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APPEAL STAFF REPORT
SUBSTANTIAL ISSUE DETERMINATION & DE NOVO HEARING

Appeal number.....**A-3-SCO-01-109, Adams Drilled Pier and Shotcrete Wall**

Applicants.....Keith Adams

Appellants.....Commissioners Sara Wan and Dave Potter

Local government.....Santa Cruz County

Local decision.....Approved with conditions (October 19, 2001)

Project location.....Coastal bluff seaward of 500 41st Avenue (APN 033-171-18) in the Opal Cliffs region of the unincorporated Live Oak area of Santa Cruz County.

Project description.....Drilled pier and shotcrete shoreline protection structure.

File documents.....Santa Cruz County Certified Local Coastal Program; Santa Cruz County Coastal Development Permit Application File 00-0757.

Staff recommendation ...**Substantial Issue Exists; Denial**

Summary of staff recommendation: This is the substantial issue determination and de novo hearing for appeal number A-3-SCO-01-109. Staff recommends that the Commission find that a substantial issue exists with respect to this project's conformance with the certified Santa Cruz County Local Coastal Program (LCP) and take jurisdiction over the coastal development permit for the project. **Staff subsequently recommends that the Commission deny the proposed project** because the residence proposed to be protected is not "significantly threatened" (as required by the LCP in order allow for the installation of shoreline protective devices), and there are a range of blufftop drainage and erosion control techniques available that would improve the stability of the bluff without an armoring project and its attendant negative impacts on coastal resources.

Report Contents

1. Report Summary

Santa Cruz County approved a coastal permit to allow installation of a concrete-faced shoreline protective structure in two phases: phase one involves the immediate installation of an approximately 80 linear feet and 40 foot deep drilled pier wall system in the bluff; phase two, to commence when the drilled piers are exposed in the bluff face in the future, would involve facing the wall system with textured concrete. Thus, the one County approval ultimately allows for a textured concrete seawall on the bluff. The structure would be installed in the unincorporated Live Oak beach area of Santa Cruz County on the bluff seaward of the intersection of 41st Avenue and East Cliff/Opal Cliff Drives immediately adjacent to a County blufftop coastal accessway (locally known as "the Hook").

The Santa Cruz County LCP recognizes that shoreline protective structures designed to forestall coastal erosion can adversely alter natural shoreline processes and, as such, 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. As a result, exacting criteria must be met under the LCP, and the Coastal Act, before such structures can be considered or approved, and the LCP requires 100 years of stability (without reliance on shoreline protective structures) for development.

The LCP only allows for shoreline protection structures "where necessary to protect existing structures from a significant threat." The LCP-required significant threat has not been clearly demonstrated in this case. The County's findings indicate that the home will be threatened by bluff retreat in the next 15 or 20 years. However, the geotechnical evidence indicates that the bluff itself is relatively stable and that it will be much longer than that until the residence is significantly threatened. At the identified long-term average rate of erosion (0.4 feet per year), the residence, which is currently setback a minimum of 24 feet from the blufftop edge, would still be expected to be set back a minimum of 20 feet from the blufftop's edge at the identified rate after another ten years; it would be 60 years at this rate until the blufftop's edge reached the residence itself. Although bluff retreat is episodic by nature, and more rapid bluff retreat may occur over part of this time interval, the best evidence to date indicates that the structure is not in significant, imminent threat from erosion.

Moreover, the LCP requires a "thorough analysis of all reasonable alternatives" when shoreline armoring is proposed and only allows for shoreline armoring measures "where non-structural measures are infeasible from an engineering standpoint or not economically viable." If a significant threat to an existing structure were proven, the County's approval has not thoroughly evaluated non-structural alternatives that could lessen the negative effect of the project approved. The facts of the case appear to indicate that some combination of vegetation treatment on the upper bluff terrace deposits combined with drainage improvement on the blufftop itself could serve to improve the stability of the bluff here. Given the moderate long-term erosion rate relative to the existing setback, dismissal of such alternatives is contrary to LCP shoreline structure policy direction.

The LCP requires that shoreline protective structures "be placed as close as possible to the development or structure requiring protection." If it were conclusively shown that there was a significant threat here, and if non-armoring alternatives were conclusively shown to be infeasible, the County-approved structure would be placed closer to the bluff edge than to the residence. In fact, the structure would be roughly 20 feet or more from the residence it is meant to protect.

In addition, the LCP requires a minimum of 100 years of stability without reliance on future shoreline protective structures. If the County-approved project were to be installed, the consulting engineers indicate that a separate seawall, with its own attendant impacts, would need to be installed at this location in roughly 20 years to protect the first shoreline protective structure. Not only is it unlikely that the LCP or the Coastal Act would allow for such shoreline armoring to protect other shoreline armoring, but additional armoring would be necessary within 22 years – well in advance of the LCP's minimum 100 year threshold.

Finally, were the other tests otherwise met to allow for armoring at this location, the LCP has multiple overlapping policies meant to result in appropriate design of allowable armoring projects to minimize and mitigate impacts to natural landforms, public viewsheds, and public access and recreational resources (including beach, offshore surfing, and blufftop access). These policies are complemented by Coastal Act access and recreation protective policies that likewise apply here. Public access, public recreation, views, landform alteration, and potentially offshore habitat issues have been inadequately analyzed and consistency with protective LCP and Coastal Act policies is not assured. For example, the impacts of the County-approved project on shoreline sand supply processes and the "Hook" surfing access offshore have not been analyzed nor mitigated.

For the above reasons, a substantial issue exists with respect to this project's conformance with the certified LCP such that the Coastal Commission must take jurisdiction over the coastal development permit for the project.

In a Coastal Commission de novo review, the proposed project raises fundamental LCP conformance issues that cannot be easily rectified by conditions of approval. The LCP-required significant threat has not been demonstrated. The LCP-required infeasibility of non-armoring alternatives has not been demonstrated. The LCP-required shoreline structure placement is not as close as possible to the residence proposed for protection. The LCP-required 100 year stability test is not met. The LCP- and Coastal Act-required prevention of, and, if unavoidable, mitigation for, impacts to beach and offshore recreational access, public views, and landform alteration has not been assured. In sum, without a clear demonstration of significant threat, and in light of the negative resource impacts from armoring that are well known to the Commission, armoring at this location cannot be found consistent with the certified LCP and Coastal Act, and cannot be found consistent with the California Environmental Quality Act. For these reasons, the proposed project is denied.

2. Appeal of Santa Cruz County Decision

A. Santa Cruz County Action

On October 19, 2001 the Santa Cruz County Zoning Administrator approved the proposed project subject to multiple conditions (see exhibit C for the County's staff report, findings and conditions on the project). Notice of the Zoning Administrator's action on the coastal development permit (CDP) was received in the Commission's Central Coast District Office on October 23, 2001. The Commission's ten-working day appeal period for this action began on October 24, 2001 and concluded at 5pm on November 6, 2001. One valid appeal (see below) was received during the appeal period.

B. Appeal Procedures

Coastal Act Section 30603 provides for the appeal of approved coastal development permits in jurisdictions with certified local coastal programs for development that is (1) between the sea and the

first public road paralleling the sea or within 300 feet of the inland extent of any beach or of the mean high tideline of the sea where there is no beach, whichever is the greater distance; (2) on tidelands, submerged lands, public trust lands, within 100 feet of any wetland, estuary, or stream, or within 300 feet of the top of the seaward face of any coastal bluff; (3) in a sensitive coastal resource area; (4) for counties, not designated as the principal permitted use under the zoning ordinance or zoning district map; and (5) any action on a major public works project or energy facility. This project is appealable because it is seaward of the first public road at the bluff above the beach.

The grounds for appeal under Section 30603 are limited to allegations that the development does not conform to the standards set forth in the certified LCP or the public access policies of the Coastal Act. Section 30625(b) of the Coastal Act requires the Commission to conduct a de novo coastal development permit hearing on an appealed project unless a majority of the Commission finds that "no substantial issue" is raised by such allegations. If the Commission conducts a de novo hearing, then in order to approve a proposed development the Commission must find that the proposed development is in conformity with: (a) the certified local coastal program (Section 30604(b)); and (b) if the project is located between the nearest public road and the sea or the shoreline of any body of water located within the coastal zone, the public access and recreation policies of Chapter 3 of the Coastal Act (Section 30604(c)). This project is located between the nearest through public road (East Cliff/Opal Cliff Drive) and the sea and thus, the Section 30604(c) finding would need to be made in a de novo approval in this case.

The only persons qualified to testify before the Commission on the substantial issue question are the Applicant, persons who made their views known before the local government (or their representatives), and the local government. Testimony from other persons regarding substantial issue must be submitted in writing. Any person may testify during the de novo stage of an appeal.

C. Appellant's Contentions

The two Commissioner Appellants contend that the County-approved project raises substantial issues with respect to the project's conformance with core LCP and Coastal Act policies, concluding as follows:

> *In sum, the County LCP recognizes that shoreline protective structures designed to forestall coastal erosion can adversely alter natural shoreline processes and, as such, 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. As a result, exacting criteria must be met under the LCP, and the Coastal Act, before such structures can be considered or approved, and the LCP requires 100 years of stability (without reliance on shoreline protective structures) for development.*
>
> *The County's approval is not consistent with the LCP in that the LCP-required significant threat has not been clearly demonstrated. The County's findings indicate that the home will be*

threatened by bluff retreat in the next 15 or 20 years; the identified erosion rate shows that it may be much longer than that. If a significant threat to an existing structure were proven, the County's approval has not thoroughly evaluated non-structural alternatives that could lessen the negative effect of the project approved, and the County's approval has not sited the proposed structure as close as possible to the structure to be protected. Public access, public recreation, views, landform alteration, and potentially offshore habitat issues have been inadequately analyzed and consistency with protective LCP and Coastal Act policies is not assured. It appears that the County approved project would require its own shoreline armoring in roughly 20 years though the LCP requires 100 years of stability.

As such, the proposed project's conformance with core LCP and Coastal Act policies is questionable. These issues warrant a further analysis and review by the Coastal Commission of the proposed project.

Please see exhibit D for the Commissioner Appellants' complete appeal document.

3. Staff Recommendation

A. Staff Recommendation on Substantial Issue

The staff recommends that the Commission determine that a **substantial issue** exists with respect to the grounds on which the appeal was filed. A finding of substantial issue would bring the project under the jurisdiction of the Commission for hearing and action.

Motion. *I move that the Commission determine that Appeal Number A-3-SCO-01-109 raises* ***no*** *substantial issue with respect to the grounds on which the appeal has been filed under §30603 of the Coastal Act.*

Staff Recommendation of Substantial Issue. *Staff recommends a* ***no*** *vote. Failure of this motion will result in a de novo hearing on the application, and adoption of the following resolution and findings. Passage of this motion will result in a finding of No Substantial Issue and the local action will become final and effective. The motion passes only by an affirmative vote of the majority of the appointed Commissioners present.*

Resolution To Find Substantial Issue. *The Commission hereby finds that Appeal Number A-3-SCO-01-109 presents a substantial issue with respect to the grounds on which the appeal has been filed under §30603 of the Coastal Act regarding consistency with the Certified Local Coastal Program.*

B. Staff Recommendation on Coastal Development Permit

The staff recommends that the Commission, after public hearing, **deny** a coastal development permit for the proposed development.

Motion. *I move that the Commission approve Coastal Development Permit Number A-3-SCO-01-109 pursuant to the staff recommendation.*

Staff Recommendation of Denial. *Staff recommends a* ***no*** *vote. Failure of this motion will result in denial of the permit and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.*

Resolution To Deny The Permit. *The Commission hereby denies a coastal development permit for the proposed development on the grounds that the development will not conform with the policies of the Santa Cruz County Local Coastal Program, and that it is located between the sea and the first public road nearest the shoreline and it will not conform with the access and recreation policies of Chapter 3 of the Coastal Act. Approval of the permit would not comply with the California Environmental Quality Act because there are feasible mitigation measures or alternatives that would substantially lessen the significant adverse impacts of the development on the environment.*

Recommended Findings and Declarations

The Commission finds and declares as follows:

4. Project Description

A. Project Location

The proposed project is located at the terminus of 41st Avenue where it meets the shoreline in the Pleasure Point/Opal Cliffs region of the unincorporated Live Oak area of Santa Cruz County.

Regional Setting

Situated on the northern shore of the Monterey Bay, Santa Cruz County is bordered to the north and south by San Mateo and Monterey Counties. Santa Cruz County is characterized by a wealth of natural resource systems ranging from mountains and forests to beaches and the Monterey Bay itself. The Bay has long been a focal point for area residents and visitors alike providing opportunities for surfers, fishermen, divers, marine researchers, kayakers, and boaters, among others. The unique grandeur of the region and its national significance was formally recognized in 1992 when the area offshore 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, Santa Cruz County has seen extensive development and regional growth over the years since 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 currently home to over one-quarter of a million persons.[1] 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 parks and recreational areas. For coastal counties such as Santa Cruz where the vast majority of residents live within a half-hour of the coast, coastal recreational resources are a critical element in helping to meet these needs. Furthermore, with coastal parks and beaches themselves attracting visitors into the region, an even greater pressure is felt at coastal recreational systems such as that found in Live Oak. With Santa Cruz County beaches providing arguably the warmest and most accessible ocean waters in all of Northern California, and with the vast population centers of the San Francisco Bay area and the Silicon Valley nearby, this type of resource pressure is particularly evident in coastal Live Oak.

Live Oak is part of a larger area including the Cities of Santa Cruz and Capitola that is home to some of the best recreational beaches in the Monterey Bay area. Not only are north Monterey Bay weather patterns more conducive to beach recreation than the rest of the Monterey Bay area, but north bay beaches are generally the first beaches accessed by visitors coming from the north of Santa Cruz. With Highway 17 providing the primary access point from the north (including San Francisco and the Silicon Valley) into the Monterey Bay area, Santa Cruz, Live Oak, and Capitola are the first coastal areas that visitors encounter upon traversing the Santa Cruz Mountains. As such, the Live Oak beach area is an important coastal access asset for not only Santa Cruz County, but also the entire central and northern California region.

See exhibit A for project location information.

Live Oak Beach Area

Live Oak represents the unincorporated segment of Santa Cruz County located between the City of Santa Cruz (upcoast) and the City of Capitola (downcoast). The Live Oak coastal area is well known for excellent public access opportunities for beach area residents, other Live Oak residents, other Santa Cruz County residents, and visitors to the area. Walking, biking, skating, viewing, surfing, fishing, sunbathing, and more are all among the range of recreational activities possible along the Live Oak shoreline. In addition, Live Oak also provides a number of different coastal environments including sandy beaches, rocky tidal areas, blufftop terraces, and coastal lagoons. These varied coastal characteristics make the Live Oak shoreline unique in that a relatively small area can provide different recreational users a diverse range of alternatives for enjoying the coast. By not being limited to one large, long beach, or solely an extended stretch of rocky shoreline, the Live Oak shoreline accommodates recreational users in a manner that is typical of a much larger access system.

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[1] 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.

Primarily residential with some concentrated commercial and industrial areas, Live Oak is a substantially urbanized area with few major undeveloped parcels remaining. Development pressure has been disproportionately intense for this section of Santa Cruz County. Because Live Oak is projected to absorb the majority of the unincorporated growth in Santa Cruz County, development pressure will likely continue to tax Live Oak's public infrastructure (e.g., streets, parks, beaches, etc.).[2] Given that the beaches are the largest public facility in Live Oak, this pressure will be particularly evident in the beach area.

Proposed Development Site

The proposed project is located on the bluffs seaward of the intersection of 41st Avenue and East Cliff/Opal Cliff Drives; roughly the boundary point between the Pleasure Point (upcoast) and Opal Cliffs (downcoast) areas of Live Oak. The subject site is occupied by an existing two-story single-family residence on an oddly shaped parcel immediately adjacent to the County's blufftop coastal accessway (locally known as "the Hook") located to the west. The Hook coastal accessway park provides a developed parking lot and related coastal access facilities (restroom, shower, etc.), and a blufftop overlook with a Coastal Conservancy funded stairway oriented towards the highly used recreational surfing area offshore here. The subject residence begins a stretch of coastline extending to Capitola in which private residential properties occupy the blufftop area seaward of the first through public road (Opal Cliff Drive). The bluffs at the subject site as well as up and down coast are unarmored currently, and exist in a natural state.

See exhibit A for graphics showing the subject site in relation to the various features described above.

B. County Approved Project

The County approved project consists of a concrete-faced shoreline protective structure that would be installed in 2 phases: phase one involves the immediate installation of an approximately 80 linear feet and 40 foot deep drilled pier wall system (14 piers set roughly 6 feet on center, connected by an at-grade 4 foot deep concrete whaler beam, and reinforced by twelve 50 foot tie-back rods) in the bluff with a 3½ foot railing atop; phase 2, to commence when the drilled piers are exposed in the future, involves facing the wall system with textured concrete.

The geotechnical record includes a geologic investigation (by Rogers Johnson and Associates, dated September 2000), and a geotechnical and coastal engineering investigation (by Haro, Kasunich & Associates Inc., dated October 2000).

See exhibit B for County-approved site plans. See exhibit C for the County staff report, findings, and conditions approving the Applicant's proposed project.

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[2] The LCP identifies Live Oak at buildout with a population of approximately 29,850 persons; based on the County's recreational formulas, this corresponds to a park acreage of 150-180 acres. Though Live Oak accounts for less than 1% of Santa Cruz County's total acreage, this projected park acreage represents nearly 20% of the County's total projected park acreage.

5. Substantial Issue Findings

In general, the Commissioner Appellants raise issues with respect to the project's conformance with certified Santa Cruz County LCP policies regarding shoreline structures and their associated impacts.

Commissioner Appellants generally contend that it has not been clearly demonstrated that there is an existing structure that is significantly threatened as required by the LCP. If such a case could be clearly established, the County's approval has not thoroughly evaluated non-structural alternatives that could lessen the negative effect of the project approved, and the County's approval has not sited the proposed structure as close as possible to the structure to be protected. Public access, public recreation, views, landform alteration, and potentially offshore habitat issues have been inadequately analyzed and consistency with protective LCP and Coastal Act policies is not assured. It appears that the County approved project would require its own shoreline armoring in roughly 20 years though the LCP requires 100 years of stability.

The Applicant has submitted their own response to the appeal (see exhibit E).

As summarized below, the appeal issues raise a substantial issue with respect to the project's conformance with the Santa Cruz County LCP.

A. Allowing Shoreline Armoring

1. Applicable Policies

The LCP defines shoreline protection structures as follows:

> ***IP Section 16.10.040(3g) Shoreline protection structure.*** *Any structure or material, including but not limited to riprap or a seawall, placed in an area where coastal processes operate.*

The LCP addresses the use of shoreline protective structures primarily through LUP Policy 6.2.16 (Structural Shoreline Protection Measures) and IP Section 16.10.070(h)(3) (Coastal Bluffs and Beaches, Shoreline Protection Structures).

> ***LUP Policy 6.2.16 Structural Shoreline Protection Measures.*** *Limit structural shoreline protection measures to structures which protect existing structures from a significant threat, vacant lots which through lack of protection threaten adjacent developed lots, public works, public beaches, or coastal-dependent uses. Require any application for shoreline protective measures to include a thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure, protection of the upper bluff or area immediately adjacent to the threatened structure, and engineered shoreline protection such as beach nourishment, revetments, or vertical walls. Permit structural protection measures only if non-structural measures (e.g., building relocation or change in design) are infeasible from an engineering standpoint or not economically viable. The protection structure must not reduce or restrict public beach access, adversely affect shoreline processes and sand supply, increase*

erosion on adjacent properties, or cause harmful impacts on wildlife and fish habitats or archeological or paleontological resources. The protection structure must be placed as close as possible to the development requiring protection and must be designed to minimize adverse impacts to recreation and to minimize visual intrusion. Shoreline protection structures shall be designed to meet approved engineering standards for the site as determined through the environmental review process. Detailed technical studies shall be required to accurately define the oceanographic conditions affecting the site. All shoreline protective structures shall incorporate permanent survey monuments for future use in establishing a survey monument network along the coast for use in monitoring seaward encroachment or slumping of revetments and erosion trends. No approval shall be given for shoreline protective structures that do not include permanent monitoring and maintenance programs. Such programs shall include a report to the County every five years or less, as determined by a qualified professional, after construction of the structure, detailing the condition of the structure and listing any recommended maintenance work. Maintenance programs shall be recorded and shall allow for County removal or repair of a shoreline protective structure, at the owner's expense, if its condition creates a public nuisance or if necessary to protect public health and safety.

IP Section 16.10.070(h)(3). *Shoreline protection structures shall be governed by the following:*

(i) shoreline protection structures shall only be allowed on parcels where both adjacent parcels are already similarly protected, or where necessary to protect existing structures from a significant threat, or on vacant parcels which, through lack of protection threaten adjacent developed lots, or to protect public works, public beaches, and coastal dependent uses. Note: New shoreline protection structures shall not be allowed where the existing structure proposed for protection was granted an exemption pursuant to Section 16.10.070(h)2.

(ii) seawalls, specifically, shall only be considered where there is a significant threat to an existing structure and both adjacent parcels are already similarly protected.

(iii) application for shoreline protective structures shall include a thorough analysis of all reasonable alternatives to such structures, including but not limited to relocation or partial removal of the threatened structure, protection of only the upper bluff or the area immediately adjacent to the threatened structure, beach nourishment, and vertical walls. Structural protection measures on the bluff and beach shall only be permitted where non-structural measures, such as building relocating the structure or changing the design, are infeasible from an engineering standpoint or not economically viable.

(iv) shoreline protection structures shall be placed as close as possible to the development or structure requiring protection.

(v) shoreline protection structures shall not reduce or restrict public beach access, adversely affect shoreline processes and sand supply, adversely impact recreational resources, increase erosion on adjacent property, create a significant visual intrusion, or cause harmful impacts to wildlife or fish habitat, archaeological or paleontologic resources.

Shoreline protection structures shall minimize visual impact by employing materials that blend with the color of natural materials in the area.

(vi) all protection structures shall meet approved engineering standards as determined through environmental review.

(vii) all shoreline protection structures shall include a permanent, County approved, monitoring and maintenance program.

(viii) Applications for shoreline protection structures shall include a construction and staging plan that minimizes disturbance to the beach, specifies the access and staging areas, and includes a construction schedule that limits presence on the beach, as much as possible, to periods of low visitor demand. The plan for repair projects shall include recovery of rock and other material that has been dislodged onto the beach.

(ix) All other required local, state and federal permits shall be obtained.

These policies generally allow for shoreline protection "where necessary to protect existing structures from a significant threat." Such structural protection is only allowable when non-structural measures are infeasible, and when such protection does not reduce public beach access, adversely affect shoreline processes and sand supply, adversely impact recreational resources, or negatively impact habitat. On the whole, these LCP policies recognize that structural shoreline protection measures have negative resource impacts and are to be utilized sparingly – and only when it can be demonstrated that such measures are warranted and appropriately mitigated.

2. County-Approved Project

The County-approved project consists of a concrete-faced shoreline protective structure that would be installed in 2 phases: phase one involves the immediate installation of an approximately 80 linear feet and 40 foot deep drilled pier wall system in the bluff; phase 2, to commence when the drilled piers are exposed in the bluff face in the future, would involve facing the wall system with textured concrete (see County-approved staff report, findings and conditions in exhibit C, and plans in exhibit B). The entire project takes place within a coastal bluff area subject to ongoing coastal processes (including erosion, wave attack, landsliding, etc.). The end-result of the County approval would be a concrete-faced wall exposed to the ocean. As a result, the drilled pier wall system approved would be "placed in an area where coastal processes operate" and constitutes a "shoreline protective structure" for LCP purposes.

3. Consistency with Applicable Policies

Defining the existing structure

The LCP allows installation of shoreline protection structures to protect existing structures, vacant lots which through lack of protection threaten adjacent development, public works, public beaches, or coastal dependent uses. The subject application involves the protection of an "existing structure" as opposed to

the other allowed categories.[3] For the purposes of the analysis that follows, it is critical to understand what constitutes the "existing structure" under the LCP. The Commission has generally interpreted LCP and Coastal Act policies to allow shoreline protection only for existing principal structures. The Commission must always consider the specifics of each individual project, but has found that accessory structures (such as patios, decks, gazebos, stairways, etc.) are not required to be protected or can be protected from erosion by relocation or other means that do not involve shoreline armoring. In this case, the subject blufftop site is developed with a two-story residence that the County indicates was constructed at least 30 years ago[4] (i.e., prior to Coastal Act and Proposition 20 coastal permitting requirements) fronted by a deck on the seaward side of the residence. Consistent with the interpretation that only principal structures are eligible for shoreline armoring, the "existing structure" against which the LCP shoreline structure policies must be applied in this case is the existing residence itself (and not the deck).

Demonstration of significant threat

The LCP only allows for shoreline protection structures "where necessary to protect existing structures from a significant threat." The LCP does not define "significant threat." In similar Santa Cruz County cases,[5] and in general, the Commission has interpreted "significant threat" and/or "imminent danger" to mean that a structure would be imperiled in the next two or three storm cycles (generally, the next few years).

In this case, the LCP-required significant threat has not been demonstrated.

The existing residential structure is located roughly 24 feet from the blufftop's edge at its closest point (i.e., the residence's setback from the bluff edge ranges from between 24 and 41 feet due to the bluff edge configuration and the unusually shaped property and residence here). The roughly 40 foot tall bluff is comprised of roughly 16 feet of nearly vertically sloped Purisma Formation bedrock on an elevated shore platform (i.e., a bedrock platform that extends above the beach sands and out from the bluffs towards the Bay) overlain by marine terrace deposits with a slope of roughly 50 degrees. There are a series of small failing wooden retaining walls within the topmost portion of the bluff.[6] Although many parcels in the general area are armored, the subject bluffs are not otherwise armored, and the bluffs immediately up and downcoast of the subject property are not currently armored.

The Applicant's consulting engineering geologist identifies a 0.4 foot per year long-term erosion rate,

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3 And not 'vacant lots, public works, public beaches, or coastal dependent uses.'

4 The County's approval is unclear on this point. The County staff report refers to the residence being 30 years old while the County findings refer to the residence being 45 years old.

5 For example, most recently in the Live Oak beach area, appeal A-3-SCO-99-056 (Filizetti-Hooper) in which a revetment installed without benefit of a permit was denied by the Commission in June of 2000. Note that the revetment in that case has since been removed and the beach and bluff restored to their pre-revetment installation condition.

6 It is unclear as to when these small upper bluff and blufftop retaining walls were constructed. The Commission has been unable to locate a County or Coastal Commission coastal permit authorization for these structures in Commission files. Additional research on this topic is underway by Commission enforcement staff as of the date of this staff report.

based on past steady and episodic erosion processes, for this site.[7] This site-specific rate is lower than rates that have typically been identified along Opal Cliffs (where the consulting engineering geologist reports retreat rates between 0.6 feet per year and 1 foot per year elsewhere along Opal Cliffs). This lower rate of erosion relative to the rest of Opal Cliffs appears to be at least partially due to the protection offered the property by the natural "armor" represented by the elevated bedrock shore platform and lower bluff.[8] Based on the provided information on long-term erosion, it could be about 60 years at the identified long-term erosion rate before the bluff retreats to the portion of the house foundation that is closest to the bluff.

The long-term erosion rate includes past episodic as well as steady erosion for this site. Although bluff erosion is episodic in nature, and an erosion event may result in a sudden loss of a portion of the bluff greater than that predicted on the basis of the long-term erosion rate (for example, were a one-foot chunk of bluff to be removed instantaneously in one major storm event), such episodic events are included in the long term rate, resulting in an average rate over time. As a result, the actual steady, day-to-day erosion rate is less than the long-term rate. In other words, the identified long-term erosion rate includes both types of erosion based on historical evidence that in this case goes back nearly 150 years. Thus, an argument that the residence is actually more threatened than the long-term rate would indicate, because of the possibility of an episodic erosion event, misses the point of what a long-term erosion rate calculates, and is flawed. While long-term rates are notoriously difficult to accurately assess, they are an important piece of evidence. This is particularly true when, as is the case here, the rate is based upon methodical evaluation of data collected over a very long period of time (in this case, roughly 150 years of data).

The Applicant's consulting engineering geologist also indicates that, even with little or no retreat of the lower bluff, the upper terrace deposits would be expected to lay back eventually to an equilibrium slope (sometime referred to as an "angle of repose" although this term does not strictly apply to cohesive materials such as the terrace deposits) at a roughly 1.5:1 slope gradient. Such an equilibrium slope would place the bluff edge roughly 13 feet from the residence (and roughly 5 feet from the deck). Of course, depending upon the length of time it takes for this process to be complete, some amount of lower bluff retreat would also be expected, and thus the remaining bluff setback would be somewhat less. The Commission's staff geologist notes, however, that the "equilibrium angle" of a coastal bluff is a complex interplay between marine erosion processes at the toe of the bluff and surficial and groundwater processes in the upper bluff. Given continued marine erosion at the base of the bluff, the upper bluff will never be allowed to evolve to an "angle of repose" as the Applicant's consultants suggest. Because bluff erosion is not a steady process, the bluff will tend to vacillate between oversteepened and understeepened conditions – the former will be "corrected" by episodic failure; the latter will be

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[7] The consulting engineering geologist, Rogers Johnson, based the erosion rate on the evaluation of maps from as early as 1853, aerial photographs from as early as 1948, and field observations and previous reports dating back to 1985.

[8] It should be noted that Opal Cliffs has long been recognized as an area within Santa Cruz County that has exhibited a high rate of bluff retreat, particularly since the time the Santa Cruz Harbor was installed upcoast of Opal Cliffs in the 1960s (and because the direction of offshore littoral drift is roughly from up to down coast at this location). Even the 0.4 feet per year site-specific rate is considered a moderate to moderately high rate compared to what has been reported elsewhere in the state.

"corrected" by continued marine erosion at the toe of the bluff. But as long as marine erosion continues, the upper bluff will not be allowed to flatten to a lower equilibrium angle akin to the angle of repose. This would only be expected over the long term if the marine erosion at the toe of the bluff were to cease; if, for example, it was armored and thus fixed relative to the upper bluff terrace deposits. The continued retreat at the base of the bluff will necessarily prevent the upper bluff from ever achieving that equilibrium angle. So the argument that the upper top of slope will retreat more than the lower bluff, placing the structure at greater risk than implied by the long-term average bluff retreat rate, is not valid unless marine erosion is halted by, for example, the construction of a seawall.

In addition to gradual, albeit episodic, bluff retreat, coastal bluffs are subject to landslides, which have the capacity to place structures on blufftops at risk. Measuring the degree of threat at this site necessitates 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 rocks. 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 rocks along a potential slide plane) and dividing them by the forces driving a landslide (principally the weight of the rocks 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.

In this case, the Applicant's consulting geotechnical engineers identify a factor of safety greater than 1.5 at this location with a failure plane well seaward of the existing residence; the factor of safety also was found to be greater than 1.1 in the pseudostatic case (using a seismic coefficient of 0.15).[9] All else being

[9] Haro, Kasunich and Associates (October 2000). Note that it is only by applying an unrealistically high seismic coefficient of 0.23 that an unstable situation (factor of safety near 1.0) is shown. Such a high seismic coefficient is not justified in this type of slope stability analysis.

equal, such a high factor of safety would indicate that the site is generally suitable for development – certainly not in imminent threat from land sliding, such as might necessitate armoring. This is corroborated by the consulting engineering geologist who indicates that seismic failure has not significantly altered long-term retreat in this area and concludes that landslide "does not appear to be a probable mode of [bluff] failure" at this location and "has not contributed to recent cliff retreat."

In any case, the Applicant's consulting engineering geologist does not quantify the existing threat to the residence, instead concluding that the proposed wall would "help prevent further loss of the bluff top on the property." Likewise, the consulting geotechnical engineers detail "improving blufftop stability at the Adams residence" by installing the proposed project, but do not clearly demonstrate a significant threat.[10] The geotechnical reports are more geared towards the parameters of the proposed wall and enhancing blufftop stability than they are concerned with justifying the need for armoring in the first place and/or demonstrating a need to protect endangered residential structures.

In sum, while the County indicated that "within the next 15 to 20 years, if not sooner, the home will be threatened by the retreat of the coastal bluff," and asserted that this demonstrated the LCP-required "significant threat," the facts of this case indicate otherwise.

First, 15 or 20 years is a much longer term of threat than that that has thus far been interpreted by the Commission as "significant" for Santa Cruz County and the California coastline. The Commission has generally used 'the next few years' as the appropriate time frame for assessing danger. This time frame would appear to be a conservative standard for this location given the frequency of major storm events in the Monterey Bay documented to be roughly one every 1.5 years, and the frequency of such storms in the Bay that are directed at this location as roughly one every 5.3 years.[11] Further, the geotechnical reports for the project do not describe a "15 or 20 year" time frame in relation to danger to the existing residence. The only such "15 or 20 year" reference in the geotechnical reports is to the observation that the proposed drilled pier shotcrete wall would itself require a toe shoreline protective structure in roughly 22 years based upon the established long-term erosion rate for the site.

More importantly, the geotechnical evidence does not indicate that the existing structure here is significantly threatened. The residence is now 24 to 41 feet from the bluff edge. At the identified rate of erosion, the residence would still be expected to be set back, at its closest point, about 20 feet from the blufftop's edge at the identified rate of bluff retreat for about ten years. It could be several decades before the residence is actually threatened by erosion, and about 60 years at this rate until the blufftop's

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[10] Haro, Kasunich & Associates, dated October 2000.

[11] The Applicant's consulting engineering geologist describes both the type and number of storms that have affected the subject property historically. By using Monterey Bay area storm activity and impact data going back to 1910, it was estimated that a major storm (i.e., one including "either high seas, strong winds, and/or damage to at least some portion of the Monterey Bay region") has occurred in the Monterey Bay area every 1.5 years on average. The northern half of the Monterey Bay (wherein the subject property is located) has incurred more damage from storms arriving from the west or southwest which pass primarily over deep water on their way to the shoreline and thus lose little of their energy in the process. These west/southwest storms were estimated to have struck the area every 5.3 years on average.

edge reached the residence itself.[12] The terrace deposits would be expected to lay back over a period of time in such a way as to maintain a blufftop setback for the residence of over 10 feet at their expected stable equilibrium angle. The high factor of safety generated by the slope stability analysis indicates that the bluff is not in imminent threat from landsliding. So although the residence is relatively near the blufftop's edge and would not be permitted today with such a setback (because the LCP now requires a minimum 100 year setback), the facts do not show a significant threat. There are certainly erosion scenarios that would threaten the residence at some point in the more long-term future, but it does not appear to be at risk within the next several years. As a result, the County-approved project raises a substantial LCP conformance issue.

Alternatives to shoreline armoring

The LCP requires a "thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure" when shoreline armoring is proposed. Ultimately, the LCP only allows for shoreline armoring measures "where non-structural measures are infeasible from an engineering standpoint or not economically viable." In this case, the County concluded that the proposed project "is the least impactive alternative which allows the continued occupancy of the home." There are several problems with this conclusion. First, there does not appear to be any evidence in the administrative record that indicates that the home is unsafe to occupy, or would be unsafe to occupy in the near term future. Certainly the geotechnical reports do not conclude as much.

Second, the County evaluated four alternatives to the proposed project: shotcrete of the bluff, moving the residence, biotechnical treatment, and drainage control. The shotcrete and relocation options are readily dismissed. Shotcrete of the bluff is simply an alternative form of armoring as opposed to an alternative method for addressing any identified problems. In fact, the County-approved project would eventually result in a shotcreted bluff at this location as approved (i.e., phase 2 of the approval). The intent of the LCP policy is to review possible non-armoring alternatives. As such, shotcrete's relevance as an alternative is limited. Relocation of the house on the subject lot is infeasible because it is basically built to property lines at East Cliff Drive and thus there is no room to move it inland. The only relocation option would be partial removal of threatened elements (were any conclusively shown to be threatened), but this option was not evaluated.

However, the County's elimination of biotechnical treatment and drainage controls bear more discussion. The County dismissed biotechnical controls as infeasible asserting that "the erosion is occurring in blocks and topples in a manner that is unsuitable for biotechnical treatment." There is little evidence in the administrative record showing that this manner of erosion is occurring. On the contrary, the consulting engineering geologist indicates recent retreat at the site, and indicates that, if left unprotected the terrace deposits would lay back to a 1.5:1 stable angle of repose. The current terrace deposit slope is roughly 1:1. Biotechnical treatment (i.e., planting of long rooted native plants to help

[12] Of course, the foundation would be compromised sometime before 60 years. Note for reference, however, that at the identified rate of erosion, there would remain a 10 foot bluff setback even after 35 years (see exhibit E). Again, as previously indicated, the identified rate of erosion would be expected to be more accurate over longer periods of time inasmuch as the rate implicitly includes episodic events of rapid bluff retreat.

hold together the upper bluff materials) would appear a reasonable alternative on such slopes.

As to drainage controls, the County approval indicates that drainage control is part of the project as proposed but that (1) subsurface erosion control is infeasible; and that (2) neither the engineering geologist nor engineer "proposes that drainage control alone is adequate to secure the bluff." There is little evidence in the administrative record implying that subsurface drainage or erosion is even a problem, let alone any indication of the feasibility of addressing it were it so identified. As to drainage control as its own alternative, the geotechnical reports do not evaluate such an option of itself. As a result, while the statement is correct that the consulting engineers have not proposed drainage controls alone as an option to address stability concerns here, that is because they were not asked to evaluate such an option, and not because they have indicated that such measures would be infeasible of themselves. In any case, the consulting engineering geologist concludes that "the control of runoff is essential for control of erosion" at this site and recommends that all drainage be collected and directed to the inland storm drain system. These drainage controls could include or be supplemented by replacing impermeable pavement with permeable concrete, or open paving stone; using and maintaining gutters and downspouts; undertaking some slight recontouring or swales to capture and control rain landing on the site; and planting a non-irrigated vegetative buffer at the bluff edge.

Finally, it should be noted that 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, they are 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 radically 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 improved 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. If the historic trends of coastal processes continue in this area, bluff retreat will eventually threaten the stability of this structure. At that point, 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). That is not to discount the effectiveness or relevance of these types of "soft" measures in this or any other case, but to understand their purpose and potential to address identified threat; particularly where the degree of threat is not proven significant as in the subject case.

In sum, it appears that, at a minimum, the alternatives considered in the County approval did not adequately analyze non-structural measures as an alternative to shoreline armoring at this site. Non-structural measures have certainly not been demonstrated to be "infeasible from an engineering standpoint or not economically viable." Such alternatives are particularly relevant in this case since the degree of threat has not been shown to be significant. The facts of the case appear to indicate that some combination of biotechnical treatment of the upper bluff terrace deposits combined with drainage

improvement on the blufftop itself could serve to stabilize the bluff here. When combined with the fact that the bluff has been eroding at a fairly gentle pace historically, dismissal of such alternatives is contrary to LCP shoreline structure policy direction. As a result, the County-approved project raises a second substantial LCP conformance issue.

Location of proposed armoring

If it were conclusively proven that there was a significant threat here, and if non-armoring alternatives were conclusively shown to be infeasible, the LCP requires that such structures "be placed as close as possible to the development or structure requiring protection." Even if these first two conditions were met in this case (which they aren't, as detailed above), the County-approved structure would be placed well away from the residence (roughly a minimum of 20 feet) near the bluff's edge, leaving approximately 3 feet of bluff between the structure and the bluff's edge. Such placement, irregardless as to the type of structure, is not as close as possible to the structure proposed for protection. In fact, it would be roughly 20 to 40 feet from the structure being protected. Placing any allowable protective work as close as possible to the existing structure being protected would allow for ongoing natural processes to occur within the bluff here. The County-approved project does not achieve this and therefore raises a third substantial LCP conformance issue.

Future armoring required

If the County-approved project were to be installed, the consulting engineers indicate that a separate seawall, with its own attendant impacts, would need to be installed at this location in roughly 20 years to protect the County-approved shoreline protective structure. Not only is it unlikely that the LCP or the Coastal Act would allow for such shoreline armoring to protect other shoreline armoring, but the LCP requires a minimum of 100 years of stability without reliance on future shoreline protective structures (including, but not limited to, LUP Policy 6.2.12, and IP Sections 16.10.070(g) and 16.10.070(h)(1)(i)). The County-approved structure in this case would appear to establish a scenario where additional armoring would be necessary within 22 years. This does not meet the LCP's minimum 100 year threshold. As a result, the County-approved project raises a fourth substantial LCP conformance issue.

4. Allowing Shoreline Armoring Conclusion

The LCP requires a significant threat be demonstrated before any form of shoreline protection be considered. The LCP requires an evaluation of alternatives to hard protective structures such as that proposed, and only allows further consideration of hard armoring if the alternatives are proven infeasible. In tandem, the intent is to limit the installation of shoreline armoring (because of its negative impacts on coastal resources) to the finite set of cases where it is truly warranted. In this case, the LCP-required significant threat has not been demonstrated, and non-structural alternatives have not been shown to be infeasible. Even were these conditions conclusively demonstrated, the approved location is not as near to the residence as possible so as to allow for natural bluff retreat processes to continue. The structure approved would require separate toe of bluff armoring of its own in roughly 22 years – well in advance of the LCP's established minimum stability threshold of 100 years. As a result, the County-approved project raises a number of substantial LCP conformance issues.

B. Avoiding, Minimizing, & Mitigating Shoreline Armoring Impacts

1. Applicable Policies

LCP Policies

If a hard protective structure is proven necessary and appropriately sited, the LCP only allows such structural protection if it minimizes landform alteration, minimizes visual intrusion, and when it does not reduce public beach access, adversely affect shoreline processes and sand supply, adversely impact recreational resources, or negatively impact habitat. In addition to the LCP's shoreline protective structure specific policies as cited previously, additional LCP policies are relevant to this point, including, but not limited to LUP Objectives 5.10.a and 5.10.b, LUP Policy 5.10.7, LUP Chapter 7, and IP Section 13.20.130. For example, the LCP states:

> ***Objective 5.10.a Protection of Visual Resource Areas.*** *To identify, protect, and restore the aesthetic values of visual resources.*
>
> ***Objective 5.10.b New Development in Visual Resource Areas.*** *To ensure that new development is appropriately designed and constructed to minimal to no adverse impact upon identified visual resources.*
>
> ***LUP Policy 5.10.2 Development Within Visual Resource Areas.*** *Recognize that visual resources of Santa Cruz County possess diverse characteristics.... Require projects to be evaluated against the context of their unique environment and regulate structure height, setbacks and design to protect these resources consistent with the objectives and policies of this section....*
>
> ***LUP Policy 5.10.3 Protection of Public Vistas.*** *Protect significant public vistas...from all publicly used roads and vistas points by minimizing disruption of landform and aesthetic character caused by grading operations,... inappropriate landscaping and structure design.*
>
> ***LUP Policy 5.10.6 Preserving Ocean Vistas.*** *Where public ocean vistas exist, require that these vistas be retained to the maximum extent possible as a condition of approval for any new development.*
>
> ***LUP Policy 5.10.7 Open Beaches and Blufftops.*** *Prohibit placement of new permanent structures which would be visible from a public beach, except where allowed on existing lots of record, or for shoreline protection and for public beach access. Use the following criteria for allowed structures:... (b) Require shoreline protection and access structures to use natural materials and finishes to blend with the character of the area and integrate with the landform.*
>
> ***LUP Policy 7.7.1 Coastal Vistas.*** *Encourage pedestrian enjoyment of ocean areas and beaches by the development of vista points and overlooks with benches and railings, and facilities for pedestrian access to the beaches...*
>
> ***IP Section 13.20.130(b)(1) Entire Coastal Zone, Visual Compatibility.*** *The following Design*

Criteria shall apply to projects site anywhere in the coastal zone: All new development shall be sited, designed and landscaped to be visually compatible and integrated with the character of surrounding neighborhoods or areas.

IP Section 13.20.130(d)(1) Beach Viewsheds, Blufftop Development. *The following Design Criteria shall apply to all projects located on blufftops and visible from beaches: Blufftop development and landscaping...in rural areas shall be set back from the bluff edge a sufficient distance to be out of sight from the shoreline, or if infeasible, not visually intrusive.*

IP Section 13.20.130(d)(2) Beach Viewsheds, Beaches. *The scenic integrity of open beaches shall be maintained....*

Furthermore, 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." Because this project is located seaward of the first through public road (East Cliff Drive/Opal Cliff Drive), for public access and recreation issues the standard of review is not only the certified LCP but also the access and recreation policies of the Coastal Act. In particular:

Section 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.*

Section 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.*

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

Section 30214(a). *The public access policies of this article shall be implemented in a manner that takes into account the need to regulate the time, place, and manner of public access depending on the facts and circumstances in each case...*

Section 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.*

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

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.*

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.*

2. County-Approved Project

As described above, the County-approved a project in two phases allowing for an exposed shotcrete wall after the second phase is complete (see County-approved staff report, findings, and conditions in exhibit C, and project plans in exhibit B).

3. Consistency with Applicable Policies

Were the other tests otherwise met to allow for armoring at this location (which they are not, as described above), the LCP has multiple overlapping policies meant to result in appropriate design of allowable armoring projects to minimize and mitigate impacts to natural landforms, public viewsheds, and public access and recreational resources (including beach, offshore surfing, and blufftop access). These policies are complemented by Coastal Act access and recreation protective policies that likewise apply here.

In this case, even were an armoring structure warranted, it does not appear that the approved project has adequately addressed such policies:

- substantial landform alteration has been approved, ultimately to result in a concrete bluff where currently exists a natural bluff landform;[13]

- visual intrusion is guaranteed for which the County-required mitigation (the project was conditioned for a future "visual treatment plan" designed to ensure that the concrete is adequately colorized, mottled and textured to blend into the adjacent natural bluffs) on the future concrete facing may

[13] In fact, the installation of the drilled piers could possibly destabilize the bluff seaward of the piers (due to the construction process and its attendant vibrations, and the location of the piers so close to the bluff edge as opposed to closer to the residence as LCP required) potentially leading to the premature loss of these bluff materials and the daylighting of the drilled-piers even sooner than the long-term erosion rate might otherwise dictate. In other words, the natural landform seaward of the project (intended to remain for some period of time until daylighting in the future – a form of built-in mitigation) is likely to be lost faster than it would be otherwise in the no project alternative or a project alternative where the drilled piers were installed next to the residence itself.

prove inadequate to conceal;

- the project includes a 3½ foot railing structure atop the proposed wall for which there were no elevations or details provided nor analyzed in the County approval. Such additional development right at the edge of the bluff could degrade the viewshed even further, particularly if it were to be a large solid structure of some sort;
- the contribution of bluff materials into the natural shoreline sand supply system at this location will eventually be halted and the County-approval includes no mitigation for this impact;
- the County approval does not analyze the potential for the project to negatively alter beach access and offshore surf access and thus, any necessary mitigation for such negative impacts is also missing;
- there is no analysis of impacts, if any, to marine resources of the Monterey Bay National Marine Sanctuary offshore.
- the subject site is immediately adjacent to the County's blufftop coastal accessway at the "Hook" and the County's approval is silent on potential impacts from the proposed project to ongoing and future blufftop recreational use of the accessway.

The record of analysis of these public access, recreation, viewshed, landform protection, and (potentially) offshore habitat issues (if a protective structure were to be proven necessary and appropriately sited) is inadequate. As a result, the County-approved project raises a substantial LCP conformance issue.

C. Substantial Issue Conclusion

The LCP recognizes that shoreline protective structures designed to forestall coastal erosion can adversely alter natural shoreline processes and, as such, 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. As a result, exacting criteria must be met under the LCP, and the Coastal Act, before such structures can be considered or approved, and the LCP requires 100 years of stability (without reliance on shoreline protective structures) for development.

The County's approval is not consistent with the LCP in that the LCP-required significant threat has not been clearly demonstrated. The County's findings indicate that the existing residential structure will be threatened by bluff retreat in the next 15 or 20 years. However, the geotechnical evidence indicates that the bluff itself is relatively stable and that it will be much longer than that until the residence is significantly threatened; at the long term erosion rate established, the foundation of the residence would not be reached by bluff retreat for another 60 years. Even if a significant threat to an existing structure were proven, the County's approval has not thoroughly evaluated non-structural alternatives that could lessen the negative effect of the project approved, and the County's approval has not sited the proposed

structure as close as possible to the structure to be protected. Public access, public recreation, views, landform alteration, and potentially offshore habitat issues have been inadequately analyzed and consistency with protective LCP and Coastal Act policies is not assured. Moreover, the County approved project would require its own shoreline armoring in roughly 20 years though the LCP requires 100 years of stability.

Therefore, the Commission finds that a substantial issue exists with respect to this project's conformance with the certified Santa Cruz County Local Coastal Program and takes jurisdiction over the coastal development permit for this project.

6. Coastal Development Permit Findings

By finding a substantial issue in terms of the project's conformance with the certified LCP, the Commission takes jurisdiction over the CDP for the proposed project. The standard of review for this CDP determination is the County LCP and the Coastal Act access and recreation policies.

A. Consistency with Applicable Policies

The substantial issue findings above are incorporated directly herein by reference. As detailed in these findings, the proposed project raises fundamental LCP conformance issues that cannot be easily rectified by conditions of approval placed on a permit. The LCP-required significant threat has not been demonstrated. The LCP-required infeasibility of non-armoring alternatives has not been demonstrated. The LCP-required shoreline structure placement is not as close as possible to the residence proposed for protection. The LCP-required 100 year stability test is not met. The LCP- and Coastal Act-required prevention of, and (for any impacts that are unavoidable) mitigation for, impacts to beach and offshore recreational access, public views, and landform alteration has not been assured. In sum, without a clear demonstration of significant threat, and in light of the negative resource impacts from armoring that are well known to the Commission, armoring cannot be found LCP and Coastal Act consistent at this location. Therefore, the Commission finds that the proposed project is inconsistent with the certified LCP and the Coastal Act and is therefore denied.

B. 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 County, acting as the lead CEQA agency, circulated a proposed negative declaration under CEQA

for the proposed project in July of 2001. Prior to that time, in early coordination with County staff, Commission staff had already provided feedback and recommendations on the project to the County and the Applicant describing the same types of LCP and Coastal Act inconsistencies detailed in this report (see exhibit G). Although County staff rebutted Commission staff comments, the project itself was not altered in light of them and, ultimately, the County certified the CEQA negative declaration as part of the project approval in October 2001.

In any case, 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 report has discussed the relevant coastal resource issues with the proposal. 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 detailed in the findings above, there are less environmentally damaging feasible alternatives to the proposed project (including the no project alternative), and there are a range of poorly analyzed (and unmitigated) impacts associated with the proposed project. Most importantly, the geotechnical information available shows that the there is not an existing structure that is significantly threatened at this location that would warrant the proposed shoreline protection and the range of negative coastal resource impacts associated with it.

As such, there are additional feasible alternatives and feasible mitigation measures available which would substantially lessen any significant adverse environmental effects which approval of the proposed project would have on the environment within the meaning of CEQA. Thus, the proposed project will result in significant environmental effects for which feasible mitigation measures have not been employed inconsistent with CEQA Section 21080.5(d)(2)(A). Therefore, the project is not approvable under CEQA and is denied.

C. Future Options

The Commission again notes that this Applicant has options that should be explored through any and all proper County permitting channels. In particular, there appear to be a range of potential drainage and erosion control alternative mechanisms that could be installed within the upper bluff to enhance bluff stability. Even simply collecting the blufftop drainage and directing it away from the bluff edge (and to the storm drain system in East Cliff Drive/Opal Cliff Drive) should help both stabilize the upper bluff and correct any sheet flow erosion problems. Such measures could be combined with even minimal planting of native (and long-rooted) plants on the upper bluff as a complementary measure. These type of measures would, of course, need to be detailed and developed by the Applicant's consulting engineers and geologists before they could be considered for LCP and/or Coastal Act conformance.

In addition, the Commission notes that the County has begun preliminary efforts toward developing a regional solution to the issue of shoreline armoring for the Opal Cliffs area. As the Commission currently understands it, the regional solution would focus on the removal of the rubble and rock revetments that block much of the beach access in this area between 41st Avenue and the City of Capitola, and would develop measures to sculpt and camouflage any armoring that is allowable under

the Coastal Act and LCP in such a way as to mimic the natural bluff topography and vegetation. Options for building in pedestrian platforms in permitted armoring that allow for lateral access at even higher tides would also be evaluated. It appears at this time that the vehicle for such a regional solution would be a specific plan for Opal Cliffs that would be an amendment into the LCP. The specific plan approach has the benefit of allowing decision makers at the County and Commission levels to develop appropriate regional planning standards based upon the unique regional geology and existing situation of Opal Cliffs rather than being limited by the piecemeal approach of individual permit applications. A specific plan also has the added advantage of providing an increased level of certainty in the permitting process since individual applications would then simply need to fit within the regional guidelines so established and agreed upon.[14]

The Commission is supportive of the development of such a specific plan for Opal Cliffs provided such a plan is premised within the context of avoiding armoring to the absolute extent feasible (as discussed in this staff report), consistent with the Coastal Act, and ensuring that the public is adequately compensated for any burden borne over the long term by armoring that fully meets the applicable LCP and Coastal Act policy tests.[15] Further, if such a regional planning process proves successful for the Opal Cliffs shoreline, then it would seem to make sense for this type of effort to be expanded to encompass other sections of the urbanized Santa Cruz County coastline.

Absent such specific planning and vision for the County's coast, individual projects must continue to be evaluated against the broader LCP and Coastal Act policies. Although the County and Commission can do their best to guard against piece-meal projects, regional inconsistency, and cumulative impacts due to shoreline armoring, these objectives may prove evasive if they are only addressed in the context of processing individual project applications. Approaching coastal erosion problems more broadly within a specific geomorphically defined region has far more likelihood of achieving sound resource management goals.

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 Santa Cruz County beaches may eventually no longer exist. While this is clearly an issue that needs local debate and deliberation, the coast here is a resource and a treasure for all Californians as well as visitors to the state and thus also has a larger than local importance. The Commission welcomes the opportunity to explore a future vision for Santa Cruz

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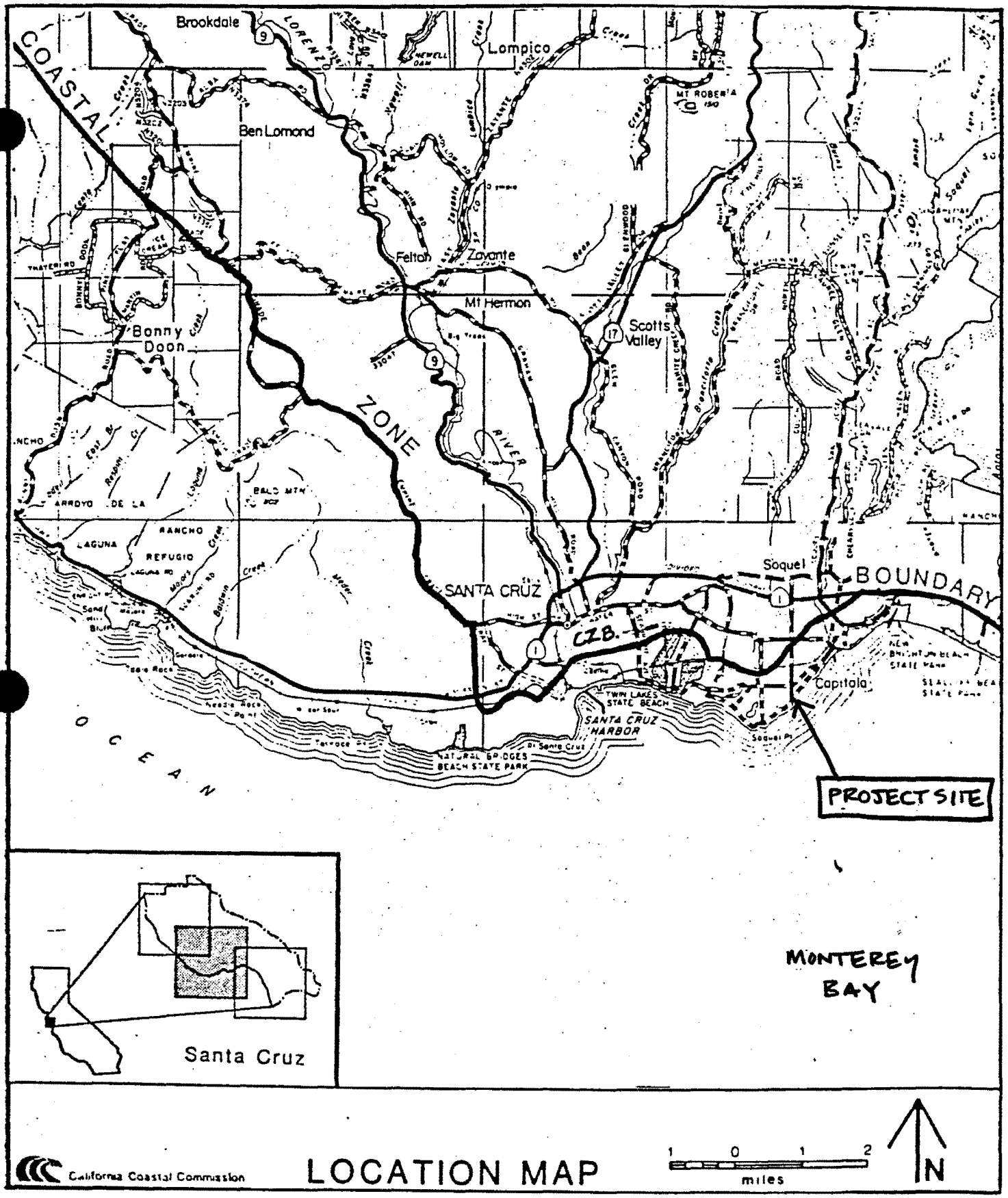
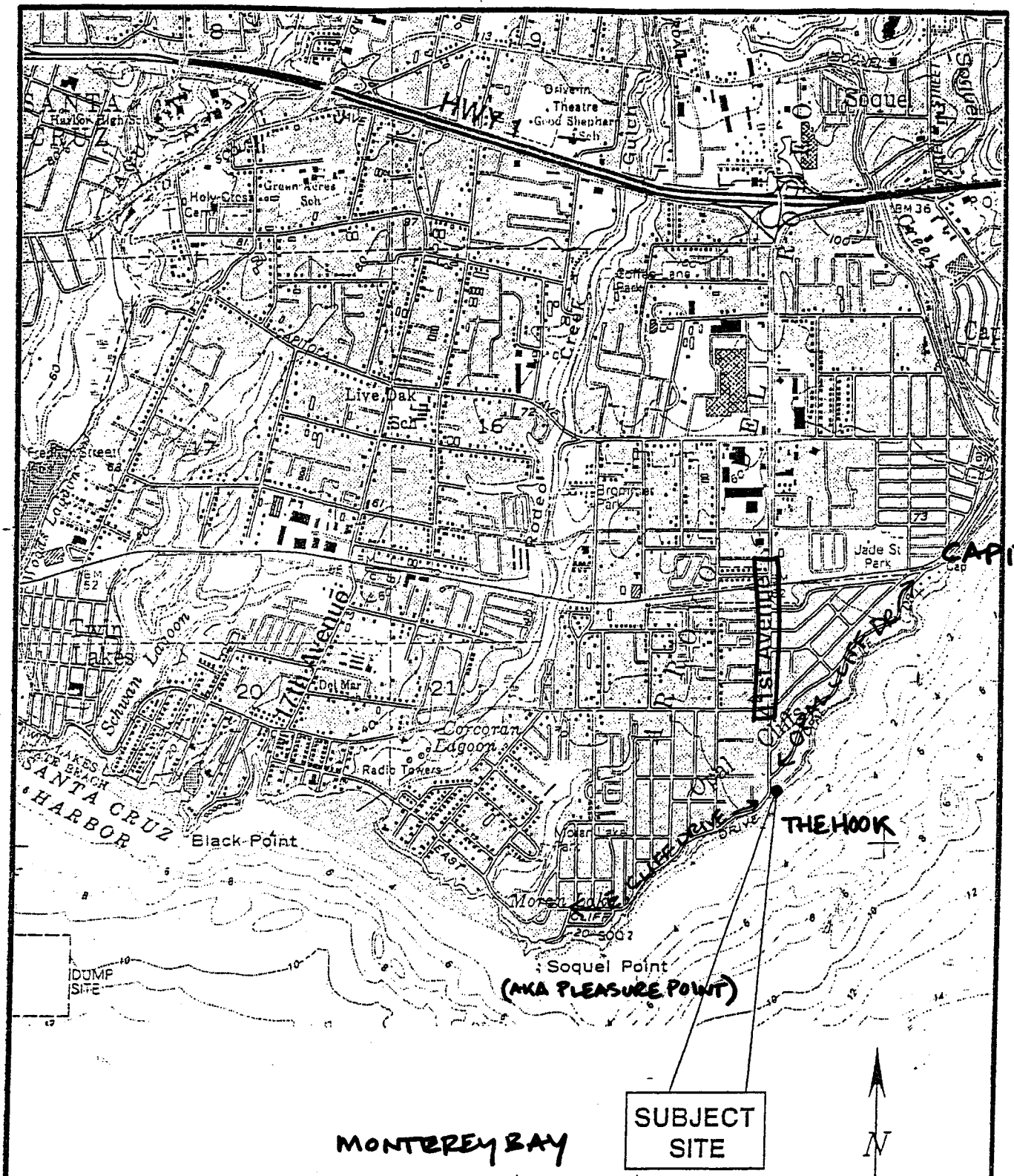
[14] Alternatively, if course, there is the potential for some type of larger project by multiple applicants or through some type of special district and/or County-sponsored arrangement. In either case, planning is completed ahead of any associated permitting and the same level of certainty is provided.

[15] Note that the Commission through the 1995 Monterey Bay ReCAP project, or Regional Cumulative Assessment Project, recommended just such a regional shoreline planning approach for the Monterey Bay area where it was estimated that approximately 25 acres of sandy beach had been covered with shoreline armoring in the study region by 1993, most of that in Santa Cruz County. In fact, the Commission's ReCAP analysis focused on the Opal Cliffs area as a case study to illustrate the coastal resource problems associated with project-by-project review of armoring proposals as opposed to long-term planning. Because property owners along the Opal Cliffs shoreline have generally undertaken bluff armoring individually, there are a vast myriad of armoring types along the bluffs and backbeach along this section of coast. As a result, beach access and aesthetics have been compromised, and the integrity of the armoring is in some cases suspect. Most of Opal Cliffs is currently armored in some way, and much (if not most) of the armoring appears to pre-date the Coastal Act.

County shoreline and beaches with its local partners and encourages the initiation of regional plans to further this important public policy debate and action.



CCC Exhibit A
(page 1 of 2 pages)



Base Map: SOQUEL QUADRANGLE, California-Santa Cruz Co., 7.5-minute series, United States Geological Survey, 1954 (Revised 1994), Scale 1:24,000.

ROGERS E. JOHNSON & ASSOCIATES Consulting Engineering Geologists 1729 Seabright Avenue Santa Cruz , California 95062 (831)425-1288 FAX (831)425-1136	SITE LOCATION MAP *Adams* 500 Forty First Avenue Santa Cruz, California	FIGURE # 1 JOB # C00036-55

CCC Exhibit A
(page 2 of 2 pages)

ATTACHMENT 2 pg 2 of 2
APPLICATION 00-0757

COASTAL BLUFF STABILIZATION

PROJECT ADDRESS:

MR. & MRS. KEITH ADAMS PROPERTY
500 41st AVENUE
SANTA CRUZ COUNTY, CALIFORNIA
APN 033-171-18

CCC Exhibit B
(page 1 of 3 pages)

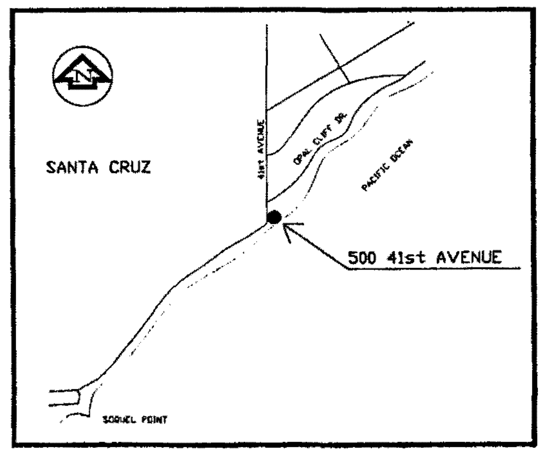
RECEIVED
NOV 2 6 2001
CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

ABBREVIATIONS:

[illegible]

SHEET INDEX:

1. COVER SHEET
2. SITE PLAN, SECTION 2-2
3. SECTION 1-1, SECTIONS, DETAILS, AND NOTES

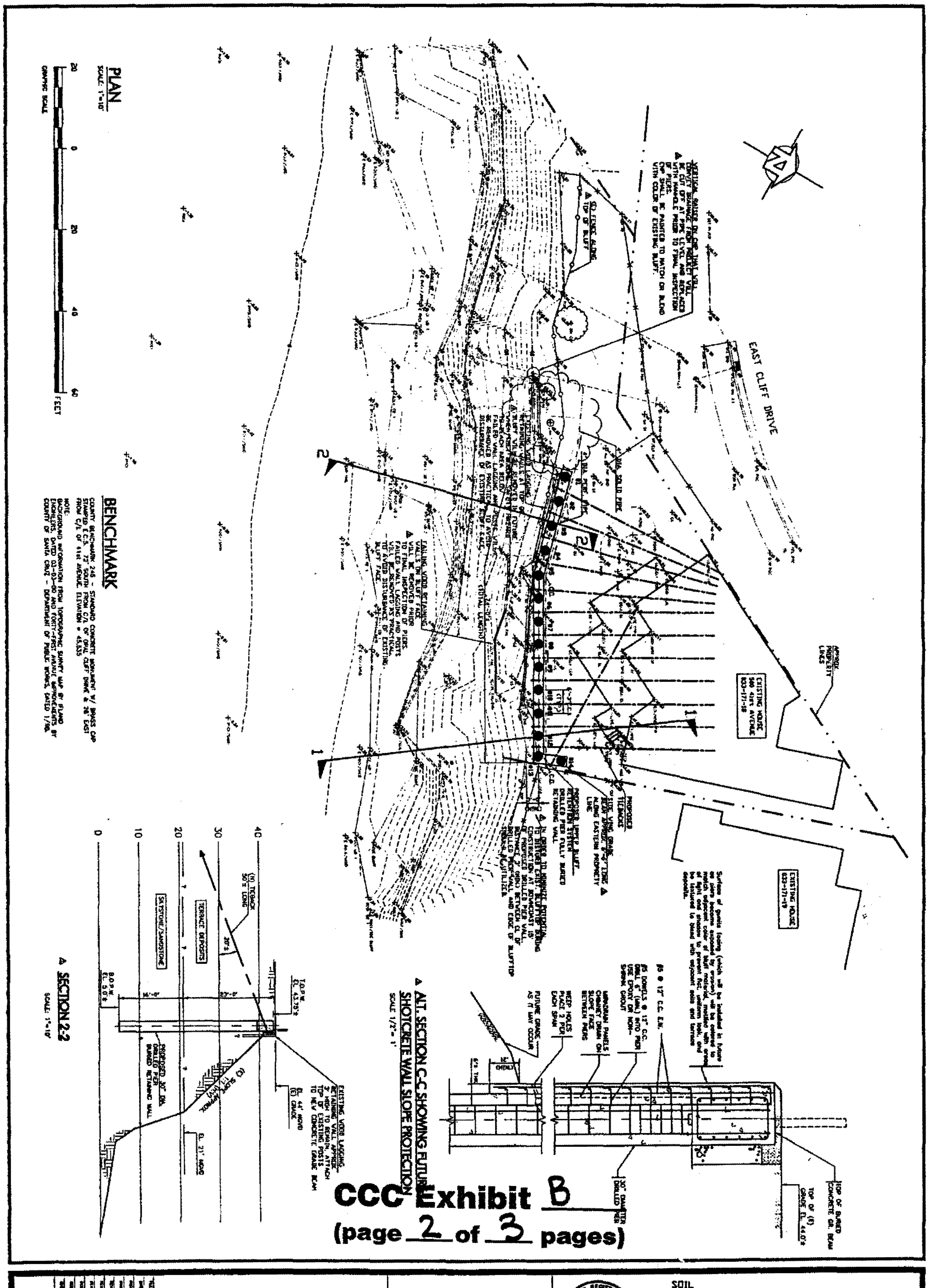


VICINITY MAP
NOT TO SCALE

SOIL ENGINEERING CONSTRUCTION, INC.
REGISTERED PROFESSIONAL ENGINEER
GEORGE E. DREW
No. 20681
EXP. 9-30-05
CIVIL
STATE OF CALIFORNIA

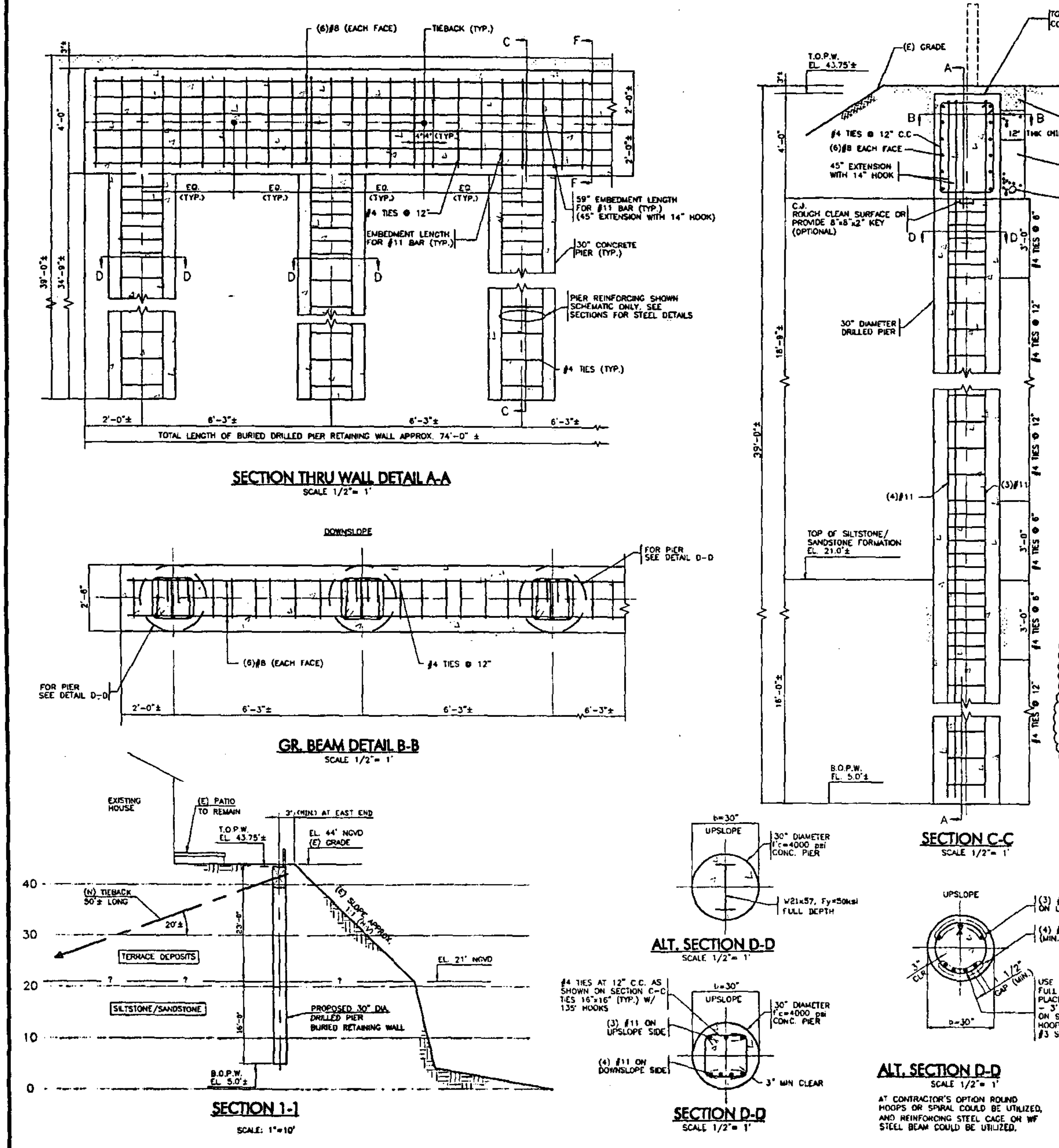
COVER SHEET

COASTAL BLUFF STABILIZATION
MR. & MRS. KEITH ADAMS PROPERTY
500 41st AVENUE
SANTA CRUZ COUNTY, CALIFORNIA



CCC Exhibit B
(page 2 **of** 3 **pages)**

2 OF 3	COASTAL BLUFF STABILIZATION MR. & MRS. KEITH ADAMS PROPERTY 500 41st AVENUE SANTA CRUZ COUNTY, CALIFORNIA	SITE PLAN, SECTION 2-2, AND SECTION 3-3	SOIL ENGINEERING CONSTRUCTION INC. SOIL ENGINEERING CONSTRUCTION, INC.



TOP OF BURIED CONCRETE GR. BEAM

TOP OF (E) GRADE EL. 44.0'±

NATIVE MATERIAL CLAYEY CAP 12" THK. (MIN.)

CALTRANS CLASS 2 ROCK OR 3/4" CLEAN DRAIN ROCK, INSTALL FILTER FABRIC MIRAFI 140 N (OR EQUAL)

4" DIA. PERF. PVC PIPE SLOPE 2% TO DRAIN, INSTALL C.O. CONNECT INTO SOLID PIPE

MIN. DEVELOPMENT LENGTH IN INCHES (ld):		
	f'c = 3.0 ksi	f'c = 4.0 ksi
#4	12"	12"
#6	19"	16"
#8	35"	30"
#11	68"	59"

LAP LENGTH IN INCHES (1.3ld):		
	f'c = 3.0 ksi	f'c = 4.0 ksi
#4	16"	16"
#6	25"	24"
#8	46"	39"
#11	89"	77"

FOR LAP SPLICES USE CLASS "B" SPLICES. (LAP OF 1.3ld)

ABBREVIATIONS:

(For standard abbreviations see Cover Sheet.)

- (E), (N) –Existing, New
- T.O.W. –Top of wall
- B.O.P.W. –Bottom of pier wall
- T.O.P.W. –Top of pier wall
- C.C. –Center to center
- U.N.O. –Unless noted otherwise

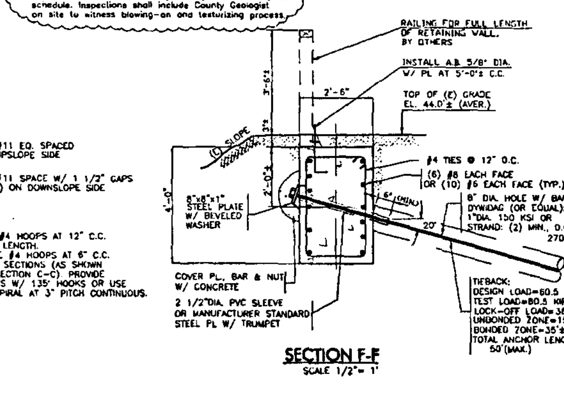
13. Proposed connecting grade beam and concrete in piers will be colorized to match color of existing coastal bluff.
Surface of gunite facing (which will be installed in future as piers become exposed by erosion) will be colored to match adjacent color of bluff material, mottled with areas of light and shadow to prevent flat, uniform look, and be textured to blend with adjacent soils and terrace deposits.

14. Prior to final inspection of piers, and later prior to final inspection of shotcrete, project geotechnical engineer and engineering geologist shall provide letter(s) of inspection indicating that all recommendations of respective technical reports have been followed.

15. Prior to beginning process of applying shotcrete or other facing to exposed piers, applicant/owner shall arrange for pre-construction site meeting among contractor, owner, and County Geologist to set inspection schedule. Inspections shall include County Geologist on site to witness blowing-on and texturizing process.

GENERAL NOTES:

1. Design and construction to be in accordance with 1997 UBC and local Codes.
2. All dimensions, conditions and location of facilities to be verified and determined in field.
3. Exact location of drilled piers for buried retaining wall at upper bluff can be adjusted as field conditions require.
4. All cast-in-place concrete shall have compressive strength of 4,000 psi at 28 days, U.N.O..
5. All structural steel shall be A 50 (Fy=50ksi).
6. Reinforcing steel to be Gr. 60 for #4 bars and above.
7. All exposed steel shall, if any, to be galvanized or coated with corrosion inhibiting paint. Tieback heads to be completely coated with epoxy grout or concrete.
8. Special inspection is required for installation of drilled piers and tiebacks, and taking concrete test specimens (UBC 1701.5.1).
9. Section at construction joint, if any, make rough or form key.
10. Minimum 3" concrete cover required for all reinforced concrete exposed to soil.
11. Tieback notes:
a. Use Dywidag bars and Dywidag standard hardware, or equal.
b. Bar to be 1" dia.(#8), Gr.150.
c. As alternative Multistrand anchor with (2) min. 0.6" dia., 270 ksi strands could be utilized.
d. Tiebacks installed at midspan between piers.
e. Tiebacks shall be double corrosion protected, per manufacturer specification.
f. Use adequate centralizers @ 10'-0" O.C. Use (3) min. centralizers per bar.
g. Tieback Loads:
Tiebacks at midspan:
Design load (DL) = 60.5 k
Test load @ 133% of DL = 80.5 k
Lock-off load @ 60% of DL = 36 k
h. Grout to be cement grout w/water-cement ratio (w:c) of 0.4 to 0.5 = 5 gal. per sack.
Allow up to 22.5 of sand/yard.
Allow minimum cure time before testing.
Provide for two stages of grouting.
First stage of grouting shall be for testing of tiebacks. Holes to be tremie pipe grouted from bottom of hole for distance of bonded zone to provide for testing.
Second stage of grouting shall be accomplished after accepted testing all way up remaining hole.
Post fracture grouting could be utilized at contractor's option, to achieve considerably higher grout-soil bond.
12. DESIGN PARAMETERS AND RECOMMENDATIONS:
Geotechnical & Coastal Investigation for Proposed Coastal Blufftop Stabilization, 500 41st Avenue, Santa Cruz, California, prepared by Haro, Kasunich & Associates, Inc., Project No. SC6896, dated October, 2000.



CCC Exhibit B
(page 3 of 3 pages)

COASTAL BLUFF STABILIZATION
MR. & MRS. KEITH ADAMS PROPERTY
500 41st AVENUE
SANTA CRUZ COUNTY, CALIFORNIA

SECTIONE 1-1, SECTIONS, DETAILS, AND NOTES

REGISTERED PROFESSIONAL ENGINEER GEORGE E. DREW No. 20681 EXP. 9-30-05 CIVIL STATE OF CALIFORNIA

SOIL ENGINEERING CONSTRUCTION INC.

SOIL ENGINEERING CONSTRUCTION, INC.

COASTAL PERMIT 00-0757
APN 033-171-18

COUNTY OF SANTA CRUZ
PLANNING DEPARTMENT

Date: October 19, 2001
Agenda Item: 1
Time: After 10:00 a.m.

STAFF REPORT TO THE ZONING ADMINISTRATOR

APPLICATION NO.:00-0757 APN: 033-171-18
APPLICANT: Betty Cost, Richard Beale and Associates
OWNER: Keith Adams
PROJECT DESCRIPTION: Proposal to construct a coastal bluff stabilization structure. Requires a Coastal Development Permit and Building Permit for a pier and shotcrete wall, approximately 80 feet long, to be constructed adjacent to the bluff top. The Property is located on the southeast side of 41st Avenue at its terminus at the ocean.
LOCATION: At terminus of 41st in Live Oak
FINAL ACTION DATE:
PERMITS REQUIRED: Building, and Coastal
ENVIRONMENTAL DETERMINATION: Negative Declaration (attached)
COASTAL ZONE: X yes _____no APPEALABLE TO CCC X yes ___no

PARCEL INFORMATION
PARCEL SIZE: 7361 Square Feet
EXISTING LAND USE: PARCEL: Single Family Dwellings
SURROUNDING: Single Family Dwellings and Open Space/Recreational
PROJECT ACCESS: 41st
PLANNING AREA: Live Oak
LAND USE DESIGNATION: R-1-5
ZONING DISTRICT: Park, Recreation and Open Space & SFR, R-1-5
SUPERVISORIAL DISTRICT: 2
GENERAL PLAN DESIGNATION:PARKS, RECREATION AND OPEN SPACE (O-R) AND URBAN MEDIUM DENSITY RESIDENTIAL

ENVIRONMENTAL INFORMATION

Item	Comments
a. Geologic Hazards	a. Slope Instability see Initial Study
b. Soils	b. Slope Instability see Initial Study
c. Fire Hazard	c. n/a
d. Slopes	d. A buried pier wall and bluff gunite wall is proposed to reduce slope instability.
e. Env. Sen. Habitat	e. n/a
f. Grading	f. n/a
g. Tree Removal	g. n/a
h. Scenic	h. Project is visible from Beach.

CCC Exhibit C
(page 1 of 19 pages)

i. Drainage	i. The site drainage will continue to be taken to the base of the slope in an adequate existing pipe.
j. Traffic	j. n/a
k. Roads	k. n/a
l. Parks	l. The site is visible form the Beach and related State Park.
m. Sewer Availability	m. n/a
n. Water Availability	n. n/a
o. Archeology	o. n/a

SERVICES INFORMATION

W/in Urban Services Line: xx yes _____ no
Water Supply: Soquel Creek Water District
Sewage Disposal: Septic
Fire District: Central
Drainage District: none

ANALYSIS & DISCUSSION

Back Ground: Phase 1 of the proposed wall (Mitigated Negative Declaration Attachment 1) consists of 13 piers that will be drilled 40 feet through the bluff terrace material into the underlying Purisima Sandstone. To assure that these piers perform adequately, they will be tied together with a grade beam that will be connected to the slope with tiebacks. The piers will not be visible. Phase 2 will occur when the front of the piers is exposed by erosion. Phase 2 consists of the application of shotcrete facing to the front of the exposed piers.

Coastal Erosion: The eighty-foot long pier wall is proposed to resist ongoing erosion of the coastal bluff. The owners and their consulting engineering geologist (Mitigated Negative Declaration Attachment 2) and geotechnical engineers (Mitigated Negative Declaration Attachment 3) have evaluated the site and have determined that within the next 15 to 20 years, if not sooner, the home will be threatened by the retreat of the coastal bluff.

The determination that the home is threatened by coastal bluff erosion has been made over a fifteen-year observation period (see Mitigated Negative Declaration Attachments 1 and 2). The Adams' home is approximately thirty years old and is of standard wood frame construction with conventional foundations. These conventional foundations are not designed to restrain coastal bluff erosion and during the original home construction no attempt was made to reduce the effect of coastal erosion. Since the original construction was completed, several episodes of bluff erosion/collapse have occurred and the bluff has retreated approximately 15 feet. The edge of the bluff is now within 20 feet of the home. Continued bluff-retreat will

result in the undermining of the foundation [1] unless intervention occurs.

Proposed Solutions: To restrain the retreat, the applicant proposes to immediately construct the designed pier wall to strengthen the upper bluff area. This consists of buried piers and a buried grade beam.

Other coastal protection measures may be required to maintain the property over time. Firstly, within approximately 10 to 15 years the buried piers will become exposed due to erosion. As piers become exposed, reinforced shotcrete facing will be installed to keep the terrace deposits from falling through the exposed piers. To minimize visual impact the shotcrete will be treated with texturing and coloring to match the bluff's appearance. This application of shotcrete is considered to be Phase 2 of this project.

Secondly, a sea wall at the bluff toe may become necessary at some point in the future to prevent damage to the home. The engineering geologist states that a seawall or similar structure should be constructed at the base of the bluff when approximately 10 feet of Purisima Formation bedrock remains between the piers and the toe of the bluff.[2] This seawall is not currently proposed and is not part of this application.

RECOMMENDATION

Staff recommends that the Zoning Administrator take action as follows:

1. Certify the Mitigated Negative Declaration as complying with the requirements of the California Environmental Quality Act (Exhibit D); and

2. Approve Application No. 00-0757, based upon the findings (Exhibit B) and subject to the attached conditions (Exhibit C).

EXHIBITS

A. Project Plans
B. Findings
C. Conditions of Approval
D. Negative Declaration Mitigations
E. Mitigated Negative Declaration
F. Assessor's Maps
G. Zoning Maps

SUPPLEMENTARY REPORTS AND INFORMATION REFERRED TO IN THIS REPORT ARE ON FILE AND AVAILABLE FOR VIEWING AT THE SANTA CRUZ COUNTY PLANNING

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[1] Rogers E. Johnson and Associates, September 14, 2000, page 9, (At Mitigated Negative Declaration Attachment 2)

[2] Rogers E. Johnson and Associates, September 14, 2000, page 14, (Mitigated Negative Declaration Attachment 2)

DEPARTMENT, AND ARE HEREBY MADE A PART OF THE ADMINISTRATIVE RECORD FOR THE PROPOSED PROJECT.

Report Prepared By: Joe Hanna, CEG 1313, County Geologist
Environmental Planning
Santa Cruz County Planning Department
701 Ocean Street, 4th Floor
Santa Cruz CA 95060
Phone Number: (408) 454-3175

EXHIBIT B

COASTAL DEVELOPMENT PERMIT FINDINGS:

1. THAT THE PROJECT IS A USE ALLOWED IN ONE OF THE BASIC ZONE DISTRICTS, OTHER THAN THE SPECIAL USE (SU) DISTRICT, LISTED IN SECTION 13.10.170(d) AS CONSISTENT WITH THE GENERAL PLAN AND LOCAL COASTAL PROGRAM LUP DISIGNATION.

   The proposed project is an allowed use in the R-1-5 zone district and is consistent with the Urban Medium Density Residential Land Use designation of the General Plan and Local Coastal Program LUP. The proposed wall is accessory to the existing single-family dwelling and is required for the dwelling's continued occupancy. (See Development Permit Findings, incorporated herewith, and specifically Finding No. 1, which discusses the need for the wall.)

2. THAT THE PROJECT DOES NOT CONFLICT WITH ANY EXISTING EASEMENT OR DEVELOPMENT RESTRICTIONS SUCH AS PUBLIC ACCESS, UTILITY, OR OPEN SPACE EASEMENTS.

   The subject property is not affected by any development restrictions that hinder development of the project. There are no public access, utility or open space easements which will be affected by the development. No public access exists and none is possible from this property to the beach. The beach itself will not be affected by the construction. All construction activities will occur from the interior of the property on the bluff, no traffic will be blocked, and a barrier will be placed along the top of the bluff between the construction site and the beach to prevent material accidentally falling onto the beach. The applicant must obtain all approvals from the State Parks and the State Lands Commission as applicable prior to intiatinag any construction.

3. THAT THE PROJECT IS CONSISTENT WITH THE DESIGN CRITERIA AND SPECIAL USE STANDARDS AND CONDITIONS OF THIS CHAPTER PURSUANT TO SECTION 13.20.130 et seq.

   The construction of the proposed improvements is consistent with the design criteria and special use standards and conditions of this chapter pursuant to Section 13.20.130 et seq., in that the project will be visually compatible, minimizes site disturbance, and will be landscaped so as to be compatible with surrounding vegetation. The project does not involve excessive grading, will not be visually intrusive, and will be visually compatible with the character of the surrounding lands. The design of the project is such that it will be subordinate to the natural geologic formation/sand and rock bluff character of the site, will maintain the natural bluff feature of the site, and all visual intrusion will be softened by gunite texturing, staining, and coloring, as well as the final landscaping of all disturbed areas.

This property is not in a Coastal LUP Designated Special Area, therefore no special policies or development requirements applying to these areas apply to this project.

This coastal bluff property falls under General Plan and Coastal LUP Policy 5.10.7, which governs Open Beaches and Blufftops. This policy allows only those structures that are compatible with the pattern of existing development, use natural finishes, blend with the character of the area, and that integrate with the adjacent landforms. Visually intrusive structures are not allowed.

A pier wall is a series of piers constructed below grade on the terrace above the bluff. A four foot grade beam, also buried, connects the concrete piers. This pier and grade beam wall will be invisible from the beach initially, as it is buried on the terrace behind the bluff top. Eventually the pier wall will be exposed by coastal erosion. After the pier wall is exposed by erosion it will be visible from the beach. To reduce visual intrusion after the wall becomes visible, both the piers and the grade beam wall will be constructed of colored concrete. To stabilize the piers after they become exposed, shotcrete will be placed between the piers. The form of the shotcrete facing will match the existing slope, and texture as well as mottled coloring will cause the wall to visually integrate with the existing bluff environment.
The goal of integrating the gunite wall with the visual bluff appearance is to simulate the color and texture of the geologic formation so that the wall blends with the existing conditions. Appropriate texturing, staining and coloring will appropriate will produce a mottled terrace color and pattern that match both wet and dry bluff conditions. This effect has been effectively used in this area before and can match the bluff under varying conditions. Also, the disturbed area around the top of the wall will be landscaped.

Pictures of a shotcrete wall similar to the proposed wall and a steel beam-wood lagging wall, the most common feasible alternative to shotcrete, are shown in Exhibit Attachments 6 and 7. As can be seen, shotcrete walls treated to reduce visual intrusion are successful in reducing impacts. This was confirmed after the wall shown in the attachment was complete and inspected by the County staff. The wood-lagging alternative is more visually intrusive, has a dissimilar overall appearance from the natural bluff, and is visible from a distance around the Monterey Bay. The success of shotcrete walls has been confirmed in many circumstances. Attachment 8 (Exhibit E) shows a variety of such treated walls. The walls have successfully matched similar rock appearance and have faded into the background better than wood lagging walls. Treated walls may be noticed as artificial at close range but they are less likely to be noticed as artificial and visually intrusive from a distance.

To assure that the appropriate texture is applied, County staff will view the site during the initial blowing of the gunite to confirm that the texture matches the general texture of the formation. To assure that the color is appropriate, County staff will view test samples of the coloring relative to both wet and dry samples of the natural bluff material.

Lastly, a condition of approval will be the removal of an existing damaged wood wall that is unsightly and the painting and reconfiguration of old unsightly County drainage pipes. These activities will help restore the scenic nature of the bluff, pursuant to GP/LUP Section 5.10.7.

In summary, given all the mitigations discussed above, the net result will be a wall treated such that it will blend with the character of the area and integrate with the landforms (GP/LUP Section 5.10.7), and an existing damaged wall will be removed to restore a scenic area (GP/LUP Section 5.10.9, Restoration of Scenic Areas).

4. THAT THE PROJECT CONFORMS WITH THE PUBLIC ACCESS, RECREATION, AND VISITOR-SERVING POLICIES, STANDARDS AND MAPS OF THE GENERAL PLAN AND LOCAL COASTAL PROGRAM LAND USE PLAN, SPECIFICALLY CHAPTER 2: FIGURE 25, AND CHAPTER 7, AND, AS TO ANY DEVELOPMENT BETWEEN THE NEAREST PUBLIC ROAD AND THE SEA OR THE SHORLINE OF ANY BODY OF WATER LOCATED WITHIN THE COASTAL ZONE, SUCH DEVELOPMENT IS IN CONFORMITY WITH THE PUBLIC ACCESS AND PUBLIC RECREATION POLICIES OF CHAPTER 3 OF THE COASTAL CACT COMMENCING WITH SECTION 30200.

The project area is at the southern end of and adjacent to 41st Avenue. No public access current exists at this site, nor is public access possible at this site. Existing public access to the beach below 41st Avenue, which is located to the west of this site, will not be affected by this project. Nor does the project affect recreational use of the adjacent Beach/Parkland. All construction activities will occur from the interior of the property on the bluff, no traffic will be blocked, and a barrier will be placed along the top of the bluff between the construction site and the beach to prevent material accidentally falling onto the beach.

The project site is not identified as a priority acquisition site in the County Local Coastal Program.

5. THAT THE PROPOSED DEVELOPMENT IS IN CONFORMITY WITH THE CERTIFIED LOCAL COASTAL PROGRAM.

The proposed placement of the improvements is in conformity with the County's certified Local Coastal Program in that the bluff wall will be constructed to preserve and protect the existing land uses. The wall will minimize site disturbance, be visually non-intrusive, and will conform to the natural landscape of the area.

Coastal visual resources will not be negatively impacted by the proposed project. The proposed pier wall will retain the existing appearance of the property for a longer period of time. Eventually, when the pier wall is exposed due to erosion, the wall will be treated and colored to match the existing bluff's appearance. The wall will blend with both the nearby community and site natural landform appearance.

To insure this, a visual treatment plan is required for the Phase II gunite wall that will be eventually placed on the top of the bluff and this plan is required to be included as part of the final construction plans. In accordance with Chapter 13.11 of the County Code, a visual treatment plan that conforms to the natural conditions of the site will be required to be incorporated into the final plans. The plan will be reviewed and approved by Environmental Planning staff prior to issuance of the Building permit.

The Coastal resources of natural shoreline processes, such as adequate sand supplies and beach dynamics on and off-site, will not be adversely affected by this project. The proposed wall will retain the terrace material, but will allow continued erosion until the wall is exposed. After exposure a textured and colored concrete facing will be applied where necessary. Consequently the current erosion pattern will continue for some time and will be stopped only when necessary when the bluff has significantly eroded. The primary source of terrace erosion and toppling is urbanization including uncontrolled surface drainage and subsurface saturation and wave cut notching at the toe with subsequent over-steepening of the terrace deposits. The proposed project will control surface drainage and will help to reduce the effects of bluff saturation. This project will have little impact on the beach with regard to loss of beach and little impact on sand supply.

A significant threat, thereby necessitating a shorline protection structure, has been determined to exist at this site. The owners and their consulting engineering geologists (Exhibit E; Mitigated Negative Declaration Attachment 2) and geotechnical engineers (Exhibit E; Mitigated Negative Declaration Attachment 3) have evaluated the site and have determined that within the next 15 to 20 years, if not sooner, the home will be threatened by the retreat of the coastal bluff.

The determination that the home is threatened by coastal bluff erosion has been made over a fifteen-year observation period (see Mitigated Negative Declaration Attachments 1 and 2). The Adams' home is approximately 45 years old and is of standard wood frame construction with conventional foundations. These conventional foundations are not designed to restrain coastal bluff erosion and during the original home construction no attempt was made to reduce the effect of coastal erosion. Since the original construction was completed, several episodes of bluff erosion/collapse have occurred and the bluff has retreated approximately 15 feet. The edge of the bluff is now within 20 feet of the home.

If the upper bluff terrace retreats to it's natural angle of repose, the top of the bluff is expected to be within three feet of the residence. After which, continuing coastal erosion will cause the bluff's toe to erode, resulting in the further retreat of the terrace material. Continued bluff retreat will result in the undermining of the home's foundation unless intervention occurs. Bluff top erosion occurs episodically and rapidly during intense rainfall with the result that the terrace material could retreat to the home's foundations during a few intense storms. This is a real and significant threat to the home. This project will strengthen the upper bluff area, and is expected to protect the existing single-family dwelling from the bluff retreat for a significant length of time.

There are few reasonable alternatives. The home is built to the property boundaries on the sides of the property, to the required front setback on the front, and the bluff is within 20 feet of the home on the rear. Other types of walls and terrace face treatments have been evaluated and the proposed project has been determined to be the least impactive alternative which allows the continued occupancy of the home. It is also the least disruptive alternative in that it will not cause loss of bluff material, and does not rusult in the loss of structural integrity of the bluff in the shor or long term. The alternative of no project would result ultimately in the placing of a protective structure during a later crisis, which could result in a less desirable project.

(Please see Development Permit Findings, and specifically Finding No. 1, for a discussion of the staging and construction plan which is required as a permit condition.)

DEVELOPMENT PERMIT FINDINGS:

1. THAT THE PROPOSED LOCATION OF THE PROJECT AND THE CONDITIONS UNDER WHICH IT WOULD BE OPERATED OR MAINTAINED WILL NOT BE DETERMENTAL TO THE HEALTH, SAFETY, OR WELFARE OF PERSONS RESIDING OR WORKING IN THE NEIGHBORHOOD OR THE GENERAL PUBLIC, OR BE MATERIALLY INJURIOUS TO PROPERTIES OR IMPROVEMENTS IN THE VICINITY.

The location of the proposed project will not be detrimental to the health, safety or welfare of persons residing or working in the neighborhood or the general public in that all public areas will be protected from any impacts of the construction by means of a barrier being erected between the construction site and the bluff so that there will be no deleterious impacts to the beach below the site. No traffic will be blocked as all construction vehicles and equipment will be entirely accommodated on the site.

A staging and construction plan will be required to ensure that the health, safety, and welfare of all persons in the vicinity will be preserved and that the project is not materially injurious to other properties or improvements in the vicinity, such as the adjacent public beach, and that all coastal resources are preserved and protected as required by this permit.

The project will also not be materially injurious to properties or improvements in the vicinity in that it will protect the existing home. Both the engineering geologist and Geoctechnical Engineer have evaluated the project for the potential of adverse off-site impacts. They have determined that the porposed pier wall and future shotcrete webbing will not adversely affect adjacent property. This property is more threatened by bluff erosion than the other properties in the vicinity in that it is located on a point of land. Regional conditions are described in the geologic and geotechnical reports. The eighty-foot long pier wall is proposed to resist ongoing erosion of the coastal bluff adjacent to the existing home. The owners and their consulting engineering geologists (Mitigated Negative Declaration Attachment 2) and geotechnical engineers (Mitigated Negative

Declaration Attachment 3) have evaluated the site and have determined that within the next 15 to 20 years, if not sooner, the home will be threatened by the retreat of the coastal bluff.

The determination that the home is threatened by coastal bluff erosion has been made over a fifteen-year observation period (see Mitigated Negative Declaration Attachments 1 and 2). The Adams' home is approximately 45 years old and is of standard wood frame construction with conventional foundations. These conventional foundations are not designed to restrain coastal bluff erosion and during the original home construction no attempt was made to reduce the effect of coastal erosion. Since the original construction was completed, several episodes of bluff erosion/collapse have occurred and the bluff has retreated approximately 15 feet. The edge of the bluff is now within 20 feet of the home. Continued bluff-retreat will result in the undermining of the foundation unless intervention occurs. This project will strengthen the upper bluff area, and is expected to thereby protect the existing single-family dwelling for approximately another 20-30 years.

2. THAT THE PROPOSED LOCATION OF THE PROJECT AND THE CONDITIONS UNDER WHICH IT WOULD BE OPERATED OR MAINTAINED WILL BE CONSISTENT WITH ALL PERTINENT COUNTY ORDINANCES AND THE PURPOSES OF THE ZONE DISTRICT IN WHICH THE SITE IS LOCATED.

The proposed bluff buried wall and eventual textured gunite facing are accessory structures that are related to the existing home. The walls will be constructed and maintained in a manner consistent with all pertinent County Ordinances, as conditioned by this permit. The project is consistent with the purposes of the R-1-5 and PR zone district in that it will protect existing single-family residential development.

3. THAT THE PROPOSED USE IS CONSISTENT WITH ALL ELEMENTS OF THE COUNTY GENERAL PLAN AND WITH ANY SPECIFIC PLAN, WHICH HAS BEEN ADOPTED FOR THE AREA.

The project is consistent with all elements of the County General Plan/Local Coastal Program Land Use Plan (See Coastal Development Permit Findings for discussion concerning the project's compliance with the Coastal Plan, and particularly finding No. 3 concerning the project's compliance with visual resources policies and the project's compatibility with the community.) No Specific Plan has been adopted for this area.

4. THAT THE PROPOSED USE WILL NOT OVERLOAD UTILITIES AND WILL NOT GENERATE MORE THAN THE ACCEPTABLE LEVEL OF TRAFFIC ON THE STRETS IN THE VICINITY.

The accessory use to an existing single-family residential use will not overload utilities and will not generate any traffic on the streets in the project vicinity. The project in the future will not increase the use of utilities nor increase the traffic in the area in that no increase in population density will be created.

5. THAT THE PROPOSED PROJECT WILL COMPLEMENT AND HARMONIZE WITH THE EXISTING AND PROPOSED LAND USES IN THE VICINITY AND WILL BE COMPATIBLE WITH THE PHYSICAL DESIGN ASPECTS, LAND USE INTENSITIES, AND DWELLING UNIT DENSITIES OF THE NEIGHBORHOOD.

The proposed project will complement and harmonize with the existing and proposed land uses in the vicinity. The project will be compatible with the physical design aspects, land use intensities, and dwelling unit densities of the neighborhood. As conditioned, the proposed project will have a less than significant visual impact on the surrounding neighborhood. To insure that the visual impacts are minimized, the wall will be textured, colored and stained such that it harmonizes with the surrounding community's appearance, specifically the appearance of the bluff. (See Coastal Development Permit Findings for discussion concerning the project's compliance with the Coastal Plan, and particularly finding No. 3 concerning the project's compliance with visual resources policies and the project's compatibility with the community.) The project will not increase land use intensities or residential densities in the vicinity, as it is an accessory use to an existing single-family dwelling.

6. THE PROPOSED DEVELOPMENT PROJECT IS CONSISTENT WITH THE DESIGN STANDARDS AND GUIDELINES (SECTIONS13.11.070 THROUGH 13.11.076), AND ANY OTHER APPLICABLE REQUIREMENTS OF THIS CHAPTER.

The proposed development is primarily underground and will have no impact on design standards. The portion of the project that will eventually be above grade is consistent with the Design Standards and Guidelines of the County Code in that the trenches are designed to fit the existing slope contours, grading is minimized, the work is designed to minimize removal of existing vegetation, the proposed landscaping will enhance the natural site amenities, and existing unsightly conditions will be rectified.

COASTAL PERMIT 00-0757
APN 033-171-18

Recording requested by:

COUNTY OF SANTA CRUZ

When recorded, return to:

Santa Cruz County Planning Department
701 Ocean Street
Santa Cruz, CA 95060
Attn: Joe Hanna

EXHIBIT C
CONDITIONS OF APPROVAL

Development Permit No. 00-0757
Applicant and Property Owners: Keith Adams
Assessor's Parcel 033-171-18
Property location and address: 500 41st
Live Oak Planning Area

Exhibits:
A. Retaining wall plans by Soils Engineering Construction

EXHIBITS:

A. Retaining wall plans by Soil Engineering Construction, dated 9/4/01.

CONDITIONS:

I. This permit authorizes the construction of a buried concrete pier wall with concrete grade beam (Phase I) and future gunite bluff top facing (Phase II). Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicant/owner shall:

A. Sign, date and return to the Planning Department one copy of the approval to indicate acceptance and agreement with the conditions thereof.

B. Obtain a Building Permit from the County of Santa Cruz Planning Department for Phase I.

C. Submit proof that these conditions have been recorded in the official records of the County of Santa Cruz (Office of the County Recorder).

II. Prior to issuance of the Building Permit the applicant/owner shall submit plans for review and approval by the Planning Department. Final plans shall be substantially in conformance with Exhibit A above and shall include the following:

A. A surveyed plot plan. The plan shall show all proposed improvements, the limits of the County right-of-way, the property lines, and the location of improvements on adjacent properties.

B. An engineered drainage plan is required. All bluff top surface drainage shall be away from the bluff face. Final plans shall show the drainage system as detailed in the soils engineering report, including outlet locations and appropriate energy dissipation devices.

C. A landscaping and erosion control plan for all disturbed areas.

D. A staging and construction plan must be submitted that shows the phased construction, the methods of access, traffic control/safety, staging, dust suppression, debris control during construction, and method for accomplishing the failing wood wall removal the reconfiguration of the CMP. The pier wall and grade beam, drainage system, landscaping, and site restoration/cleanup items shall be included in Phase I. The gunite facing of the wall shall be installed as the Phase II when needed as the cliff erodes. A separate Building Permit shall be obtained for Phase II when it is to be constructed. The staging and construction plan shall show how the health, safety, and welfare of all persons in the vicinity will be preserved, and how the project will not be materially injurious to other properties or improvements in the vicinity, such as the adjacent public beach, and that all coastal resources are preserved and protected as required by this permit. All construction activities will occur from the interior of the property on the bluff, no traffic will be blocked, and a barrier will be placed along the top of the bluff between the construction site and the beach to prevent material accidentally falling onto the beach. No debris from the removal of the failing wood retaining wall shall be allowed to fall onto the beach, and shall be removed from the site.

E. All plans shall conform to the requirements of the County Soils and Geology Review letter dated April 26, 2001, the Engineering Geology Report by Rogers E. Johnson and Associates dated September 4, 2000, and the Soils Engineering Report by Haro, Kasunich and Associates dated October 2000. Final plans shall reference these reports and state that all development shall conform to the reports' recommendations. An engineered foundation plan is required. On this plan the geotechnical engineer's and engineering geologist's requirements must be detailed and the plan must be approved by the geotechnical engineer and engineering geologist in writing. Prior to the building permit issuance the geotechnical engineer and engineering geologist must submit a brief building, grading and drainage plan review letter to Environmental Planning stating that the plans and foundation design are in general conformance with the report recommendations.

F. Record the attached Declaration of Geologic Hazards.

G. At the time of construction of Phase II, a visual treatment plan shall be submitted for the Phase II gunite wall that will be eventually placed on the top of the bluff. This plan shall ensure that the wall will blend with the natural conditions of the site's natural landform appearance. The plan will be reviewed and approved by Environmental Planning staff prior to issuance of the Building permit. To assure that the color is appropriate, County staff will view test samples of the coloring relative to both wet and dry samples of the natural bluff material. The wall shall be colored to match the adjacent color of the bluff material, mottled with areas of light and shadow, and be textured to blend with the adjacent soils and terrace deposits. A list of similar projects that have been completed by the contractor, along with color photos of at least two of those projects shall be submitted to the Project Planner/County Geologist.

H. For Phase II, record a monitoring and maintenance agreement on the property deed that provides for the upkeep of the landscaping (per the approved plan) and continued good condition of the face of the wall. The agreement shall include provision for cleaning and restaining as necessary to perpetuate the color and texture as approved at the time of final inspection.

I. ***Comply with the Mitigated Negative Declaration Conditions A2 and B.***

   a. Submit color chips and colored sample of the concrete mix to be used on the project, including staining and acid treatment, to the Project Planner/County Geologist for review and approval;

   b. Submit specifications to the Project Planner/County Geologist for review ad approval that describe the colorizing and staining process that will be used to achieve the color match and the mottled, shadow effect that will be relied upon for a realistic texture match;

c. Submit to the Project Planner/ County Geologist for review and approval a list of similar projects that have been completed by the contractor who is chosen for the project, along with color photographs of at least two projects;

d. Record a monitoring and maintenance agreement on the property deed that provides for the upkeep of the landscaping (per the plan) ad continued good condition of the face of the wall. The agreement shall include provision for cleaning and retaining as necessary to perpetuate the color and texture as approved at the time of final inspection.

e. The vertical riser on the CMP that will covey drainage form the project will be cut off at pipe level and replaced with a manhole prior to final inspection of the piers;

f. Said CMP shall be painted to match or blend with the color of the bluff;

g. The failing wood retaining walls on the bluff face, which are a hazard as well as a visual intrusion, will be removed prior to final inspection of the piers.

III. All construction shall be performed in accordance with the approved plans. For reference in the field, a copy of these conditions shall be included on all construction plans. Prior to final building and grading inspection the applicant/owner shall meet the following conditions:

A. All site improvements shown on the final approved Building Permit plans shall be installed according to the approved staging and construction plan for Phase I. Phase II will be completed in the future when the cliff has eroded to the wall. A separate Building Permit shall be required at that time for Phase II.

B. All inspections required by the permit for Phase I shall be completed to the satisfaction of the County Planning Department.

C. The project Civil Engineer and Geotechnical Engineer shall submit letters to the Planning Department verifying that all construction has been performed according to the final approved plans and specifications.

D. The Geotechnical Engineer must inspect all foundation excavations and a letter of inspection must be submitted to Environmental Planning and the building inspector prior to pour of concrete.

E. Dust suppression and debris control techniques as per the construction plans shall be implemented during construction.

F. Prior to final inspection of Phase I, the Geotechnical Engineer and Engineering Geologist must submit a final letter report to Environmental Planning and the

Building Inspector regarding the compliance with all technical recommendations of the soils report and geologic report.

G. Prior to final inspection of Phase I, the existing damaged wood wall that is unsightly shall be removed as indicated on Exhibit A, and the painting and reconfiguration of old unsightly County drainage pipes shall be completed: the vertical riser on the CMP that will convey drainage from the project will be cut off at pipe level and replaced with a manhole. The CMP shall also be painted to match or blend with the color of the bluff.

H. At the time the gunite facing (project Phase II) is applied to the wall, to assure that the appropriate texture is applied, County staff will view the site during the initial blowing of the gunite to confirm that the texture matches the general texture of the formation. Prior to beginning the process of applying the shotcrete facing to the exposed piers and wall, the applicant/owner shall arrange for a pre-construction meeting among the contractor, owner, and Project Planner/County Geologist to set the inspection schedule. The best technology available shall be utilized in the construction of the facing.

I. Pursuant to Sections 16.40.040 and 16.42.100 of the County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this development, any artifact or other evidence of an historic archaeological resource or a Native American cultural site is discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the Sherri-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains. The procedures established Sections 16.40.040 and 16.42.100 should be observed.

J. Comply with the Mitigated Negative Declaration Conditions C and D.

   a. Prior to final inspection of the piers and the later prior to final inspection of the shotcrete, the project engineer and engineering geologist shall provide a letter(s) of inspection indicating that all recommendations of the respective technical report have been followed.

   b. Prior to beginning the process of applying shotcrete or the facing to the exposed piers, applicant / owner shall arrange for a pre-construction site meeting among the contractor, owner, and County Geologist to set the inspection schedule. Inspections shall include Co. Geologist on site to witness the blowing-on and texturing process.

IV. Operational Conditions.

A. No land clearing, grading or excavating shall take place between October 15 and April 15 unless a separate winter erosion-control plan is approved by the Planning Director. All bare slopes shall be seeded with barley seed at the end of construction or prior to October 15, 2001, whichever occurs first.

B. All landscaping and erosion control shall be permanently maintained.

C. In the event that future County inspections of the subject property disclose noncompliance with any Conditions of this approval or any violation of the County Code, the owner shall pay to the County the full cost of such County inspections, including any follow-up inspections and/or necessary enforcement actions, up to and including permit revocation.

V. As a condition of this development approval, the holder of this development approval ("Development Approval Holder"), is required to defend, indemnify, and hold harmless the COUNTY, its officers, employees, and agents, from and against any claim (including attorneys' fees), against the COUNTY, it officers, employees, and agents to attack, set aside, void, or annul this development approval of the COUNTY or any subsequent amendment of this development approval which is requested by the Development Approval Holder.

A. COUNTY shall promptly notify the Development Approval Holder of any claim, action, or proceeding against which the COUNTY seeks to be defended, indemnified, or held harmless. COUNTY shall cooperate fully in such defense. If COUNTY fails to notify the Development Approval Holder within sixty (60) days of any such claim, action, or proceeding, or fails to cooperate fully in the defense thereof, the Development Approval Holder shall not thereafter be responsible to defend, indemnify, or hold harmless the COUNTY if such failure to notify or cooperate was significantly prejudicial to the Development Approval Holder.

B. Nothing contained herein shall prohibit the COUNTY from participating in the defense of any claim, action, or proceeding if both of the following occur:

1. COUNTY bears its own attorney's fees and costs; and

2. COUNTY defends the action in good faith.

C. Settlement. The Development Approval Holder shall not be required to pay or perform any settlement unless such Development Approval Holder has approved the settlement. When representing the County, the Development Approval Holder shall not enter into any stipulation or settlement modifying or affecting the interpretation or validity of any of the terms or conditions of the development approval without the prior written consent of the County.

D. Successors Bound. "Development Approval Holder" shall include the applicant and the successor'(s) in interest, transferee(s), and assign(s) of the applicant.

E. Within 30 days of the issuance of this development approval, the Development Approval Holder shall record in the office of the Santa Cruz County Recorder an agreement which incorporates the provisions of this condition, or this development approval shall become null and void.

Minor variations to this permit which do not affect the overall concept or density may be approved by the Planning Director at the request of the applicant or staff in accordance with Chapter 18.10 of the County Code.

PLEASE NOTE: THIS PERMIT EXPIRES TWO YEARS FROM DATE OF APPROVAL UNLESS YOU OBTAIN YOUR BUILDING PERMIT AND COMMENCE CONSTRUCTION.

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CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060
PHONE: (831) 427-4863
(831) 427-4877

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT

Please review attached appeal information sheet prior to completing this form.

SECTION I. Appellant(s):

Name, mailing address and telephone number of appellant(s):

Commissioner Sara Wan
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219
(415) 904-5200

Commissioner Dave Potter
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219
(415) 904-5200

SECTION II. Decision Being Appealed

1. Name of local/port government:
Santa Cruz County

2. Brief description of development being appealed:
Drilled pier and shotcrete shoreline protection structure.

3. Development's location (street address, assessor's parcel number, cross street, etc.:
Coastal bluff seaward of 500 41st Avenue (APN 033-171-18) in the Opal Cliffs region of the unincorporated Live Oak area of Santa Cruz County.

4. Description of decision being appealed:

a. Approval; no special conditions: _____
b. Approval with special conditions: **XXX**
c. Denial: _____

Note: For jurisdictions with a total LCP, denial decisions by a local government cannot be appealed unless the development is a major energy or public works project. Denial decisions by port governments are not appealable.

TO BE COMPLETED BY COMMISSION:

APPEAL NO: A-3-SCO-01-109
DATE FILED: November 6, 2001
DISTRICT: Central

RECEIVED
NOV 06 2001
CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

CCC Exhibit D
(page 1 of 1 pages

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (PAGE 2)

5. Decision being appealed was made by (check one):

a. XX Planning Director/Zoning Administrator

b. ___ City Council/Board of Supervisors

c. ___ Planning Commission

d. ___ Other:_____

6. Date of local government's decision: **October 19, 2001**

7. Local government's file number: **00-0757**

SECTION III Identification of Other Interested Persons

Give the names and addresses of the following parties: (Use additional paper as necessary.)

a. Name and mailing address of permit applicant:

Keith Adams	**Representative: Richard Beale Land Use Planning**
500 41st Avenue	**100 Doyle Street, Suite E**
Santa Cruz, CA 95062	**Santa Cruz, CA 95062**

b. Names and mailing addresses as available of those who testified (either verbally or in writing) at the city/county/port hearings (s). Include other parties which you know to be interested and should receive notice of this appeal.

(1) **Santa Cruz County (a) Parks, (b) Redevelopment, and (c) Public Works Depts.**
701 Ocean Street
Santa Cruz, CA 95060

(2) **Live Oak Community Association, attn: Georgia Ackley & Everdyn Wescoat**
178 24th Avenue
Santa Cruz, CA 95062-5302

(3) **Surfer's Environmental Alliance**
P.O. Box 3578
Santa Cruz, CA 95063

(4) **Charles Paulden**
415 Palisades Street
Santa Cruz, CA 95062

SECTION IV. Reasons Supporting This Appeal

Note: Appeals of local government coastal permit decisions are limited by a variety of factors and requirements of the Coastal Act. Please review the appeal information sheet for assistance in completing this section which continues on the next page.

CCC Exhibit D
(page 1 of 1 pages)

State briefly your reasons for this appeal. Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)

SEE ATTACHED: REASONS FOR THIS APPEAL.

Note: The above description need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signed: Laura Allen
Appellant or Agent

Date: November 6, 2001

Agent Authorization: I designate the above identified person(s) to act as my agent in all matters pertaining to this appeal.

Signed: _____

Date: _____

(Document2)

CCC Exhibit D
(page 3 of 7 pages)

State briefly your reasons for this appeal. Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)

SEE ATTACHED: REASONS FOR THIS APPEAL.

Note: The above description need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signed: Dave Potter
Appellant or Agent

Date: November 6, 2001

Agent Authorization: I designate the above identified person(s) to act as my agent in all matters pertaining to this appeal.

Signed: _____

Date: _____

(Document2)

CCC Exhibit D
(page 4 of 7 pages)

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (PAGE 4)

Reasons for appeal:

Santa Cruz County approved a proposal to install a concrete-faced shoreline protective structure in 2 phases: phase one involves the immediate installation of an approximately 80 linear feet and 40 foot deep drilled pier wall system in the bluff; phase 2, to commence when the drilled piers are exposed in the future, involves facing the wall system with textured concrete (County Application Number 00-0757; Adams). The proposed project is located on the seaward side of 500 41st Avenue (APN 033-171-18) in the Opal Cliffs region of the unincorporated Live Oak area of Santa Cruz County, adjacent to the County's blufftop coastal accessway (parking lot, bluff overlook, stairway) where 41st Avenue meets East Cliff Drive (locally known as "the Hook"). The County-approved project raises Local Coastal program (LCP) and Coastal Act conformance issues and questions as follows:

The LCP addresses whether shoreline protective structures are necessary through Land Use Plan (LUP) Policy 6.2.16 (Structural Shoreline Protection Measures) and Implementation Plan (IP) Chapter 16.10 (Geologic Hazards), particularly Section 16.10.070(h)(3) (Coastal Bluffs and Beaches, Shoreline Protection Structures). These applicable LCP policies only allow for shoreline protection structures "where necessary to protect existing structures from a significant threat." In this case, it is not clear that a significant threat has been demonstrated. The residential structure at this location is roughly 24 feet from the blufftop's edge at its closest point (i.e., the residence's setback from the bluff edge ranges from between 24 and 41 feet due to the bluff edge configuration and the unusually shaped property and residence here). The Applicant's consulting engineering geologist identifies a 0.4 feet per year long-term erosion rate, based on past steady and episodic erosion processes, for this site. It would take 60 years at the identified rate for the bluff to retreat to the foundation of the home. Even after 10 additional years of erosion, the residence would still be set back a minimum of 20 feet from the blufftop's edge at the identified rate. Accordingly, it is not clear that the required significant threat has been demonstrated and thus the County's approval raises questions of consistency with LCP shoreline protective structure policies.

If a significant threat to an existing structure is proven, the LCP requires a "thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure." Although it is questionable as to whether a significant threat exists as described above, the County found a significant threat here. As a result, the LCP requires an alternatives analysis to avoid the use of hard protective structures, with an emphasis on the use of non-structural measures to address the identified threat. Other than discussion of the "no project" alternative, the approved project does not include a thorough analysis of potential alternatives to the proposed project. Accordingly, the County's approval raises questions of consistency with LCP shoreline protective structure alternatives analysis policies.

If a significant threat to an existing structure is proven, and non-structural measures are proven infeasible, the LCP requires that such structures "be placed as close as possible to the development or structure requiring protection." In this case, the County-approved structure would be placed well away from the residence (roughly a

Reasons for appeal:

(Continued from previous page)

minimum of 20 feet) near the bluff's edge, leaving approximately 3 feet of bluff between the structure and the bluff's edge. Accordingly, the County's approval raises questions of consistency with LCP shoreline protective structure siting policies.

If a hard protective structure is proven necessary and appropriately sited, the LCP only allows such structural protection if it minimizes landform alteration, minimizes visual intrusion, and when it does not reduce public beach access, adversely affect shoreline processes and sand supply, adversely impact recreational resources, or negatively impact habitat. (In addition to the LCP's shoreline protective structure specific policies, additional LCP policies are relevant to this point, including, but not limited to LUP Objectives 5.10.a and 5.10.b, LUP Policy 5.10.7, LUP Chapter 7, and IP Section 13.20.130. Furthermore, Coastal Act public access and recreation policies, applicable because this site is between the first public road and the sea, require similar protections and measures.) In this case, substantial landform alteration has been approved, ultimately to result in a concrete bluff where currently exists a natural bluff landform; visual intrusion is guaranteed for which the County-required mitigation on the future concrete facing may prove inadequate to conceal; the contribution of bluff materials into the natural shoreline sand supply system at this location will eventually be halted and the County-approval includes no mitigation for this impact; the County approval does not analyze the potential for the project to negatively alter beach access and offshore surf access and thus, any necessary mitigation for such negative impacts is also missing; there is no analysis of impacts, if any, to marine resources of the Monterey Bay National Marine Sanctuary offshore. In addition, the subject site is immediately adjacent to the County's blufftop coastal accessway and the County's approval is silent on potential impacts from the proposed project to ongoing and future blufftop recreational use of the accessway. These public access, recreation, viewshed, landform protection, and (potentially) offshore habitat issues appear to have been inadequately analyzed (if a protective structure were to be proven necessary and appropriately sited). Accordingly, the County's approval raises questions of consistency with such applicable Coastal Act and LCP resource policies.

If the County-approved project were to be installed, the consulting engineers indicate that a separate seawall, with its own attendant impacts, would need to be installed at this location in roughly 20 years to protect the County-approved shoreline protective structure. Not only is it unclear whether the LCP or the Coastal Act would allow for such shoreline armoring to protect other shoreline armoring, but the LCP requires a minimum of 100 years of stability without reliance on future shoreline protective structures (including, but not limited to, LUP Policy 6.2.12, and IP Sections 16.10.070(g) and 16.10.070(h)(1)(i)). The County-approved structure in this case does not appear to meet the LCP's minimum 100 year requirement. As such, it is unclear that such a structure is allowed under the LCP, and it is unclear whether such a structure, if installed, would constitute an "existing structure" under the LCP or the Coastal Act (since, if LCP-consistent, it would have been installed in such a way as to not require such future armoring). Accordingly, the County's approval raises questions of

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (PAGE 4)

Reasons for appeal:

(Continued from previous page)

consistency with such applicable LCP 100 year stability and shoreline protective structure policies.

In sum, the County LCP recognizes that shoreline protective structures designed to forestall coastal erosion can adversely alter natural shoreline processes and, as such, 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. As a result, exacting criteria must be met under the LCP, and the Coastal Act, before such structures can be considered or approved, and the LCP requires 100 years of stability (without reliance on shoreline protective structures) for development.

The County's approval is not consistent with the LCP in that the LCP-required significant threat has not been clearly demonstrated. The County's findings indicate that the home will be threatened by bluff retreat in the next 15 or 20 years; the identified erosion rate shows that it may be much longer than that. If a significant threat to an existing structure were proven, the County's approval has not thoroughly evaluated non-structural alternatives that could lessen the negative effect of the project approved, and the County's approval has not sited the proposed structure as close as possible to the structure to be protected. Public access, public recreation, views, landform alteration, and potentially offshore habitat issues have been inadequately analyzed and consistency with protective LCP and Coastal Act policies is not assured. It appears that the County approved project would require its own shoreline armoring in roughly 20 years though the LCP requires 100 years of stability.

As such, the proposed project's conformance with core LCP and Coastal Act policies is questionable. These issues warrant a further analysis and review by the Coastal Commission of the proposed project.

TO: CALIFORNIA COASTAL COMMISSIONERS

SUBJECT: Applicant's Response to Coastal Commission Appeal A-3-SCO-01-109, Owner - Adams.

I. CONTEXT OF PROJECT

- This Project is Not a "Shoreline Protection Measure". The County's determination of its General Plan (LCP) Policies is correct - the proposed project is not a "shoreline protection measure", as defined in the County's General Plan (LCP) section 6.2.16(see Attachment 1). This LCP section states, "Require any application for shoreline protection measures to include a thorough analysis of all reasonable alternatives, including but not limited to, ... protection of the upper bluff or area immediately adjacent to the threatened structure ...". Since the LCP defines upper bluff protection projects as *preferred alternatives* to shoreline protection measures, they obviously cannot be categorized as shoreline protection measures. This type of project, therefore, is not controlled by the policies and implementing ordinances pertaining to shoreline protection measures.

Since the essential reasons for this appeal are based upon County policy pertaining to shoreline protection measures, the adequacy of this entire appeal is in question. Since the County's determination is correct, then this appeal appears to have been made in error and should be dismissed.

- Controlling Precedents Exempt This Project From Regulations Governing "shoreline protection measures." Historically in Santa Cruz County, the Planning Department and Coastal Commission staff have never categorized upper bluff protection projects as shoreline protection measures. Numerous examples of upper bluff armoring projects establish the precedent of treating these structures more favorably than "shoreline protection measures." This project is similar to other upper bluff stabilization projects that have been approved by the County and the Coastal Commission, and constructed during the past several years. It is virtually identical to the project constructed just down the street at 4310 Opal Cliff Drive, under Coastal Permit 93-0325 (see Attachment 2). Numerous examples of upper bluff stabilization projects establish the precedent of treating these structures more favorably than "shoreline protection measures"(see Attachment 3).

CCC Exhibit E
(page 1 of 56 pages)

- Existing Geologic Hazard. Even though project approval is not dependent upon the determination of a significant or immanent geologic threat, it is best to complete this work and address this situation at this point in time. The residence is already too close to the bluff edge, and the parcel contains absolutely minimal front and side yard areas(see Attachment 4). Both the project geologist and the County planner/Certified Engineering Geologist, have established that bluff erosion poses a significant hazard to the residence. These experts support installation of bluff top protection. Their investigations led them to conclude that significant winter storms, in a single season, would threaten the stability of the residence(see Attachment 5, Attachment 6 - noted sections, and Attachment 7 - response #2 and p.3).

- Erosion Would Require Emergency Response. When the bluff erodes to the point of creating a structural hazard, bluff stabilization work will necessarily occur under an "emergency" condition(see Attachment 8, pg.3 Attachment 7, response #2). Construction equipment access and staging areas will be severely restricted or eliminated. This would be an unreasonable approach for the situation, and will only serve to continue the potentially dangerous setting present at the site. This can also lead to visual blight, as shown on Attachment 9). Constructing the project now is a reasonable approach to avoiding these adverse situations.

- Project Will Not Be Visually Intrusive. The project will mimic the natural composition and topography of the bluff, thereby maintaining the aesthetic values of this area. This is in conformance with County Policies and the guiding principles of the Coastal Commission ReCAP Report recommendations for a uniform, comprehensive shoreline protection plan for this portion of the coast line(see Attachment 10 and Attachment 11 - noted sections). A completed upper bluff stabilization project, as approved under Coastal Permit 98-0689, as well as other similar projects, clearly demonstrate how the finished product can blend seamlessly into the natural surroundings(see Attachments 12, 13 and 14). If the project is not approved until a future emergency exists, at that point the house will be visually intrusive, but a protection project will still require approval and construction. This scenario would *not* serve the public's best interest.

- Project Will Protect Public Safety. If not stabilized, the eroding bluff will continue to pose a significant health and safety threat to residents of the property - due to bluff top failures and landslides, and public beach users - due to falling debris and landslides(see Attachment 15). These conditions create a continuous, adverse liability for the property owners, and degrade property values. It is a very real possibility that failure to stabilize the bluff now, will eventually create structural distress and damage to the residence. This could

then result in the owners being denied the economic use of their property. As for beach users, the situation is already a potential attractive nuisance, which may result in liability to the property owners. An adverse ruling on this project will result in the Coastal Commission prohibiting the land owner from correcting this situation, and thereby create potential liability for the Commission itself. Again, project approval will serve the best interests of the public.

II. REASONS THIS PROJECT SHOULD BE APPROVED:

A. This Project is Consistent With Coastal Act/Plan Policies.

1. *Compliance With County Design Criteria.* As detailed in the County staff report findings and response letter dated 04/26/01, the project conforms to LCP policies and implementing ordinances(see Attachments 10 and 16). In particular, it is the least visually intrusive means of upper bluff structural stabilization, maintains the aesthetic character of the area, improves lateral public beach access (by eliminating landslide debris along the toe of the bluff) and supports the existing residential, open space and recreational (beach) uses of the site. These are all significant public benefits, especially when compared to any alternatives.

2. *Compliance With ReCAP.* The Coastal Commission's 1993 ReCAP report recognizes that all beach-front parcels along Opal Cliff Drive are developed with residences, and most already have some type of shoreline protection measure in place. It recommends a comprehensive and uniform bluff and beach protection plan for the Opal Cliff Drive stretch of coast line. The ReCAP report recommends use of stabilization measures that maintain the natural beauty and aesthetics of the coast line. Similar projects have been approved and constructed elsewhere along the coast, and are the most-preferred and recommended alternatives to concrete seawalls or rip-rap. This project can be viewed as a pilot project for a more comprehensive program - one that can hopefully be developed in the future with the cooperation of the affected residents, the County and the Coastal Commission.

3. This project has been planned and approved in a manner consistent with all County and Coastal Commission rules and regulations. Such an effort ought to be commended and supported. There is great public benefit from constructing the project at this point in time, including public safety, improved beach access and preservation of important public vistas.

B. Denial Would Violate Established Planning Policies:

1. *Site Planning Principles Demand Useable Open Space.* This parcel has minimal open space(see Attachment 4). Continued erosion will remove useable open space. Project denial will ensure unrestricted bluff retreat that would necessarily result in total removal of all rear yard open space. The consequence of continued erosion is that this parcel will become nonconforming as to lot area. That result is contrary to the established policies for residential development and uses such as this(see Attachments 17 and 18 - noted sections).

2. *Visual Blight Would Result From Project Denial.* Should the project be denied and the bluff allowed to retreat to within a few feet of the existing residence, the result would be in direct conflict with the objectives of LCP policies 6.2 and implementing ordinance 13.20.130(d)1. These policies require structures to be set back from the bluff top sufficiently to be "out of sight from the shoreline", and "not visually intrusive" (see Attachments 17 and 18).

3. *Project Denial Would Result in Unsafe Conditions.* LCP Implementing ordinance 16.10 requires development to be adequately setback from geologic hazards, such as failing bluffs(see Attachment 19). Denying this project would ensure that these policies would be violated. This potentially puts the property owners in a situation where it is impossible to protect and stabilize the property due to conflicts with LCP and County Ordinances, and therefore approaches a taking of the property.

4. *This appeal appears to be antagonistic to the property owner protecting the bluff under any circumstances.* It is impossible to comply fully with all arguments and angles put forth by the appellant, if they all in fact apply. The appellants argue that the situation is currently not bad enough to warrant project approval, but even if it was, the structure must meet a 100-year stability requirement. On the other hand, if one waits, there will be other significant problems, such as unsafe conditions, visual intrusiveness and not enough useable open space. Accordingly, an acceptance of the appellant's arguments results in a "Catch-22" for the property owners, that in effect may result in a depravation of the economic use of the prpoerty.

C. The Project Responds To an Imminent Threat.

Again, although not required as a basis for project approval, there exists an immediate threat to the safety of the existing residence as evidenced by the following facts:

1. *Expert Opinion of County Geologist.* The County staff planner/Certified Engineering Geologist has concludes that:

> "The current site condition constitutes a real and 'significant threat' to an existing structure (the residence). Bluff top erosion occurs episodically and rapidly during intense rainfall with the result that the

terrace material could retreat to the home's foundations during a few intense storms. This is a real and significant threat to the home."(see Attachment 5). He also stated, at the Public Hearing, that this project is "a necessity for the home to remain safe".

2. *Opinion of Consulting Geologist.* The applicants' consulting geologist found that:
   - Considering the 50 years of detailed records,... a major storm [occurs] every 1.1 years on average.
   - Analysis of the record reveals that ... five significant storms occurred within a single year (1931).
   - The coastal bluff at the subject property shows evidence of recent failures within the upper marine terrace deposits. and
   - If left unprotected, ... additional failure could put the bluff top about 3 feet from the current residence (see Attachment 6).

3. *Expert Opinion of County Zoning Administrator.* At the Public Hearing, the County Zoning Administrator stated that, "Having visited the site, it is important that we act on this as soon as we can" and, "Is there a significant threat situation? - Yes, no question".

4. *Technical Consensus is Unrebutted.* Every technical expert who has examined this project has concluded that there is a present danger to the residence. Two of the most highly qualified Certified Engineering Geologists in this area have stated that winter storms may occur at any time that could cause enough bluff erosion to destabilize the residence. If that were to occur, stabilization of the bluff will necessarily occur under "emergency" conditions. There is no contrary evidence in the record.

D. Project Denial Would Ensure An Emergency Response.

Denial of this project will delay responding to this manifest geologic threat until the home is in imminent peril. That has been the method of responding to bluff retreat in the past. Many, if not most, coastal protection measures in this area have been installed during "emergency" situations following catastrophic storms. This has generally resulted in a limited choice of stabilization projects that are typically not engineered, often of sub-standard quality (e.g. large rip-rap boulders dumped onto the beach, plastic covering on the bluff face, etc.), and can result in visual blight. Such projects are normally carried out under conditions that pose significant safety hazards to workers and public beach users. They often contribute to adverse erosion and shoreline processes on adjacent or near-by properties. Approving this project will obviate the need to respond to a future proposal in a climate of crisis.

IV. SPECIFIC RESPONSES TO COASTAL COMMISSION "REASONS FOR APPEAL":

A. Project is Not A Shoreline Protection Measure.

As detailed above, LCP Policy section 6.2.16, paragraph two, identifies upper bluff stabilization projects as a preferred alternative to shoreline protection measures. A project may not be both a shoreline protection measure and an alternative to a shoreline protection measure. In identifying upper bluff projects as an alternative to shoreline protection measures, the LCP explicitly refutes the argument that such projects may be considered shoreline protection measures. Therefore, County Policies and Implementing Ordinances relied on by Coastal Commission staff for this appeal do not pertain to this project.

B. A significant threat to the existing house exists.

All of the geotechnical experts and County staff involved in this project, conclude that a significant threat to the existing house does exist at this site, and it is prudent and appropriate to install the proposed stabilization measure at this point in time.

C. Reasonable alternatives have been evaluated.

A thorough alternatives analysis has been completed, and it has been determined that the proposed project is the most appropriate, and in fact the only truly effective means of addressing the bluff erosion and retreat at this site (see Attachment 7 - response #1, and Attachment 16 - response #3).

D. Project is as close as possible to the structure requiring protection.

At the public hearing, the staff planner and Zoning Administrator acknowledged that, given the site conditions and requirements for equipment access, staging and construction, the project is sited as close as possible to the house that requires the protection.

E. Objectives of pertinent LCP objectives, sections 5.10.a, 5.10.b, 5.10.7, Chapter 7 and IP section 13.20.130 are being met.

The project meets these LCP objectives and IP ordinances regarding the protection of visual resources, in that the project is designed to fit the topography of the site, it utilizes natural materials and finishes and state-of-the art construction techniques to blend with the character of the area and provide the least amount of visual intrusion(see Attachments 12, 13 and 14). The project is visually compatible with the surrounding area, it serves to preserve the natural bluff land form and aesthetic character, it includes landscaping that will further enhance the view shed, it serves to

preserve the ocean vistas - by maintaining the maximum setback from the bluff edge to the house, and thereby maintaining the best possible public view shed from the beach below, it does not interfere with any public beach access, it maintains and enhances public beach access and coastal recreation by stabilizing the failing bluff, and preventing the continuation of hazardous conditions due to rock falls and landslides. This also serves to protect lateral beach access.

F. Contribution of bluff materials into the natural shoreline sand supply system:

An expert geologist has evaluated this issue and concludes that the project will not have any significant affect on the natural shoreline sand supply(see Attachment 20, "impact upon natural shoreline sand supply system" section). The County geologist/staff planner is on record as agreeing with this conclusion.

G. Objectives of Coastal Act public access and recreation policies:

The project meets these Coastal Act policies in that it is located approximately 75 feet from a public access stairway, it does not encroach on, inhibit or affect any public beach access or offshore surf access. As detailed above, the project improves lateral beach access and public safety for beach users.

H. Impacts to marine resources:

Since all construction activities will occur at the top of the bluff, with plans to contain all construction materials in this area, there will be no impact on the beach or offshore marine resources.

I. Need for future seawall:

Although this project proposal does not include a seawall, if the bluff is left unprotected, then at some point in the next 15 to 20 years a seawall will have to be constructed, simply to protect the existing house from an immanent threat(see Attachment 7, p.3 drawing). Again, this will result in a property that does not conform with County LCP Policies and Ordinances requiring setbacks from geologic hazards and preserving important public view sheds. It is also important to note that the location of a future seawall, required to protect the residence, is virtually the same as one that would be required to protect this upper bluff stabilization project.

J. LCP requirement for 100-year project stability:

County LCP Policies and ordinances pertaining to 100-year stability were created to address new structures requiring a setback determination from the edge of the bluff.

(see Attachments 17 and 19 - noted sections). The 100 year rule does not, and obviously cannot, apply to actual bluff stabilization projects placed on the bluff face. If the 100 year stability rule were applied to such bluff face projects, no such project could ever be constructed, since it could never meet a 100-year stability setback criterion.

The strained interpretation of the 100 year rule advocated by the Coastal staff has never been used in the past. Numerous bluff-top retaining walls have been approved and constructed in recent years. These projects have neither been categorized as "shoreline protection measures", nor subject to a 100-year stability setback evaluation. Unless the law is changed, this rule should not be given an entirely new interpretation. The public is entitled to rely on past interpretation of Coastal policies in guiding their actions. Changing interpretations of unchanged policies threatens to cast the entire system of coastal regulation into disrepute.

6.2.14 Additions to Existing Structures

(LCP) Additions, including second story and cantilevered additions, shall comply with the setback requirements of 6.2.12. *(Revised by Res. 81-99)*

6.2.15 New Development on Existing Lots of Record

(LCP) Allow development activities in areas subject to storm wave inundation or beach or bluff erosion on existing lots of record, within existing developed neighborhoods, under the following circumstances:

(a) A technical report (including a geologic hazards assessment, engineering geology report and/or soil engineering report) demonstrates that the potential hazard can be mitigated over the 100-year lifetime of the structure. Mitigations can include, but are not limited to, building setbacks, elevation of the structure, and foundation design;

(b) Mitigation of the potential hazard is not dependent on shoreline or coastal bluff protection structures, except on lots where both adjacent parcels are already similarly protected; and

(c) The owner records a Declaration of Geologic Hazards on the property deed that describes the potential hazard and the level of geologic and/or geotechnical investigation conducted.
(Revised by Res. 81-99)

6.2.16 Structural Shoreline Protection Measures

(LCP) Limit structural shoreline protection measures to structures which protect existing structures from a significant threat, vacant lots which through lack of protection threaten adjacent developed lots, public works, public beaches, or coastal dependent uses.

Require any application for shoreline protection measures to include a thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure, protection of the upper bluff or area immediately adjacent to the threatened structure, engineered shoreline protection such as beach nourishment, revetments, or vertical walls. Permit structural protection measures only if non-structural measures (e.g. building relocation or change in design) are infeasible from an engineering standpoint or not economically viable.

The protection structure must not reduce or restrict public beach access, adversely affect shoreline processes and sand supply, increase erosion on adjacent properties, or cause harmful impacts on wildlife and fish habitats or archaeological or paleontological resources.

The protection structure must be placed as close as possible to the development requiring protection and must be designed to minimize adverse impacts to recreation and to minimize visual intrusion.

Shoreline protection structures shall be designed to meet approved engineering standards for the site as determined through the environmental review process.

Detailed technical studies shall be required to accurately define oceanographic conditions affecting the site. All shoreline protective structures shall incorporate permanent survey monuments for future use in establishing a survey monument network along the coast for use in monitoring seaward encroachment or slumping of revetments or erosion trends.

(1)

COUNTY OF SANTA CRUZ
Planning Department

Coastal **PERMIT**

Owner Eric Anderson
Address c/o Mesiti-Miller Engineers
224 Walnut St.
~~Santa Cruz, CA 95060~~

Permit Number 93-0325
Parcel Number(s) 033-171-23

PROJECT DESCRIPTION AND LOCATION

Propsal to construct a Coastal protection structure and remove existing deck. Requires a Coastal Zone Permit. Property located on the south side of Opal Cliff Drive (4310 Opal Cliff Drive). SUBJECT TO ATTACHED CONDITIONS.

Approval Date: June 17, 1994
Exp. Date (If not exercised) July 1, 1996
Denied by: _____

Effective Date: July 1, 1994
Coastal Appeal Exp. Date: Call Coastal
Denial Date: _____

_____ This project requires a coastal zone permit which is not appealable to the California Coastal Commission. It may be appealed to the Planning Commission. The appeal must be filed within 10 working days of action by the Zoning Administrator.

__XX__ This project requires a Coastal Zone Permit, the approval of which is appealable to the California Coastal Commission. (Grounds for appeal are listed in the County Code Section 13.20.110) The appeal must be filed with the Coastal Commission within 10 working days of receipt by the Coastal Commission of notice of local action. Approval or denial of the Coastal Zone Permit is appealable to the Planning Commission; the appeal must be filed within 10 working days of action by the Zoning Administrator.

This permit cannot be exercised until after the Coastal Commission appeal period. That appeal period ends on the above indicated date. Permittee is to contact Coastal staff at the end of the above appeal period prior to commencing any work.

A Building Permit must be obtained (if required) and construction must be initiated prior to the expiration date in order to exercise this permit. **THIS PERMIT IS NOT A BUILDING PERMIT.**

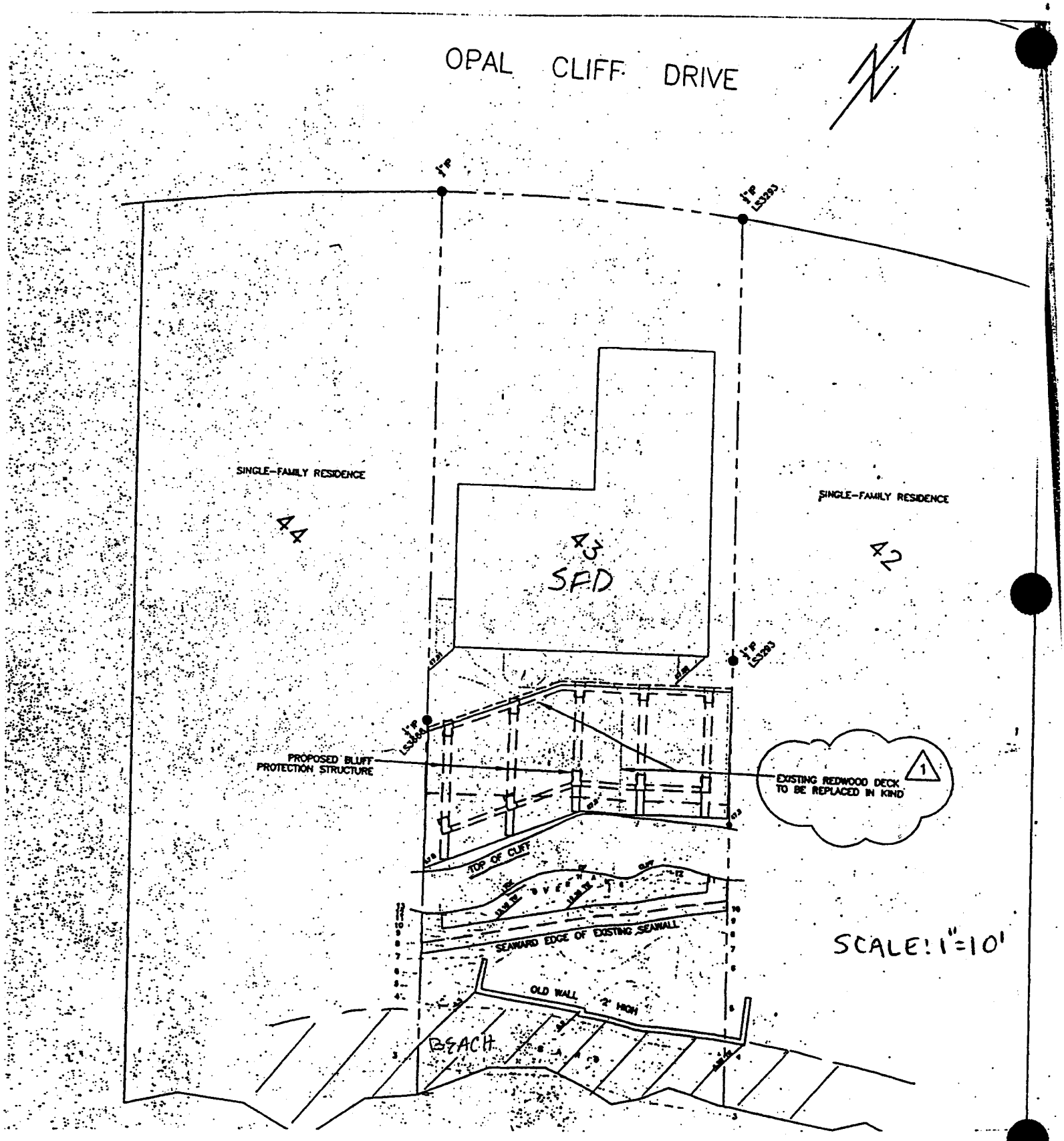
By signing this permit below, the owner agrees to accept the terms and conditions of this permit and to accept responsibility for payment of the County's costs for inspections and all other actions related to noncompliance with the permit conditions. This permit shall be null and void in the absence of the owner's signature below.

_____ _____
Signature of Owner/Agent **Date**

_____ _____
Staff Planner **Date** 6-30-94

CCC Exhibit E
(page 10 of 56 pages)

Distribution: Applicant - white, File - yellow, Clerical - pink, Coastal Commission - goldenrod



CCC Exhibit E
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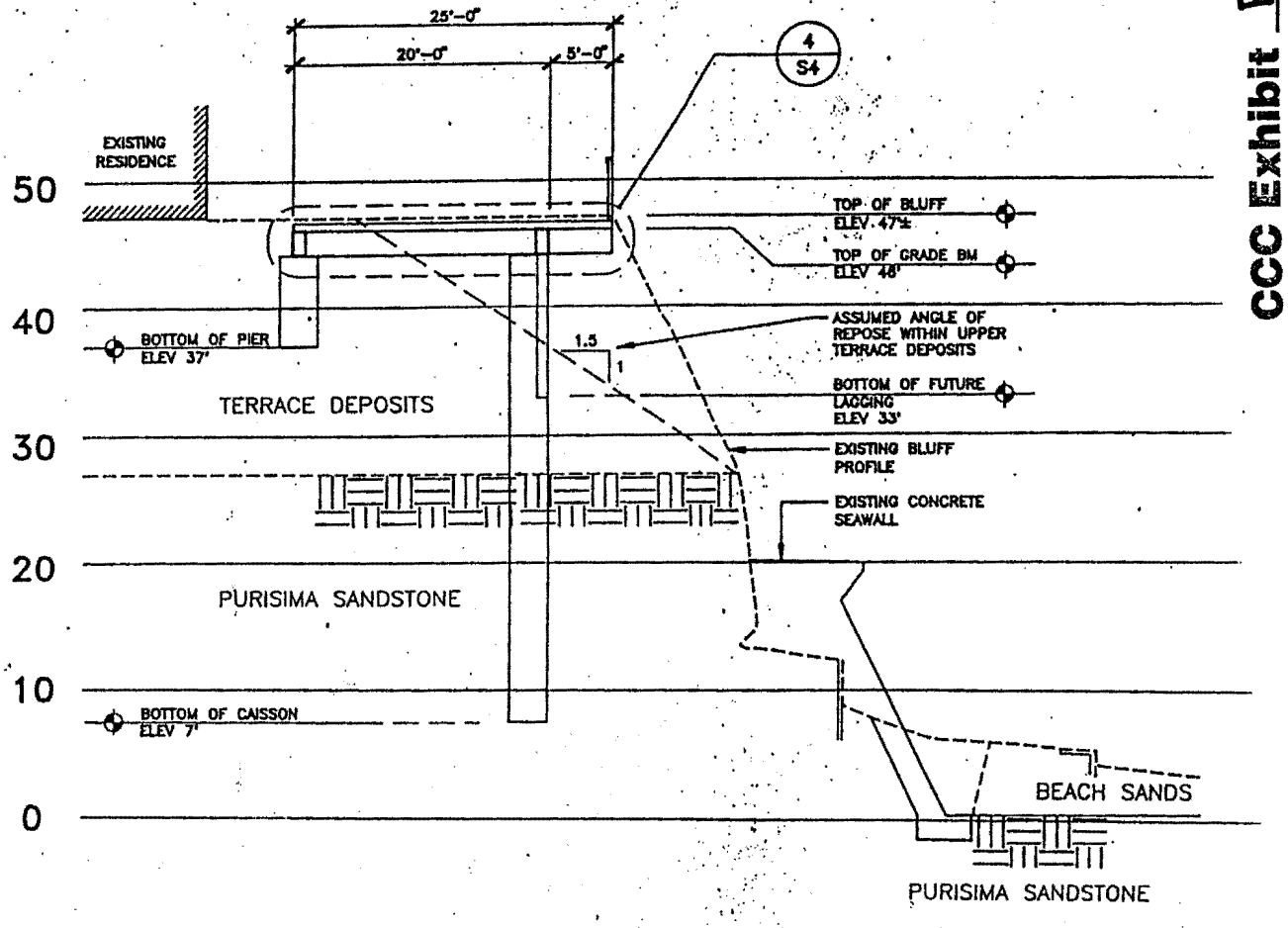
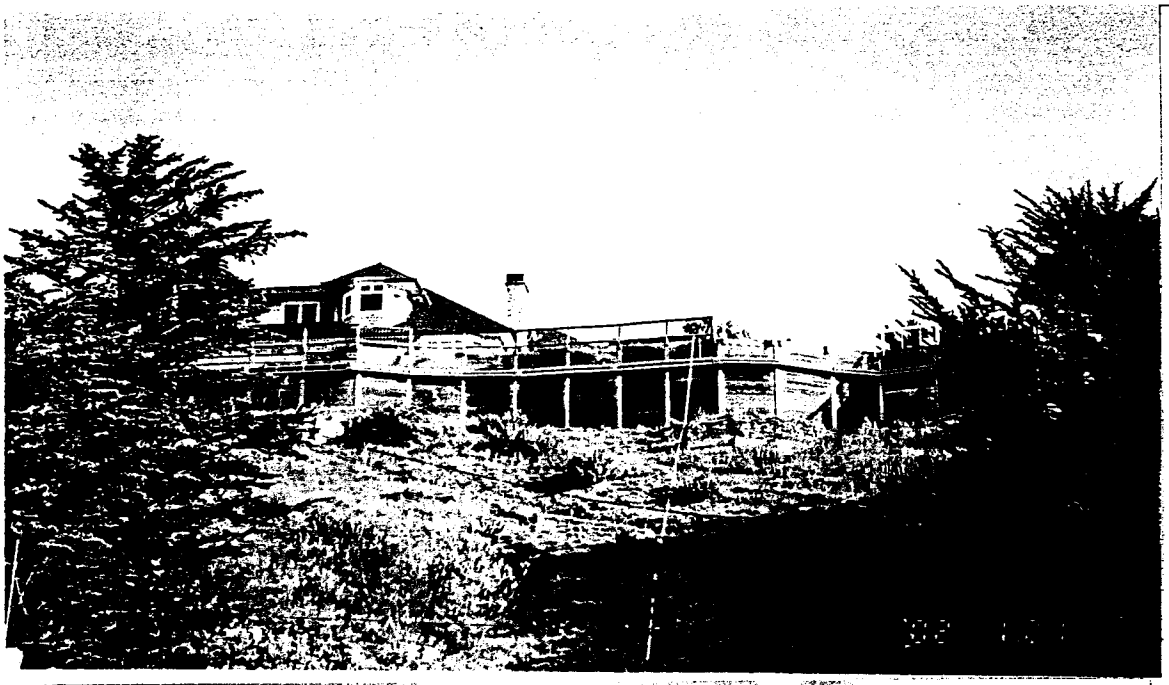


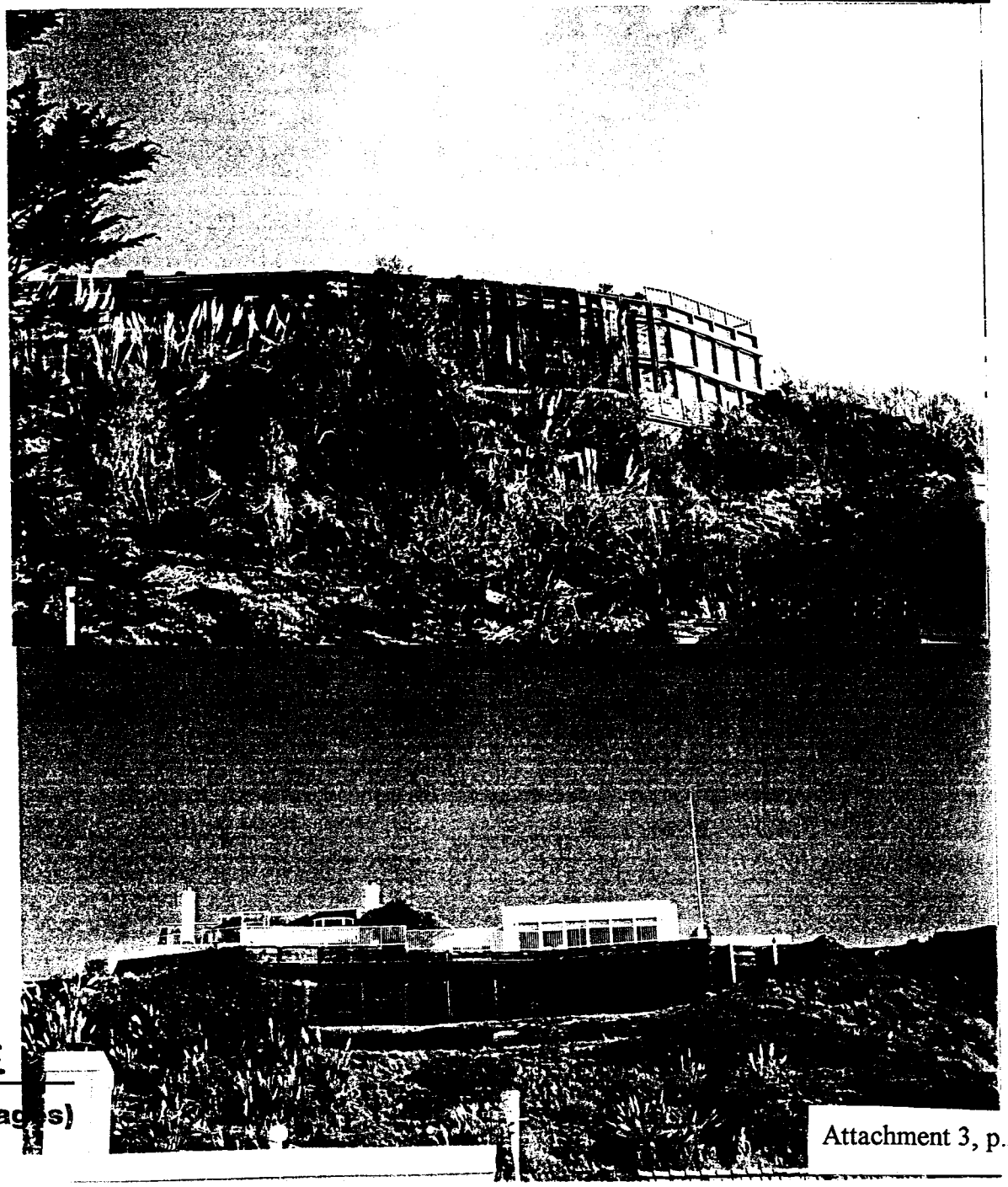
SECTION B SCALE: 1" = 10'

PREVIOUSLY ISSUED COUNTY PERMITS FOR UPPER BLUFF STABILIZATION PROJECTS

Permit Number	Project Type
00-0470	Retaining wall
98-0689	Sculpted/colored reinforced shotcrete wall
98-0705	Sculpted/colored reinforced shotcrete wall
98-0488	Retaining wall
97-0543	Retaining wall
97-0296	Retaining wall
95-0818	Retaining wall
95-0198	Retaining wall (gabion baskets)
95-0149	Repair and extend retaining wall
94-0380	Retaining wall
93-0325	Subsurface piers and grade beam retaining structure
93-0228	Retaining wall
92-0131	Retaining wall (gabion baskets)
90-0729Q	Retaining wall
90-1174Q	Retaining wall

CCC Exhibit E
(page 13 of 56 pages)





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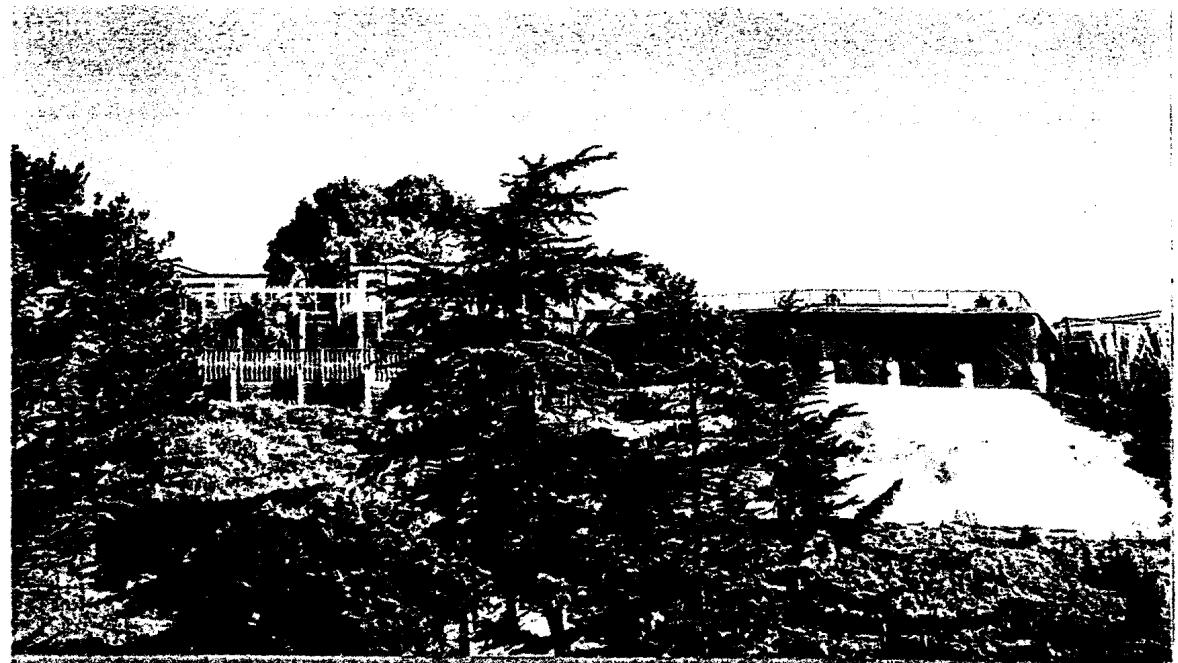

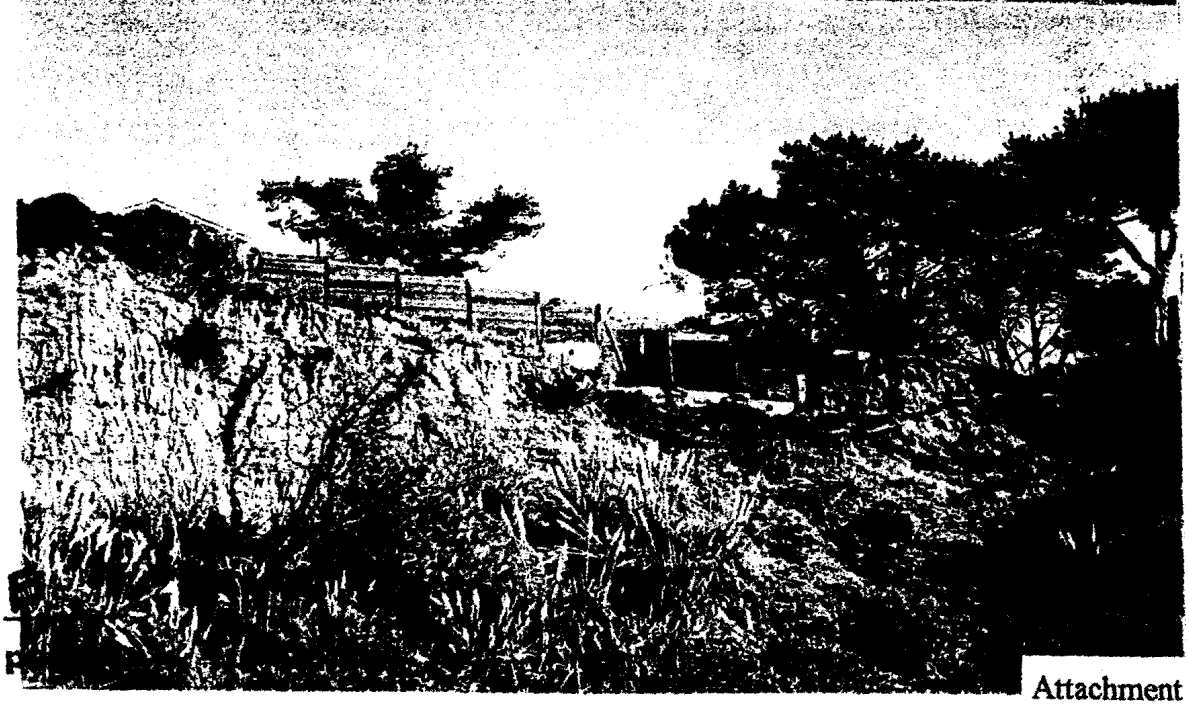

2. Rogers Johnson and Associates have examined the site and has determined that if the upper bluff terrace retreats to it's natural angle of repose that the top of the bluff will be within three feet from the residence at it's closest point.[3] Consequently, the continuing coastal erosion will cause the bluff's toe to erode resulting in the further retreat of the terrace material. The rate of this erosion will result in the exposure and the undermining of the home's foundation within the next fifty years.

As an engineering geologist, I believe that the current site condition constitutes a real and "significant threat" to an existing structure. Bluff top erosion occurs episodically and rapidly during intense rainfall with the result that the terrace material could retreat to the home's foundations during a few intense storms. This is a real and significant threat to the home.

- *If a significant threat to an existing structure is documented, the LCP requires a "thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure." In this case, the no project alternative should be evaluated. In addition, the expected equilibrium angle of the upper terrace deposits and the over Purisma (as appropriate) should be calculated for the no project alternative... (Reference LCP LUP Policy 6.2.16, Zoning Section 16.10.070(h)(3))*

3. There are few reasonable alternatives to a pier wall on this property. The home is built to the property boundaries on the northwest side of the property and the bluff is within 20 feet of the home on the home's southern side. Available alternatives are:

   - A concrete terrace treatment could be applied to the bluff's face either on the terrace face alone or along the whole bluff face. This treatment could have a significant increased impact to sediment production, natural appearance and beach dynamics.
   - A wood-lagging wall could be attached to the slope although the piers for the lagging would be very similar to the wall that is now proposed.
   - Removing the home is not necessary and would have the affect of condemning the home.
   - No project would result ultimately in the placing of a protective structure during a latter crisis. This could result in less desirable project.

The proposed alternative pier wall appears to be the lowest impact

GEOLOGIC DESCRIPTION OF SITE AND VICINITY

The Geologic Map (Plate 1), Geologic Cross Section (Plate 2), Site Location Map (Figure 1) and Local Geologic Map (Figure 5) depict relevant topographic and geologic information on the subject property.

Geomorphology

The subject property occupies a portion of an elevated marine terrace immediately above the coastal bluff at Opal Cliffs (Plate 1 and Figure 1). The 40-foot high coastal bluff was created by the combined processes of tectonic uplift and coastal erosion. The Purisima Formation bedrock, forming the base of the very steep bluff, is continuously attacked by the surf. Over time, wave erosion notches the base of the bluff creating overhangs within the bedrock. These overhangs eventually fail along planes of pre-existing weakness (i.e., fractures, joints, faults, bedding, etc.), undermining the overlying marine terrace deposits. The now over-steepened marine terrace deposits eventually recline, by gradual erosion and slumping, to their natural angle of repose (approximately 1.5:1 slope). This process repeats itself over time, causing a seesawing retreat of the entire coastal bluff.

The coastal bluff at the subject property shows evidence of recent failures within the upper marine terrace deposits. Marine terrace deposits are freshly exposed due to slumping over the majority of the bluff at the rear of the subject property (Plate 1). Several wood lagging retaining walls, constructed to retain the upper marine terrace deposits, are distressed or have failed entirely. The Purisima Formation bedrock at the base of the bluff also shows evidence of relatively recent retreat. Surf erosion has notched the base of the bluff, producing overhangs in several locations. The overhangs are generally about one foot deep, but span areas up to 20 feet wide (Plates 1 and 2). In our 1985 geologic report addressing the site, we noted the absence of notching and overhangs at the base of the subject property (Johnson, 1985).

An elevated shore platform, approximately 20 to 25 feet wide, lies at the base of the bluff below the subject property. Beyond the elevated platform the wave cut surface is heavily dissected. Differential erosion has created a network of small platforms or pedestals isolated by troughs and small basins partially filled by beach sand. This is schematically shown in cross section on Plate 2. Both the elevated shore platform and the dissected wave cut platform absorb some of the surf's erosive energy.

Earth Materials and Geologic Structure

The earth materials at the subject site consist of Purisima Formation bedrock overlain by marine terrace deposits (Plate 2). Our observations of the earth materials on the site are in agreement with the published geologic map of Santa Cruz County (see Figure 5; Brabb, 1989). The upper 23 feet of the bluff, which slopes at approximately 50 degrees, exposes Pleistocene marine terrace deposits capped

2. The storms which produced the greatest damage in the interior of the bay often came from the west or southwest.

3. Structures directly exposed to wave action and designed to protect oceanfront properties from such action have been regularly damaged or destroyed.

For the period of most detailed record, 1910-1960, there have been at least 45 storms of some significance (i.e., either high seas, strong winds, and/or damage to at least some portion of the Monterey Bay region). Thus, considering the 50 years of detailed records, this amounts to a major storm every 1.1 years on average. Analysis of the record (Appendix B) reveals that no major storms were recorded for some intervals as long as seven years (1916 to 1923), but in other cases, five significant storms occurred within a single year (1931). If we consider the entire period, 1910 to 1999, we have a major storm about every 1.5 years on average.

This historical record indicates that the northern half of Monterey Bay (Moss Landing to Santa Cruz) is most susceptible to damage from storms arriving from the west or southwest (Griggs and Johnson, 1983; Johnson and Associates, 1987). Waves from the northwest, which predominate along the central coast (Figure 3), undergo refraction or bending, resulting in a significant energy loss prior to striking beaches along the interior of the bay (Figure 4). Thus, although waves from the west-northwest and northwest dominate along the coastline, their effect on the interior of the bay appears to have been relatively small. In contrast, the storm waves approaching from the west, west-southwest and southwest pass primarily over the deep water on their way to the shoreline within the bay and lose little energy. These storms have produced the greatest recorded damage at the north end of the bay.

Of the 45 major storms in the study period, 1910 to 1960, 20 have been listed as coming from the southwest or west; only 12 are described as arriving from the north or northwest (the remainder list no direction of approach). Of the 13 storms which have produced significant damage along the bay's interior, only one is described as coming from the northwest; 11 arrived from the southwest, and for two of these the direction was not listed. Thus, at least 85 percent of the storms which have caused damage approached from the south or southwest. Looking at the frequency of arrival of these storms, 13 have occurred in 69 years. In other words, damaging storms have struck the area every 5.3 years on average. This does not, however, mean that storms will actually occur every 5.3 years.

The record of historical storm damage illuminates some other processes of relevance to the subject property. The past damage to the Monterey Bay coastal area was often caused by the coupling or simultaneous occurrence of high tide and huge waves.

Although there have been numerous significant storms within the Monterey Bay between 1984 and [illegible] storms have caused very little damage to structures. The 1997-1998 winter storms.

Based on the results listed in Table 2, the maximum earthquake ground motion (mean acceleration plus one dispersion) expected at the subject property will be approximately 0.45g, based on a M_w 7.9 earthquake centered on the San Andreas fault 16.3 kilometers northeast of the site.

Naeim and Anderson (1993) found that "effective peak acceleration" (EPA) is more typically about 75 percent of the peak acceleration. Effective peak acceleration is comparable to "repeatable high ground acceleration" (after Ploessel and Slossen, 1974) and is generally considered to represent the large number of lower amplitude peaks on an accelerogram recording. This suggests that the recommended design peak ground acceleration of 0.45g would generate an EPA of approximately 0.34g.

Following the guidelines of the California Division of Mines and Geology (1997), we recommend using a seismic coefficient ("k") of 0.15 in pseudostatic slope stability analysis (as necessary).

The duration of strong shaking is dependent on magnitude. Dobry et al. (1978) have suggested a relationship between magnitude and duration of "significant" or strong shaking expressed by the formula:

Log D = 0.432 M - 1.83 (where D is the duration and M is the magnitude).

On the basis of the above relationship, the duration of strong shaking associated with a magnitude 7.9 earthquake is estimated to be about 38 seconds. This long duration of seismic shaking may be even more critical as a design parameter than the peak acceleration.

CONCLUSIONS

The subject property is located along Opal Cliffs in Santa Cruz, on the edge of a very steep coastal bluff that is approximately 45 feet high. Like all of the sea cliffs in the northern Monterey Bay area, it was created by coastal erosion processes, primarily surf attack.

Marine terrace deposits are exposed on the upper 23 of the cliff. The existing retaining walls on the upper slope are distressed or have failed. If left unprotected, the terrace deposits will likely continue to erode and fail until the angle of the slope (within the marine terrace deposits) is about 33 degrees (1.5:1 slope gradient). If the terrace deposits do reach their angle of repose, the bluff top will be within about 5 feet of the residence. Eminent additional failure of the overhangs within the underlying Purisima Formation sandstone could put the bluff top about 3 feet from the current residence at its closest point (assuming an additional 2 feet of retreat of the bedrock portion of the cliff).

The toe of the cliff on the subject property is somewhat protected by an elevated shore platform. This may contribute to the relatively slow rates of retreat at the subject property. However, the notching of the toe of the bluff and the failure of the existing wood retaining walls within the upper marine terrace deposits are indications of active and continued bluff retreat. The proposed pin-pile wall will retain the

HARO, KASUNICH AND ASSOCIATES, INC.

CONSULTING GEOTECHNICAL & COASTAL ENGINEERS

Project No. SC6896
6 February 2002

MR. JOEL SCHWARTZ
Planning and Development Services
4355 Diamond Street No. 3
Capitola, California 95010

Subject: Response to Project Appeal by
The California Coastal Commission

Reference: Proposed Coastal Blufftop Stabilization
Adams Residence
500 41st Avenue
Santa Cruz County, California

Dear Mr. Schwartz:

It is our understanding the proposed blufftop stabilization project at the referenced site has been appealed by the California Coastal Commission. This letter is written to address the geotechnical aspects of the following three issues relating to the proposed project:

1. Possible alternative projects to stabilize the blufftop:

2. Appropriate timing for installation of engineered stabilization structure; and

3. Future need for a seawall to protect property.

Our responses are as follows:

1. Short of an engineered retaining wall or "hard" structure, any other blufftop stabilization alternatives such as grading, drainage improvements or erosion control landscaping cannot be effectively used at the referenced parcel due to the oversteepened slope gradient, site topography and proximity of the existing residential structure. In our opinion, the proposed soil pin wall with tiebacks is the most appropriate stabilization system for the site at this time;

2. Now is the most appropriate time to install the blufftop stabilization system and protect the Adams residence. The existing yard area is minimal. There is no front yard to act as a staging area. The backyard, as measured between the residence and blufftop, is about 20 feet wide.

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The current backyard configuration allows the use of heavy equipment to drill the cast-in-place soil pin excavations and associated tiebacks. This scenario would facilitate time efficient construction and minimize any risks of the project not being completed due to physical constraints.

If the bluff is allowed to erode further, the construction methods would be limited to hand digging the pier holes and the use of scaffolding on the beach to drill the tiebacks.

3. The need for a future seawall to protect the residence exists whether or not the upper blufftop stabilization system is constructed at this time. As shown in the attached schematic, Figure 1, the location of the anticipated seawall is about the same (± 3 feet) whether it ends up being constructed to protect the blufftop stabilization soil pins or just the residence with the backyard eroded away to the foundation perimeter.

If you have any questions, please call our office.

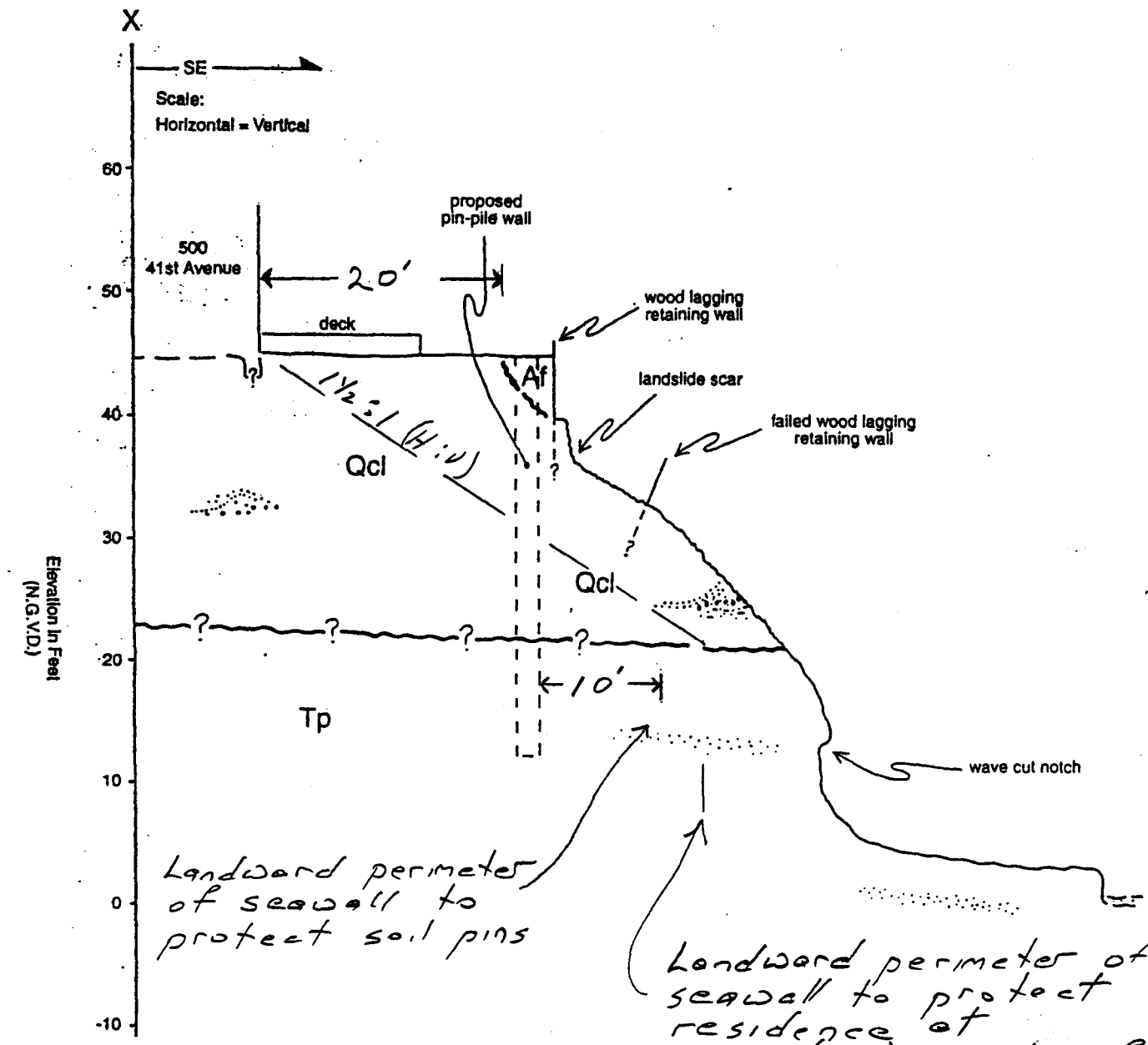
Very truly yours,

HARO, KASUNICH AND ASSOCIATES, INC.

Rick L. Parks
C.E. 55980

RLP/sq
Attachment
Copies: 4 to Addressee
1 to Keith Adams

CCC Exhibit E
(page 22 of 56 pages)



Base X-section:
Rogers Johnson & Associates
8/18/00

PROJECT NO: SC6896	Projected Seawall Locations
DATE: 5 Feb 02	500 41st Avenue
SCALE: 1 inch = 13 feet	Santa Cruz County, CA
DRAWN BY: RP/RJA	

HARO, KASUNICH & ASSOCIATES

CCC Exhibit E
Page 23 of 56 pages

2. Rogers Johnson and Associates have examined the site and has determined that if the upper bluff terrace retreats to it's natural angle of repose that the top of the bluff will be within three feet from the residence at it's closest point.[3] Consequently, the continuing coastal erosion will cause the bluff's toe to erode resulting in the further retreat of the terrace material. The rate of this erosion will result in the exposure and the undermining of the home's foundation within the next fifty years.

   As an engineering geologist, I believe that the current site condition constitutes a real and "significant threat" to an existing structure. Bluff top erosion occurs episodically and rapidly during intense rainfall with the result that the terrace material could retreat to the home's foundations during a few intense storms. This is a real and significant threat to the home.

- *If a significant threat to an existing structure is documented, the LCP requires a "thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure." In this case, the no project alternative should be evaluated. In addition, the expected equilibrium angle of the upper terrace deposits and the over Purisma (as appropriate) should be calculated for the no project alternative... (Reference LCP LUP Policy 6.2.16, Zoning Section 16.10.070(h)(3))*

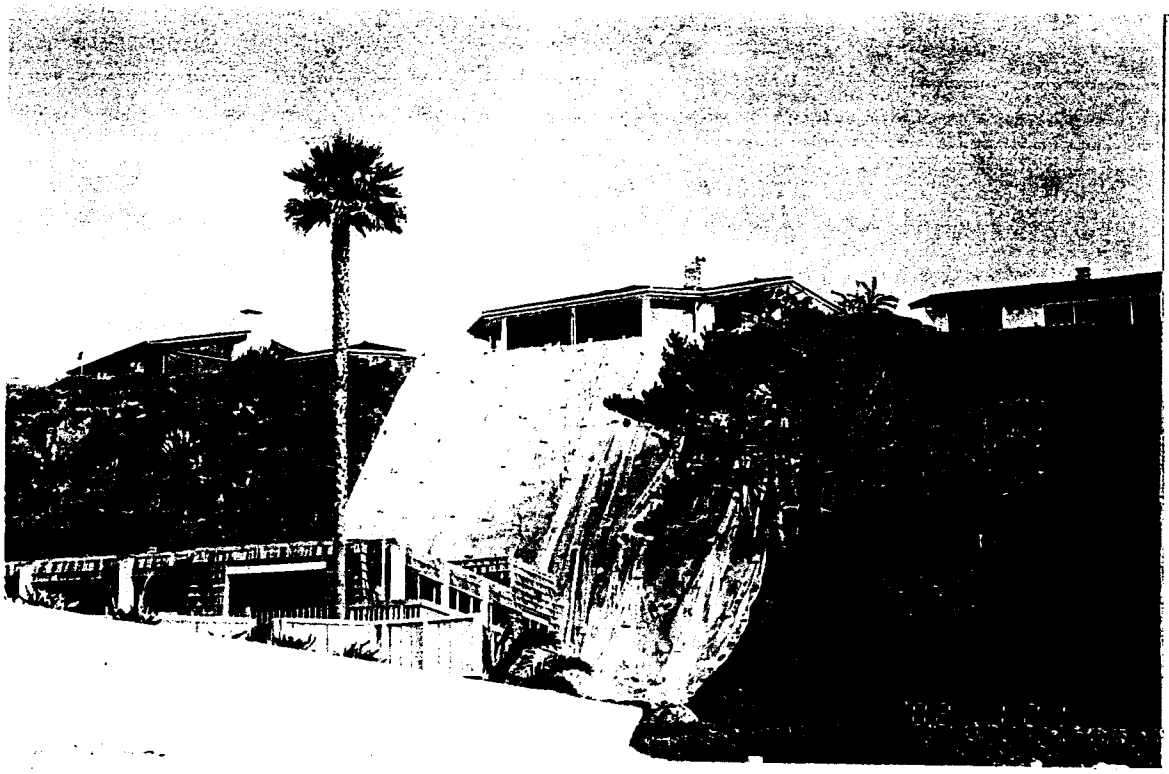
3. There are few reasonable alternatives to a pier wall on this property. The home is built to the property boundaries on the northwest side of the property and the bluff is within 20 feet of the home on the home's southern side. Available alternatives are:

   - A concrete terrace treatment could be applied to the bluff's face either on the terrace face alone or along the whole bluff face. This treatment could have a significant increased impact to sediment production, natural appearance and beach dynamics.
   - A wood-lagging wall could be attached to the slope although the piers for the lagging would be very similar to the wall that is now proposed.
   - Removing the home is not necessary and would have the affect of condemning the home.
   - No project would result ultimately in the placing of a protective structure during a latter crisis. This could result in less desirable project.

The proposed alternative pier wall appears to be the lowest impact

CCC Exhibit E
(page 24 of 56 pages)

Attachment 8
From staff report.



CCC Exhibit E
(page 25 of 56 pages)

COASTAL PERMIT 00-0757
APN 033-171-18

EXHIBIT B

COASTAL DEVELOPMENT PERMIT FINDINGS:

1. THAT THE PROJECT IS A USE ALLOWED IN ONE OF THE BASIC ZONE DISTRICTS, OTHER THAN THE SPECIAL USE (SU) DISTRICT, LISTED IN SECTION 13.10.170(d) AS CONSISTENT WITH THE GENERAL PLAN AND LOCAL COASTAL PROGRAM LUP DISIGNATION.

   The proposed project is an allowed use in the R-1-5 zone district and is consistent with the Urban Medium Density Residential Land Use designation of the General Plan and Local Coastal Program LUP. The proposed wall is accessory to the existing single-family dwelling and is required for the dwelling's continued occupancy. (See Development Permit Findings, incorporated herewith, and specifically Finding No. 1, which discusses the need for the wall.)

2. THAT THE PROJECT DOES NOT CONFLICT WITH ANY EXISTING EASEMENT OR DEVELOPMENT RESTRICTIONS SUCH AS PUBLIC ACCESS, UTILITY, OR OPEN SPACE EASEMENTS.

   The subject property is not affected by any development restrictions that hinder development of the project. There are no public access, utility or open space easements which will be affected by the development. No public access exists and none is possible from this property to the beach. The beach itself will not be affected by the construction. All construction activities will occur from the interior of the property on the bluff, no traffic will be blocked, and a barrier will be placed along the top of the bluff between the construction site and the beach to prevent material accidentally falling onto the beach. The applicant must obtain all approvals from the State Parks and the State Lands Commission as applicable prior to initiating any construction.

3. THAT THE PROJECT IS CONSISTENT WITH THE DESIGN CRITERIA AND SPECIAL USE STANDARDS AND CONDITIONS OF THIS CHAPTER PURSUANT TO SECTION 13.20.130 et seq.

   The construction of the proposed improvements is consistent with the design criteria and special use standards and conditions of this chapter pursuant to Section 13.20.130 et seq., in that the project will be visually compatible, minimizes site disturbance, and will be landscaped so as to be compatible with surrounding vegetation. The project does not involve excessive grading, will not be visually intrusive, and will be visually compatible with the character of the surrounding lands. The design of the project is such that it will be subordinate to the natural geologic formation/sand and rock bluff character of the site, will maintain the natural bluff feature of the site, and all visual intrusion will be softened

by gunite texturing, staining, and coloring, as well as the final landscaping of all disturbed areas.

This property is not in a Coastal LUP Designated Special Area, therefore no special policies or development requirements applying to these areas apply to this project.

This coastal bluff property falls under General Plan and Coastal LUP Policy 5.10.7, which governs Open Beaches and Blufftops. This policy allows only those structures that are compatible with the pattern of existing development, use natural finishes, blend with the character of the area, and that integrate with the adjacent landforms. Visually intrusive structures are not allowed.

A pier wall is a series of piers constructed below grade on the terrace above the bluff. A four foot grade beam, also buried, connects the concrete piers. This pier and grade beam wall will be invisible from the beach initially, as it is buried on the terrace behind the bluff top. Eventually the pier wall will be exposed by coastal erosion. After the pier wall is exposed by erosion it will be visible from the beach. To reduce visual intrusion after the wall becomes visible, both the piers and the grade beam wall will be constructed of colored concrete. To stabilize the piers after they become exposed, shotcrete will be placed between the piers. The form of the shotcrete facing will match the existing slope, and texture as well as mottled coloring will cause the wall to visually integrate with the existing bluff environment.
The goal of integrating the gunite wall with the visual bluff appearance is to simulate the color and texture of the geologic formation so that the wall blends with the existing conditions. Appropriate texturing, staining and coloring will appropriate will produce a mottled terrace color and pattern that match both wet and dry bluff conditions. This effect has been effectively used in this area before and can match the bluff under varying conditions. Also, the disturbed area around the top of the wall will be landscaped.

Pictures of a shotcrete wall similar to the proposed wall and a steel beam-wood lagging wall, the most common feasible alternative to shotcrete, are shown in Exhibit Attachments 6 and 7. As can be seen, shotcrete walls treated to reduce visual intrusion are successful in reducing impacts. This was confirmed after the wall shown in the attachment was complete and inspected by the County staff. The wood-lagging alternative is more visually intrusive, has a dissimilar overall appearance from the natural bluff, and is visible from a distance around the Monterey Bay. The success of shotcrete walls has been confirmed in many circumstances. Attachment 8 (Exhibit E) shows a variety of such treated walls. The walls have successfully matched similar rock appearance and have faded into the background better than wood lagging walls. Treated walls may be noticed as artificial at close range but they are less likely to be noticed as artificial and visually intrusive from a distance.

To assure that the appropriate texture is applied, County staff will view the site during the initial blowing of the gunite to confirm that the texture matches the general texture of the formation. To assure that the color is appropriate, County staff will view test samples of the coloring relative to both wet and dry samples of the natural bluff material.

Lastly, a condition of approval will be the removal of an existing damaged wood wall that is unsightly and the painting and reconfiguration of old unsightly County drainage pipes. These activities will help restore the scenic nature of the bluff, pursuant to GP/LUP Section 5.10.7.

In summary, given all the mitigations discussed above, the net result will be a wall treated such that it will blend with the character of the area and integrate with the landforms (GP/LUP Section 5.10.7), and an existing damaged wall will be removed to restore a scenic area (GP/LUP Section 5.10.9, Restoration of Scenic Areas).

4. THAT THE PROJECT CONFORMS WITH THE PUBLIC ACCESS, RECREATION, AND VISITOR-SERVING POLICIES, STANDARDS AND MAPS OF THE GENERAL PLAN AND LOCAL COASTAL PROGRAM LAND USE PLAN, SPECIFICALLY CHAPTER 2: FIGURE 25, AND CHAPTER 7, AND, AS TO ANY DEVELOPMENT BETWEEN THE NEAREST PUBLIC ROAD AND THE SEA OR THE SHORLINE OF ANY BODY OF WATER LOCATED WITHIN THE COASTAL ZONE, SUCH DEVELOPMENT IS IN CONFORMITY WITH THE PUBLIC ACCESS AND PUBLIC RECREATION POLICIES OF CHAPTER 3 OF THE COASTAL CACT COMMENCING WITH SECTION 30200.

The project area is at the southern end of and adjacent to 41st Avenue. No public access current exists at this site, nor is public access possible at this site. Existing public access to the beach below 41st Avenue, which is located to the west of this site, will not be affected by this project. Nor does the project affect recreational use of the adjacent Beach/Parkland. All construction activities will occur from the interior of the property on the bluff, no traffic will be blocked, and a barrier will be placed along the top of the bluff between the construction site and the beach to prevent material accidentally falling onto the beach.

The project site is not identified as a priority acquisition site in the County Local Coastal Program.

5. THAT THE PROPOSED DEVELOPMENT IS IN CONFORMITY WITH THE CERTIFIED LOCAL COASTAL PROGRAM.

The proposed placement of the improvements is in conformity with the County's certified Local Coastal Program in that the bluff wall will be constructed to preserve and protect the existing land uses. The wall will minimize site disturbance, be visually non-intrusive, and will conform to the natural landscape of the area.

Coastal visual resources will not be negatively impacted by the proposed project. The proposed pier wall will retain the existing appearance of the property for a longer period of time. Eventually, when the pier wall is exposed due to erosion, the wall will be treated and colored to match the existing bluff's appearance. The wall will blend with both the nearby community and site natural landform appearance.

To insure this, a visual treatment plan is required for the Phase II gunite wall that will be eventually placed on the top of the bluff and this plan is required to be included as part of the final construction plans. In accordance with Chapter 13.11 of the County Code, a visual treatment plan that conforms to the natural conditions of the site will be required to be incorporated into the final plans. The plan will be reviewed and approved by Environmental Planning staff prior to issuance of the Building permit.

The Coastal resources of natural shoreline processes, such as adequate sand supplies and beach dynamics on and off-site, will not be adversely affected by this project. The proposed wall will retain the terrace material, but will allow continued erosion until the wall is exposed. After exposure a textured and colored concrete facing will be applied where necessary. Consequently the current erosion pattern will continue for some time and will be stopped only when necessary when the bluff has significantly eroded. The primary source of terrace erosion and toppling is urbanization including uncontrolled surface drainage and subsurface saturation and wave cut notching at the toe with subsequent over-steepening of the terrace deposits. The proposed project will control surface drainage and will help to reduce the effects of bluff saturation. This project will have little impact on the beach with regard to loss of beach and little impact on sand supply.

A significant threat, thereby necessitating a shoreline protection structure, has been determined to exist at this site. The owners and their consulting engineering geologists (Exhibit E; Mitigated Negative Declaration Attachment 2) and geotechnical engineers (Exhibit E; Mitigated Negative Declaration Attachment 3) have evaluated the site and have determined that within the next 15 to 20 years, if not sooner, the home will be threatened by the retreat of the coastal bluff.

The determination that the home is threatened by coastal bluff erosion has been made over a fifteen-year observation period (see Mitigated Negative Declaration Attachments 1 and 2). The Adams' home is approximately 45 years old and is of standard wood frame construction with conventional foundations. These conventional foundations are not designed to restrain coastal bluff erosion and during the original home construction no attempt was made to reduce the effect of coastal erosion. Since the original construction was completed, several episodes of bluff erosion/collapse have occurred and the bluff has retreated approximately 15 feet. The edge of the bluff is now within 20 feet of the home.

If the upper bluff terrace retreats to it's natural angle of repose, the top of the bluff is expected to be within three feet of the residence. After which, continuing coastal erosion will cause the bluff's toe to erode, resulting in the further retreat of the terrace material. Continued bluff retreat will result in the undermining of the home's foundation unless intervention occurs. Bluff top erosion occurs episodically and rapidly during intense rainfall with the result that the terrace material could retreat to the home's foundations during a few intense storms. This is a real and significant threat to the home. This project will strengthen the upper bluff area, and is expected to protect the existing single-family dwelling from the bluff retreat for a significant length of time.

There are few reasonable alternatives. The home is built to the property boundaries on the sides of the property, to the required front setback on the front, and the bluff is within 20 feet of the home on the rear. Other types of walls and terrace face treatments have been evaluated and the proposed project has been determined to be the least impactive alternative which allows the continued occupancy of the home. It is also the least disruptive alternative in that it will not cause loss of bluff material, and does not result in the loss of structural integrity of the bluff in the short or long term. The alternative of no project would result ultimately in the placing of a protective structure during a later crisis, which could result in a less desirable project.

(Please see Development Permit Findings, and specifically Finding No. 1, for a discussion of the staging and construction plan which is required as a permit condition.)

DEVELOPMENT PERMIT FINDINGS:

1. THAT THE PROPOSED LOCATION OF THE PROJECT AND THE CONDITIONS UNDER WHICH IT WOULD BE OPERATED OR MAINTAINED WILL NOT BE DETERMENTAL TO THE HEALTH, SAFETY, OR WELFARE OF PERSONS RESIDING OR WORKING IN THE NEIGHBORHOOD OR THE GENERAL PUBLIC, OR BE MATERIALLY INJURIOUS TO PROPERTIES OR IMPROVEMENTS IN THE VICINITY.

The location of the proposed project will not be detrimental to the health, safety or welfare of persons residing or working in the neighborhood or the general public in that all public areas will be protected from any impacts of the construction by means of a barrier being erected between the construction site and the bluff so that there will be no deleterious impacts to the beach below the site. No traffic will be blocked as all construction vehicles and equipment will be entirely accommodated on the site.

A staging and construction plan will be required to ensure that the health, safety, and welfare of all persons in the vicinity will be preserved and that the project is not materially injurious to other properties or improvements in the vicinity, such as the adjacent public beach, and that all coastal resources are preserved and protected as required by this permit.

The project will also not be materially injurious to properties or improvements in the vicinity in that it will protect the existing home. Both the engineering geologist and Geotechnical Engineer have evaluated the project for the potential of adverse off-site impacts. They have determined that the proposed pier wall and future shotcrete webbing will not adversely affect adjacent property. This property is more threatened by bluff erosion than the other properties in the vicinity in that it is located on a point of land. Regional conditions are described in the geologic and geotechnical reports. The eighty-foot long pier wall is proposed to resist ongoing erosion of the coastal bluff adjacent to the existing home. The owners and their consulting engineering geologists (Mitigated

Negative Declaration Attachment 2) and geotechnical engineers (Mitigated Negative Declaration Attachment 3) have evaluated the site and have determined that within the next 15 to 20 years, if not sooner, the home will be threatened by the retreat of the coastal bluff.

The determination that the home is threatened by coastal bluff erosion has been made over a fifteen-year observation period (see Mitigated Negative Declaration Attachments 1 and 2). The Adams' home is approximately 45 years old and is of standard wood frame construction with conventional foundations. These conventional foundations are not designed to restrain coastal bluff erosion and during the original home construction no attempt was made to reduce the effect of coastal erosion. Since the original construction was completed, several episodes of bluff erosion/collapse have occurred and the bluff has retreated approximately 15 feet. The edge of the bluff is now within 20 feet of the home. Continued bluff-retreat will result in the undermining of the foundation unless intervention occurs. This project will strengthen the upper bluff area, and is expected to thereby protect the existing single-family dwelling for approximately another 20-30 years.

2. THAT THE PROPOSED LOCATION OF THE PROJECT AND THE CONDITIONS UNDER WHICH IT WOULD BE OPERATED OR MAINTAINED WILL BE CONSISTENT WITH ALL PERTINENT COUNTY ORDINANCES AND THE PURPOSES OF THE ZONE DISTRICT IN WHICH THE SITE IS LOCATED.

The proposed bluff buried wall and eventual textured gunite facing are accessory structures that are related to the existing home. The walls will be constructed and maintained in a manner consistent with all pertinent County Ordinances, as conditioned by this permit. The project is consistent with the purposes of the R-1-5 and PR zone district in that it will protect existing single-family residential development.

3. THAT THE PROPOSED USE IS CONSISTENT WITH ALL ELEMENTS OF THE COUNTY GENERAL PLAN AND WITH ANY SPECIFIC PLAN, WHICH HAS BEEN ADOPTED FOR THE AREA.

The project is consistent with all elements of the County General Plan/Local Coastal Program Land Use Plan (See Coastal Development Permit Findings for discussion concerning the project's compliance with the Coastal Plan, and particularly finding No. 3 concerning the project's compliance with visual resources policies and the project's compatibility with the community.) No Specific Plan has been adopted for this area.

4. THAT THE PROPOSED USE WILL NOT OVERLOAD UTILITIES AND WILL NOT GENERATE MORE THAN THE ACCEPTABLE LEVEL OF TRAFFIC ON THE STRETS IN THE VICINITY.

The accessory use to an existing single-family residential use will not overload utilities and will not generate any traffic on the streets in the project vicinity. The project in the

future will not increase the use of utilities nor increase the traffic in the area in that no increase in population density will be created.

5. THAT THE PROPOSED PROJECT WILL COMPLEMENT AND HARMONIZE WITH THE EXISTING AND PROPOSED LAND USES IN THE VICINITY AND WILL BE COMPATIBLE WITH THE PHYSICAL DESIGN ASPECTS, LAND USE INTENSITIES, AND DWELLING UNIT DENSITIES OF THE NEIGHBORHOOD.

The proposed project will complement and harmonize with the existing and proposed land uses in the vicinity. The project will be compatible with the physical design aspects, land use intensities, and dwelling unit densities of the neighborhood. As conditioned, the proposed project will have a less than significant visual impact on the surrounding neighborhood. To insure that the visual impacts are minimized, the wall will be textured, colored and stained such that it harmonizes with the surrounding community's appearance, specifically the appearance of the bluff. (See Coastal Development Permit Findings for discussion concerning the project's compliance with the Coastal Plan, and particularly finding No. 3 concerning the project's compliance with visual resources policies and the project's compatibility with the community.) The project will not increase land use intensities or residential densities in the vicinity, as it is an accessory use to an existing single-family dwelling.

6. THE PROPOSED DEVELOPMENT PROJECT IS CONSISTENT WITH THE DESIGN STANDARDS AND GUIDELINES (SECTIONS13.11.070 THROUGH 13.11.076), AND ANY OTHER APPLICABLE REQUIREMENTS OF THIS CHAPTER.

The proposed development is primarily underground and will have no impact on design standards. The portion of the project that will eventually be above grade is consistent with the Design Standards and Guidelines of the County Code in that the trenches are designed to fit the existing slope contours, grading is minimized, the work is designed to minimize removal of existing vegetation, the proposed landscaping will enhance the natural site amenities, and existing unsightly conditions will be rectified.

southern portion of Monterey County's coastline consists of mostly resistant granite rock with interlying sandy pocket beaches. Generally in the Monterey Bay pilot area, with the exception of few specific localities, the coastline is eroding, losing large quantities of sand naturally to the offshore submarine canyons and some to the inland dune systems.

While the ReCAP pilot area offers a variety of shoreline types, many smaller portions of the shoreline have common features. Segments of the bay's shoreline may be broken down into "regions" while considering such factors as geology, wave conditions, and natural sand budget, to name a few. At a large scale, the shoreline can be divided into littoral cells which share common characteristics of sediment sources and transport. On a smaller scale, there are stretches of coast bounded by lagoons or headlands which have a similar geology and wave climate. These common factors should affect the types of armoring which will be most effective for a portion of shoreline; however, in many portions of the ReCAP area, the strategies used to provide shoreline protection differ greatly from one property to the next, in spite of the apparent physical similarities between the sites.

Shoreline protective measures in portions of the ReCAP pilot area generally lack any regional scheme for dealing with erosion. For example, in many coastal permits for projects within Santa Cruz County, geologic analyses often consider regional wave conditions and/or tectonics, but rarely do these reports consider sand budgets or regional sand supplies. Santa Cruz Harbor was constructed before the Coastal Act came into effect and thus it never received review through the California Coastal Management Program (CCMP); however, this project illustrates both the regional effects which can accompany a single project and the importance of a regional overview of projects which may modify shoreline processes. Since the harbor has been constructed, an expansive beach has developed upcoast of the jetties where there once had been significant erosion; downcoast areas as far as Capitola have experienced profound decreases in sand supplies and increased shoreline retreat. Since construction of the harbor, there have been at least six regional studies investigating ways to address these downcoast effects.[12]

The Live Oak area of Santa Cruz County illustrates a second situation which can arise when individual projects are undertaken without a regional overview to guide shoreline activity. Much of the shoreline has been armored; numerous protective efforts exist in close proximity to each other and review of permit activity shows repeated activity at some sites. Figure 3-6 shows a mosaic of permit activity for one small section of coast within Live Oak along Opal Cliffs. This plethora of armoring and permit activity makes comprehensive review difficult -- work has been done through the emergency process, through regular Commission issued permits and through local permits. Within this 3,000 foot long section of shoreline, properties have been protected with gunite, vertical walls, rip-rap and concrete cylinders. Some properties were issued two or three permits for different armoring activities, properties received permits for one type of protection and different armoring was actually constructed, new properties have been added to existing permits through the amendment process, and several properties received local permits without any conditions for access.

Figure 3-6: Opal Cliffs Up Close and Personal. Click here to view Figure 3-6.

A regional overview of this segment of coast could have identified the major factors contributing to erosion and identified an effective strategy for the "region" to address natural shoreline processes. Such an overview might identify recommended treatments for various areas, such as where revetments may be most effective, areas where vertical walls may be most effective, areas where surface treatment of the bluff (gunite, rock bolting, etc.) may be most effective, and finally, areas where beach nourishment or sand management may be most effective. Applicants could use this general direction to design a site-specific solution. As a second type of regional overview, some local governments have prepared "standard" designs for shoreline protection which can be used in specified areas.[13] Applicants can use these designs in the specified areas or identify different efforts for protection which better suit the site-specific conditions.

The existing situation in Live Oak, however, presents a piecemeal confusion of protective measures. From an engineering perspective, the weakest points in shoreline armoring are normally the ends and the junctions between different styles of protection (rock adjacent to concrete to gunite, for example). Such ends and junctions occur frequently in the Live Oak area, and while no engineering evaluation has been prepared, the potential for weaknesses in the protection would be greatly reduced by a regional approach to controlling erosion in the area. In addition, the general look and aesthetic of the area would change if adjoining properties had shoreline protection efforts with a similar visual effect.

A final support for a regional overview of shoreline activity comes from an earlier analysis of coastal hazards by Gary Griggs, James Pepper and Martha Jordan, in which they find,

> Since these decisions are usually made on a project-by-project basis, they tend to be evaluated independently, without any systematic consideration of the aggregate or cumulative effects either within or among jurisdictions. Within such a decision-making context any given project can be viewed as small and thus easy to rationalize in terms of approval. Cairns (1986) calls this endemic failure to take into account the aggregate effects of environmental management "the tyranny of small decisions".[14]

A regional overview for individual shoreline activity would provide coastal planners and analysts a perspective on how an individual project would fit into the overall cumulative approach to shoreline management.

Without a regional overview, the piecemeal approach to shoreline protective devices will continue to impact shoreline processes

and resources. The attempt to minimize coastal hazards with various devices (seawalls and numerous rip-rap structures), combined with naturally occurring coastal processes, requires a closer examination of their cumulative impacts. Piecemeal solutions to coastal erosion problems are not generally effective and have the potential to create further problems. Often overlooked are the regional effects of such shoreline protection. Where a regional coastal erosion problem exists, a regional solution should be developed and implemented.

The ReCAP pilot area has had many years of experience with a variety of armoring devices. It should be possible to study the on-site impacts, possible downcoast impacts and maintenance records for these structures and determine which types are most effective in different areas. From such information, local governments would be able to make sound decisions about the types of armoring which would be allowed in the future.

RECOMMENDATIONS

Program Improvements

- Develop procedural guidance for defining and delineating all areas of high coastal hazards in the pilot area coastline; these areas should then further be broken down into smaller regions that share the same geologic and ocean processes. These "regional" or "sub-regional" breakdowns of the pilot area coastline should consider, but not be limited to, such factors as geology, wave conditions, and sand budget situation. Regions would not necessarily be bounded by city or county jurisdictions, but would follow the bounds established by the physical characteristics of the coast.
- Prepare procedural guidance for the development of regional shoreline erosion and bluff retreat management plans suitable for implementation by ReCAP area LCP jurisdictions that are broken down by the defined geologic sub-regions taking into account the specific geologic and geographic constraints of the subject area and incorporating concerns and regulations governing protective devices along the shoreline as well as the sand budget situation within the specified "region". The framework for this guidance would include, but not be limited to:
    - Standard engineering plans defining the specific types of armoring which would be acceptable for specific areas, and where appropriate, identification of the types of armoring which should never be considered for certain areas.
    - Standard alternatives feasibility analysis worksheet that would be a required element of all hazard response projects and that would require applicants to go through a series of steps to assure that hard protective devices were only created as a last resort. The analysis may require, but not be limited to, the use of technical evaluations of the site (geotechnical reports, engineering geology reports, etc.), an examination of all other options (removal, relocation, "do nothing", sand replenishment, etc.), and a conclusion that a shoreline protective device would be the "best option" (most protective of the public trust, best long term solution, etc.) for the subject site.
    - Standard conditions and monitoring requirements that may include discussion of mechanisms to ensure shoreline protection effectiveness and public safety with provisions for the removal of ineffective or hazardous protective structures as well as programs to address beach replenishment and sand supply.

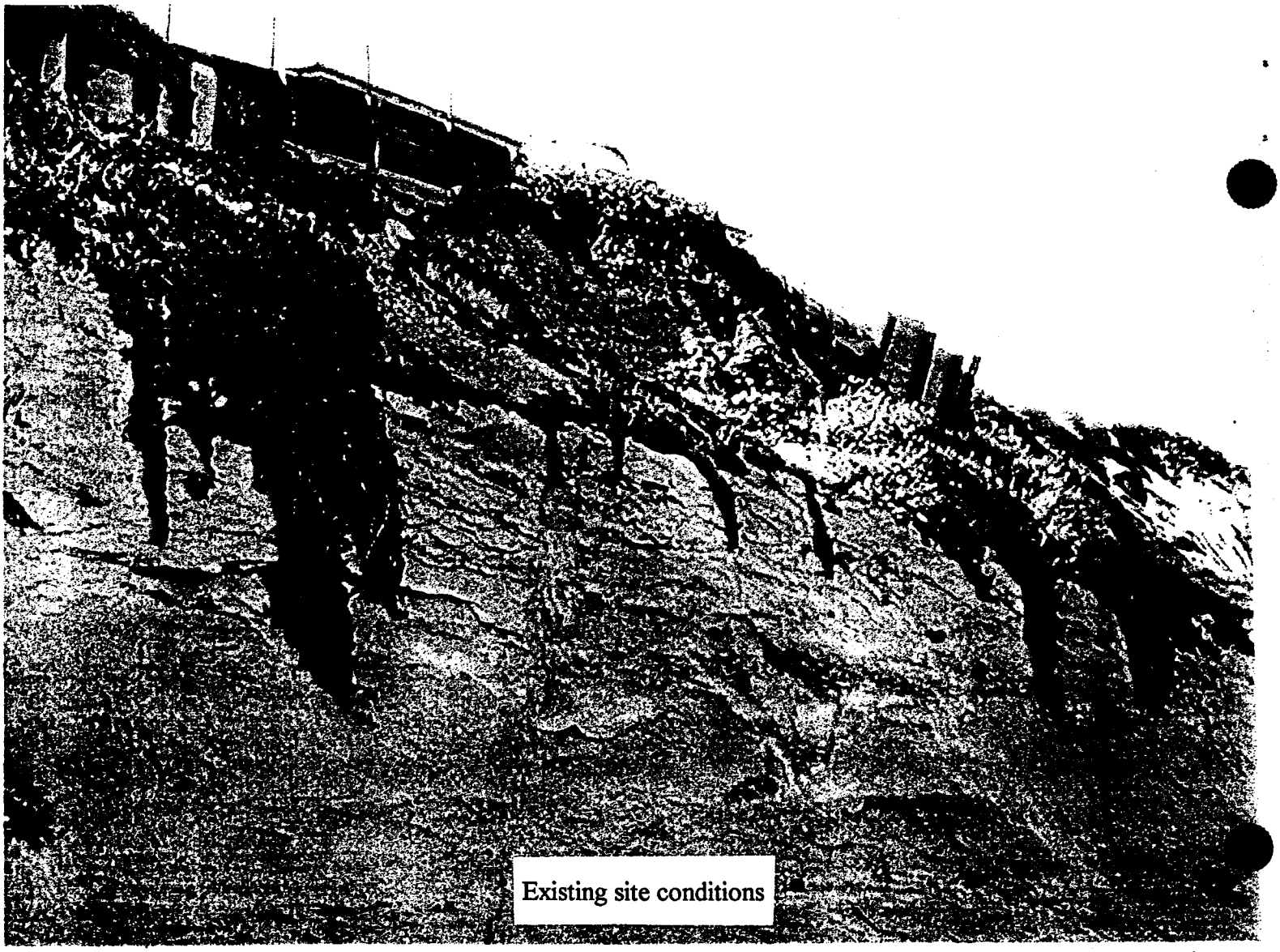
Opportunities In the Longer Term

- Provide guidance for the development of regional programs for managing and expanding shoreline sand resources through such mechanisms as aggressive beach nourishment, especially for areas where beach sand loss exceeds supply.
- Provide guidance for ReCAP area LCP jurisdictions to address major watershed projects -- both in and outside the coastal zone -- for impacts to shoreline sand supply issues, particularly in areas with sediment deficits.
- Pursue expanding Section 30235 of the Coastal Act governing protective devices to require that protective efforts be compatible with both regional conditions and with the protective efforts used for properties in the same shoreline region.

HAZARDS PROBLEM TWO

Impacts To Access From Armoring Are Often Overlooked

Incremental impacts to beach areas, access and the general character of the shoreline have occurred from approval of permits for shoreline armoring. Over the ReCAP time period, there have been measurable losses in beach access through increases in the



Existing site conditions

Photo 2

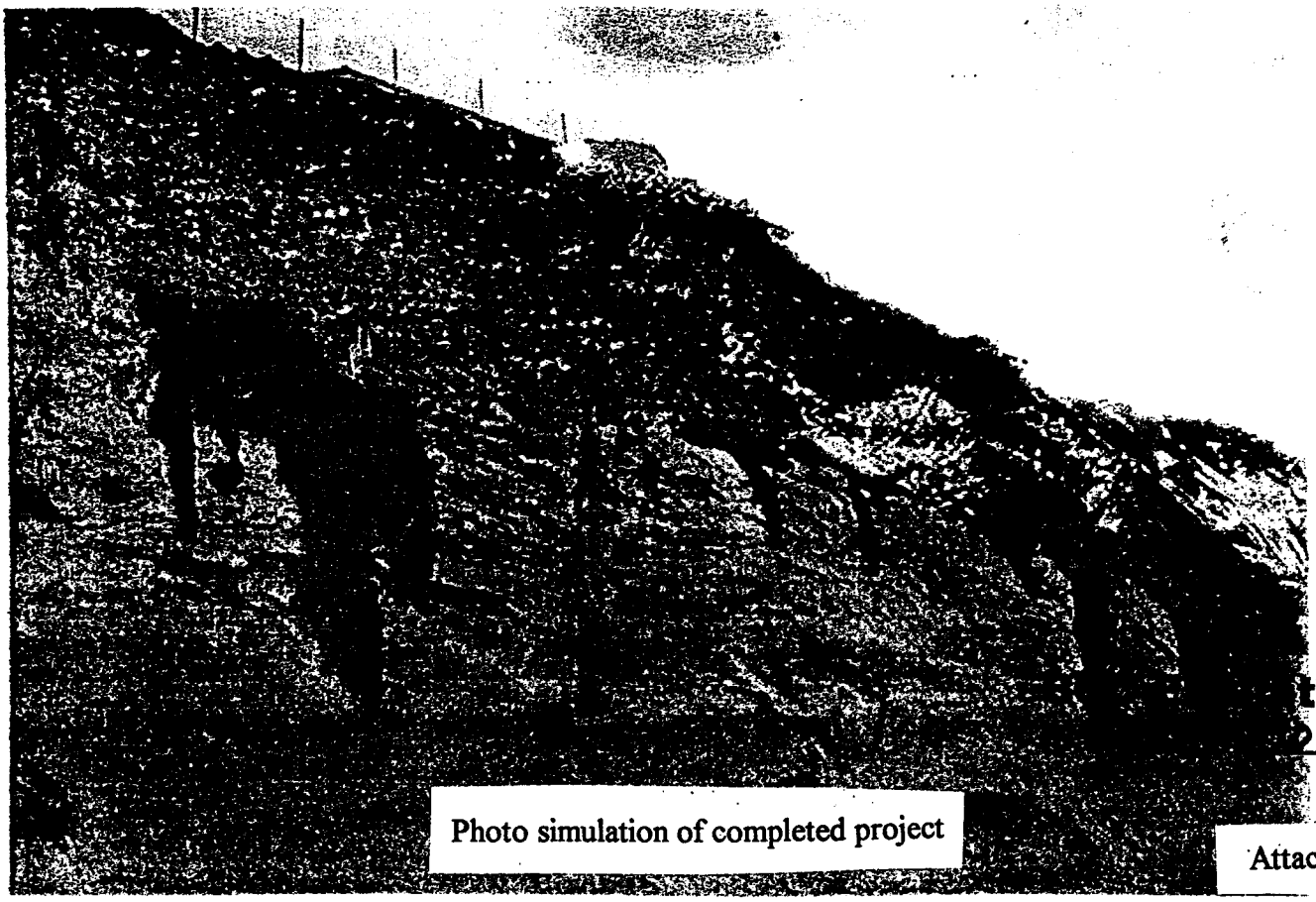


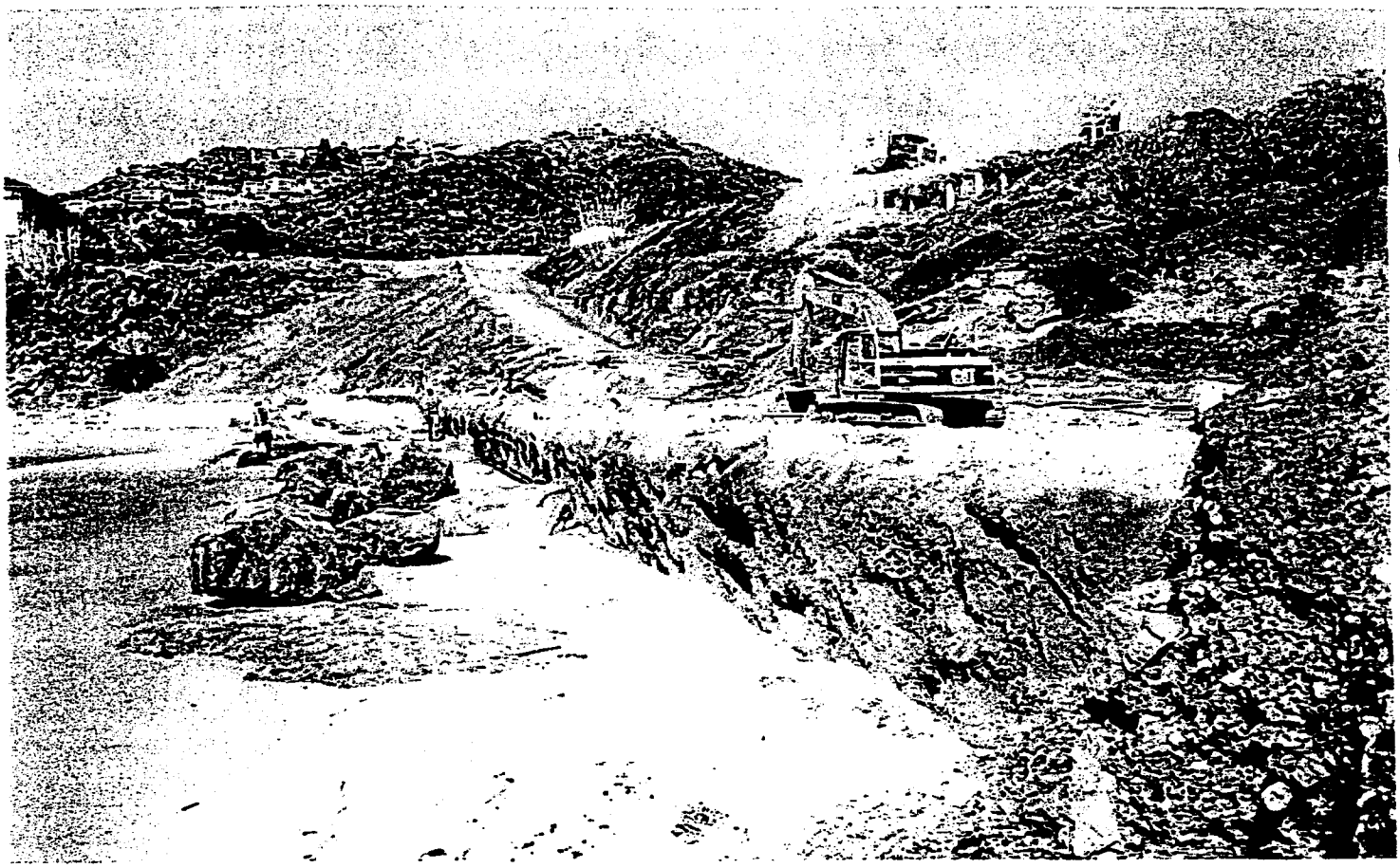
Photo simulation of completed project

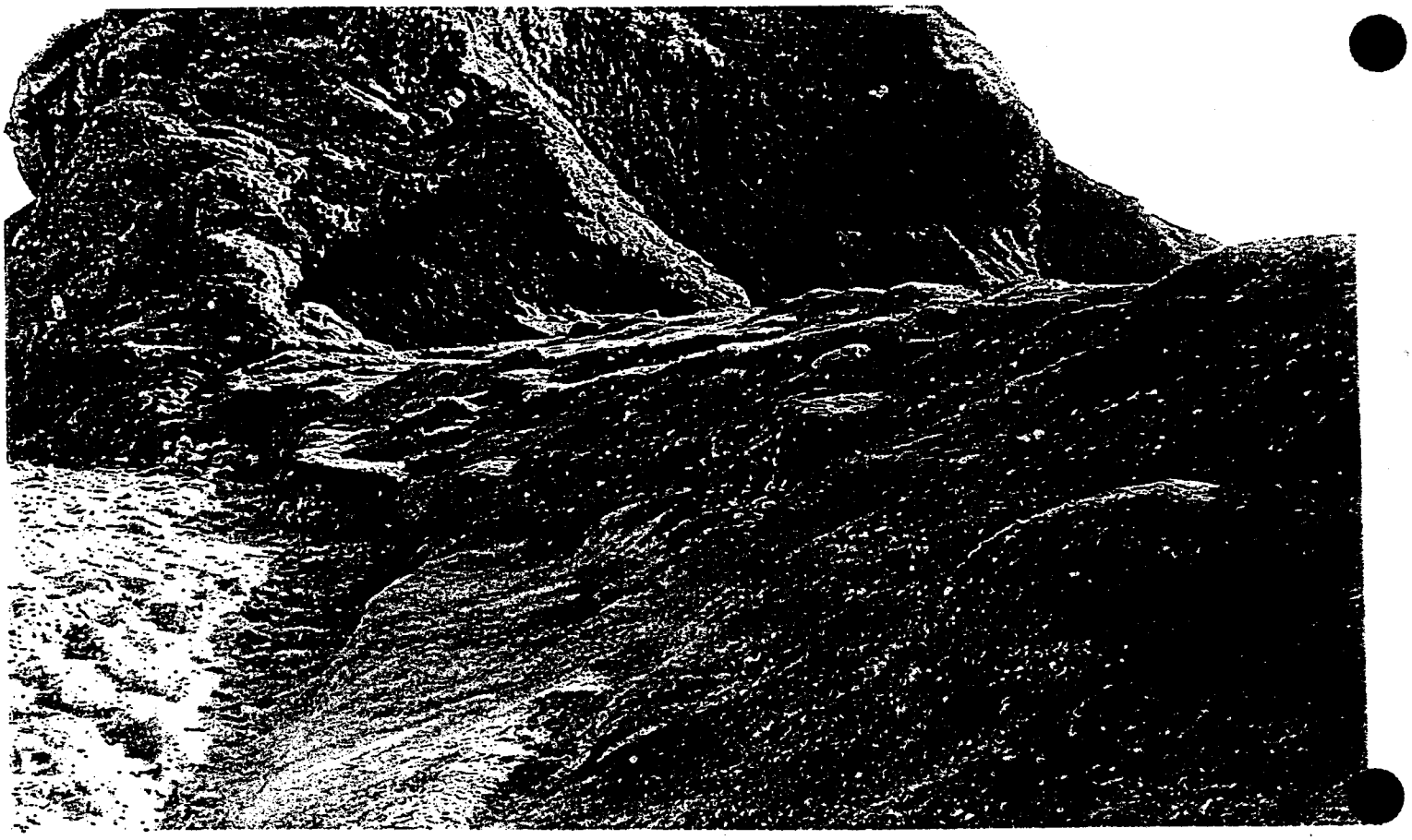
pages)

Attachment 12

CCC Exhibit E
(page 36 of 56 pages)

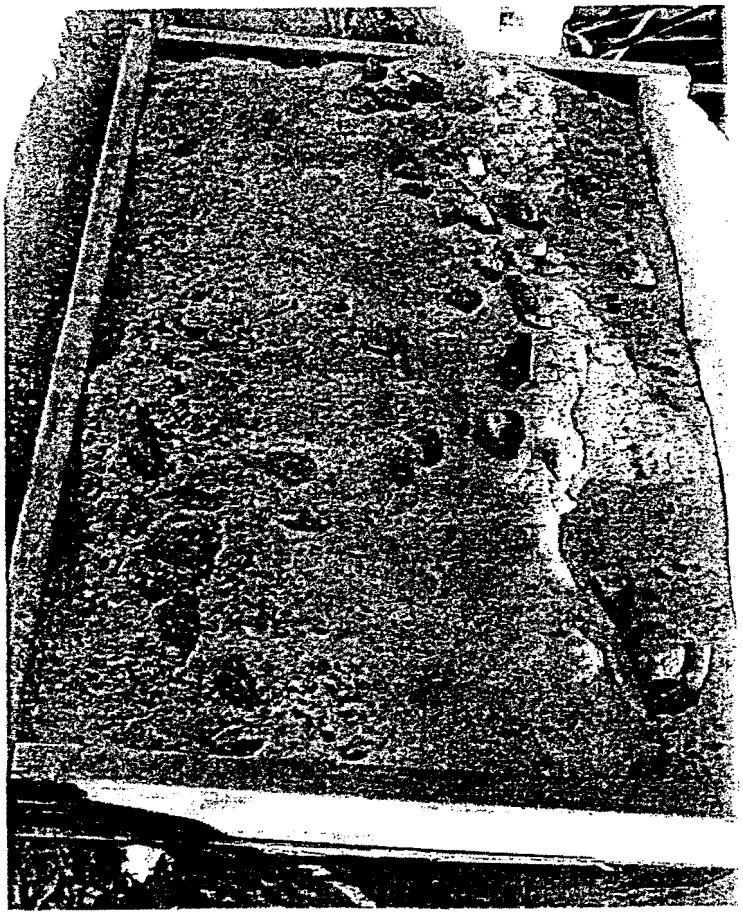
Attachment 13,
Recently completed
project in Santa Cruz.

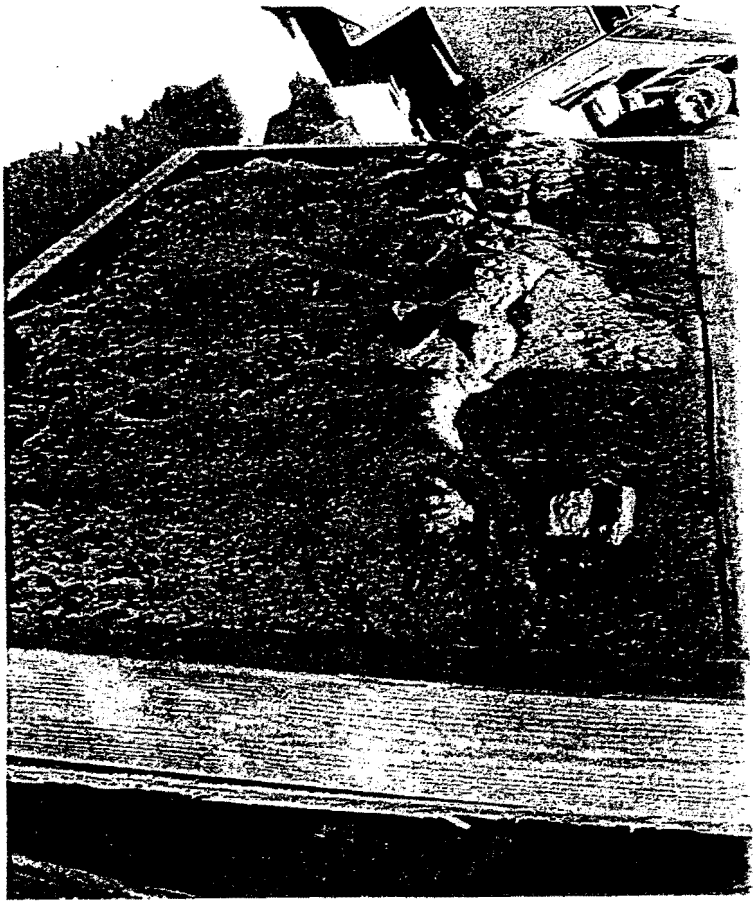




CCC Exhibit E
(page 37 of 56 pages)

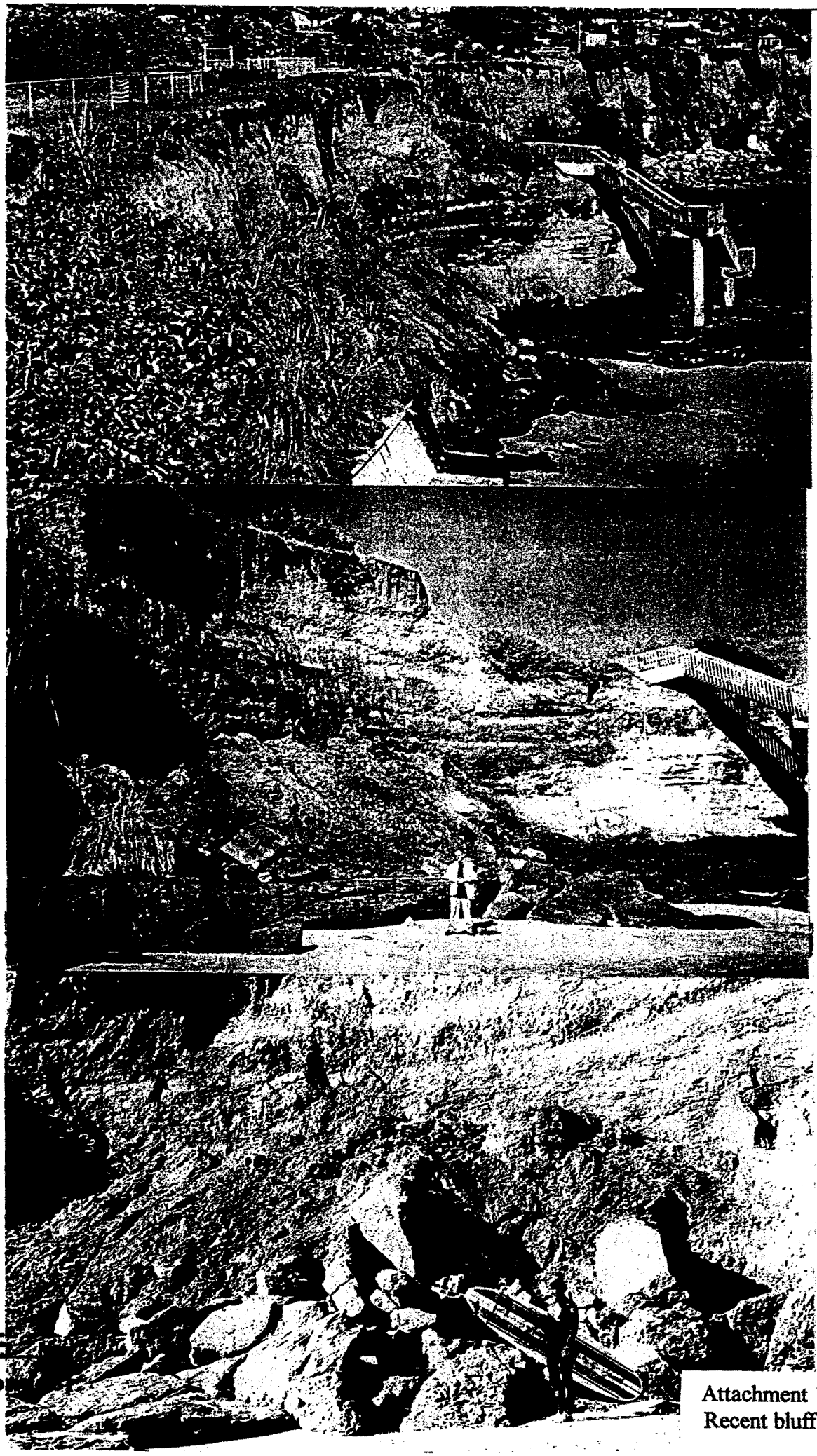
Attachment 14, p.1 of 2
Completed project in California.





CCC Exhibit E
(page 38 **of** 56 **pages)**

Attachment 14, p.2of2
Examples of project treatments.



Attachment 15,
Recent bluff landslide.

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County of Santa Cruz

PLANNING DEPARTMENT
701 OCEAN STREET, SUITE 400, SANTA CRUZ, CA 95060-4073
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
ALVIN D. JAMES, DIRECTOR

Thursday, April 26, 2001

Dan Carl
Coastal Planner
CALIFORNIA COASTAL COMMISSION
Central Coast District Office
725 Front Street, Suite 300
Santa Cruz, CA 95060

Subject: Response to Your Letter of February 13, 2001
Application Number 00-0757
APN 033-171-18
Keith Adams

Dear Mr. Carl:

I am writing to respond to your concerns, questions and comments about the proposed development Application 00-0757. Your letter goes through the County of Santa Cruz Local Coastal Program and indicates how the project must comply with this Program. Subsequently, Ms. Betty Cost of Richard Beale and Associates, the owner's agent - representative wrote to you to respond to your concerns and I believe you office-received copies of the geotechnical report by Haro, Kasunich and Associates and the Engineering Geology Report by Rogers E. Johnson and Associates.[1]

To answer your concerns, I will first indicate in italics your comment and then respond in regular text. Our responses are as follows.

- *As you are aware, seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" measures designed to forestall coastal erosion can adversely alter natural shoreline processes. Such shoreline protection 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. As a result, all such applications must be carefully examined consistent with the LCP and the Coastal Act.*

    1. We agree that protection structures can adversely alter both man accentuated and natural shoreline processes. A protection structure is

CCC Exhibit E
(page 40 of 56 pages)

allowed under the General Plan and the Local Coastal Plan (hereafter GP) only when there is a significant threat[2] to property or structures. An engineering geologist normally identifies this threat as Rogers Johnson has done for this project (see item 2.) The proposed project does have design aspects that reduce the impact that the proposed bluff protection structure has on coastal resources.

- **Sand Supply**: The proposed wall will retain the terrace material, but will allow continued erosion until the wall is exposed. After exposure a textured concrete facing will be applied where necessary. Consequently the current erosion pattern will continue for some time and will be stopped will only when necessary when the bluff has significantly eroded.
- **Public Access**: The proposed wall does not affect public access in anyway even if /or when a toe protection structure is allowed and placed.
- **Coastal Views**: The proposed pier wall will retain the existing appearance of the property for a longer period of time. Eventually, the piers will be exposed and consequently, the piers will need to be colored to match the bluff's appearance.
- **Natural Landform**: The pier wall will help to retain the current bluff's appearance. Coastal Bluff's do change and consequently, the retention of the current conditions is an aberration from both the current and natural conditions. Even so, the wall will blend with the community and site natural appearance.
- **Beach Dynamics**: The primary source of terrace erosion and toppling is urbanization including uncontrolled surface drainage and subsurface saturation. The proposed project will control surface drainage and will help to reduce the affects of bluff saturation.
- **Loss of Beach**: This project will have little impact on the beach.

- *The LCP requires that a "significant threat' to an existing structure be documented before a shoreline protection structure is considered. It appears that the subject residence in this case is located approximately 20 feet back from bluff-top edge. Any findings adopted should be based upon adequate geotechnical information specific to this site documenting evidence of the LCP required "significant threat" in this case. (Reference LCF Land Use Plan (LU?) Policy 6.2.16, Zoning Section 16.10.070(h)(3).) Please note in any case that the Coastal Commission does not generally recognize accessory structures (such as the deck intervening between the subject residence and the bluff edge, according to the plans) for shoreline protection structure purposes since these accessory structures can generally be protected from erosion by relocation or other means that do not involve shoreline armoring.)*

CCC Exhibit E
(page 41 of 50 pages)

2. Rogers Johnson and Associates have examined the site and has determined that if the upper bluff terrace retreats to it's natural angle of repose that the top of the bluff will be within three feet from the residence at it's closest point.[3] Consequently, the continuing coastal erosion will cause the bluff's toe to erode resulting in the further retreat of the terrace material. The rate of this erosion will result in the exposure and the undermining of the home's foundation within the next fifty years.

   As an engineering geologist, I believe that the current site condition constitutes a real and "significant threat" to an existing structure. Bluff top erosion occurs episodically and rapidly during intense rainfall with the result that the terrace material could retreat to the home's foundations during a few intense storms. This is a real and significant threat to the home.

- *If a significant threat to an existing structure is documented, the LCP requires a "thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure." In this case, the no project alternative should be evaluated. In addition, the expected equilibrium angle of the upper terrace deposits and the over Purisma (as appropriate) should be calculated for the no project alternative... (Reference LCP LUP Policy 6.2.16, Zoning Section 16.10.070(h)(3))*

3. There are few reasonable alternatives to a pier wall on this property. The home is built to the property boundaries on the northwest side of the property and the bluff is within 20 feet of the home on the home's southern side. Available alternatives are:

   - A concrete terrace treatment could be applied to the bluff's face either on the terrace face alone or along the whole bluff face. This treatment could have a significant increased impact to sediment production, natural appearance and beach dynamics.
   - A wood-lagging wall could be attached to the slope although the piers for the lagging would be very similar to the wall that is now proposed.
   - Removing the home is not necessary and would have the affect of condemning the home.
   - No project would result ultimately in the placing of a protective structure during a latter crisis. This could result in less desirable project.

   The proposed alternative pier wall appears to be the lowest impact

alternative that allows the continued occupancy of the home.

- *Minimize landform alteration: It appears that the proposed wall would significantly alter the natural bluff feature at this location. It is not clear to what extent such a large structural intrusion into the bluff might result in the loss of bluff materials and/or the loss of structural integrity of the bluff materials seaward, up-coast, and down-coast of the proposed drilled wall location both during construction and in the long term. Please evaluate the impact that the proposed wall would have on the natural landform present at this location.*

4. The proposed pier wall appears to be the least disruptive alternative. The pier wall will not cause loss of bluff material, and does not result in the loss of structural integrity of the bluff in the short or long term.

- *Minimize visual intrusion: The proposed project plans do not indicate how the disturbed slope would be restored (e.g., with cascading plantings). Furthermore, the project should include provisions for mitigating all visual impacts when the buried wall is day lighted by coastal erosion processes during the course of its design lifetime. In any case, additional design review should ensure that this very scenic location is not blighted, both in the immediate and the long term, by unnatural development of this sort.*

5. The pier wall will have little initial visual intrusion. In the longer term the wall will be exposed by erosion and will need to be initially colored to match the existing terrace material. Haro, Kasunich and Associates [4] indicate colored and textured shotcrete will be placed between the piers when they are exposed.

- *Not adversely impact shoreline processes and sand supply: The Commission's experience statewide has been that shoreline protection structures have a significant and measurable effect on shoreline process and sand supply. Natural shoreline processes, such as the formation and retention of sandy beaches, can be significantly altered by construction of protective 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. Please note that for purposes of mitigation, the Commission utilizes a sand supply calculation to determine the amount of sand generating materials withheld by armoring; please contact us if you do not already have this information.*

CCC Exhibit E
(page 43 of 56 pages)

6. The pier wall will have a minor impact on sand supply and we will apply an appropriate condition to reduce this impact. Please do supply us with your formula.

- *It is not clear how the proposed project would be constructed if approval were eventually granted. Please ensure that a detailed staging and construction plan is included with the application. Impacts to coastal resources during construction need to be evaluated within this on text. (Reference LCP LUP Policy 6.2.16, Zoning Section 16. 10.070(h)(3))*

7. A staging and construction plan will be required and a condition will be applied to the project so that the construction follows this plan. This plan will require the removal of the existing dislodged wood-lagging wall.

- *It is not clear how this proposed project relates (or should relate) to other existing and/or proposed armoring for this stretch of coastline. In other words, has a comprehensive solution been developed to address erosion and loss of beach at this location? If not, are there opportunities to address such issues on a regional basis here as opposed to a parcel by parcel.*

8. The proposed pier wall only supports this one home. The home's unique constraints do not affect the regional in general and is more threaten than most homes in the area. The County of Santa Cruz does not have program to address coastal bluff problems on this stretch of coastline and this type of program is beyond this applicant's ability to initiate.

- *Please ensure that the up and down coast features are adequately described on the proposed project plans. The County's environmental review and/or findings should explore such a regional approach. (Reference LCP LUP Policy 6.2.16, Zoning Section 16. 10--070(h)(3))*

9. The project plans do describe some of the features near the property and the engineering geologist does describe the nearby regions geologic constraints. The staff report will explore the possibility of a regional approach.

If you have any additional questions please call me at (831) 454-3175.

Very truly yours,

Joe Hanna
County Geologist CEG 1313

CCC Exhibit E
(page 44 of 56 pages)

Programs

a. Implement a program to document the public and private costs of landslides, to identify existing landslides, and revise County maps as additional information becomes available. Require property owners and public agencies to control landslide conditions which threaten structures or roads. (Responsibility: Planning Department)

b. Maintain and periodically update public information brochures concerning landslide hazards and guidelines for hillside development as new information becomes available. (Responsibility: Planning Department)

COASTAL BLUFFS AND BEACHES

Policies

6.2.10 Site Development to Minimize Hazards

(LCP) Require all developments to be sited and designed to avoid or minimize hazards as determined by the geologic hazards assessment or geologic and engineering investigations. *(Revised by Res. 81-99)*

6.2.11 Geologic Hazards Assessment in Coastal Hazard Areas

(LCP) Require a geologic hazards assessment or full geologic report for all development activities within coastal hazard areas, including all development activity within 100-feet of a coastal bluff. Other technical reports may be required if significant potential hazards are identified by the hazards assessment. *(Revised by Res. 81-99)*

6.2.12 Setbacks from Coastal Bluffs

(LCP) All development activities, including those which are cantilevered, and non habitable structures for which a building permit is required, shall be set back a minimum of 25 feet from the top edge of the bluff. A setback greater than 25 feet may be required based on conditions on and adjoining the site. The setback shall be sufficient to provide a stable building site over the 100-year lifetime of the structure, as determined through geologic and/or soil engineering reports. The determination of the minimum 100 year setback shall be based on the existing site conditions and shall not take into consideration the effect of any proposed shoreline or coastal bluff protection measures. *(Revised by Res. 81-99)*

6.2.13 Exception for Foundation Replacement and/or Upgrade

(LCP) Foundation replacement and/or foundation upgrades that meet the definition of development activity shall meet the 25-foot minimum and 100-year stability setback requirements. An exception to those requirements may be granted for existing structures that are located partly or wholly within the setback if the Planning Director determines that:

1) the area of the structure that is within the setback does not exceed 25% of the area of the structure, OR

2) the structure cannot be relocated to meet the setback due to inadequate parcel size.
(Revised by Res. 81-99)

No approval shall be given for shoreline protective structures that do not include permanent monitoring and maintenance programs. Such programs shall include a report to the County every five years or less, as determined by a qualified professional, after construction of the structure, detailing the condition of the structure and listing any recommended maintenance work. Maintenance programs shall be recorded and shall allow for County removal or repair of a shoreline protective structure, at the owner's expense, if its condition creates a public nuisance or if necessary to protect the public health and safety. *(Revised by Res. 81-99)*

✳ **6.2.17 Prohibit New Building Sites in Coastal Hazard Areas**
(LCP) Do not allow the creation of new building sites, lots, or parcels in areas subject to coastal hazards, or in the area necessary to ensure a stable building site for the minimum 100-year lifetime, or where development would require the construction of public facilities or utility transmission lines within coastal hazard areas or in the area necessary to ensure a stable building site for the minimum 100-year lifetime.

6.2.18 Public Services in Coastal Hazard Areas
(LCP) Prohibit utility facilities and service transmission systems in coastal hazard areas unless they are necessary to serve existing residences. *(Revised by Res. 81-99)*

6.2.18.1 Density Calculations
(LCP) Exclude areas subject to coastal inundation, as defined by geologic hazard assessment or full geologic report, from use for density calculations. *(Added by Res. 81-99)*

6.2.19 Drainage and Landscape Plans
(LCP) Require drainage and landscape plans recognizing potential hazards on and off site to be approved by the County Geologist prior to the approval of development in the coastal hazard areas. Require that approved drainage and landscape development not contribute to offsite impacts and that the defined storm drain system or Best Management Practices be utilized where feasible. The applicant shall be responsible for the costs of repairing and/or restoring any off-site impacts.

6.2.20 Reconstruction of Damaged Structures on Coastal Bluffs
(LCP) Permit reconstruction of structures on or at the top of a coastal bluff which are damaged as a result of coastal hazards, including slope instability and seismically induced landslides, or are damaged by non-coastal related hazards (fire, etc.), and where the loss is less than 50 percent of the value, in accordance with the recommendations of the hazards assessment. Encourage relocation to a new footprint provided that the new location is landward of the previous site at the best possible site not affecting resources (e.g. the most landward location, or landward of the area necessary to ensure a stable building site for the minimum 100-year lifetime, or not necessitating a future shoreline protective structure).

When structures located on or at the top of a coastal bluff are damaged as a result of coastal hazards, including slope instability and seismically induced landslides, and where the loss is greater than 50 percent of the value, permit reconstruction if all applicable regulations can be met, including minimum setbacks. If the minimum setback cannot be met, allow only in-kind reconstruction, and only if the hazard can be mitigated to provide stability over a 100 year period.

For structures damaged by other than coastal hazards, where the loss is greater than 50% of the value, allow in-kind reconstruction, subject to all regulations except for the minimum setback. Allow other than in-kind reconstruction only if the minimum setback is met.

located in an existing cluster of buildings, colors and materials shall repeat or harmonize with those in the cluster.

4. Large Agricultural Structures. The visual impact of large agricultural structures shall be minimized by:

(i) Locating the structure within or near an existing group of buildings.

(ii) Using materials and colors which blend with the building cluster or the natural vegetative cover of the site (except for greenhouses).

(iii) Using landscaping to screen or soften the appearance of the structure.

5. Restoration. Feasible elimination or mitigation of unsightly, visually disruptive or degrading elements such as junk heaps, unnatural obstructions, grading scars, or structures incompatible with the area shall be included in site development. The requirement for restoration of visually blighted areas shall be in scale with the size of the proposed project.

6. Signs. Signs shall minimize disruption of the scenic qualities of the viewshed.

(i) Materials, scale, location and orientation of signs shall harmonize with surrounding elements.

(ii) Directly lighted, brightly colored, rotating, reflective, blinking, flashing or moving signs are prohibited.

(iii) Illumination of signs shall be permitted only for state and county directional and informational signs, except in designated commercial and visitor serving zone districts.

(iv) In the Highway 1 viewshed, except within the Davenport commercial area, only CALTRANS standard signs and public parks, or parking lot identification signs, shall be permitted to be visible from the highway. These signs shall be of natural unobtrusive materials and colors.

(d) Beach Viewsheds. The following Design Criteria shall apply to all projects located on blufftops and visible from beaches.

1. Blufftop Development. Blufftop development and landscaping (e.g., decks, patios, structures, trees, shrubs, etc.) in rural areas shall be set back from the bluff edge a sufficient distance to be out of sight from the shoreline, or if infeasible, not visually intrusive. In urban areas of the viewshed, site development shall conform to (c) 2 and 3 above.

2. Beaches. The scenic integrity of open beaches shall be maintained:

(i) No new permanent structures on open beaches shall be allowed, except where permitted pursuant to Chapter 16.10 (Geologic Hazards) or Chapter 16.20 (Grading Regulations).

(ii) The design of permitted structures shall minimize visual intrusion, and shall incorporate materials and finishes which harmonize with the character of the area. Natural materials are preferred. (Ord. 3435, 8/23/83; 3487, 12/20/83)

CCC Exhibit E
(page 47 of 56 pages)

geologic hazards shall be required, as a condition of development approval and building permit approval, to record a Declaration of Geologic Hazards and the County Recorder. The Declaration shall include a description of the hazards on the parcel, and the level of geologic and/or geotechnical investigation conducted.

(e) Slope Stability.

1. Location: All development activities shall be located away from potentially unstable areas as identified through the geologic hazards assessment, full geologic report, soils report or other environmental or technical assessment.

2. Creation of New Parcels: Allow the creation of new parcels in areas with potential slope instability as identified through a geologic hazards assessment, full geologic report, soils report or other environmental or technical assessment only under the following circumstances:

(i) New building sites, roadways, and driveways shall not be permitted on or across slopes exceeding thirty (30) percent grade.

(ii) A full geologic report and any other appropriate technical report shall demonstrate that each proposed parcel contains at least one building site and access which are not subject to significant slope instability hazards, and that public utilities and facilities such as sewer, gas, electrical and water systems can be located and constructed to minimize landslide damage and not cause a health hazard.

(iii) New building sites shall not be permitted which would require the construction of engineered protective structures such as retaining walls, diversion walls, debris walls or slough walls designed to mitigate potential slope instability problems such as debris flows, slumps or other types of landslides.

3. Drainage: Drainage plans designed to direct runoff away from unstable areas (as identified from the geologic hazards assessment or other technical report) shall be required. Such plans shall be reviewed and approved by the County Geologist.

4. Leach Fields: Septic leach fields shall not be permitted in areas subject to landsliding as identified through the geologic hazards assessment, environmental assessment, or full geologic report.

5. Road Reconstruction: Where washouts or landslides have occurred on public or private roads, road reconstruction shall meet the conditions of appropriate geologic, soils and/or engineering reports and shall have adequate engineering supervision.

6. Notice of Hazards: The developer and/or subdivider of a parcel or parcels in an area of geologic hazards shall be required to record a Declaration of Geologic Hazards with the County Recorder. The Declaration shall include a description of the hazards on the parcel, and the level of geologic and/or geotechnical investigation conducted.

7. Other Conditions: Other permit conditions including but not limited to project redesign, building site elimination and the development of building and septic system envelopes, building setbacks and foundation and drainage requirements shall be required as deemed necessary by the Planning Director.

(f) Floodplains.

1. Critical and Public Facilities: Critical facilities and nonessential public structures and additions shall be located outside of the one hundred year floodplain unless such facilities are necessary to serve existing uses, there is no other feasible location and construction of these structures will not increase hazards to life on property within or adjacent to the floodplain.

2. Creation of New Parcels: Allow the creation of new parcels including those created by minor land division or subdivision in the one hundred year floodplain only under the following circumstances:

(i) A full hydrologic report and any other appropriate technical report must demonstrate that each proposed parcel contains at least one building site, including a septic system and leach field site, which is not subject to flood hazard, and that public utilities and facilities such as sewer, gas, electrical and water systems can be located and constructed to minimize flood damage and not cause a health hazard.

(ii) A declaration indicating the limits and elevations of the one hundred year floodplain certified by a registered professional engineer or surveyor must be recorded with the County Recorder.

CCC Exhibit E
(page 48 of 50 pages)

in 16.10.025, and within some areas not mapped as part of the Flood Insurance Study, are areas designated as floodways (see also 16.10.040 2d). The floodway is an extremely hazardous area due to the quantity and velocity of flood waters, the amount of debris which may be transported, and the high potential for erosion during periods of large stream flows. In the floodway the following provisions apply:

1. Development and Building Within Floodway Prohibited: All development activity, except for the reconstruction, repair, alteration or improvement of an existing structure, is prohibited within the floodway unless exempted by State or Federal laws. Any encroachment which would cause any increase in the base flood level is prohibited.

2. Sites Where Floodway Not Established. Where the Flood Insurance Study or other technical report has identified a flood hazard area but has not designated a floodway, the applicant must demonstrate, through hydrologic analysis, that the project will not adversely affect the carrying capacity of the area. For the purposes of this Chapter, "adversely affects" means that the cumulative effect of the proposed development, when combined with all other existing and anticipated development in the watershed, will increase the water surface elevation of the base flood more than one foot at any point. The hydrologic analysis must identify the boundaries of the floodway, and the project must comply with the provisions of Section (g)1, above.

3. Setback from Floodway: Where neither a Base Flood Elevation nor a floodway has been identified by the Flood Insurance Study or by a site specific hydrologic study, a minimum setback of 20 feet from the top edge of the banks of a drainage course shall be maintained, and all activity that takes up flood storage area within this setback shall be prohibited. This floodway setback may be reduced by the Planning Director only if a full hydrologic analysis identifies the boundaries of the floodway, demonstrates that a smaller setback will not increase the susceptibility of the proposed activity to flood related hazards, and there is no alternative location outside of the 20 foot setback. (See also Chapter 16.30, Riparian Protection, for vegetation related setbacks from streams.)

4. Location of Septic Systems. New septic systems and leach fields shall not be located in the floodway. The capacity of existing systems in the floodway shall not be increased.

5. Alteration of Structures in Floodway: Reconstruction, repair, alteration or improvement of a structure in a floodway shall not cause any increase in the base flood elevation. Substantial improvements, regardless of cause, shall only be permitted in accordance with Section 16.10.070(f), above. Repair, reconstruction, alteration, or replacement of a damaged structure which does not exceed the ground floor square area of the structure before the damage occurred shall not be considered an increase in the base flood elevation.

6. Permit Requirements: All other required local, state and federal permits must be obtained.

(h) Coastal Bluffs and Beaches:

1. Criteria in Areas Subject to Coastal Bluff Erosion: Projects in areas subject to coastal bluff erosion shall meet the following criteria:

✳ (i) for all development and for non-habitable structures, demonstration of the stability of the site, in its current, pre-development application condition, for a minimum of 100 years as determined by either a geologic hazards assessment or a full geologic report.

✳ (ii) for all development, including that which is cantilevered, and for non-habitable structures, a minimum setback shall be established at least 25 feet from the top edge of the coastal bluff, or alternatively, the distance necessary to provide a stable building site over a 100-year lifetime of the structure, whichever is greater.

✳ (iii) the determination of the minimum setback shall be based on the existing site conditions and shall not take into consideration the effect of any proposed protection measures, such as shoreline protection structures, retaining walls, or deep piers.

(iv) foundation replacement and/or foundation upgrades that meet the definition of development per Section 16.10.040(s) and pursuant to Section 16.10.040(r), shall meet the setback described in Section 16.10.070(h)(1), except that an exception to the setback requirement may be granted for existing structures that are wholly or partially within the setback, if the Planning Director determines that:

a) the area of the structure that is within the setback does not exceed 25% of the total area of

the structure, OR

b) the structure cannot be relocated to meet the setback because of inadequate parcel size.

(v) additions, including second story and cantilevered additions, shall comply with the minimum 25 foot and 100 year setback.

(vi) The developer and/or the subdivider of a parcel or parcels in an area subject to geologic hazards shall be required, as a condition of development approval and building permit approval, to record a Declaration of Geologic Hazards with the County Recorder. The Declaration shall include a description of the hazards on the parcel and the level of geologic and/or geotechnical investigation conducted.

(vii) approval of drainage and landscape plans for the site by the County Geologist.

(viii) service transmission lines and utility facilities are prohibited unless they are necessary to serve existing residences.

(ix) All other required local, state and federal permits shall be obtained.

2. Exemption:

(i) Any project which does not specifically require a building permit pursuant to Section 12.10.070(b) is exempt from Section 16.10.070(h)1, with the exception of: non-habitable accessory structures that are located within the minimum 25 foot setback from the coastal bluff where there is space on the parcel to accommodate the structure outside of the setback, above-ground pools, water tanks, projects (including landscaping) which would unfavorably alter drainage patterns, and projects involving grading.

For the purposes of this Section, the unfavorable alteration of drainage is defined as a change that would significantly increase or concentrate runoff over the bluff edge or significantly increase infiltration into the bluff. Grading is defined as any earthwork other than minor leveling, of the scale typically accomplished by hand, necessary to create beneficial drainage patterns or to install an allowed structure, that does not excavate into the face or base of the bluff.

Examples of projects which may qualify for this exemption include: decks which do not require a building permit and do not unfavorably alter drainage, play structures, showers (where run-off is controlled), benches, statues, landscape boulders, benches, and gazebos which do not require a building permit.

(ii) If a structure that is constructed pursuant to this exemption subsequently becomes unstable due to erosion or slope instability, the threat to the exempted structure shall not qualify the parcel for a coastal bluff retaining structure or shoreline protection structure. If the exempted structure itself becomes a hazard it shall either be removed or relocated, rather than protected in place.

3. Shoreline protection structures shall be governed by the following:

(i) shoreline protection structures shall only be allowed on parcels where both adjacent parcels are already similarly protected, or where necessary to protect existing structures from a significant threat, or on vacant parcels which, through lack of protection threaten adjacent developed lots, or to protect public works, public beaches, and coastal dependent uses.

Note: New shoreline protection structures shall not be allowed where the existing structure proposed for protection was granted an exemption pursuant to Section 16.10.070(h)2.

(ii) seawalls, specifically, shall only be considered where there is a significant threat to an existing structure and both adjacent parcels are already similarly protected.

(iii) application for shoreline protective structures shall include thorough analysis of all reasonable alternatives to such structures, including but not limited to relocation or partial removal of the threatened structure, protection of only the upper bluff area or the area immediately adjacent to the threatened structure, beach nourishment, and vertical walls. Structural protection measures on the bluff and beach shall only be permitted where non-structural measures, such as relocating the structure or changing the design, are infeasible from an engineering standpoint or are not economically viable.

(iv) shoreline protection structures shall be placed as close as possible to the development or structure requiring protection.

(v) shoreline protection structures shall not reduce or restrict public beach access, adversely

CCC Exhibit E
(page 50 of 50 pages)

• Engineering Geology
• Coastal Geology
• Hydrogeology

Nolan, Zinn, and Associates

5 February 2002 Job #01076-SC

Alistair Black and A.G. Banman
c/o Joel Schwartz
4355 Diamond Street #3
Capitola, California 95010

Re: California Coastal Commission comments
Upper bluff stabilization and erosion control project
4440 and 4420 Opal Cliff Drive
Santa Cruz, California
APN's 033-151-08 and 033-151-23

Dear Mr. Black and Mr. Banman:

This letter summarizes our comments regarding the appeal document generated by the California Coastal Commission (CCC), entitled "Commission Notification Of Appeal, dated 10 December 2001, Numbers A-3-SCO-01-117, -118. We have performed this review and written this letter at the request of your project planner, Joel Schwartz.

The engineering geology issues that California Coastal Commission letter focuses upon are:

1. Whether bluff retreat poses a "significant threat" to the structures;
2. Whether "non-structural" alternatives have been adequately explored;
3. The impact that retaining the marine terrace deposits will have upon the "natural shoreline sand supply system."

"Significant Threat"

It is our opinion that both the Black and Banman Residences are subject to greater than "ordinary" risk, as defined by the Joint Committee on Seismic Safety of the California Legislature (1974) (see Appendix B from the prior geologic reports written by Zinn Geology, dated 15 and 20 March 2001, attached). If the marine terrace deposits of the upper bluff are not adequately retained *within the lifetime of these residences*, than future failures of the upper bluff may cause a loss of life or serious physical injury due to partial collapse of the structures.

In our opinion, this qualifies the process of upper bluff retreat as a significant threat to the Black and Banman residences.

We also noted that the CCC letter discussed erosion of the upper bluff. Unfortunately their discussion appears to have omitted the *dominant* geologic process of landsliding operating upon

ht Avenue, Suite A2 Santa Cruz, CA 95062 · Tel. 831-423-7006 · Fax 831-423-7008 · email: nze@nolanzinn.com

the Black and Banman properties. The landslides within the marine terrace deposits along this stretch of coastal bluff typically occur in response to intense rainfall (preceded by long duration antecedent rainfall), intense seismic shaking, or a combination thereof. A vertical scar exposing the marine terrace deposits is typically left behind by this process.

The combined processes of erosion and shallow landsliding will continue to attack the marine terrace deposits exposed in the vertical to near-vertical upper bluff on the Black and Banman properties, causing the face of the upper bluff to "lay back" to a lower angle. Even after the upper bluff has laid back to a lower angle, it will continue to fail catastrophically during episodes of large earthquakes and storms. A vertical to near-vertical bluff will be left behind by these episodic events, essentially "resetting the clock" for the gentler long term processes of erosion and shallow landsliding. Overall, the upper bluff will steadily march landward toward the Black and Banman residences, with periodic advances made upon the residences during large earthquakes and storms. As stated before, in our opinion, this qualifies the process of upper bluff retreat as a significant threat to the Black and Banman residences.

Non-structural alternatives

The CCC letter recommends that further analysis of "non-structural" methods be pursued. Unfortunately, we were unable to observe the engineering calculations performed by the CCC staff to demonstrate that non-structural methods are feasible. The reader should turn to the reports written by Tharp and Associates, the project geotechnical engineer, for the subject properties. In particular, the reader should refer to the section discussing the recommended design forces for the proposed tie back anchors. We are unaware of any non-structural alternatives that are capable of resisting these magnitudes of forces. Once, again, we point out that the largest geologic problem in the marine terrace deposits is *landsliding*, not erosion. In our opinion, non-structural alternatives will only slightly forestall erosion, and will not prevent significant long term upper bluff retreat.

Impact upon "natural shoreline sand supply system."

We have attempted to analyze the impact of retaining the marine terrace deposits upon the "natural shoreline sand supply system." The average yearly natural littoral drift in the vicinity of the subject properties has been estimated to be in the range of 260,000 and 326,000 cubic yards by researchers (Griggs and Best, 1991). We interpret the researchers' findings as meaning that this volume of sand, derived from coastal erosion and sediments from local creeks and rivers, moves downcoast (towards Capitola) each year through the near shore littoral system.

We have estimated that the marine terrace deposits are approximately 20 feet high (thick) on the subject properties. It is important to note that the particles comprising the littoral drift along the shoreline are sand size or larger. Hence, we will conservatively assume that the entire 20 foot high (thick) package of marine terrace deposits contains 75% of sand (or larger) size particles by volume, resulting in a 15 foot column (20 feet x 0.75) of sand-size particles of bigger. The bluff top exposure of the marine terrace deposits fronting the properties is about 145 feet (in plan

view). This would result in a window of "sand" of 2175 square feet (15 feet x 145 feet) at any given time.

If we were to assume that the CCC average yearly bluff retreat estimates of ½ foot are correct, than that would result in a yearly average of 1088 cubic feet (2175 square feet x 0.5 feet), or 40 cubic yards of sand being held back by the proposed retaining structure. This would represent between 0.01% and 0.02% of the total volume of average yearly littoral drift cited by Griggs and Best (1991).

If we utilize the highest average yearly bluff retreat rates of 2 feet cited by Foxx, Nielsen and Associates (1998) for their study of the nearby proposed East Cliff Drive Seawall, than that would result in a yearly average of 4350 cubic feet (2175 square feet x 2 feet), or 161 cubic yards of sand being held back by the proposed retaining structure. This would represent between 0.06% and 0.05% of the total volume of average yearly littoral drift cited by Griggs and Best (1991).

So, considering a range of values for both average yearly littoral drift, and average yearly bluff retreat rates, the proposed retaining structure will hold back between 0.01% and 0.06% of sand by volume from the natural littoral drift system *per year*. In our opinion, the impact of the proposed retaining structures upon the littoral drift system will be insignificant, based upon the aforementioned estimates.

Lower bluff protection

The CCC letter briefly touches upon the issue of "additional armoring" at the base of the coastal bluff on the Black and Banman properties. We unaware of any recommendations regarding additional armoring. Our report identified a hybrid seawall-revetment system in disrepair. Inspection of the aerial photographs indicates the hybrid system on the properties started off as a broad rip-rap revetement that was present at least as early as 1961 (the earliest set of aerial photographs we could clearly discern the presence of the protective structure). The revetment was likely placed as part of the coastal protection program pursued by the Army Corps of Engineers many decades ago.

We observed the hybrid revetment and sea wall on the Black property (4440 Opal Cliff Drive) upon aerial photographs dated 5 October 1976. It can be readily discerned as a lighter toned, flat bench projecting out from the bluff face. It is possible that the hybrid revetment and sea wall was present as early as 1965, based upon our observation of aerial photographs dated 11 May 1965, but the resolution and lighting of the photographic prints make this interpretation equivocal. Hence, we conclude that the hybrid revetment and sea wall on the Black property is at least as old 26 years, and possibly older than 37 years.

If the existing protective structures are not adequately repaired and maintained, the lower bluff will begin to retreat at a higher rate. This will cause the upper bluff retreat rate to accelerate, ultimately resulting in an increase of risk to the structure and the occupants. Hence, we are

pursuing a geologic study of the existing protective structures and the lower bluff, so that we may make the proper recommendations regarding the refurbishment of the protective structures.

Sincerely,
Nolan, Zinn and Associates, Inc.

Erik N. Zinn
Principal Geologist
C.E.G. No. 2139

Attachments: Excerpted Appendix B from prior reports written by Zinn Geology, dated 15 and 20 March 2001

REFERENCES

Best, T.C. and Griggs, G.B., 1991, From shoreline to abyss - a sediment budget for the Santa Cruz littoral cell, California, Society for Economic Paleontologists and Mineralogists Special Publication No. 46., 55 p.

California Coastal Commission, 2001, Commission notification of appeal, Numbers A-3-SCO-01-117, -118, unpublished government agency letter.

Foxx, Nielsen and Associates, 1998, Engineering geologic study of proposed coastal bluff stabilization, job number Scr-786-G, unpublished consultant letter.

Joint Committee on Seismic Safety of the California Legislature, 1974, Meeting the earthquake challenge - final report, reprinted by the California Division of Mines and Geology in 1974 as Special Publication 45, p.9.

SCALE OF ACCEPTABLE RISKS FROM SEISMIC GEOLOGIC HAZARDS		
Risk Level	Structure Types	Extra Project Cost Probably Required to Reduce Risk to an Acceptable Level
Extremely low[1]	Structures whose continued functioning is critical, or whose failure might be catastrophic: nuclear reactors, large dams, power intake systems, plants manufacturing or storing explosives or toxic materials.	No set percentage (whatever is required for maximum attainable safety).
Slightly higher than under "Extremely low" level.[1]	Structures whose use is critically needed after a disaster: important utility centers; hospitals; fire, police and emergency communication facilities; fire station; and critical transportation elements such as bridges and overpasses; also dams.	5 to 25 percent of project cost.[2]
Lowest possible risk to occupants of the structure.[3]	Structures of high occupancy, or whose use after a disaster would be particularly convenient: schools, churches, theaters, large hotels, and other high rise buildings housing large numbers of people, other places normally attracting large concentrations of people, civic buildings such as fire stations, secondary utility structures, extremely large commercial enterprises, most roads, alternative or non-critical bridges and overpasses.	5 to 15 percent of project cost.[4]
An "ordinary" level of risk to occupants of the structure.[3,5]	The vast majority of structures: most commercial and industrial buildings, small hotels and apartment buildings, and single family residences.	1 to 2 percent of project cost, in most cases (2 to 10 percent of project cost in a minority of cases).[4]

1 Failure of a single structure may affect substantial populations.

2 These additional percentages are based on the assumptions that the base cost is the total cost of the building or other facility when ready for occupancy. In addition, it is assumed that the structure would have been designed and built in accordance with current California practice. Moreover, the estimated additional cost presumes that structures in this acceptable risk category are to embody sufficient safety to remain functional following an earthquake.

3 Failure of a single structure would affect primarily only the occupants.

4 These additional percentages are based on the assumption that the base cost is the total cost of the building or facility when ready for occupancy. In addition, it is assumed that the structures would have been designed and built in accordance with current California practice. Moreover the estimated additional cost presumes that structures in this acceptable-risk category are to be sufficiently safe to give reasonable assurance of preventing injury or loss of life during and following an earthquake, but otherwise not necessarily to remain functional.

5 "Ordinary risk": Resist minor earthquakes without damage: resist moderate earthquakes without structural damage, but with some non-structural damage; resist major earthquakes of the intensity or severity of the strongest experienced in California, without collapse, but with some structural damage as well as non-structural damage. In most structures it is expected that structural damage, even in a major earthquake, could be limited to repairable damage. (Structural Engineers Association of California)

Source: *Meeting the Earthquake Challenge*, Joint Committee on Seismic Safety of the California Legislature, Jan. 1974, p.9.

CCC Exhibit E
(page 55 of 56 pages)

SCALE OF ACCEPTABLE RISKS FROM NON-SEISMIC GEOLOGIC HAZARDS[6]		
Risk Level	Structure Type	Risk Characteristics
Extremely low risk	Structures whose continued functioning is critical, or whose failure might be catastrophic: nuclear reactors, large dams, power intake systems, plants manufacturing or storing explosives or toxic materials.	1. Failure affects substantial populations, risk nearly equals nearly zero.
Very low risk	Structures whose use is critically needed after a disaster: important utility centers; hospitals; fire, police and emergency communication facilities; fire station; and critical transportation elements such as bridges and overpasses; also dams.	1. Failure affects substantial populations. Risk slightly higher than 1 above.
Low risk	Structures of high occupancy, or whose use after a disaster would be particularly convenient: schools, churches, theaters, large hotels, and other high rise buildings housing large numbers of people, other places normally attracting large concentrations of people, civic buildings such as fire stations, secondary utility structures, extremely large commercial enterprises, most roads, alternative or non-critical bridges and overpasses.	1. Failure of a single structure would affect primarily only the occupants.
"Ordinary" risk	The vast majority of structures: most commercial and industrial buildings, small hotels and apartment buildings, and single family residences.	1. Failure only affects owners /occupants of a structure rather than a substantial population. 2. No significant potential for loss of life or serious physical injury. 3. Risk level is similar or comparable to other ordinary risks (including seismic risks) to citizens of coastal California. 4. No collapse of structures; structural damage limited to repairable damage in most cases. This degree of damage is unlikely as a result of storms with a repeat time of 50 years or less.
Moderate risk	Fences, driveways, non-habitable structures, detached retaining walls, sanitary landfills, recreation areas and open space.	1. Structure is not occupied or occupied infrequently. 2. Low probability of physical injury. 3. Moderate probability of collapse.

[6] Non-seismic geologic hazards include flooding, landslides, erosion, wave runup and sinkhole collapse

CCC Exhibit E
(page 56 of 56 pages)

East Cliff Property Owners Association
James C. Marshall, President
23439 East Cliff Drive
Santa Cruz, CA 95062
(831) 476-0877
Director's: Bill Geisreiter, Harry Blanchard, August Motmans, John Rodgers

February 12, 2002

The California Coastal Commission
c/o Joel Schwartz
Planning and Development
4355 Diamond Street, #3
Capitola, CA 95010

Re: Appeals of Upper Bluff Stabilization Projects for Adams (A-3-SCO-01-109), Black (A-3-SCO-01-117) and Banman (A-3-SCO-01-118).

Dear Commissioners:

The Board of Directors of the East Cliff Property Owners Association represents 120 members whose properties are located between the Santa Cruz Small Craft Harbor and the Capitola Wharf, and are subject to the direct impact of the ocean's forces.

We have worked diligently over the past 30 years to address the issues of our members, namely the preservation of our rights to protect our homes and properties, and to preserve the public's right to access, safety and aesthetic harmony.

It is our opinion that the above named projects on appeal deserve our whole-hearted support. The projects have undergone close scrutiny and the facts are evident: there is a significant threat, the proposed design is the best alternative, and the construction technique is aesthetically appropriate.

We consider your actions on this issue to be an indication of the direction the Coastal Commission is taking in respect to the rights of homeowners. We are very mindful of the trust placed in you to make sound coastal protection decisions, and we recommend these projects to you in everyone's best interest.

Sincerely,

James C. Marshall. President

CCC Exhibit F
(page 1 of 3 pages)

February 6, 2002

Dear Members of the Coastal Commission:

I am writing in support of the applications for coastal bluff protection submitted by Keith Adams of 500 41st Avenue in Santa Cruz (County Application Number 00-0757; Adams), Alistair Black (number 00-0704) and Gene Banman (01-0137).

My name is Bill Osberg, and I am 47 years old. Ever since I was a teenager I have been drawn to the ocean and the surf. It became a dream of mine to live at the beach, close enough so I could see the surf and walk to surfing. But beach front property has always been very expensive in California, so in pursuit of my goal I studied seriously in school, then worked hard in the software business for almost 25 years. I practically gave up surfing during that time and lived far from the beach.

Three years ago through a combination of determination, hard work, skill, and some luck, I became a coastal property owner on Opal Cliff Drive. This is a very special place, and both my wife and I love our house at the beach. Like all Opal Cliff homeowners, we would like to preserve and protect it, but recent rulings by the Coastal Commission may make that impossible.

My understanding is that the Commission's current position prohibits coastal protection for an existing house until "necessary to protect existing structures from a significant threat" - and the definition of a significant threat is when the bluff top is 3 feet from the foundation of the house! This appears to be a change from last year, when protection was allowed for lots with existing houses much further away than 3 feet from the bluff edge. I'm not a geologist, but I believe any geologist will tell you that bluff erosion is not a gradual process. Bluffs do not erode 4 inches a year, year after year. Instead, they don't erode visibly for perhaps many years, then 10 feet or more can shear away in a single event. The homes lost in Pacifica during the last El Nino year are an example. It was widely publicized that some of those homeowners lost 40 feet of bluff in a single year. Those homes had no coastal protection.

I observed episodic erosion myself in January 2002 at the slide near the Private's stairway on Opal Cliff Drive, where at least 8 feet of bluff top sheared off and landed on the beach below. If the house had been 6 feet from the bluff, and thus not eligible for coastal protection as in the new interpretation, that house would now be hanging over the edge and would be condemned.

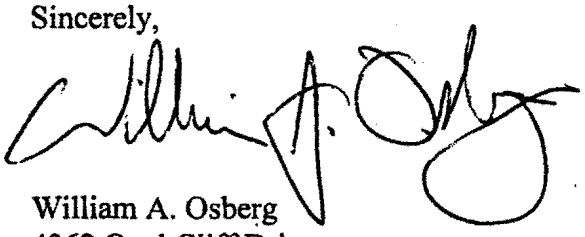
Moving houses away from the edge is frequently not a viable option as many of the lots in this area are already quite narrow, so moving the house would run up against other regulations regarding front setbacks. Removing part of the house, like the living room (which is usually the room closest to the bluff), clearly doesn't make sense. The only option would be to demolish the existing house and build a new smaller one.

On the other hand, for building a new house, the Commission requires the structure to be far enough away from the edge of the bluff that it could be expected to remain in place for 100 years. As many lots are not wide enough to achieve this goal without coastal protection, my understanding is that coastal protection is permitted. If this were not the case, then the 100 year regulation would amount to a taking of the property without compensation. Any lot on Opal Cliff Drive overlooking Monterey Bay is worth well over $1 million today, and many of them are worth several times that.

It is an inconsistent and illogical position to require builders of new homes to provide 100 years of protection while existing homeowners may not add any protection until the bluff is 3 feet away. Because erosion is episodic and frequently occurs in chunks much larger than 3 feet, this position is equivalent to saying that one can do nothing until the house is suspended over the edge, at which point it is an emergency situation and all you can do is demolish it. This is completely unfair.

It would be a consistent and appropriate position to allow owners of existing homes to achieve at least the same level of protection as is required of new home builders. I don't understand why the Coastal Commission doesn't at least tolerate that approach. These applicants are prepared to spend a lot of money in order to construct a state-of-the-art stabilization measure that will blend harmoniously with the natural surroundings. I urge the Commission to approve these projects, and support these reasonable approaches to stabilizing the upper bluff area.

Sincerely,



William A. Osberg
4362 Opal Cliff Drive
Santa Cruz, CA 95062

STATE OF CALIFORNIA - THE RESOURCES AGENCY GRAY DAVIS, *Governor*

CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060
PHONE: (831) 427-4863
FAX: (831) 427-4877

February 13, 2001

Joe Hanna
Santa Cruz County Planning Department
701 Ocean Street, Suite 400
Santa Cruz, Ca 95060-4073

Subject: ***Project Comments for Application Number 00-0757 (Adams Drilled Pier Tie-back Wall at 500 41st Avenue)***

Dear Mr. Hanna:

Thank you for forwarding the above-referenced development proposal to our office for review. These comments are based upon the brief project description you have provided, along with the proposed site plans that illustrate the project. After preliminary review of these materials, we have some concerns, questions and comments about the proposed development as it relates to applicable Santa Cruz County Local Coastal Program (LCP) and California Coastal Act policies as follows:

- As you are aware, seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" measures designed to forestall coastal erosion can adversely alter natural shoreline processes. Such shoreline protection 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. As a result, all such applications must be carefully examined consistent with the LCP and the Coastal Act.

- The LCP requires that a "significant threat" to an existing structure be documented before a shoreline protection structure is considered. It appears that the subject residence in this case is located approximately 20 feet back from blufftop edge. Any findings adopted should be based upon adequate geotechnical information specific to this site documenting evidence of the LCP-required "significant threat" in this case. (Reference LCP Land Use Plan (LUP) Policy 6.2.16, Zoning Section 16.10.070(h)(3).) Please note in any case that the Coastal Commission does not generally recognize accessory structures (such as the deck intervening between the subject residence and the bluff edge, according to the plans) for shoreline protection structure purposes since these accessory structures can generally be protected from erosion by relocation or other means that do not involve shoreline armoring.)

- If a significant threat to an existing structure is documented, the LCP requires a "thorough analysis of all reasonable alternatives, including but not limited to, relocation or partial removal of the threatened structure." In this case, the no project alternative should be evaluated. In addition, the expected equilibrium angle of the upper terrace deposits and the lower purisma (as appropriate) should be calculated for the no project alternative. (Reference LCP LUP Policy 6.2.16, Zoning Section 16.10.070(h)(3))

CCC Exhibit G
(page 1 of 3 pages)

- If a significant threat to an existing structure is documented, and if a hard protective structure is found to be the least environmentally damaging feasible alternative to protect the threatened existing structure, the proposed shoreline protection structure must be constructed in such a way as to, at a minimum:

  - Minimize landform alteration: It appears that the proposed wall would significantly alter the natural bluff feature at this location. It is not clear to what extent such a large structural intrusion into the bluff might result in the loss of bluff materials and/or the loss of structural integrity of the bluff materials seaward, upcoast, and downcoast of the proposed drilled wall location both during construction and in the long term. Please evaluate the impact that the proposed wall would have on the natural landform present at this location.

  - Minimize visual intrusion: The proposed project plans do not indicate how the disturbed slope would be restored (e.g., with cascading plantings). Furthermore, the project should include provisions for mitigating all visual impacts when the buried wall is daylighted by coastal erosion processes during the course of its design lifetime. In any case, additional design review should ensure that this very scenic location is not blighted, both in the immediate and the long term, by unnatural development of this sort.

  - Not adversely impact shoreline processes and sand supply: The Commission's experience statewide has been that shoreline protection structures have a significant and measurable effect on shoreline process and sand supply. Natural shoreline processes, such as the formation and retention of sandy beaches, can be significantly altered by construction of protective 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. Please note that for purposes of mitigation, the Commission utilizes a sand supply calculation to determine the amount of sand generating materials withheld by armoring; please contact us if you do not already have this information.

  (Reference LCP LUP Objectives 5.10.a and 5.10.b, LUP Policies 5.10.7 and 6.2.16, Zoning Sections 13.20.130 and 16.10.070(h)(3))

- It is not clear how the proposed project would be constructed if approval were eventually granted. Please ensure that a detailed staging and construction plan is included with the application. Impacts to coastal resources during construction need to be evaluated within this context. (Reference LCP LUP Policy 6.2.16, Zoning Section 16.10.070(h)(3))

- It is not clear how this proposed project relates (or should relate) to other existing and/or proposed armoring for this stretch of coastline. In other words, has a comprehensive solution been developed to address erosion and loss of beach at this location? If not, are there opportunities to address such issues on a regional basis here as opposed to a parcel by parcel

approach in order to better protect coastal resources? Please ensure that the up and down coast features are adequately described on the proposed project plans. The County's environmental review and/or findings should explore such a regional approach. (Reference LCP LUP Policy 6.2.16, Zoning Section 16.10.070(h)(3))

- Finally, complementary Coastal Act policies that likewise provide criteria for the review of proposed armoring projects, and likewise protect coastal resources, may also come into play at this location. (Reference Coastal Act Chapter 3)

Please have the Applicant send us 3 copies of the geotechnical report for this proposed project when the report has been completed.

Thank you for the opportunity to comment in the development stage of this project. As the County moves forward with project analysis and environmental review, the issues identified above, as well as any other relevant coastal issues identified upon further review or due to project modifications, should be considered in light of the provisions of the certified Santa Cruz County LCP. In any event, we may have more comments for you on this project after we have seen additional project information or revisions. If you have any questions, please do not hesitate to call me at (831) 427-4893.

Sincerely,

Dan Carl
Coastal Planner

cc: Betty Cost, Richard Beale Land Use Planning Inc. (Representative for Keith and Kim Adams)