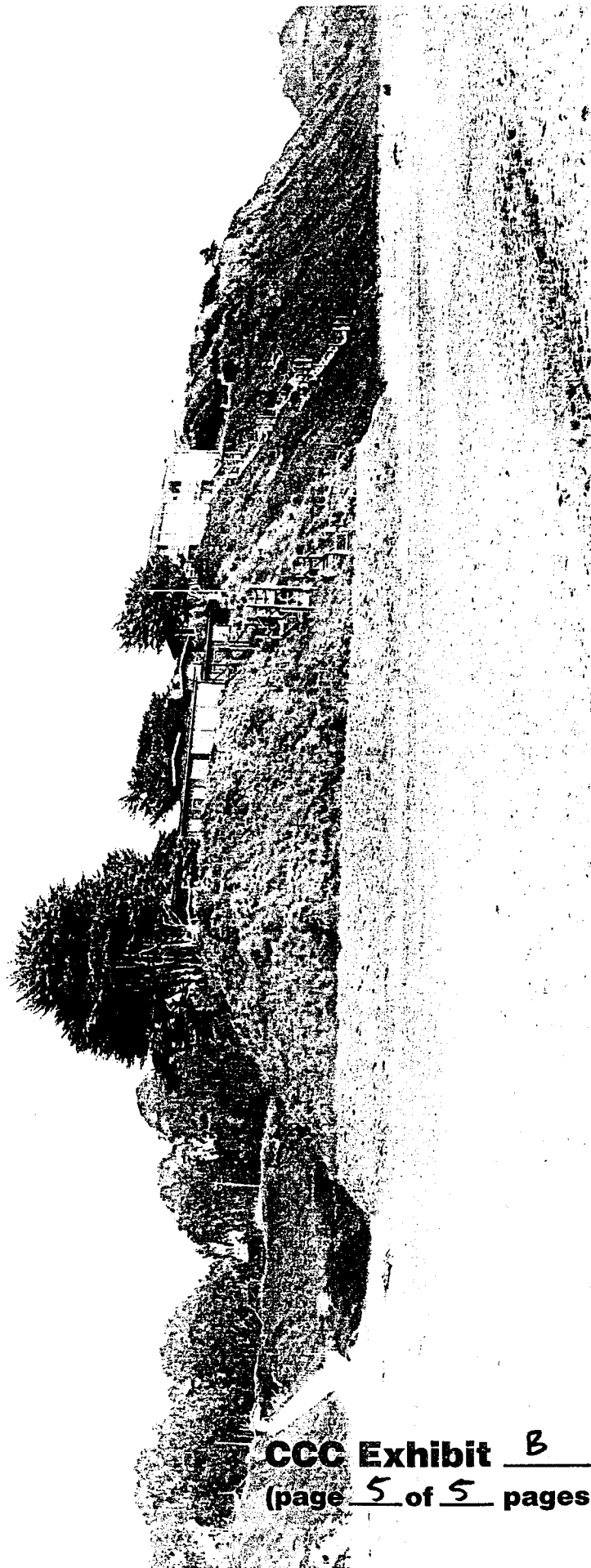
R. 4" SQUARE x 3/4"  
W/ BEVEL WASHER,  
TYPICAL

**C9x13.4 CONTINUOUS CHANNELS**

TIEBACK ANCHORS SHALL BE  
A.B. CHANCE S.S. 175 OR  
APPROVED EQUAL, INSTALLED  
PER MANUFACTURERS

## 11. DIMENSION

**CCC Exhibit B**  
**(page 4 of 5 pages)**

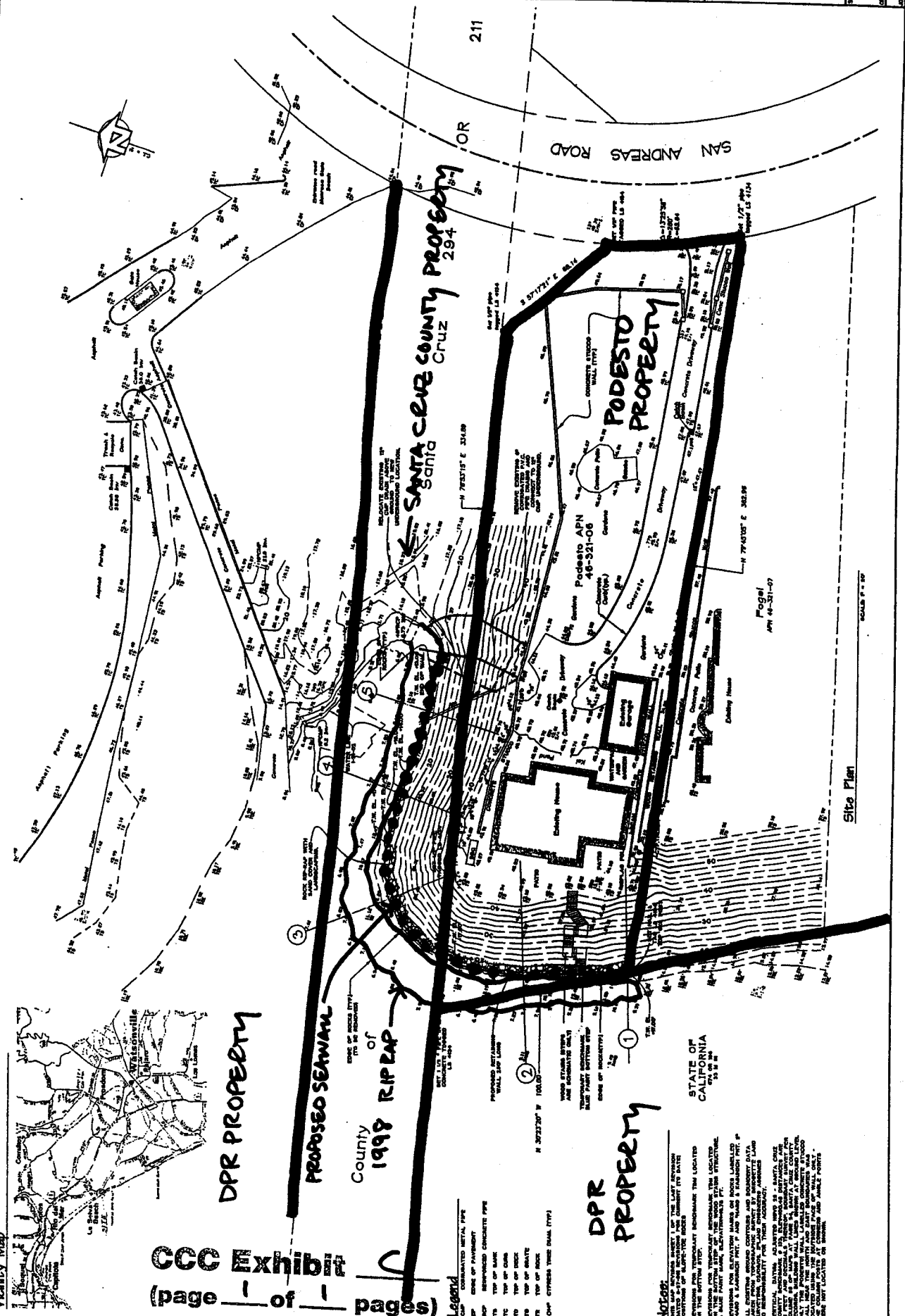


CCC Exhibit B  
(page 5 of 5 pages)

Podesto residence  
Proposed Seawall  
Richard Beale Land Use Planning, Inc.

© 2002 ArchiGraphics

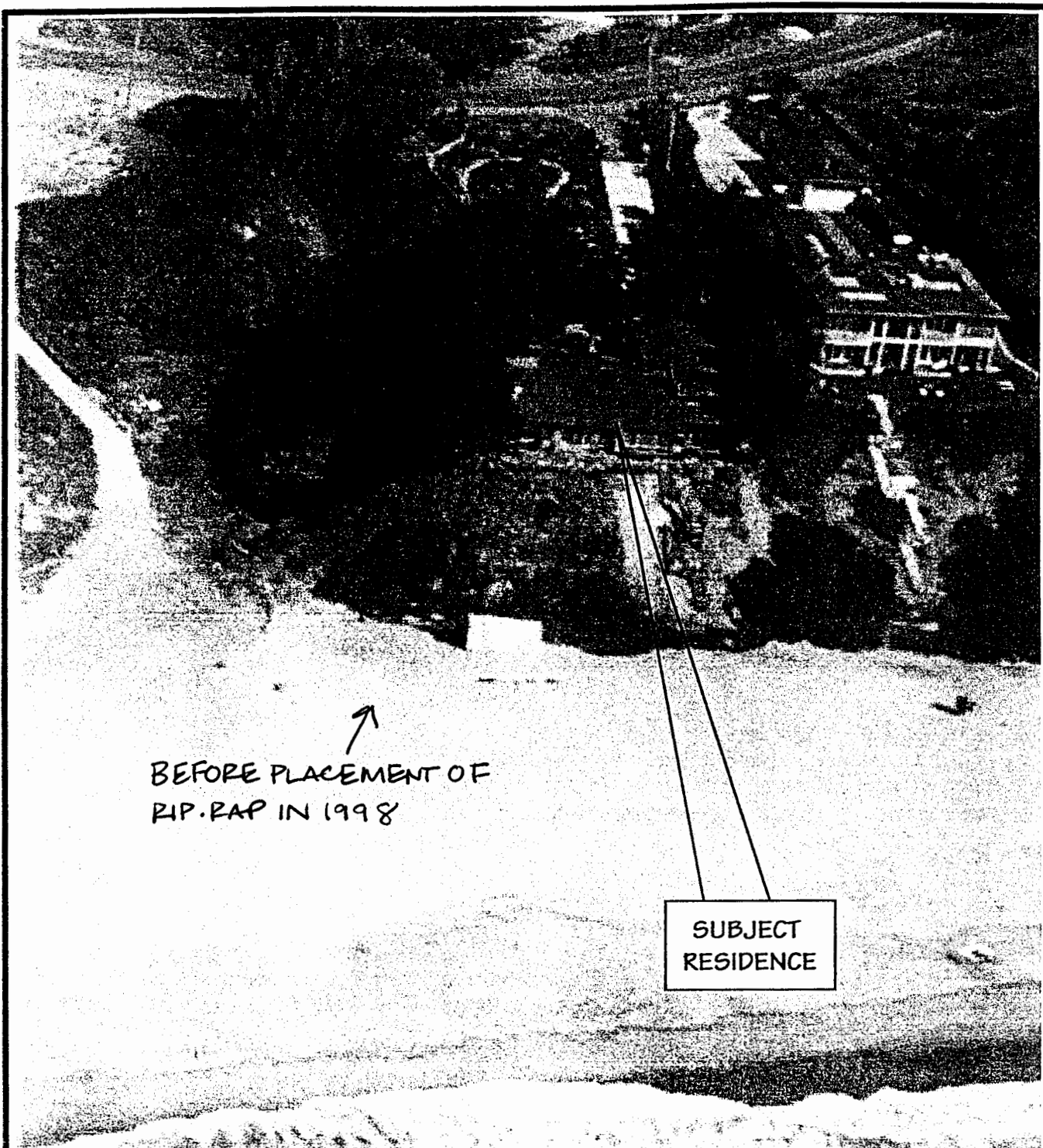
APPLICANT'S PHOTO SIMULATION OF PROPOSED STRUCTURE



**CCC Exhibit** 4  
(page 1 of 1 pages)

[illegible]





Photograph date: October 1997

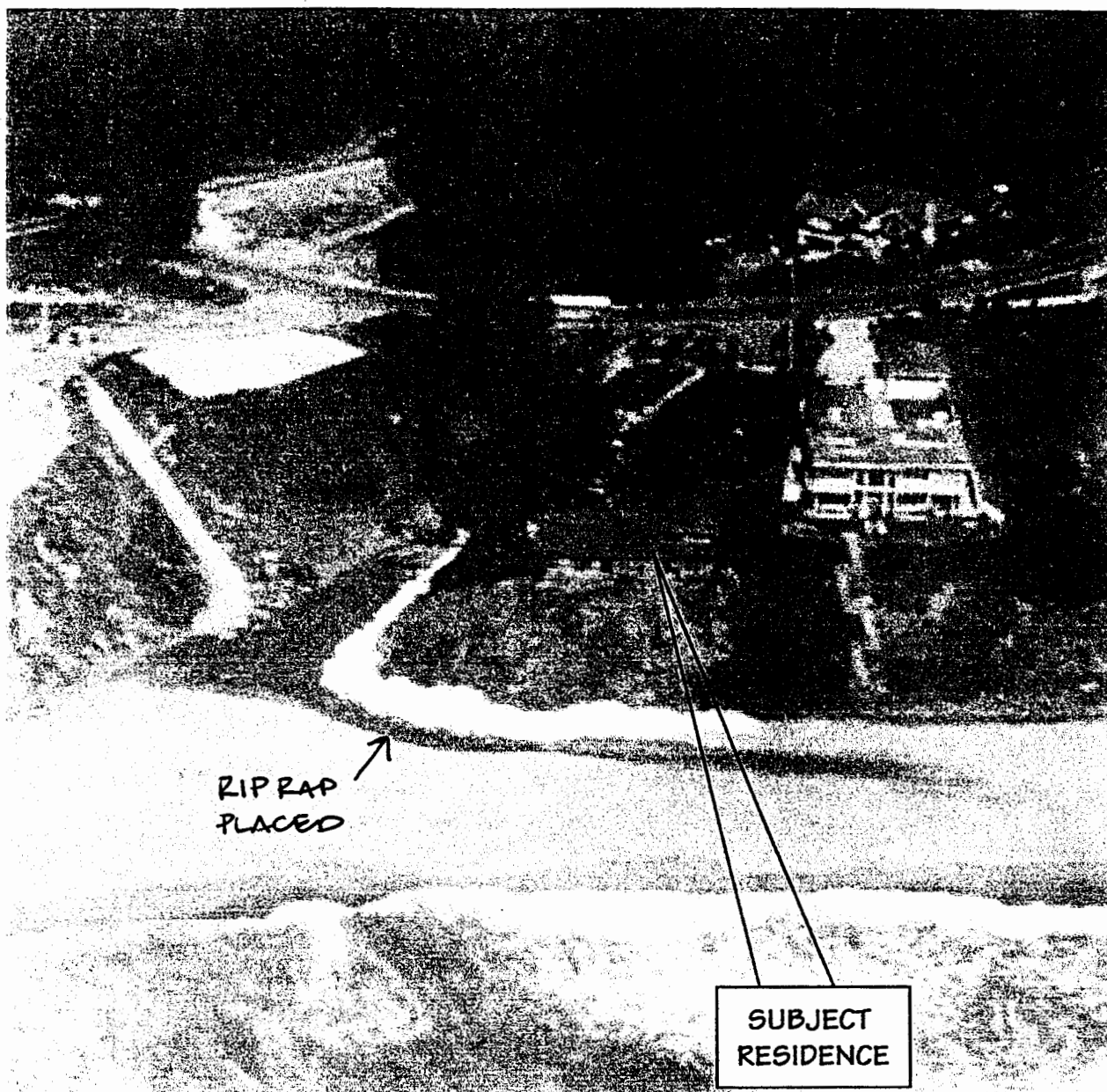
**CCC Exhibit D**  
(page 1 of 2 pages)

Source: USGS web site: <http://coastal.er.usgs.gov/cgi-bin/response.pl?site=cc&loc=36>

ROGERS E. JOHNSON & ASSOCIATES  
Consulting Engineering Geologists  
41 Hangar Way, Suite B  
Watsonville, California 95076  
(831)728-7200 FAX (831)728-7218

USGS Pre El-Nino Oblique Photograph  
*Podesto Property*  
1443 San Andreas Road  
La Selva Beach, California

FIGURE #  
**1**  
JOB #  
C00051 - 64



Photograph date: April 1998

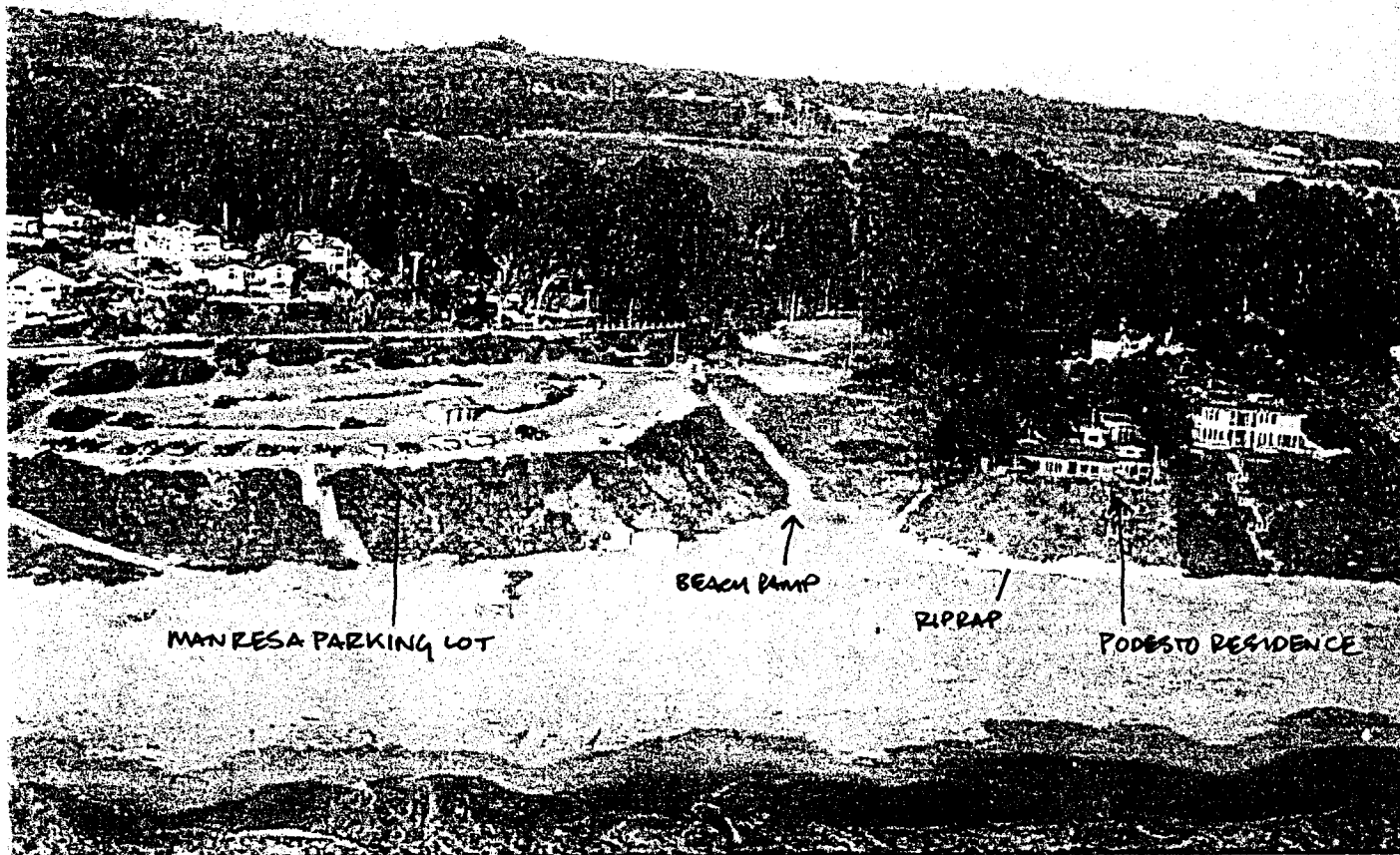
**CCC Exhibit D**  
**(page 2 of 2 pages)**

Source: USGS web site: <http://coastal.er.usgs.gov/cgi-bin/response.pl?site=cc&loc=36>

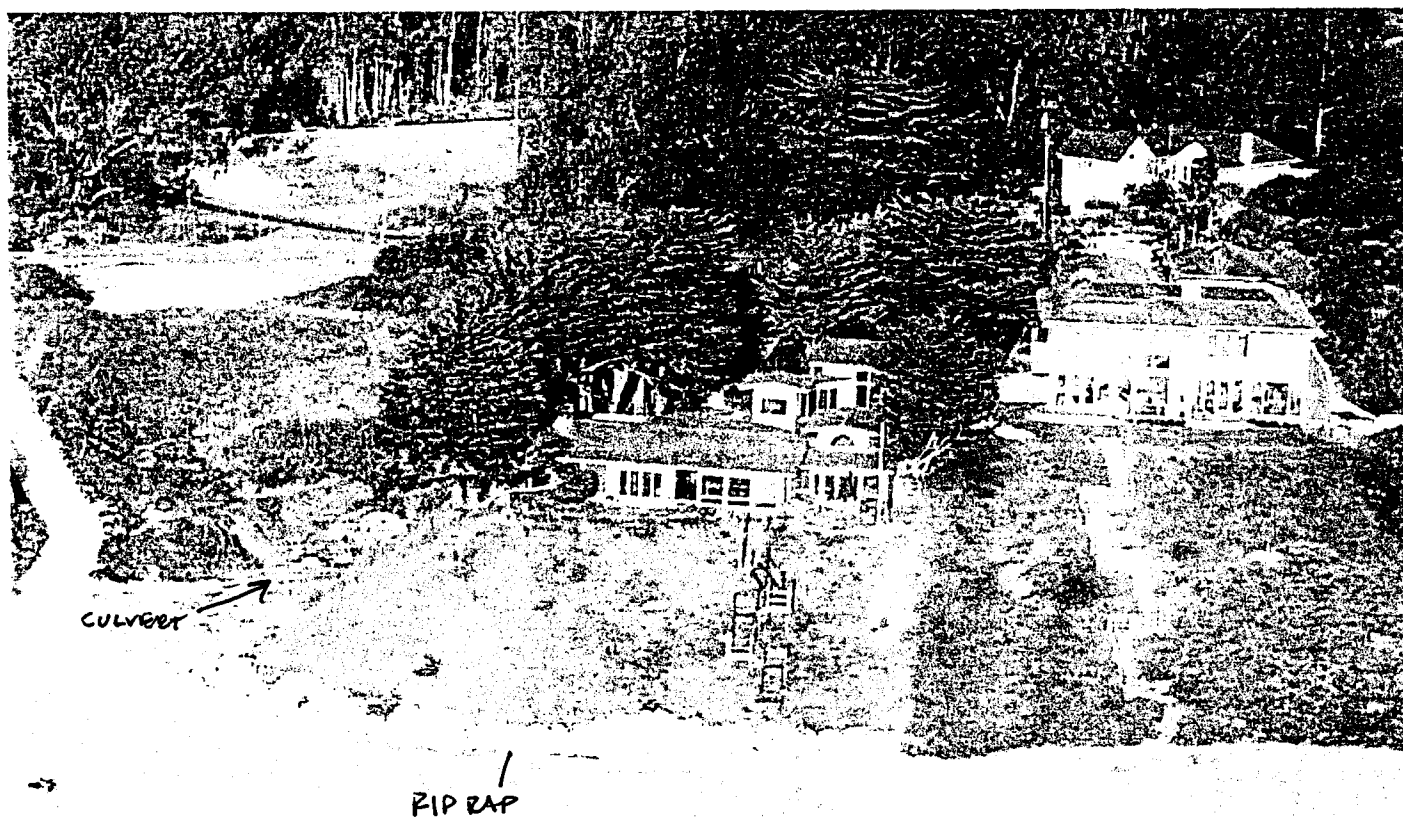
ROGERS E. JOHNSON & ASSOCIATES  
Consulting Engineering Geologists  
41 Hangar Way, Suite B  
Watsonville, California 95076  
(831)728-7200 FAX (831)728-7218

USGS Post El-Nino Oblique Photograph  
Podesto Property  
1443 San Andreas Road  
La Selva Beach, California

FIGURE #  
**2**  
JOB #  
C00051 - 64



CALIFORNIA COASTAL RECORDS PROJECT  
IMAGE 6792 9/30/2002









CHANNEL SIDE BLUFFTOP  
SETBACK

↑  
MORE INLAND  
↓  
MORE SEAWARD

CCC Exhibit E  
(page 3 of 3 pages)



HARO, KASUNICH  
& ASSOCIATES, INC.  
116 East Lake Avenue  
WATSONVILLE, CALIFORNIA 95076  
(831) 722-4175 FAX 722-3202

JOB 1443 SAN ANDREAS SL 3899  
SHEET NO. \_\_\_\_\_ OF \_\_\_\_\_  
CALCULATED BY \_\_\_\_\_ DATE 2/6/98  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_  
SCALE \_\_\_\_\_



Bench at toe being washed away. Emergency measures begun for slides on Podesta property



CCC Exhibit F  
(page 1 of 8 pages)





High Tide at 8:19 AM  
10:00 AM picture taken

Series of pictures taken in  
January 2000 - high tide - no storm.

CCC Exhibit F  
(page 2 of 8 pages)



Picture taken at 9:30 AM  
HIGH TIDE AT 9:05 AM

CCC Exhibit F  
(page 3 of 8 pages)



high tide 9:54 AM 6.9'

photo taken at high tide



Project No. SC3899  
21 June 2001

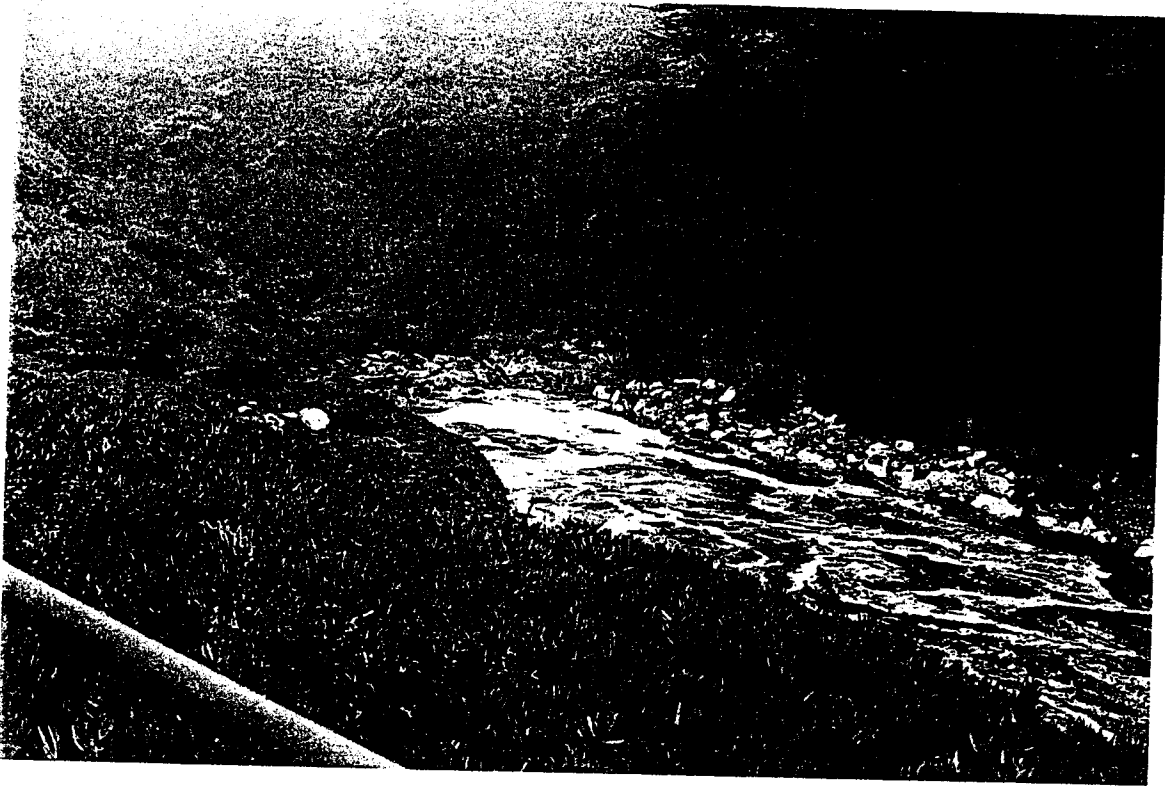
1443 SAN ANDREAS ROAD  
PODESTO PROPERTY  
HARO, KASUNICH & ASSOCIATES, INC.

PHOTOGRAPH

Podesto property, winter storm January 11, 2001



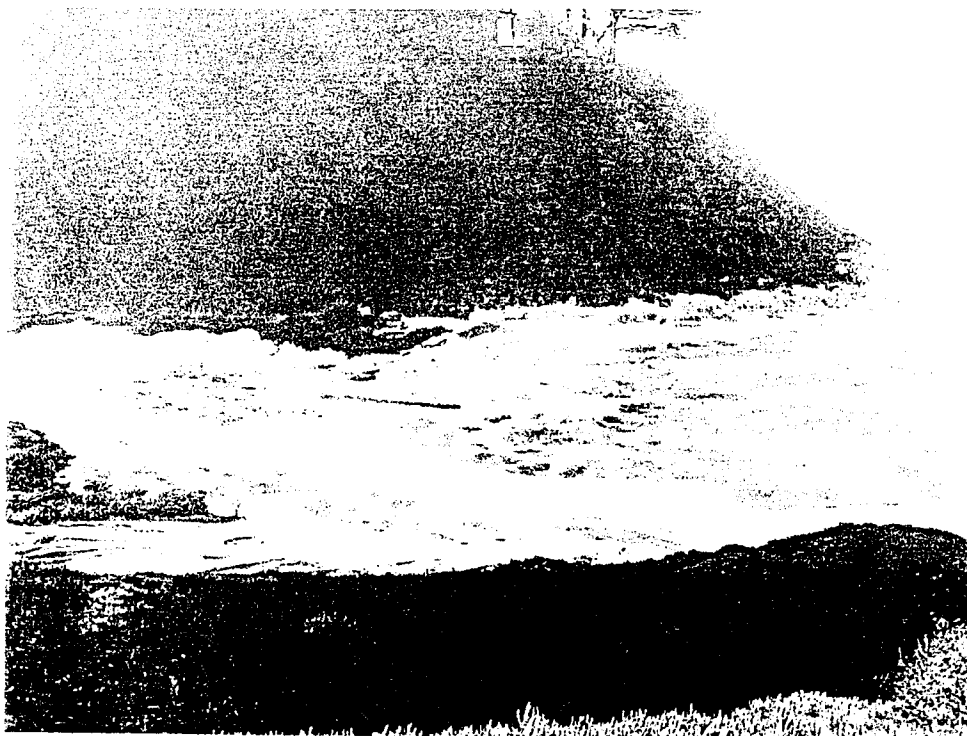
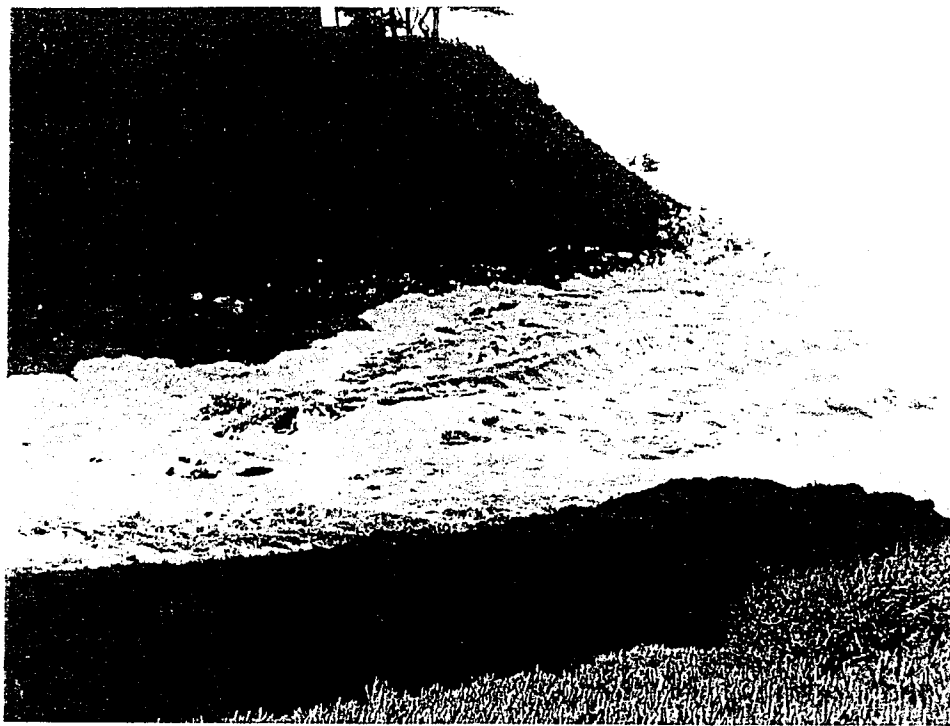
CCC Exhibit F  
(page 6 of 8 pages)



STORM OF 11/9/02 CCC Exhibit F  
(page 7 of 8 pages)

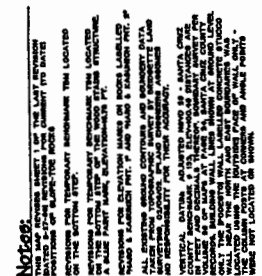


PODESTO PROPERTY  
WINTER STORM OF DECEMBER 2002



PAGE 1

CCC Exhibit F  
(page 8 of 8 pages)



SCALE 9 - 30