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Staff report prepared by:	Susan Craig
Staff report approved by:	Dan Carl
Hearing date:	7/7/2010

APPEAL STAFF REPORT
SUBSTANTIAL ISSUE DETERMINATION & DE NOVO HEARING

Appeal number.....**A-3-SCO-08-029 and A-3-SCO-08-042, Trousdale SFDs**

Applicant.....Kelley and Cindy Trousdale

Appellant.....Fay Levinson

Local government .....Santa Cruz County

Local decisions.....Approved by the Santa Cruz County Zoning Administrator on May 2, 2008 (A-3-SCO-08-029 – County Coastal Development Permit (CDP) Application Number 07-0117) and on July 11, 2008 (A-3-SCO-08-042 – County Coastal Development Permit Application Number 07-0325).

Project location .....On the bluff above Hidden Beach at 660 Bayview Drive in the unincorporated area of Aptos, Santa Cruz County.

Project descriptions .....**A-3-SCO-08-029:** Demolish a portion of an existing one-story single family residence and construct a new two-story single family residence of about 5,000 square feet; removal of one tree (APN 043-161-58).

A-3-SCO-08-042: Demolish the remaining portion of an existing one-story single family residence and construct a new two-story single family residence of about 4,200 square feet; remove two trees (APN 043-161-57).

File documents.....Administrative record for Santa Cruz County CDP Numbers 07-0117 and 07-0325; Santa Cruz certified Local Coastal Program (LCP).

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

A.Staff Recommendation

1. Staff Note

Santa Cruz County approved two separate CDPs and thus there are two separate appeals. However, the Applicants are the same for each CDP/Appeal and the property involved consists of two contiguous parcels. Each of the two proposed projects shares similar issues and the applications are best understood if evaluated jointly. As a result, these CDPs/Appeal matters are combined in this staff report, and the

hearing on these items will be combined as well. Even so, because of the way the applications were considered separately by the County, there are two sets of motions and resolutions necessary for each Commission action (see pages 3-5).

2. Summary of Staff Recommendation

In 2008, Santa Cruz County approved the demolition of an existing single-family residence that straddles two lots, and the construction of two two-story single-family residences and associated improvements on these same two lots that are located above Hidden Beach in the unincorporated Aptos-Rio del Mar area of Santa Cruz County. The proposed residences would range in size from about 4,200 square feet to 5,000 square feet and would be located within a mapped scenic resource area. The County's coastal development permit (CDP) actions on the approved projects were appealed to the Coastal Commission. **Staff recommends that the Commission find that the appeals raise a substantial issue and also recommends that the Commission deny both proposed new residences.**

The Santa Cruz County Local Coastal Program (LCP) requires that risks be minimized and long-term stability and structural integrity be provided, and that development be sited, designed, and built to allow for natural shoreline processes to occur; all of this is required to be accomplished without the benefit of protective devices or other shoreline altering construction. The LCP also requires that a coastal bluff building site be stable for a minimum of 100 years in its pre-development application condition, and that any development on it be set back an adequate distance to provide stability for 100 years. The project sites are located on top of an actively eroding bluff. While the Applicants' geological representatives have established blufftop setbacks for the residences that are in the range of about 27-32 feet, the Commission's staff geologist has analyzed the proposed projects' setbacks in terms of potential future sea level rise, the coastal bluff retreat rate, and slope stability analysis and determined that the County-approved blufftop setbacks are significantly too narrow for long-term stability and that these setbacks would need to be greatly increased (to 116 feet) to meet LCP requirements. The proposed developments cannot meet the required 116-foot setback requirement. Thus, the proposed developments would be significantly out of conformance with the LCP's natural hazards policies. Staff is unaware of any modifications that could make residential structures on these lots consistent with the natural hazards policies and standards of the LCP. As a result, Staff recommends that the proposed developments be denied.

The LCP has multiple provisions that require development to be sited and designed to ensure protection of significant visual resources, including views within mapped scenic resource areas. The two lots proposed for development are located within an LCP-mapped scenic resource area. The proposed project sites are located on a section of gentle downsloping coastal bluff. This gently sloping coastal bluff surface continues downcoast across the adjacent undeveloped properties to an arroyo. The proposed project sites are prominent in the foreground of views out to the ocean from significant public use areas at Hidden Beach County Park, including from the main beach/ocean overlook and the beach access trail, as well as from Hidden Beach itself. Views from beaches and parks are protected visual resources under the LCP. Such policies and protections specifically protect areas having regional public importance for their natural beauty and prohibit the placement of new permanent structures which would be

visible from a public beach, except where allowed on existing parcels of record, or for shoreline protection and for public beach access. Given the topography of the project sites and the size and scale of the proposed residential developments, the proposed projects will have a significant detrimental impact on the natural setting and viewshed as seen from the beach and from the Hidden Beach County Park public access trail and overlook area. As such, the proposed developments are inconsistent with the LCP's visual resource policies, including those that specifically provide protection for mapped scenic resource areas and views from beaches and parks.

Staff recommends that the Commission deny CDPs for the proposed developments.

When the Commission denies a project, the question sometimes arises whether the Commission's action constitutes a "taking" of private property without just compensation, as this is not allowed under the Fifth Amendment of the United States Constitution or under Section 30010 of the Coastal Act. The first step in this analysis is to define the property interest against which the taking will be measured. In this case, the single "parcel" subject to a potential takings claim consists of both of the lots on which the Applicants' home is located. The denial of the Applicants' proposed residences would not constitute a taking because denial would not constitute a taking under any of the tests that the courts have identified for establishing a taking. In short, if the Commission denies the Applicants' request to demolish the existing single-family dwelling that straddles both lots and to construct a new residence on each lot, this denial would not preclude the Applicants from applying for improvements to the existing structure on the site or for continued use of that existing structure. In these circumstances, it cannot be said that the Commission has made a final and authoritative decision about the use of the project site. Therefore, the Commission's denial cannot be a taking because a taking claim is not "ripe." Also, the lots contain an existing blufftop single-family residence and associated development. That makes the property extremely valuable even after the denial of this project and provides a reasonable economic use, and thus the Commission's denial would not result in a categorical taking. Finally, the Commission's action does not constitute a taking under any of the three factors weighed by a Court under the Penn Central analysis. Consequently, the Commission's denial of the projects would be consistent with Coastal Act Section 30100 (and the United States Constitution).

3. Staff Recommendation on Substantial Issue

Staff recommends that the Commission determine that a **substantial issue** exists with respect to the grounds on which the appeals were filed. A finding of substantial issue would bring the projects under the jurisdiction of the Commission for hearing and action.

> **Motion #1.** I move that the Commission determine that Appeal Number A-3-SCO-08-029 raises no substantial issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act. I recommend a no vote.
>
> **Staff Recommendation of Substantial Issue #1.** 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 #1. The Commission hereby finds that Appeal Number A-3-SCO-08-029 presents a substantial issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act regarding consistency with the certified Local Coastal Program and/or the public access and recreation policies of the Coastal Act.

Motion #2. I move that the Commission determine that Appeal Number A-3-SCO-08-042 raises no substantial issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act. I recommend a no vote.

Staff Recommendation of Substantial Issue #2. 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 #1. The Commission hereby finds that Appeal Number A-3-SCO-08-042 presents a substantial issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act regarding consistency with the certified Local Coastal Program and/or the public access and recreation policies of the Coastal Act.

4. Staff Recommendation on CDP Applications

Staff recommends that the Commission, after public hearing, **deny** a coastal development permit for each of the proposed developments.

Motion #1. I move that the Commission approve Coastal Development Permit Number A-3-SCO-08-029 for the development proposed by the Applicants. I recommend a no vote.

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 1) the development will not conform with the policies of Chapter 3 of the Coastal Act, and 2) denial of the proposed development a) will not constitute a taking of private property for public use without payment of just compensation, and b) is an action to which the California Environmental Quality Act does not apply.

Motion #2. I move that the Commission approve Coastal Development Permit Number A-3-

SCO-08-042 for the development proposed by the Applicants. I recommend a no vote.

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 1) the development will not conform with the policies of Chapter 3 of the Coastal Act, and 2) denial of the proposed development a) will not constitute a taking of private property for public use without payment of just compensation, and b) is an action to which the California Environmental Quality Act does not apply.

Report Contents

Exhibit 9: Correspondence (Powerpoint Presentation and Additional Photos)

B. Findings and Declarations

The Commission finds and declares as follows:

1. Project Location

The proposed development sites are located atop the coastal bluff overlooking Hidden Beach at the southeast end of Bayview Drive in the unincorporated Aptos-Rio del Mar area of Santa Cruz County. The project sites consist of two lots (APNs 043-161-57 and 043-161-58). The lot line between the two APNs is straddled by an existing one-story single family dwelling (i.e., a portion of the existing single-family dwelling is located on each APN). Together the lots total about 18,419 square feet: parcel 043-161-57 is 7,985 square feet, and parcel 043-161-58 is 10,434 square feet.

The project sites are located along the blufftop at the edge of a single-family residential neighborhood with homes located upcoast and inland of the project sites. Just downcoast of the project sites are three vacant parcels, which are located along the top of the coastal bluff as it descends to a coastal arroyo.[1] Just downcoast of the arroyo is Hidden Beach County Park,[2] including its blufftop coastal overlook and its heavily-used public access path that connects to the sand at Hidden Beach proper. A second publicly-used path extends along the bluff on the upcoast side of the arroyo from Hidden Beach to Hidden Beach Way. The bluff, beach, arroyo, and park area are located between the Beach Drive (beach level) and Bayview Drive (blufftop level) residential areas upcoast and the terraced Aptos-Seascape residential area extending above the beach inland of the Via Gaviota seawall downcoast, and provide a natural landform respite from the up and down coast built environment, including because the Beach Drive and Via Gaviota neighborhoods are constructed on top of what was historically beach sand.[3]

There is an existing wood retaining wall and a shotcrete retaining wall located on the bluff face below the Applicants' property (see pages 6-7 of Exhibit 2). The Applicants do not own the property that contains these retaining walls.[4] The slope adjacent to the retaining walls has experienced recent failures and the wood retaining wall itself appears to be being undermined by slope failure and erosion. A

[1] The County approved a single-family residence on each of the three vacant parcels located southeast of the Trousdale project sites – these SFDs are also on appeal to the Commission (A-3-SCO-09-001, -002, -003).

[2] Hidden Beach County Park is a 1.5-acre public park facility maintained by the County that provides a tot play area, lawn area, picnic tables, and public parking. The park extends linearly along the arroyo edge to the blufftop overlook and sandy beach at Hidden Beach.

[3] This represents an anomaly within the Central Coast, where such beach level development is uncommon.

[4] And the property is subject to an offer to dedicate fee title borne from a settlement agreement between the Commission and the then landowner. Per the settlement agreement, the owner was permitted to construct a "bunker house" at the downcoast end of Beach Drive, provided that the owner offered to dedicate fee title to the Hidden Beach property and arroyo property to the State or other public entity to be maintained as open space for public recreational use. As a result of that settlement, this entire area, including the bluff fronting this site, was offered to the public as open space land for public recreational use. The settlement agreement and the resultant fee offer prohibit new structures or improvements within this property.

variety of shoreline protective structures, including upper bluff wooden retaining walls and upper bluff shotcrete walls, are found upcoast of the project sites.

The parcels proposed for development are designated in the LCP Land Use Plan (LUP) as Urban Low Density Residential and are zoned R-1-6 Single-Family Residential – 6,000 square foot minimum lot size.

Both lots are located within the LCP-designated and mapped scenic resource area associated with the public beach, park, and access path. See Exhibit 1 for location maps. See Exhibit 2 and Exhibit 9 for photographs of the project sites, the arroyo, the two public access paths on either side of the arroyo, and the existing upcoast and downcoast residential development.

2. Project Description

The County-approved projects include: 1) demolition of the existing one-story single-family residence that straddles the Applicants' two blufftop parcels; 2) construction of a new two-story single-family dwelling of about 5,000 square feet and an attached garage, grading to include about 98 cubic yards of cut and 40 cubic yards of fill, and removal of one tree that is 18-inches in diameter on APN 043-161-58 (County CDP 07-0117; appeal A-3-SCO-08-029); and 3) construction of a new two-story single-family dwelling of about 4,200 square feet, grading to include about 79 cubic yards of cut and 159 cubic yards of fill, and removal of two trees (38-inch diameter and 58-inch diameter) on APN 043-161-57 (County CDP 07-0325; appeal A-3-SCO-08-042).

3. Santa Cruz County CDP Approval

A-3-SCO-08-029: On May 2, 2008, the Santa Cruz County Zoning Administrator approved CDP 07-0117 which, among other things (see project description above), allows for demolition of the existing one-story residence and development of a new two-story single-family residence of about 5,000 square feet on APN 043-161-58 (see Exhibit 3A for the County's adopted conditions and findings on this project and Exhibit 4A for the County-approved project plans). Notice of the County's action on the CDP was received in the Coastal Commission's Central Coast District Office on May 21, 2008. The Coastal Commission's ten-working day appeal period for this action began on May 22, 2008 and concluded at 5 p.m. on June 5, 2008. One valid appeal (see below) was received during the appeal period.

A-3-SCO-08-042: On July 11, 2008, the Santa Cruz County Zoning Administrator approved CDP 07-03257 which, among other things (see project description above), allows for demolition of the existing one-story residence and for development of a new two-story single-family residence of about 4,200 square feet on APN 043-161-57 (see Exhibit 3B for the County's adopted conditions and findings on this project and Exhibit 4B for the County-approved project plans). Notice of the County's action on the CDP was received in the Coastal Commission's Central Coast District Office on August 5, 2008. The Coastal Commission's ten-working day appeal period for this action began on August 6, 2008 and concluded at 5 p.m. on August 19, 2008. One valid appeal (see below) was received during the appeal

period.

4. Appeal Procedures

Coastal Act Section 30603 provides for the appeal to the Coastal Commission of certain CDP decisions in jurisdictions with certified LCPs. The following categories of local CDP decisions are appealable: (a) approval of CDPs for development that is located (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 tide line 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, and (3) in a sensitive coastal resource area; or (b) for counties, approval of CDPs for development that is not designated as the principal permitted use under the LCP. In addition, any local action (approval or denial) on a CDP for a major public works project (including a publicly financed recreational facility and/or a special district development) or an energy facility is appealable to the Commission. These projects are appealable because they involve development that is located seaward of the first public road, within 300 feet of the inland extent of the beach, and within 300 feet of the blufftop edge.

The grounds for appeal under Section 30603 are limited to allegations that the development does not conform to the certified LCP or to the public access policies of the Coastal Act. Section 30625(b) of the Coastal Act requires the Commission to conduct a de novo CDP hearing on an appealed project unless a majority of the Commission finds that "no substantial issue" is raised by such allegations. Under Section 30604(b), if the Commission conducts a de novo hearing and ultimately approves a CDP for a project, the Commission must find that the proposed development is in conformity with the certified LCP. If a CDP is approved for a project that is located between the nearest public road and the sea or the shoreline of any body of water located within the coastal zone, Section 30604(c) also requires an additional specific finding that the development is in conformity with the public access and recreation policies of Chapter 3 of the Coastal Act. These projects are located between the nearest public road and the sea, and thus this additional finding would need to be made if the Commission approves the project following a de novo hearing.

The only persons qualified to testify before the Commission on the substantial issue question are the Applicants, 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 CDP determination stage of an appeal.

5. Summary of Appeal Contentions

The Appellant contends that the County-approved projects raise issues with respect to the projects' conformance with core LCP policies related to geological hazards and appropriate blufftop setbacks, and

public viewsheds. Specifically, the Appellant contends that the projects approved by the County would significantly impact the public viewshed by introducing new two-story development in a scenic resource area where there is limited existing blufftop development. The Appellant also contends that the bluff in this area is unstable and highly erosive and that the County-approved blufftop setbacks may not be adequate. The Appellant also questions whether the two parcels proposed for development are legal parcels, or if there is only one legal parcel that has been illegally divided. Please see Exhibit 5 for the complete appeal documents.

6. Substantial Issue Determination

A. Visual Resources

The LCP requires protection of public viewsheds, community character, and aesthetics within the County's coastal zone (including LCP Policies 5.10.1, 5.10.2, 5.10.3, 5.10.7 - see Exhibit 8 for relevant policies). Such policies and protections specifically protect this viewshed as a matter of "regional public importance" because of its natural beauty. The Appellant contends that the proposed project would adversely impact this significant public viewshed, inconsistent with the LCP.

The two lots proposed for redevelopment are located within an LCP-mapped scenic resource area. These lots are located within the viewshed of the beach to the south and the beach access path from Hidden Beach County Park to the east, including the park's main beach and ocean overlook area. Views to and from beaches and parks (including the public access path from Hidden Beach County Park) and significant public viewshed areas, such as this area, are protected visual resources under the LCP.

The proposed project sites are located on a section of coastal blufftop that slopes gently to the southeast toward adjacent undeveloped properties and ultimately an arroyo (see page 1 of Exhibit 2). The elevation of the two project sites ranges from about 105 feet above sea level (A-3-SCO-08-029) to about 85 feet above sea level (A-3-SCO-08-042). Upcoast from the project sites, the bluff elevation reaches about 130 feet above sea level. Thus, these lots are much more visible from the adjacent beach and nearby Hidden Beach County Park public access path compared to the blufftop lots located just upcoast on Bayview Drive that are at a higher elevation and are not located directly adjacent to Hidden Beach County Park facilities.

Given the relatively low elevation of the bluff here and the projects' proximity to Hidden Beach County Park and the associated park path and overlook, development of two two-story houses ranging in size from about 4,200 square feet to 5,000 square feet will be extremely visible from the beach, the overlook, and from the public access path. Given the topography of the project sites and the size and scale of the proposed residential developments, the proposed projects will have a detrimental impact on the natural setting and the public viewshed as seen from the beach and the park, including the overlook and the public access trail. The proposed development would not minimize viewshed disruption, would not retain ocean vistas to the maximum extent possible, would not keep non-recreational structures out of the blufftop, would not integrate development into the character of the surrounding area, would not result in development that is subordinate to the natural character of the site, and overall would not adequately protect significant public views recognized by the LCP as "areas having regional public

importance for their natural beauty" – all of which are LCP requirements (see applicable policies and standards in Exhibit 8). As such, the County-approved projects are inconsistent with the LCP's visual resource policies and substantial LCP conformance issues are raised by the County's CDP actions.

B. Geological Hazards

The LCP requires that development be sited to ensure long-term stability, including at a minimum providing a stable building site over a minimum 100-year period (as required by LUP Chapter 6 and Zoning Code Chapter 16.10 – see Exhibit 8). Per the LCP, new development must also avoid the need for shoreline armoring, with its attendant impacts. The Appellant contends that the proposed projects would be located on an actively eroding bluff and that the County-approved projects would not be sited for 100 years of minimum of stability, inconsistent with the LCP.

It appears that the County-approved projects do not meet the required LCP stability tests, and it appears that shoreline armoring would be required to protect such development in the future. Although the Applicants' geological representatives have established blufftop setbacks[5] for the residences that are in the range of about 27-32 feet, the Commission's staff geologist has analyzed the proposed projects' setbacks in terms of future potential applicable coastal hazards (including sea level rise, the coastal bluff retreat rate, and slope stability analysis) and determined that the County-approved blufftop setbacks are much too narrow and that these setbacks would need to be greatly increased to 116 feet in order to meet the LCP's minimum 100-year stability requirements (see Exhibit 6 for the Commission's staff geologist's memorandum regarding the proposed projects). As such, the County-approved projects are inconsistent with the LCP's geologic hazards requirements and substantial LCP conformance issues are raised by the County's CDP actions.

C. Lot Legality

The Appellant contends that the lots in question may not be legal. On March 16, 2006, the County found the lots to be separate legal lots. Specifically, on appeal, the Santa Cruz County Planning Department Principal Planner determined that the lots in question are legal separate lots entitled to Unconditional Certificates of Compliance. Based upon the legal description of the property and as described in the County's lot legality staff report, the lots at issue, Lots 34, 35 and 36 of Block 107, Tract No. 10 were created by a map filed on December 18, 1936. All parties agree that in 1938 a house was built across the lot line between Lots 34 and 35, with approximately 50% of the house on each lot.

In 1979 the County adopted a combination ordinance (now County Code Section 14.01.110), stating that contiguous lots under common ownership shall merge where a dwelling or commercial structure has been built across the common boundary line, and which has been taxed as one building site. The County has determined that this ordinance does not apply retroactively, and, therefore, does not apply to combine lots where structures spanning two lots were built prior to the adoption of the ordinance.

In addition, in 1983 the merger provisions of the Subdivision Map Act were changed. Specifically,

[5] The LCP requires a 100-year development setback from the blufftop edge or a minimum setback of 25 feet, whichever is greater.

Government Code Section 66424.2, which allowed local agencies to enact merger ordinances, was repealed, and Government Code Section 66451.10 was enacted, stating that the Subdivision Map Act provides the only method by which a local agency is authorized to merge parcels. Government Code Section 66451.19 sets forth the requirements for mergers which took place prior to the 1983 enactment to be recognized under state law. It provides that when a local agency had a merger ordinance that was in effect on January 1, 1984, "and a merger occurred pursuant to the ordinance prior to January 1, 1984, the local agency was required to have recorded a notice of that merger describing the parcels prior to January 1, 1986, and if the notice was not recorded within this period, the parcels are deemed to be unmerged." (9 Miller & Starr, California Real Estate Digest (3d ed. 2007), Subdivisions, Land Use Planning, and Approvals, §25:14, pp. 70-71). Commission staff has seen no evidence indicating that a notice of merger was recorded against the subject property.

In 1969, Lots 34, 35, and 36 were transferred by Grant Deed. This 1969 deed did not demonstrate any intent to combine the lots into one parcel. Nor does the 2002 transfer of the subject property to the Applicants (Lots 34, 35 and 36, excepting portions of Lots 35 and 36 which were conveyed separately in 1971) demonstrate the intent to combine these lots into one parcel.

Based on the materials provided to Commission staff to date from the County, as well as the relevant County ordinances and state statutes referenced above, it appears that the subject lots were not recombined or merged by the action of the owners or the County. Thus, the two lots that comprise the project site are legal lots. This contention does not raise a substantial issue with respect to the project's conformity with the Santa Cruz County LCP.

D. Substantial Issue Determination Conclusion

In conclusion, the County-approved projects raise substantial issues with respect to their conformance with applicable LCP provisions related to protection and enhancement of visual resources and geological hazards. Therefore, the Commission finds that a substantial issue exists with respect to the approved projects' conformance with the certified Santa Cruz County LCP, and takes jurisdiction over the CDP applications for the proposed projects.

7. Coastal Development Permit Determination

The standard of review for these applications is the Santa Cruz County certified LCP (see Exhibit 8 for applicable LCP policies and Implementation Plan (IP) standards). All Substantial Issue Determination findings above are incorporated herein by reference.

A. Geologic Conditions and Hazards

1. Applicable Policies

The LCP requires that a coastal bluff building site be stable for a minimum of 100 years in its pre-development application condition, and that any development on it be set back an adequate distance to

provide stability for 100 years. The 100 years of stability must be established through the use of appropriate setbacks and siting, and without reliance on engineering measures "such as shoreline protection structures, retaining walls, or deep piers" (IP Section 16.10.070(h(3)). Also, the LCP allows shoreline protection structures only "to protect existing structures from a significant threat" (LUP Policy 6.2.16). Thus, the LCP has a two-part 100-year stability requirement: first, there must be a portion of the site in question that itself will be stable for 100 years in a pre-development (i.e., no project) scenario, without reliance on structural development to make it so; and second, ostensibly if the first test is met, any development then introduced into the site must also be stable for 100 years without reliance on engineering measures.

On the whole, these LCP policies recognize that development is not appropriate in coastal hazard areas for which 100 years (minimum) of site and structural stability cannot be guaranteed (without relying on engineering measures) and allows shoreline protection in only very specific and limited circumstances for already existing development. See Exhibit 8 for the applicable LUP policies and IP standards.

2. Reports Submitted

The Applicant has submitted the following geologic and geotechnical engineering reports for the site:

- *Geologic Investigation, Lands of Trousdale, Aptos, California, County of Santa Cruz APN's 043-161-50* by Zinn Geology, dated August 17, 2006 (Zinn 2006).

- *Geotechnical Investigation for Lands of Trousdale, 660 Bayview Drive, Rio del Mar, California* by Pacific Crest Engineering Inc., dated August 2006 (PCEI 2006).

The following documents[6] were submitted in response to the Commission's staff geologist's initial verbal comments regarding the above reports:

- *Projecting Future Sea-Level Rise: What is a Reasonable Estimate for the Next Century?* by G.E. Weber, Geologic Consultant, dated February 24, 2009 (Weber 2/2009).

- *Response to California Coastal Commission comments, Lands of Frank, Bayview Drive, A.P.N. 043-161-51, -40, -39, Rio del Mark, Santa Cruz County, California* by Pacific Crest Engineering, Inc., dated February 26, 2009 (PCEI 2009).

- *Supplemental Analysis in Response to California Coastal Commission comments, Parcels southeast of Bayview Drive, Aptos California, County of Santa Cruz, APN's 043-161-51, -40, & -39* by Zinn Geology, dated February 26, 2009 (Zinn 2009).

The Commission's staff geologist (Dr. Mark Johnsson) reviewed the all the above documents and reports and issued a Geotechnical Review Memorandum on June 18, 2009 (Exhibit 6). Subsequent to

[6] These documents specifically reference the immediately adjacent downcoast properties, which are also on appeal to the Commission (A-3-SCO-09-001, -002, -003). The Applicants have requested that all geological and other data being obtained for the adjacent properties be used to evaluate their projects as well.

this memorandum, the Applicant submitted the following additional correspondence regarding the projects:

- *Appeal Numbers A-3-SCO-09-001, -002, -003 (Frank),* letter and attachments from G.E. Weber, Geologic Consultant, dated December 15, 2009 (Weber 12/2009).

- *Projections of Sea-Level Rise in the 21st Century,* letter from G.E. Weber, Geologic Consultant, dated February 2, 2010 (Weber 2010).

The geologic description of the site that follows derives primarily from the Zinn 2006 and PCEI 2006 reports.

3. Site Geologic Characteristics

The project site includes two lots straddled by an existing one-story single family dwelling (i.e., a portion of the existing single-family dwelling is located on each lots). The majority of the project sites are located on top of an uplifted marine terrace surface that slopes gently to the southeast toward adjacent undeveloped properties and ultimately to an arroyo. The gently sloping marine terrace surface transitions to a gently sloping inset fluvial[7] terrace surface, which continues across the adjacent undeveloped properties to the downcoast arroyo. The marine terrace also drops off, as much as 90 degrees vertical, along the coastal bluff that is located just slightly seaward of the southwestern edge of the property. The coastal bluff plunges near vertically toward the beach for about 6 to 8 feet before it inflects to a shallower gradient. During the descent to the beach, yet another inflection is encountered between 25 and 35 feet above the beach, with the slope tapering to between 37 and 40 degrees. A broad, sandy beach extends seaward at the base of the coastal bluff.

The project site lies on top of a blanket of marine terrace deposits that transition into an eastward-thickening wedge of relatively unconsolidated fluvial terrace sands up to 27 feet thick, which in turn overlie an ancestral wave-cut platform (marine terrace deposits) and an eastward-descending ancestral stream-cut terrace (fluvial terrace deposits) in the underlying Purisima formation sandstone bedrock. The coastal bluff is partially buttressed by a steeply-dipping wedge of colluvium[8] that is likely an agglomeration of many years of mass sloughing from the bluff.

Drainage at the site is primarily by sheet flow eastward toward the arroyo. No erosional landforms such as gullies, aside from the arroyo, appear to be actively developing upon the marine terrace surface on the property. Groundwater was not encountered in any of the borings across the property, which were done between 16½ and 38 feet below the ground surface. Although no groundwater was encountered, it is assumed that the groundwater perches on top of the wave-cut platform, within the marine terrace deposits, as is commonly encountered in this stretch of coastline.

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[7] Defined by www.Answers.com as "produced by the action of a river or stream."

[8] Defined by www.Answers.com as "a loose deposit of rock debris accumulated through the action of rain-wash or gravity on or at the base of a slope."

4. Stability Requirements

As stated above, the LCP requires that a coastal bluff building site be stable for a minimum of 100 years in its pre-development application condition, and that any development on it be set back an adequate distance to provide stability for 100 years. In both cases, the 100 years of stability must be established through the use of appropriate setbacks and siting, and without reliance on engineering measures. For bluff properties that are subject to erosion, the setbacks and siting must consider both the factor of safety for the overall slope as well as the expected erosion of the site over the life of the proposed development. In this case, the setbacks between the proposed residences and the edge of the coastal bluff are in the range of 27 to 32 feet. Dr. Johnsson has determined that the County-approved blufftop setbacks are inadequate for both of the project sites and that if these lots were developed the residences would be endangered by coastal erosion and bluff retreat well in advance of the LCP's 100-year minimum stability requirement. See below for a discussion of projected future coastal erosion and bluff retreat for the proposed project sites.

5. Future Sea Level Rise

The premise that sea level will continue to rise is based on a number of factors, including the warming of the earth that has taken place over the past several hundred years, and the projections that the earth will continue to warm over the next 100 years. This slow increase in temperature results in sea level rise due to thermal expansion of ocean water, which leads to a greater volume of water in the oceans, and also due to the melting of glacial ice and ice sheets, which increases the volume of the oceans as a result of the addition of water to the oceans. Estimating sea level rise is important with respect to the proposed projects because such changes in sea level will exacerbate the frequency with which the ocean waves, including storm waves, impact the coastal bluff, resulting in accelerated coastal erosion and an increase in the rate of bluff retreat at the site.

The Applicants' sea level rise report (Weber 2/2009 – see pages 1-8 of Exhibit 7) evaluated the amount of sea level rise that may occur over the next 100 years. This report referenced recent literature on sea level rise while emphasizing the uncertainty in predicting future sea level rise. Regarding uncertainty in estimating future sea level rise, this report states that the rates of change in the warming of the atmosphere and the oceans, and the relationship between these rates of change and the volume of carbon dioxide in the atmosphere, are not clear, and therefore all projections of the total amount of sea level rise that will occur in the next 100 years are based on interpretations and assumptions. The Weber report determined that the least conservative estimate for sea-level rise should apply to single-family residences (such as the proposed development) while "critical facilities" should assume a more conservative (i.e. higher rate) of sea level rise. Weber concluded that:

> *…a reasonable assumption for sea level rise in the next century, to be applied to geological hazard and risk analyses for single family residences…should be equal to or greater than the total sea level rise in the 20th century and consistent with the rate of rise (acceleration) over the past 20-30 years. This number would lie someplace between 300-340 mm, approximately 11 to 13 inches.*

Dr. Johnsson notes in his memorandum (Exhibit 6) that this amount of sea level rise is at the low end of

what most researchers are now predicting for sea level rise over the next 100 years, and that some of the assumptions in reports cited in the Weber report already appear to be outdated. The memorandum also notes that the Commission has recently been recommending that analysis for the effects of sea level rise with respect to proposed development assume a minimum rate of 3 feet of sea level rise per century and evaluate higher rates in order to determine the amount of sea level rise that could put the proposed project at risk. In this case, Dr. Johnsson estimates a minimum of 3 feet of sea level rise over the next century. Currently, the ocean reaches the base of the bluff during storms or periods of higher tides (see pages 8-9 of Exhibit 2 and pages 17-19 of Exhibit 9 for photographs). For this site, the expected result of an increase in sea level is that the higher water level will result in wave/tidal impacts against the bluff taking place on a more frequent basis. An increase in the frequency of waves hitting the bluff face will lead to greater erosion of the bluff and an increase in the bluff retreat rate, which will lead to the proposed residences being endangered by erosion well before 100 years.

6. Coastal Bluff Retreat

The retreat of the slopes and the bluffs along this portion of Monterey Bay results from erosion, which occurs at the base of sea cliffs by hydraulic impact and scour from wave action, and episodic landsliding processes associated with intense rainfall and seismic shaking. Using aerial photographs, the Zinn 2006 report found that the top of the coastal bluff at the project site has eroded at an average rate of between 0.09 and 0.30 feet per year since 1928. Regarding landslides, this report noted that the upper coastal bluff above the beach has retreated episodically through the process of terrestrial landsliding.[9] In terms of long-term retreat rates, the report ignored the effect of the retaining walls[10] constructed on the bluff below the properties because the walls will likely be undermined when the base of the bluff retreats.

According to Dr. Johnsson's memorandum (Exhibit 6):

> *The Zinn reports assume that in order for the proposed structures to be threatened, the beach fronting the coastal bluff would need to be removed by coastal erosion or drowned by rising sea level; then the colluvial wedge at the base of the bluff would need to be eroded; and finally the coastal bluff would need to be eroded until a vertical projection of the base of the bluff would intersect the buildings' foundations. Working backwards from the latter condition, and assuming a bedrock erosion rate of 1 to 2 feet per year, the reports* [specifically the Zinn 2009 report] *estimate the buildings sited as proposed would be threatened in 120.5 to 176 years (for the Trousdale parcels)...*

Dr. Johnsson disagrees with a number of assumptions built into the Applicants' analysis. First, he notes that the reports by Zinn Geology use the estimated sea level rise figure from the Weber 2/2009 (11 to 13 inches over the next century) instead of the 3 feet of sea level rise more commonly accepted for Commission siting decisions. Second, Dr. Johnsson notes that the assumption that the buildings will be threatened by upper bluff retreat at the same time that the bedrock has been eroded to a point located vertically beneath the buildings' foundations is inappropriate. Coastal bluffs are typically not vertical. In

[9] And such a landslide occurred just downcoast of the site in early 2009 – see page 10 of Exhibit 6 for a photograph of the landslide area.

[10] Id (the walls are not on the Applicants' properties).

fact, as described in the Zinn 2006 report, although the bluff at this site plunges near vertically toward the beach for about 6 to 8 feet, it then inflects to a shallower gradient. During the descent to the beach, yet another inflection is encountered between 25 and 35 feet above the beach, with the slope tapering to between 37 and 40 degrees. Thus, the bluff at this location is not vertical but rather exhibits retreat that is typical and indicative of a combination of erosive processes that leave the bluff materials with insufficient strength to retain a vertical profile. In short, the upper bluff edge will intersect the buildings' foundations long before the toe of the bluff lies vertically beneath the foundations.

Third, the residences will be threatened by erosion long before the upper bluff edge intersects the foundations. As mentioned above, the LCP requires that stability be demonstrated for the 100-year lifetime of the structure. The industry standard definition of stability for slopes is typically taken as a factor of safety against sliding of 1.5, meaning that the forces tending to resist slope movement (essentially the strength of the bluff materials) must exceed forces tending to initiate slope movement (essentially the weight of the bluff materials as projected onto the most likely slide plane) by 50%. As discussed below, this level of stability is achieved at a point some distance landward of the bluff edge.

Although the colluvial wedge at the base of the bluff will help to reduce the erosion rate of the bluff, its gradual removal will result in increased instability of the upper bluff. This increased instability may result in future bluff failures which will cause the bluff to retreat far faster than the 1 to 2 feet per year long-term average cited by the Applicants in the Zinn 2009 report. According to Dr. Johnsson, it is far preferable to evaluate the movement of the upper bluff edge through time and, taking into account the distance from the upper bluff edge at which a factor of safety of 1.5 is achieved, evaluate setbacks with respect to the upper bluff edge rather than the location of the base of the bluff.

7. Slope Stability

The field of slope stability encompasses the analysis of static and dynamic stability of natural and artificial slopes. If the forces available to resist movement are greater than the forces driving movement, the slope is considered stable. A factor of safety is calculated by dividing the forces resisting movement by the forces driving movement. A higher factor of safety means that a slope is less likely to fail; a lower factor of safety indicates slope instability. Generally, a factor of safety of 1.5 is considered suitable for new development (sometimes referred to as the "static" factor of safety). In earthquake-prone areas, such as the project site, an additional analysis is typically included where the seismic forces from a potential earthquake are added to the analysis (sometimes referred to as the "pseudo-static" factor of safety). In this case, a pseudo-static factor of safety of 1.1 is generally considered adequate.

The initial slope stability analysis for the project site (PCEI 2006) did not determine a minimum factor of safety for all potential failure modes. The calculated factor of safety for the assumed failure surface was 1.89 for the project site. According to Dr. Johnsson, this is a higher factor of safety than typically reported for coastal bluffs of this height and inclination. Indeed, a failure of the upper bluff on the properties directly downcoast of the project sites that occurred in early 2009 (see page 10 of Exhibit 6) demonstrates that the bluffs at this location do not have such an unusually high factor of safety. Such a bluff failure indicates that, at that time, the forces driving the slide exceeded the forces resisting the slide, meaning that the factor of safety dropped below 1.0.

Dr. Johnsson requested that the project's geotechnical engineer provide additional information regarding the calculation of the factor of safety with respect to the soil strength parameters used and the minimum factor of safety for a circular failure surface. PCEI 2009 subsequently provided supporting materials for the soil strength parameters, and Dr. Johnsson reviewed these materials and concluded the parameters were reasonable. The PCEI 2009 report contained an analysis of a circular failure of the upper bluff terrace deposits (which is the most likely type of failure to occur and the analysis that was requested by Dr. Johnsson) but did not include an analysis of the global stability of the entire bluff. In any event, the results of these slope stability analyses indicate that a factor of safety of 1.5 is reached about 18 feet landward of the bluff edge on the Trousdale parcels. A pseudo-static analysis (used to approximate stability during a seismic event) showed that the 1.1 factor of safety line is seaward of this point (located about 8 feet landward of the bluff edge), indicating that the static condition is determinative for stability.

8. Regional Studies by the U.S. Geological Survey and the California Energy Commission

In 2007 the U.S. Geological Survey released a report that evaluated the long-term bluff erosion rate along the California coast. For the stretch of coast located in the area of the project sites, the rates were generally 0.66 to 0.98 feet per year.[11] These numbers are consistent with those previously reported by other experts in the field[12] and are consistent with those used by the Applicants' geologist (Zinn 2009). In March 2009, the California Energy Commission released a report that evaluated the impacts of future sea level rise on the California coast. This report cited sea-level rise forecasts between 1.0 meter (about 3 feet) and 1.4 meters (about 4.5 feet) of rise by 2100. The report included a set of hazard maps showing the area at high risk from coastal erosion using the erosion rate from the 2007 USGS study in combination with the predicted increase in wave attack based on the 1.4 meter sea-level rise scenario. For the project sites, this "erosion high hazard area" included the first 112 feet inland from the current bluff edge.

9. Hazards Conclusion

Given all of the above, Dr. Johnsson concludes that the recommended coastal blufftop setback for the project sites would be 116 feet. This is based on using the long-term average annual erosion rate of 0.98 feet per year from the USGS study.[13] This rate of erosion would equal 98 feet of coastal bluff erosion over 100 years. Additionally, the slope stability analysis concluded that a static factor of safety of 1.5 is attained about 18 feet landward of the present bluff edge on the project sites. Using the method outlined by Dr. Johnsson, these two numbers (98 feet and 18 feet) are added together to create the appropriate coastal blufftop setback of 116 feet.

The County-approved blufftop setbacks for the projects range from about 27 to 32 feet. As discussed above, the LCP requires that a site demonstrate a minimum of 100 years of stability for new

[11] Hapke, C.J., and Reid, D., 2007, National Assessment of Shoreline Change, Part 4: Historical Coastal Cliff Retreat along the California Coast, U.S. Geological Survey.

[12] For example: Griggs, G., Patsch, K., and Savoy, L., 2005, *Living with the changing California Coast:* Berkeley, California, University of California Press.

[13] The higher value is based on the precautionary principle that dictates using the worst case scenario where uncertainty is present, and taking into account a potential increase in the historic erosion rate due to accelerated sea level rise.

development.[14] At the 100-year minimum threshold, the 116-foot setback will render both lots undevelopable (i.e., the required setback will occupy essentially all of these two lots), and there are not any feasible project modifications that could make the projects meet the required blufftop setback. As such, the projects are inconsistent with the geological hazards requirements of the Santa Cruz County LCP and the projects must be denied.

B. Visual Resources

1. Applicable Policies

The LCP has multiple provisions that require development to be sited and designed to ensure protection of significant visual resources, including views within mapped scenic resource areas. Such policies and protections specifically protect areas having regional public importance for their natural beauty by ensuring that new development is appropriately designed and constructed to have minimal to no adverse impact upon identified visual resources. Views from beaches and parks (including the public access path from Hidden Beach County Park) are protected visual resources under the LCP.

2. Analysis

The property proposed for redevelopment is located within an LCP-mapped scenic resource area. This property is located within the public beach viewshed as well as the public beach viewshed associated with the public access path and overlook components of Hidden Beach County Park.

The proposed project sites are located on a section of coastal blufftop that slopes gently to the southeast toward adjacent undeveloped properties and ultimately an arroyo (see page 1 of Exhibit 2). The elevation of the two project sites ranges from about 105 above sea level (A-3-SCO-08-029) to about 85 feet above sea level (A-3-SCO-08-042). Upcoast from the project sites, the bluff elevation reaches about 130 feet above sea level. Thus, these lots are much more visible from the adjacent beach and nearby Hidden Beach County Park public access path and overlook compared to the blufftop lots located just upcoast on Bayview Drive that are at a higher elevation and are not located directly adjacent to the components of Hidden Beach County Park.

Given the relatively low elevation of the bluff here and the projects' proximity to Hidden Beach County Park and the associated park path and overlook, development of two two-story houses ranging in size from about 4,200 square feet to 5,000 square feet will be extremely visible from the beach, the overlook, and from the public access path. Given the topography of the project sites and the size and scale of the proposed residential developments, the proposed projects will have a detrimental impact on the natural setting and the public viewshed as seen from the beach and the park, including the overlook and the public access trail. The proposed development would not minimize viewshed disruption, would not retain ocean vistas to the maximum extent possible, would not keep non-recreational structures out of

[14] Although, of course, 100 years is the minimum, and a larger number of years could be used to generate appropriate setbacks, in this case the 100-year setback, or 116 feet, is appropriate for LCP site stability purposes, including because this is the method typically applied by the Commission and because such a setback would move residential development inland sufficiently to address the LCP's long-term stability requirements.

the blufftop, would not integrate development into the character of the surrounding area, would not result in development that is subordinate to the natural character of the site, and overall would not adequately protect significant public views recognized by the LCP as "areas having regional public importance for their natural beauty" – all of which are LCP requirements (see applicable policies and IP standards in Exhibit 8). Thus, the proposed residences cannot be approved as proposed. Even a substantially reduced-scale development would raise similar concerns at this location, and such substantially-reduced development could not be found consistent with the LCP's coastal hazard requirements. As a result, the proposed developments cannot be found consistent with the LCP and must be denied.

D. CDP Determination Conclusion – Denial of A-3-SCO-09-002 and A-3-SCO-09-003

1. Denial

As discussed in the above findings, the proposed residential developments are inconsistent with the policies of the LCP. When the Commission reviews a proposed project that is inconsistent with the certified LCP, there are several options available to the Commission. In many cases, the Commission will approve the project but impose reasonable terms and conditions to bring the project into conformance with the LCP. In other cases, the range of possible changes is so significant as to make conditioned approval infeasible. In this situation, the Commission denies the proposed projects because the proposed projects are significantly out of conformance with the LCP, due to inadequate coastal blufftop setbacks and unavoidable impacts on visual resources. For these two lots there are no feasible conditions that could bring the projects into conformance with the LCP, and there are no obvious feasible alternatives consistent with the LCP that the Commission might suggest to the Applicants. Thus, the Commission is denying these two projects without further guidance to the Applicants.

2. Takings

As discussed above, the two houses proposed for development are inconsistent with the LCP and must be denied. When the Commission denies a project, a question may arise as to whether the denial results in an unconstitutional "taking" of the applicant's property without payment of just compensation. Coastal Act Section 30010 addresses takings and states as follows:

> *The Legislature hereby finds and declares that this division is not intended, and shall not be construed as authorizing the commission, port governing body, or local government acting pursuant to this division to exercise their power to grant or deny a permit in a manner which will take or damage private property for public use, without the payment of just compensation therefor. This section is not intended to increase or decrease the rights of any owner of property under the Constitution of the State of California or the United States.*

Consequently, although the Commission is not a court and may not ultimately adjudicate whether its action constitutes a taking, the Coastal Act imposes on the Commission the duty to assess whether its action might constitute a taking so that the Commission may take steps to avoid it. If the Commission

concludes that its action does not constitute a taking, then it may deny the project while still complying with Section 30010. If the Commission concludes that its action might constitute a taking, then Section 30010 requires the Commission to approve some level of development, even if the development is otherwise inconsistent with LCP or Coastal Act policies. In this latter situation, the Commission will propose modifications to the development to minimize its LCP or Coastal Act inconsistencies while still allowing some reasonable amount of development.[15]

In the remainder of this section, the Commission considers whether, for purposes of compliance with Section 30010, its denial of the project would constitute a taking. The Commission finds that, under any of the prevailing takings tests, the denial of the project would not constitute a taking.

General Takings Principles

The Fifth Amendment of the United States Constitution provides that private property shall not "be taken for public use, without just compensation."[16] Article 1, section 19 of the California Constitution provides that "[p]rivate property may be taken or damaged for public use only when just compensation…has first been paid to, or into court for, the owner."

The idea that the Fifth Amendment proscribes more than the direct appropriation of property is usually traced to *Pennsylvania Coal Co. v. Mahon* ((1922) 260 U.S. 393). Since *Pennsylvania Coal*, most of the takings cases in land use law have fallen into two categories (see *Yee v. City of Escondido* (1992) 503 U.S. 519, 522-523). First, there are the cases in which government authorizes a physical occupation of property (see, e.g., *Loretto v. Teleprompter Manhattan CATV Corp.* (1982) 458 U.S. 419). Second, there are the cases in which government merely regulates the use of property (*Yee*, *supra*, 503 U.S. at pp. 522-523). A taking is less likely to be found when the interference with property is an application of a regulatory program rather than a physical appropriation (e.g., *Keystone Bituminous Coal Ass'n. v. DeBenedictis* (1987) 480 U.S. 470, 488-489, fn. 18). The Commission's actions here would be evaluated under the standards for a regulatory taking.

The Supreme Court itself has recognized that case law offers little insight into when, and under what circumstances, a given regulation may be seen as going "too far" (*Lucas v. South Carolina Coastal Council* (1992) 505 U.S. 1003, 1014). In its recent takings cases, however, the Court has identified two circumstances in which a regulatory taking might occur. The first is the "categorical" formulation identified in *Lucas, supra.* In *Lucas*, the Court found that regulation that denied all economically viable use of property was a taking without a "case specific" inquiry into the public interest involved (*Id*. at p. 1014). The *Lucas* court emphasized, however, that this category is extremely narrow, applicable only "in the extraordinary circumstance when *no* productive or economically beneficial use of land is permitted" or the "relatively rare situations where the government has deprived a landowner of all

[15] For example, in CDP A-3-SCO-00-033 (Hinman), the Commission in 2000 approved residential development on a site that was entirely ESHA even though it was not resource dependent development and thus was inconsistent with the LCP (which was the standard of review in that case).

[16] The Fifth Amendment was made applicable to the States by the Fourteenth Amendment (see *Chicago, B. & Q. R. Co. v. Chicago* (1897) 166 U.S. 226).

economically beneficial uses" or rendered it "valueless" (*Id.* at pp. 1016-1017 [emphasis in original]) (see *Riverside Bayview Homes, supra,* 474 U.S. at p. 126 [regulatory takings occur only under "extreme circumstances"]).[17]

The second circumstance in which a regulatory taking might occur is under the three-part, ad hoc test identified in *Penn Central Transportation Co.* (*Penn Central*) *v. New York* (1978) 438 U.S. 104, 124. This test generally requires an examination into the character of the government action, its economic impact, and its interference with reasonable, investment-backed expectations (*Id*. at p. 134; *Ruckelshaus v. Monsanto Co.* (1984) 467 U.S. 986, 1005). In *Palazzolo v. Rhode Island* (2001) 533 U.S. 606, the Court again acknowledged that the *Lucas* categorical test and the three-part *Penn Central* test were the two basic situations in which a regulatory taking might be found to occur (see *id.* [rejecting *Lucas* categorical test where property retained value following regulation but remanding for further consideration under *Penn Central*]).

Before a Landowner May Establish a Taking, Government Must Have Made a Final Determination Concerning the Use to Which the Property May Be Put

Before a landowner may seek to establish a taking under either the Lucas or Penn Central formulations, however, it must demonstrate that the taking claim is "ripe" for review. This means that the takings claimant must show that government has made a "final and authoritative" decision about the use of the property (e.g., *Williamson County Regional Planning Com. v. Hamilton Bank* (1985) 473 U.S. 172; *MacDonald, Sommer & Frates v. County of Yolo* (1986) 477 U.S. 340, 348). Premature adjudication of a takings claim is highly disfavored, and the Supreme Court's cases "uniformly reflect an insistence on knowing the nature and extent of permitted development before adjudicating the constitutionality of the regulations that purport to limit it" (*Id.* at p. 351). Except in the rare instance where reapplication would be futile, the courts generally require that an applicant resubmit at least one application for a modified project before it will find that the taking claim is ripe for review (e.g., *McDonald, supra*).

In this case, although the Commission has denied the Applicants' request to demolish the existing single-family dwelling that straddles both parcels and construct a new residence on each parcel, the Commission's denial does not preclude the Applicants from applying for improvements to the existing structure on the site or for continued use of that existing structure. In these circumstances, it cannot be said that the Commission has made a final and authoritative decision about the use of the project site. Therefore, the Commission's denial cannot be a taking because a taking claim is not "ripe."

Even if the Taking Claim Were Ripe, the Commission's Action Would Not Constitute a Taking

As a threshold matter, before a taking claim can be analyzed it is necessary to define the parcel of property against which the taking claim will be measured. In most cases, this is not an issue because there is a single, readily identifiable parcel of property on which development is proposed. The issue is

[17] Even where the challenged regulatory act falls into this category, government may avoid a taking if the restriction inheres in the title of the property itself; that is, background principles of state property and nuisance law would have allowed government to achieve the results sought by the regulation (*Lucas, supra,* 505 U.S. at pp. 1028-1036).

complicated in cases where the landowner owns or controls adjacent or contiguous parcels that are related to the proposed development. In these circumstances, courts will analyze whether the lots are sufficiently related so that they should be aggregated as a single parcel for takings purposes. In determining whether lots should be aggregated, courts have looked to a number of factors such as unity of ownership, the degree of contiguity, the dates of acquisition and the extent to which the parcel has been treated as a single unit (e.g., *District Intown Properties, Ltd. v. District of Columbia* (D.C.Cir.1999) 198 F.3d 874, 879-880) [nine individual lots treated as single parcel for takings purposes]; *Ciampitti v. United States* (Cl.Ct. (1991) 22 Cl.Ct. 310, 318).

Applying these factors, the Commission concludes that the property to be analyzed for takings purpose is a single parcel comprised of two lots (APNs 043-161-57 and 043-161-58), which are each proposed for development with a single-family residence after the existing residence that straddles the lots is demolished. There are many reasons to support this. First, this parcel has been treated as a single unit since at least 1938, when the existing house was constructed almost equally across the two parcels (i.e. about 50% of the house is located on each lot). The Applicants purchased the entire property and the existing house for a single purchase price, and the parties to the sale did not assign separate values or purchase prices to the two lots. Second, both lots were purchased by the Applicants at the same time, so the date of acquisition supports aggregation. Third, the two lots are contiguous, framed by Bayview Drive inland and the bluff and the beach seaward, and are subject to the same local land use designation (R-UL, Residential – Urban Low Density) and zoning (R-1-6). Finally, there is unity of ownership because the Applicants purchased both lots and still currently own both lots.[18]

In summary on this point, the takings doctrine treats APN 043-161-57 and APN 043-161-58 as a single parcel for the purpose of determining whether a taking occurred. Because this single parcel contains a residential structure and provides the Applicants substantial use of both lots, the Commission's denial of demolition of the existing residence that straddles both lots and construction of two new houses, one on each lot, is not a taking under any formulation of the takings doctrine. This analysis follows.

The Denial of the Project Would Not Constitute a Categorical Taking

As discussed, the first test is whether there has been a categorical taking of property under the *Lucas* standards. To constitute a categorical taking, the regulation must deny all economically viable use of property; in other words, it must render the property "valueless" (*Lucas, supra,* 505 U.S. at p. 1012). If the property retains any value following the Government's action, the *Lucas* categorical taking formulation is unavailable and the property owner must establish a taking under the three-part Penn Central test (see *Tahoe-Sierra Pres. Council, Inc. v. Tahoe Reg'l Planning Agency* (2002) 535 U.S. 302, 330; *Palazollo, supra,* 533 U.S. at pp. 630-632). Because permit decisions rarely render property "valueless", courts seldom find that permit decisions constitute takings under the *Lucas* standard.

[18] While the Applicants are currently on title for both lots, there was apparently some sort of transfer of a 50% interest in one of the lots in 2008, after this appeal was filed. Based on the recorded grant deed, in 2008, the Applicants granted a 50% interest in APN 043-161-57 to another party (Trent and Michele West). The documentary transfer tax on this grant was $0.

In *Norman v. US*, the court found that "if there is no destruction of *all* use, then there is no categorical taking" (*Norman v. US*, (2004) 63 Fed.Cl. 231, 258. [emphasis in original]). There is no categorical taking of property even if the government takes away a property's most beneficial use. (*Ibid.*) "[T]he destruction of one "strand of the bundle [of property rights] is not a taking. Only where Congress takes away every beneficial use does a categorical taking occur" (*Maritrans, Inc. v. United States* (2003) 342 F.3d 1344, 1354). In *Maritrans*, the Federal Circuit found no categorical taking of property where a statute limited plaintiff's use of its single hull tank barges but plaintiff still had some other beneficial use of its barges for shipping operations. (Id.) Moreover, in *Cooley v. United States* ((2003) 324 F.3d 1297, 1305), the court found no categorical taking when the Corps of Engineers denied a Section 404 wetland fill permit, resulting in a 98.8% decrease in the economic value of plaintiff's property.

In this case, the relevant parcel (including both lots) contains an existing blufftop single-family residence and associated development. That makes the property extremely valuable even after the denial of this project, and there is no categorical taking.

Therefore, the Commission's denial of demolition of the existing residence and construction of two new residences leaves the Applicants with significant uses, all of which have economic value to the Applicants, for which the Applicants would (and did) pay valuable consideration. In these circumstances, the Commission's denial does not render APN 043-161-57 and APN 043-161-58 valueless and does not constitute a categorical taking under *Lucas.*

The Denial of the Permit is Not a Taking Under the Ad Hoc *Penn Central* Test

If a regulatory decision does not constitute a taking under *Lucas*, a court may consider whether the permit decision would constitute a taking under the ad hoc inquiry stated in *Penn Central Transp. Co. v. New York City* ((1978) 438 U.S. 104, 123-125). This ad hoc inquiry generally requires an examination into factors such as the character of the government action, its economic impact, and its interference with reasonable, investment-backed expectations. When applied to the facts of this case, each of these factors demonstrates that the Commission's denial is not a taking.

Reasonable Investment-Backed Expectations. This absence of reasonable investment-backed expectations is usually dispositive of a takings claim under the *Penn Central* standards (*Ruckelshaus v. Monsanto Co.* (1984) 467 U.S. 986, 1005, 1008-1009). The reasonableness of an investment-backed expectation must be based on more than a "unilateral expectation or an abstract need" (*Webb's Fabulous Pharmacies, Inc. v. Beckwith* (1980) 449 U.S. 155, 161). In addition, a government action that prevents an applicant from either pursuing the most profitable or "the highest and best use" of his property does not, in and of itself, constitute a taking (*MacLeod v. County of Santa Clara*, (1984) 749 F.2d 541, 547-548, *cert. denied*, 472 U.S. 109 (1985)). In the case of this project, the Applicants cannot show that the denial of their proposal to demolish the existing residence and construct a new residential structure on each lot deprives them of their reasonable investment-backed expectations.

As discussed above, when the Applicants purchased the property, the entire property had a single APN number (APN 043-161-50). Subsequent to the purchase of the property, the Applicants received an unconditional certificate of compliance from the County to establish the legality of the two lots known

as APN 043-161-50, which resulted in the designation of APN 043-161-57 and APN 043-161-58. The Applicants purchased the entire property, which included an approximately 3,500 square foot residence (APN 043-161-50) on an 18,419 square foot lot,[19] for a single purchase price of $2,600,000 in 2002.[20]

When the Applicants purchased the property in 2002, the entire site was already being used to support the existing residential development that straddled both lots, leading a reasonable person to conclude that that was the appropriate use of the lots. A reasonable person also would have viewed the lots and investigated the physical constraints to redevelopment. This investigation would have revealed the lots' hazardous location atop an actively eroding bluff.

A reasonable person also would have investigated the regulatory constraints regarding redevelopment of the site that existed at the time, including the relevant LCP provisions applicable to the site (e.g., geologic hazards and required setbacks, visual resources, etc.). When the Applicants purchased the property, the LCP prohibited new development of the type proposed in coastal hazard areas such as this site. LCP Policies 5.10.6 and 6.2.15 state, respectively:

> ***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.*
>
> ***6.2.15 - New Development on Existing Lots of Record:*** *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.*

In other words, in an LCP-mapped scenic resource area, such as the proposed project sites, development must protect visual resources to the maximum extent feasible, and such development must be stable for a minimum of 100 years. A reasonable person would have investigated the applicable LCP policies and determined their impact on the potential development of these lots. Had the Applicants undertaken this investigation, they would have known that the LCP prohibited redevelopment of the lots that they purchased in the manner proposed by the Applicants (i.e., construction of two new single-family dwellings). Also, real estate agents and sellers familiar with the site likely would have assumed that the buyers were buying the property for its existing residential use, which has been in effect since the late 1930s, instead of for the purpose of demolition of the existing residence and redevelopment of the site

[19] This square footage includes both lots.

[20] In 2008, the Applicants granted a 50% interest in APN 043-161-57 to another party. The documentary transfer tax on this grant was $0. The Applicants retain ownership of 50% of APN 043-161-57, including the portion of the house that is located on this parcel.

with two residences. Given these considerations, a purchaser of this property should not have expected to be able to develop two homes on this site.

Ultimately, the effect of the Commission's action is to prevent the Applicants from constructing two separate homes, but it allows them to continue to use their property in the manner in which it was used when they purchased it. The Applicants are still free to reside in their single-family residence or to sell the home and lots as a unit, as they have been bought and sold for more than 70 years. While the Commission's action may not allow the Applicants to obtain different, potentially more profitable use of these lots, courts have routinely rejected landowners' attempts to satisfy the reasonable investment-backed expectation element with speculative profit expectations, finding that the Fifth Amendment does not protect such expectations (*Andrus v. Allard* (1979) 444 U.S. 51, 66; *Penn Central*, *supra*, 438 U.S. at p. 130; *Macleod*, 749 F.2d at pp. 547-549). Thus, the Commission's action merely prohibits the Applicants from pursuing an additional use of their property, but it does not prevent them from continuing to use it for its original purpose – one single-family residence.

In summary on this point, the Applicants did not have a reasonable, investment-backed expectation that they could demolish the existing residence and construct two new residences on the site.

Economic Impact. The second prong of the *Penn Central* analysis requires an assessment of the economic impact of the regulatory action on the Applicants' property. Although a landowner is not required to demonstrate that the regulatory action destroyed all of the property's value, the landowner must demonstrate that the value of the property has been very substantially diminished (see *Tahoe-Sierra Pres. Council, Inc., supra,* [citing *William C. Haas v. City and County of San Francisco* (9th Cir. 1979) 605 F.2d 1117 (diminution of property's value by 95% not a taking)]; *Rith Energy v. United States* (Fed.Cir. 2001) 270 F.3d 1347 [applying *Penn Central*, court finds that diminution of property's value by 91% not a taking]). In this case, the evidence demonstrates that the Commission's action would likely have little impact on the value of the Applicants' property, and that at a minimum it would not create such diminution in value to constitute a taking.

The Applicants acquired the property, including the existing residence, for $2,600,000 and, even after the Commission's actions, the Applicants retain an approximately 3,500 square foot blufftop ocean-view single-family dwelling that straddles the two lots.

The following chart of single-family home sales prices for blufftop ocean view homes along the immediate shoreline located on Bayview Drive and nearby Seaview Drive and Kingsbury Drive in Aptos from 2006 to 2009 shows the prices for single-family homes on larger lots in this area.

Address	Year Sold	Sale Price	Lot Square Footage
426 Seaview	2009	$3,500,000	18,210
337 Kingsbury	2008	$2,900,000	12,632
313 Kingsbury	2008	$2,400,000	13,939
307 Kingsbury	2008	$2,810,000	11,326
611 Bayview	2007	$1,095,000	8,276

668 Bayview	2007	$1,100,000	6,970
350 Kingsbury	2006	$1,850,000	6,534
678 Bayview	2005	$950,000	6,098
453 Seaview	2005	$2,150,000	8,276
334 Kingsbury	2005	$1,300,000	6,534
352 Kingsbury	2005	$1,000,000	13,504

Source: Santa Cruz County Assessor's Office Transaction Database and www.realquest.com.

The only property with approximately the same square footage as the Applicant's property sold in 2009, after the recent economic downturn for $3.5 million. A smaller property, at 307 Kingsbury Drive, sold for $2.8 million in 2008 (it was purchased for approximately $2 million in 2002, the same year the Applicants purchased their home). Similarly, homes at 347 Kingsbury and 655 Bayview also increased significantly in value between 2003 and 2006 (approximately $325,000 and $800,000, respectively). Although fluctuations in the real estate market are to be expected, the available data show that the Applicants' property has likely at least retained its value as a single-family residence or that it has increased in value since 2002. Thus, even after the Commission's denial of two separate single-family dwellings, the Applicants retain significant value in their real estate, and they cannot demonstrate that the Commission's action has so diminished the value of their property interest that it constitutes a taking of their property without just compensation.

These lots continue to retain their value because of the lots' location and the existing residential use. The Commission's action does not appear to have a substantial impact on the value of the lots, and it has a far smaller economic impact than other regulatory actions for which the courts have rejected taking claims.

Ad-Hoc Takings: Character of the Commission's Action. The final prong of the *Penn Centr*al test requires a consideration of the character or nature of the regulatory action. A regulatory action that is an exercise of the police power designed to protect the public's health, safety and welfare is much less likely to effect a taking (*Keystone Bituminous Coal Ass'n, supra,* 480 U.S. at pp. 488-490; *Penn Central, supra*, 438 U.S. at p. 127) than, for example, a government action that is more like a physical appropriation of property (see *Loretto, supra,* 458 U.S. 419).

In this case, the Commission's denial of a portion of the Applicant's proposal promotes important policies that protect the public's health, safety and welfare. Detailed earlier in this report, these policies include the fostering of public safety from geologic and physical hazards, and the preservation of scenic resources and character. At the same time, the Commission's action involves no physical occupation or appropriation of the Applicant's property interests. Consequently, application of the third prong of *Penn Central* strongly weighs against a finding that the denial of this project constitutes a taking.

For all of these reasons, the Commission's denial of this project would not constitute a taking under the ad hoc *Penn Central* standards.

3. Conclusion

For all of the above reasons, the Commission concludes that its denial of the Applicants' proposal would not constitute a taking and therefore is consistent with Coastal Act Section 30010.

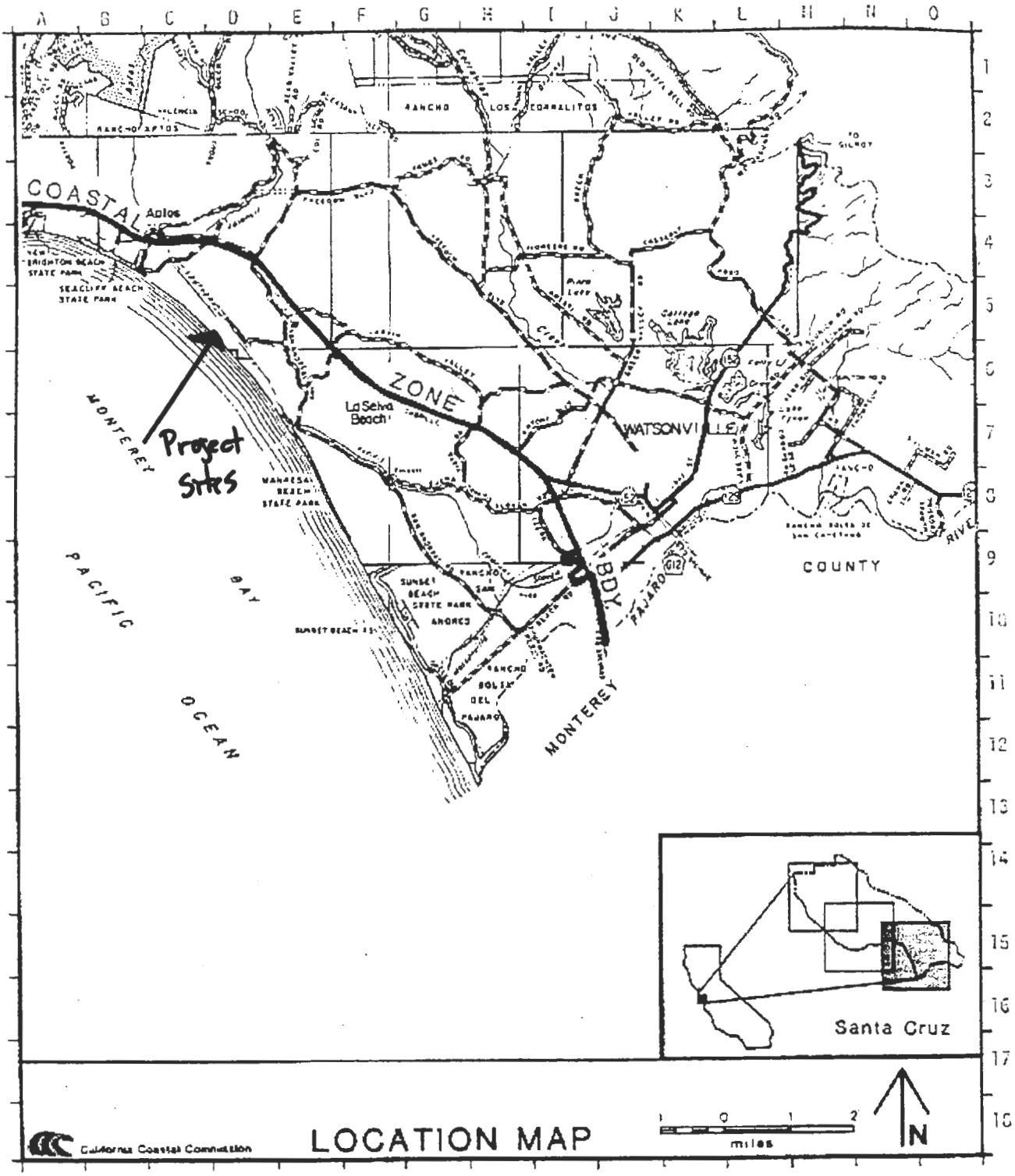
8. California Environmental Quality Act (CEQA)

Public Resources Code (CEQA) Section 21080(b)(5) and Sections 15270(a) and 15042 (CEQA Guidelines) of Title 14 of the California Code of Regulations (14 CCR) state in applicable part:

> ***CEQA Guidelines (14 CCR) Section 15042. Authority to Disapprove Projects.*** *[Relevant Portion.] A public agency may disapprove a project if necessary in order to avoid one or more significant effects on the environment that would occur if the project were approved as proposed.*
>
> ***Public Resources Code (CEQA) Section 21080(b)(5). Division Application and Nonapplication.*** *…(b) This division does not apply to any of the following activities: …(5) Projects which a public agency rejects or disapproves.*
>
> ***CEQA Guidelines (14 CCR) Section 15270(a). Projects Which are Disapproved.*** *(a) CEQA does not apply to projects which a public agency rejects or disapproves.*

Section 13096 (14 CCR) requires that a specific finding be made in conjunction with coastal development permit applications about the consistency of the application with any applicable requirements of CEQA. This staff report has discussed the relevant coastal resource issues with the proposals. All public comments received to date have been addressed in the findings above. All above findings are incorporated herein in their entirety by reference. As detailed in the findings above, the proposed project would have significant adverse effects on the environment as that term is understood in a CEQA context.

Pursuant to CEQA Guidelines (14 CCR) Section 15042 "a public agency may disapprove a project if necessary in order to avoid one or more significant effects on the environment that would occur if the project were approved as proposed." Section 21080(b)(5) of the CEQA, as implemented by section 15270 of the CEQA Guidelines, provides that CEQA does not apply to projects which a public agency rejects or disapproves. The Commission finds that denial, for the reasons stated in these findings, is necessary to avoid the significant effects on coastal resources that would occur if the projects were approved as proposed. Accordingly, the Commission's denial of this project represents an action to which the CEQA, and all requirements contained therein that might otherwise apply to regulatory actions by the Commission, do not apply.

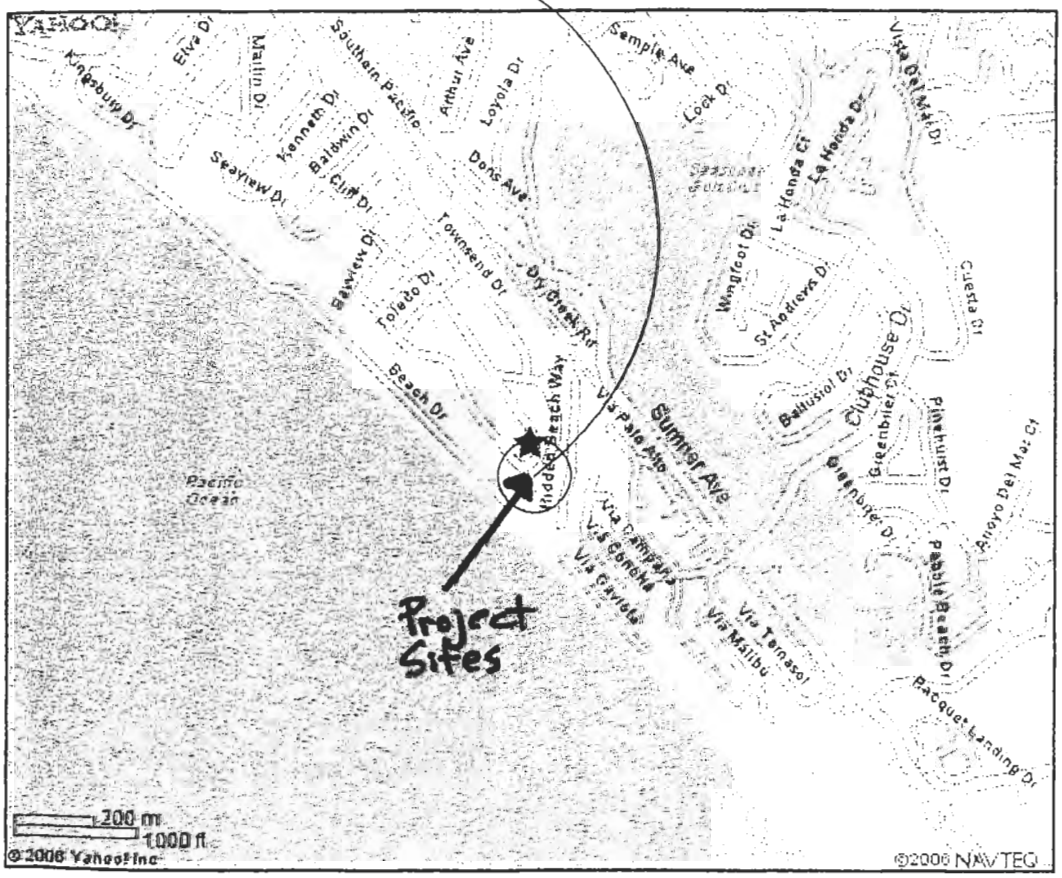


County of Santa Cruz

Sheet 3 of 3

CCC Exhibit 1
(page 1 of 2 pages)

BAYVIEW DRIVE



VICINITY MAP

CCC Exhibit 1
(page 2 of 2 pages)

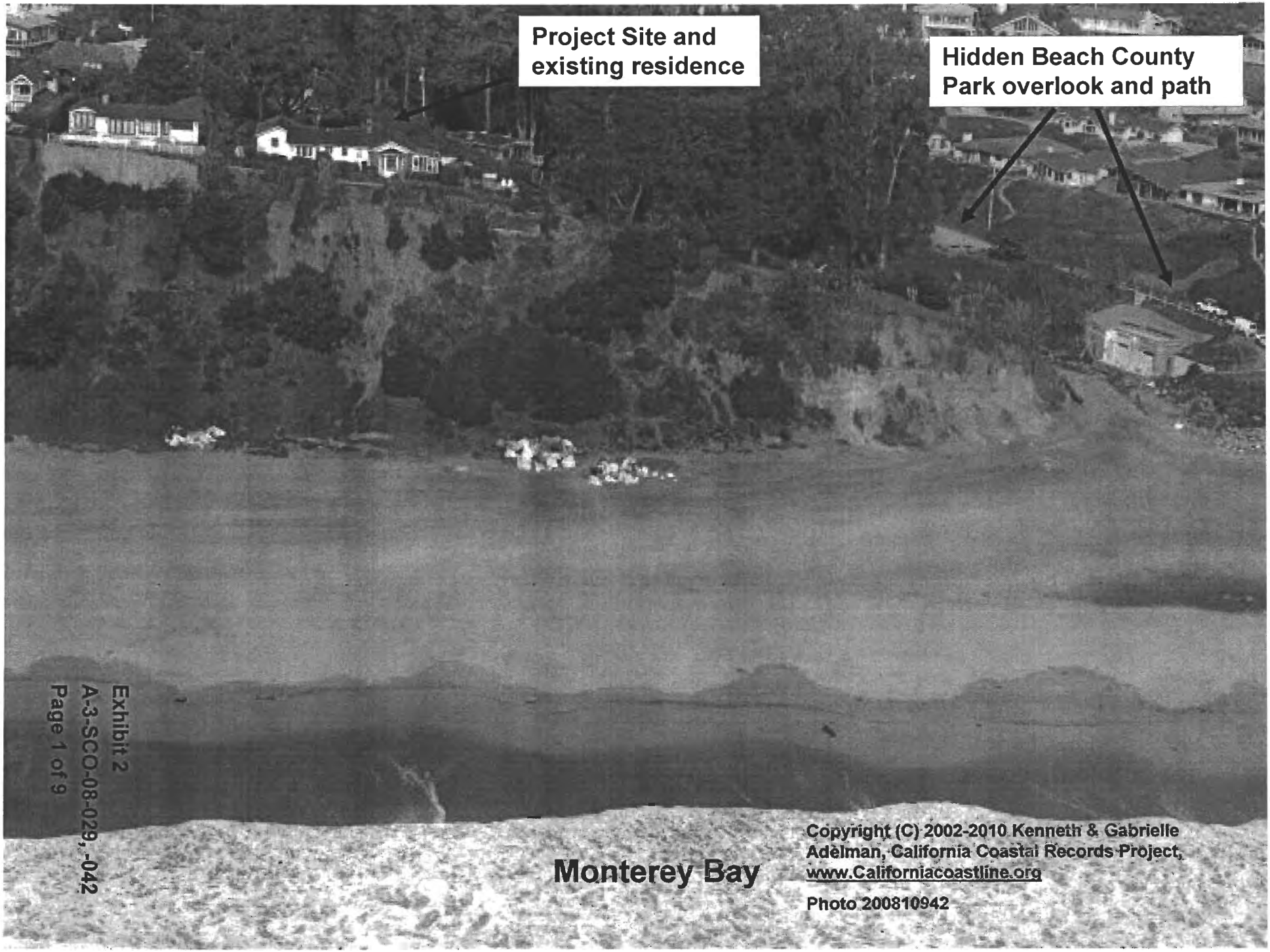


Exhibit 2
A-3-SCO-08-029, -042
Page 1 of 9

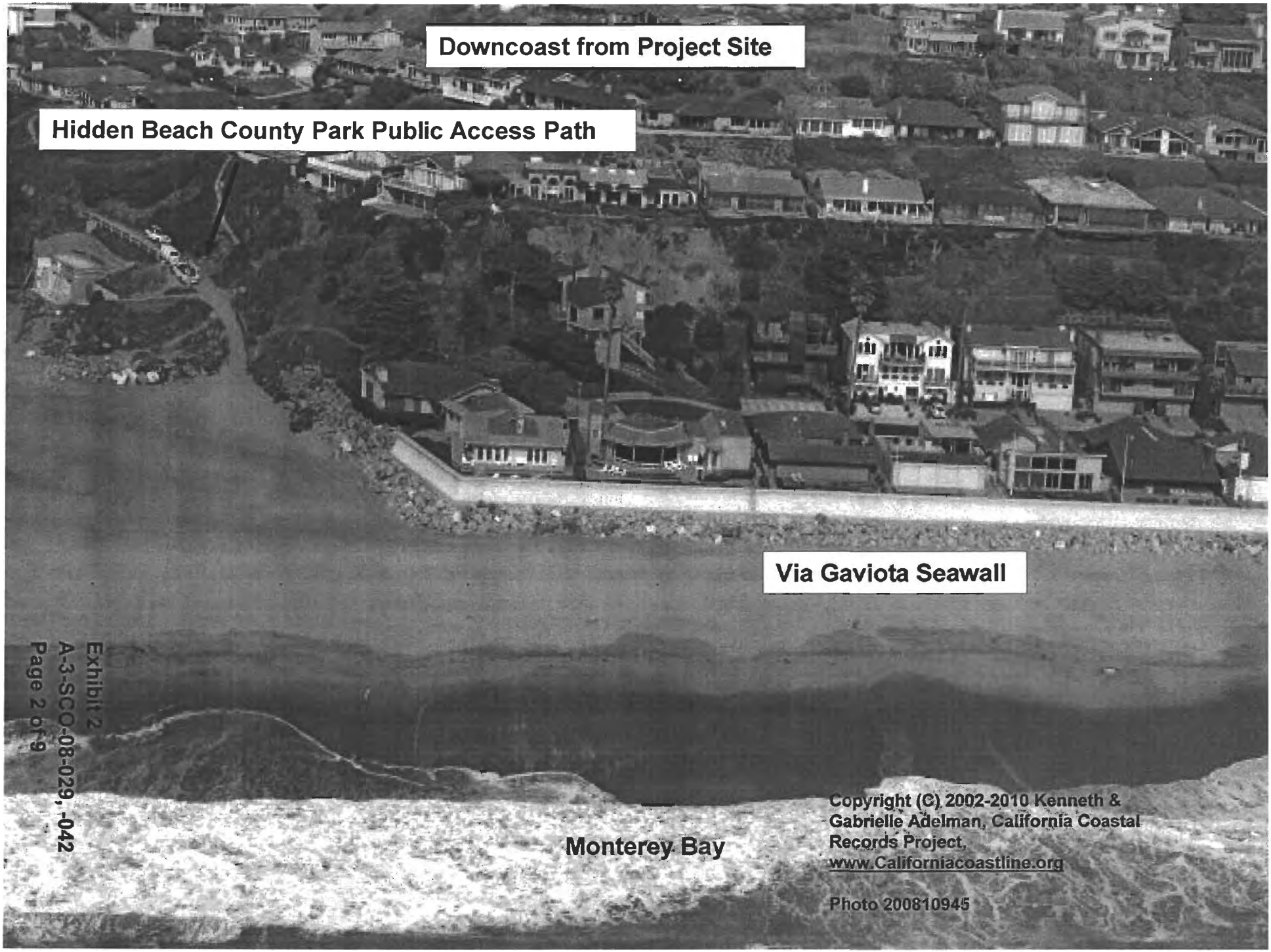


Exhibit 2
A-3-SCO-08-029, -042
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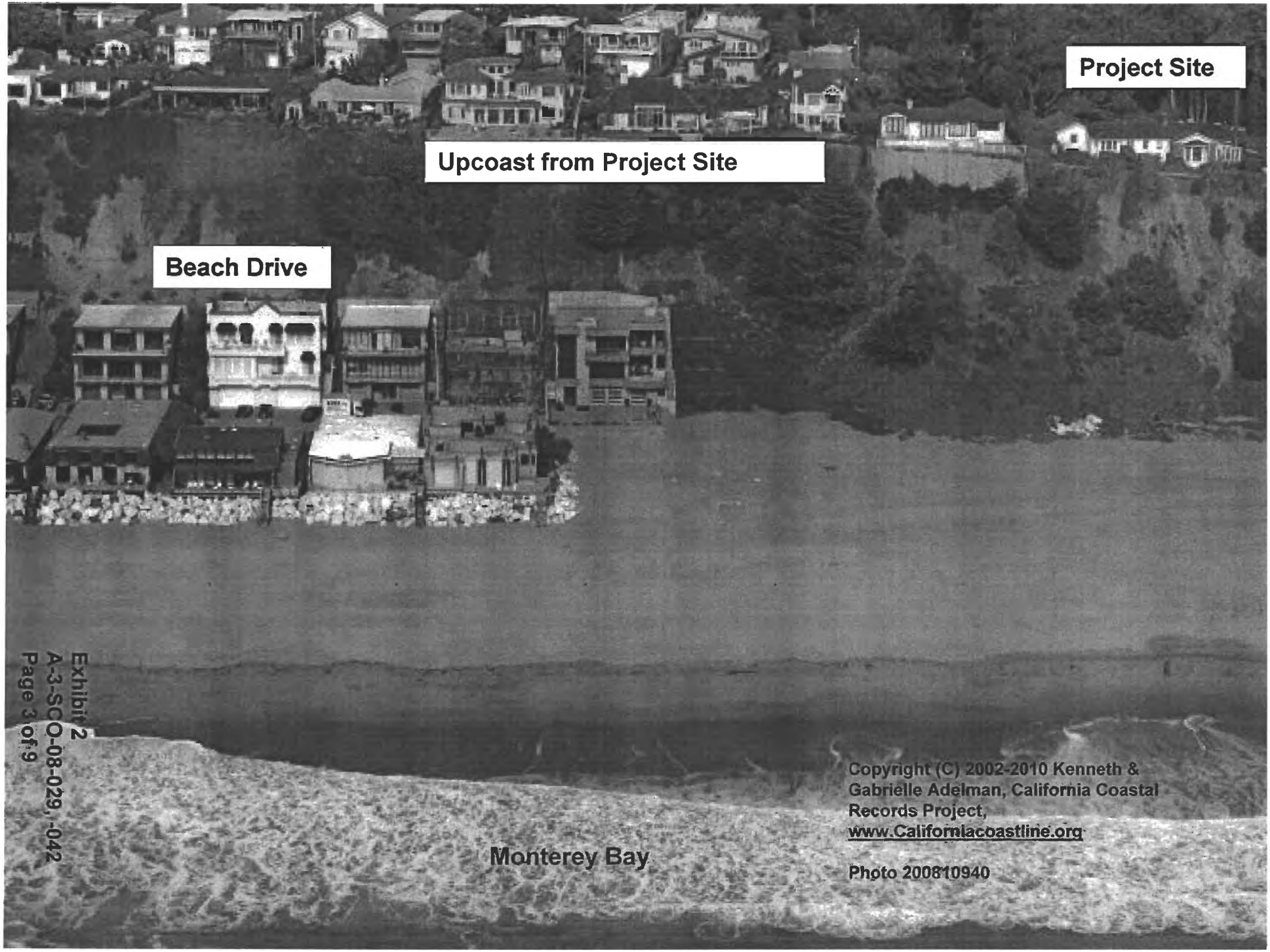
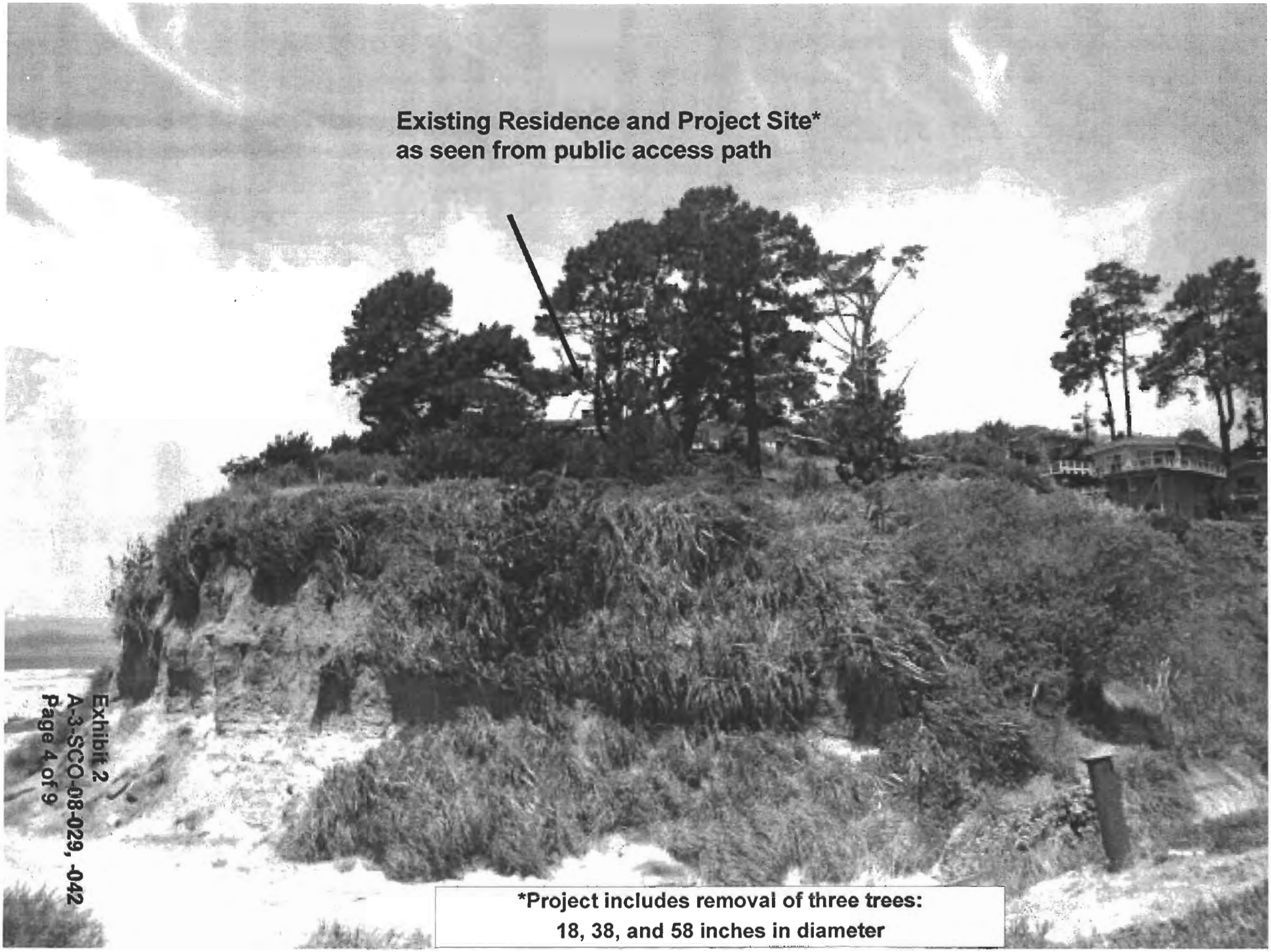
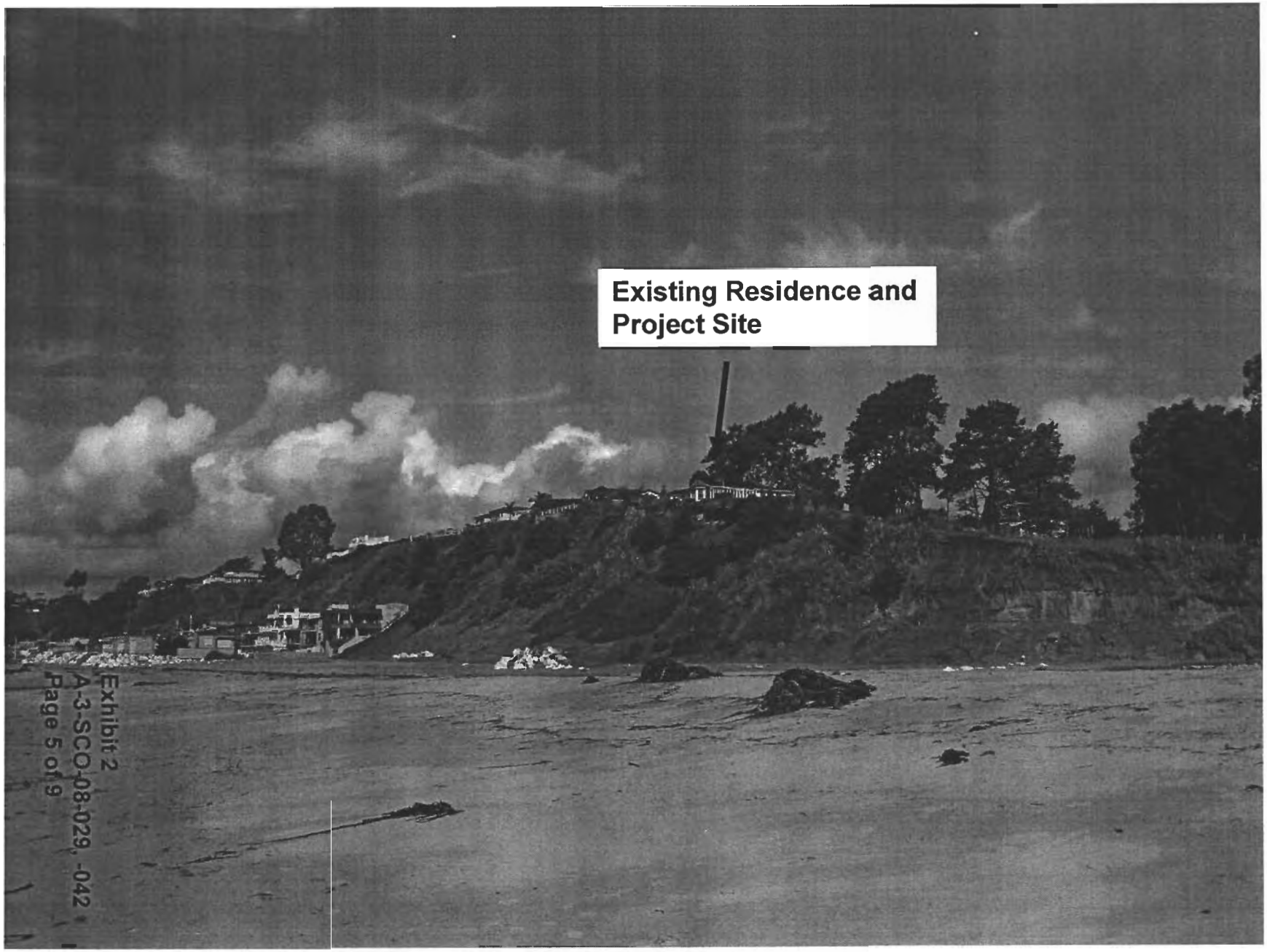

Project Site
Upcoast from Project Site
Beach Drive
Monterey Bay
Copyright (C) 2002-2010 Kenneth & Gabrielle Adelman, California Coastal Records Project, www.Californiacoastline.org
Photo 200810940


Existing Residence and Project Site*
as seen from public access path
*Project includes removal of three trees:
18, 38, and 58 inches in diameter



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Page 5 of 9

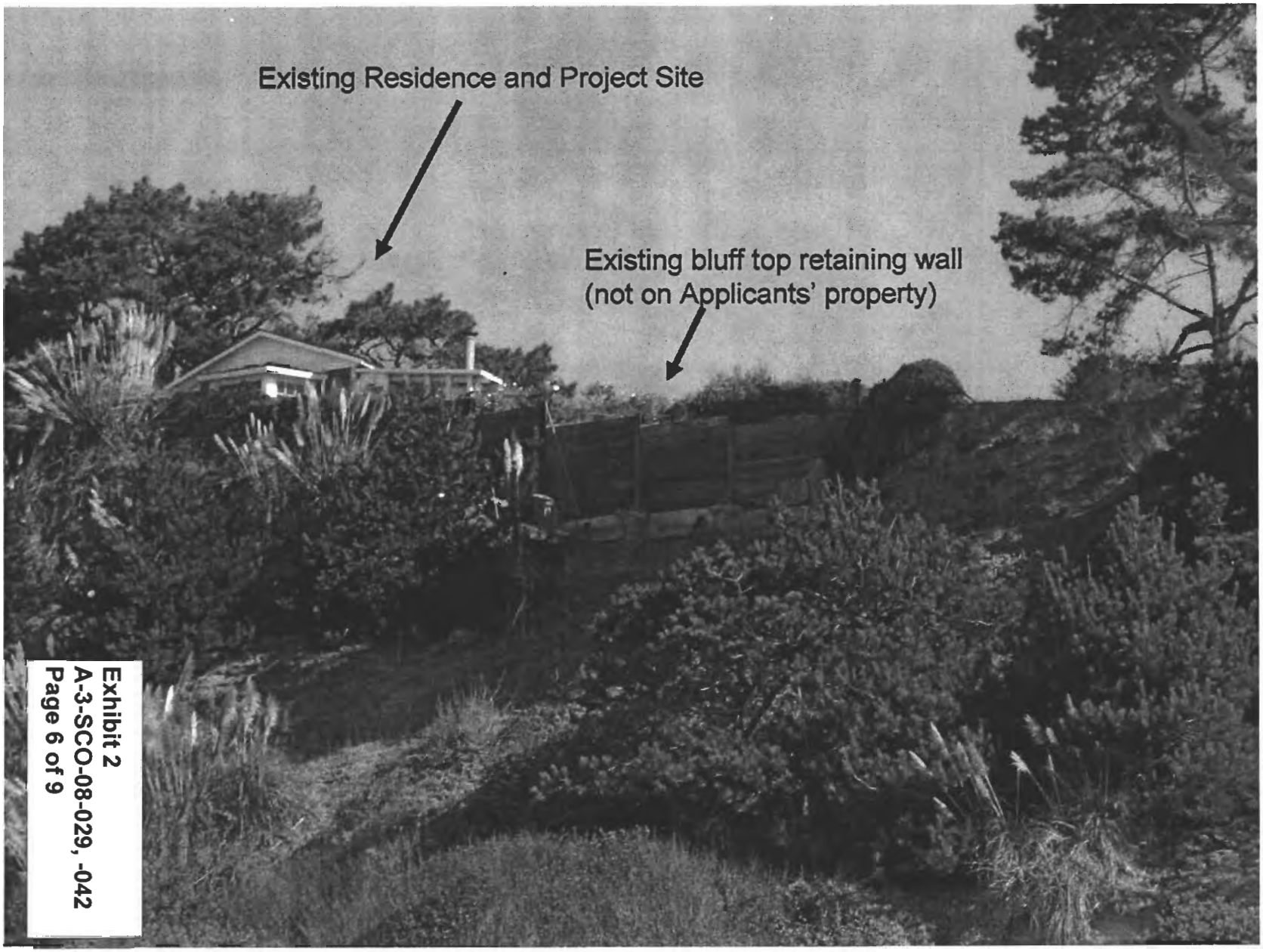

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Exhibit 2
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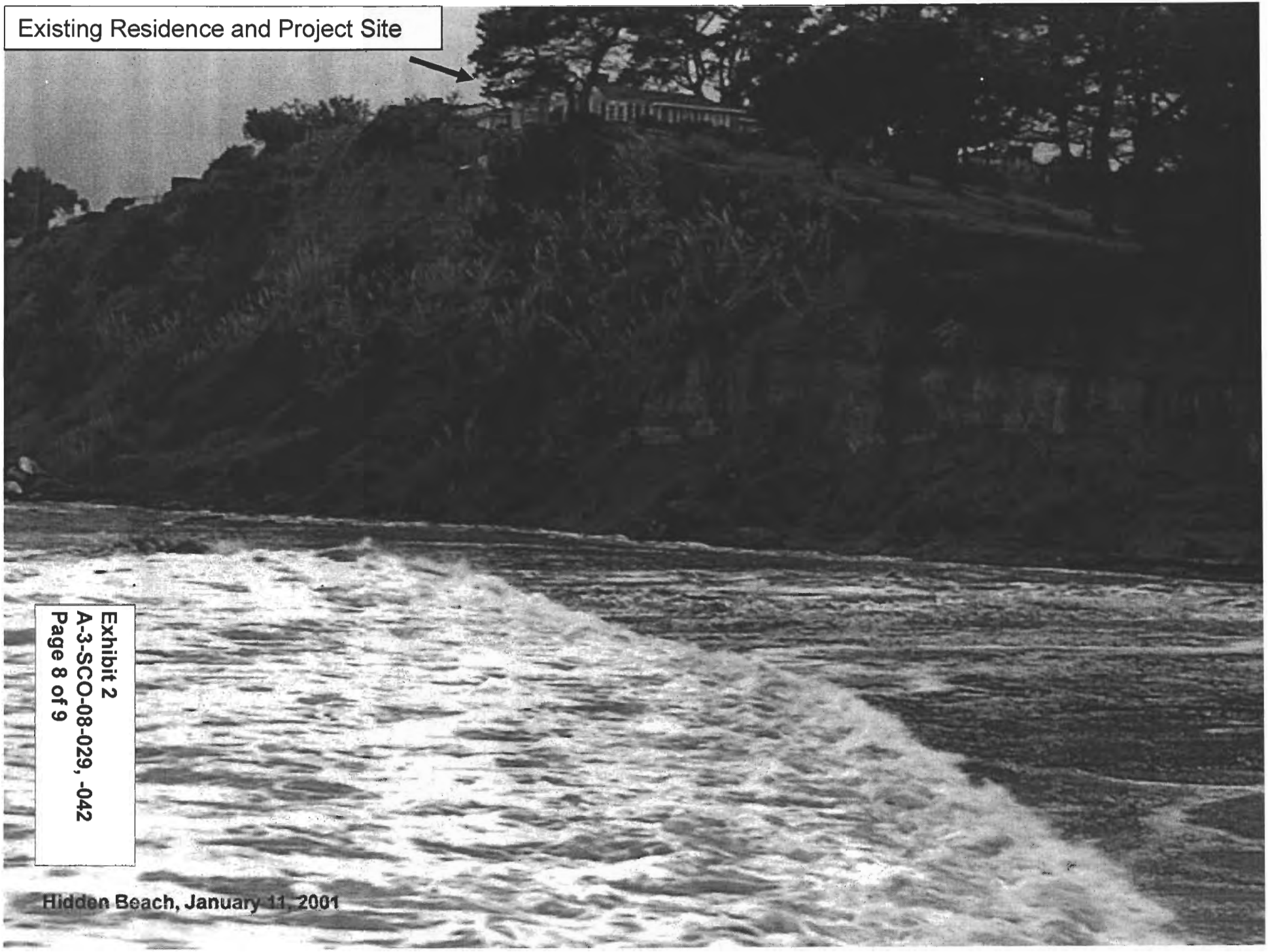

Exhibit 2
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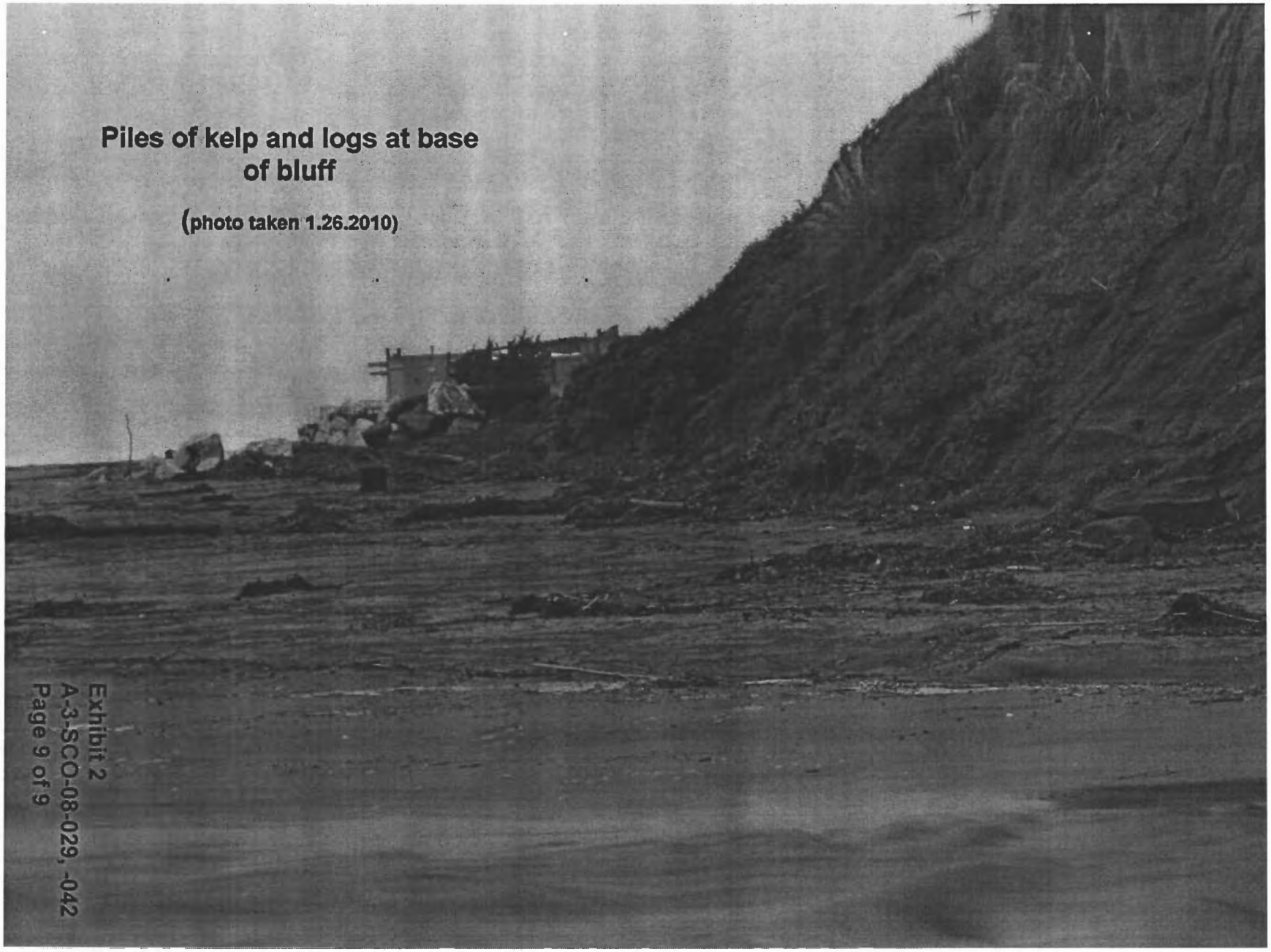
Hidden Beach, January 11, 2001


Piles of kelp and logs at base of bluff
(photo taken 1.26.2010)

NOTICE OF FINAL LOCAL ACTION ON COASTAL PERMIT

County of Santa Cruz

FINAL LOCAL ACTION NOTICE
REFERENCE # 3-SCO-08-148
APPEAL PERIOD 5/22 - 6/5/2008

RECEIVED
MAY 21 2008
CALIFORNIA COASTAL COMMISSION CENTRAL COAST AREA

Date of Notice: 5/19/08

Notice Sent to (via certified mail):
California Coastal Commission
Central Coast Area Office
725 Front Street, Ste. 300
Santa Cruz, CA 95060

Please note the following **Final Santa Cruz County Action** on a coastal permit, coastal permit amendment or coastal permit extension application (all local appeals have been exhausted for this matter):

Project Information

Application No.: 07-0117
Project Applicant: Kelley & Cindy Trousdale, trustees
Applicant's Rep: Matson-Britton Architects
Project Location: 660 Bayview Drive, Aptos

Project Description: Proposal to demolish a one story single family residence and construct a replacement two story single family residence

Final Action Information

Final Local Action: Approved with Conditions

Final Action Body:
- X Zoning Administrator
- __ Planning Commission
- __ Board of Supervisors

Required Materials Supporting the Final Action	Enclosed	Previously sent (date)
Staff Report	XXX	
Adopted Findings	XXX	
Adopted Conditions	XXX	
Site Plans	XXX	
Elevations	XXX	

Additional Materials Supporting the Final Action	Enclosed	Previously sent (date)
CEQA Document	XXX	
Geotechnical Reports	XXX	
Biotic Reports		
Other:		
Other:		

Coastal Commission Appeal Information

This Final Action is:

__ **NOT appealable** to the California Coastal Commission. The Final County of Santa Cruz Action is now Effective.

X **Appealable** to the California Coastal Commission. The Coastal Commission's 10-working day appeal period begins the first working day after the Coastal Commission receives adequate notice of this Final Action. The Final Action is not effective until after the Coastal Commission's appeal period has expired and no appeal has been filed. Any such appeal must be made directly to the California Coastal Commission Central Coast Area Office in Santa Cruz; there is no fee for such an appeal. Should you have any questions regarding the Coastal Commission appeal period or process, please contact the Central Coast Area Office at the address listed above, or by phone at (831) 427-4863.

Copies of this notice have also been sent via first-class mail to:
- Applicant
- Interested parties who requested mailing of notice

CCC Exhibit 3A
(page 1 of 17 pages)

COUNTY OF SANTA CRUZ
Planning Department

COASTAL DEVELOPMENT PERMIT AND GRADING PERMIT

Owner: KELLEY AND CINDY TROUSDALE
Address: 660 BAYVIEW DRIVE
APTOS, CA 95003

Permit Number: 07-0117
Parcel Number(s): 043-161-57,-58

PROJECT DESCRIPTION AND LOCATION

Permit to demolish an existing single-family residence on two lots (043-161-57 and -58), to grade about 100 cubic yards, to construct a single-family residence of about 5,000 sq. ft. with attached garage on parcel 043-161-58, and to remove one 18 inch diameter tree. Requires a Coastal Development Permit, Grading Permit, Geologic Reports Review and Soils Report Review. Project located at the southern end of Bayview Drive approximately 1600 feet southeast of the intersection of Toledo Drive. (660 Bayview Drive)

SUBJECT TO ATTACHED CONDITIONS

Approval Date: 5/2/08
Exp. Date (if not exercised): see conditions
Denial Date:

Effective Date: 5/16/08
Coastal Appeal Exp. Date: Call Coastal Com
Denial Date:

___ This project requires a Coastal Zone Permit, which is not appealable to the California Coastal Commission. It may be appealed to the Board of Supervisors. The appeal must be filed within 14 calendar days of action by the decision body.

__X__ 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 business days of receipt by the Coastal Commission of notice of local action. Approval or denial of the Coastal Zone Permit is appealable. The appeal must be filed within 14 calendar days of action by the decision body.

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 5/2/08

Distribution: Applicant, File, Clerical, Coastal Commission

Staff Report to the Zoning Administrator

Application Number: 07-0117

Applicant: Matson-Britton Architects
Owner: Kelley and Cindy Trousdale
APN: 043-161-57 & -58

Agenda Date: 5/2/08
Agenda Item #:
Time: After 10:00 a.m.

Project Description: Proposal to demolish an existing single-family residence on two lots (043-161-57 & -58), to construct one single-family residence of about 5,000 square feet with an attached garage on parcel 043-161-58, and to remove one 18" diameter tree.

Location: Project located at the southern end of Bayview Drive, on the site of 660 Bayview Drive.

Supervisoral District: 2nd District (District Supervisor: Ellen Pirie)

Permits Required: Coastal Development Permit, Grading Permit
Technical Reviews: Geologic Report Review & Soils Report Review

Staff Recommendation:

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approval of Application 07-0117, based on the attached findings and conditions.

Exhibits

A.	Project plans	F.	Zoning, General Plan, & Location maps
B.	Findings	G.	Site Photographs
C.	Conditions	H.	Topography Map
D.	Categorical Exemption (CEQA determination)	I.	Photo Simulations
E.	Assessor's parcel map	J.	Comments & Correspondence

Parcel Information

Parcel Size:	18,419 square feet (043-161-57 & -58 combined) 10,434 square feet (043-161-58)
Existing Land Use - Parcel:	Single-family residence
Existing Land Use - Surrounding:	Single-family residential neighborhood, Coastal bluff
Project Access:	Bayview Drive
Planning Area:	Aptos

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CCC Exhibit 3A
(page 3 of 17 pages)

Land Use Designation:	R-UL (Urban Low Density Residential)
Zone District:	R-1-6 (Single-family residential, 6,000 square foot minimum)
Coastal Zone:	X Inside __ Outside
Appealable to Calif. Coastal Comm.	X Yes __ No

Environmental Information

Geologic Hazards:	Coastal bluff at rear of property
Soils:	Report reviewed and accepted
Fire Hazard:	Not a mapped constraint
Slopes:	3-5% slopes (043-161-57); 10-15% slopes (043-161-58) & edge of coastal bluff at southwest property line
Env. Sen. Habitat:	Not mapped/no physical evidence on site
Grading:	Approximately 98 cubic yards of cut, 40 cubic yards of fill
Tree Removal:	One 18" diameter tree to be removed
Scenic:	Scenic beach viewshed
Drainage:	Drainage system at rear of property graded to drain away from bluff
Archeology:	Not mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	X Inside __ Outside
Water Supply:	Soquel Creek Water District
Sewage Disposal:	Santa Cruz County Sanitation District
Fire District:	Aptos/La Selva Fire Protection District
Drainage District:	Zone 6

History

Per the County Assessor's records, the existing house was originally constructed in 1938. In 1995, the repair and extension of the bluff protection wall and drainage swale behind the project site was approved through Coastal Development Permit 95-0149. Recent surveys show these improvements (wall and drainage) on the adjacent property to the south. No evidence of a maintenance agreement or right to use the adjacent property for these improvements has been provided and the applicant has requested that the adjacent improvements not be associated with this application.

In 2005, a Parcel Legality Determination (05-0727), determined that the project site includes two separate legal lots of record. Unconditional Certificates of Compliance were recorded for these two parcels.

This application was previously scheduled for the 8/17/07 Zoning Administrator hearing. This item was removed from the agenda and remanded to staff for further review. This application was rescheduled for the 12/7/07 Zoning Administrator hearing. Prior to the 12/7/07 hearing, the owner's attorney requested that the hearing be postponed to resolve issues regarding the coastal bluff behind the subject property and the design of the proposed residence. The application was removed from the agenda in response to the request made by the owner's attorney. Additional

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4-25-08

meetings were held with Planning Department staff and the owner's representatives to discuss the above listed issues and to allow for additional review by staff. As a result of these discussions, this revised staff report has been prepared. This revised report replaces any previous report prepared for this application.

Project Setting

The project site is located at the southeast end of Bayview Drive, at 660 Bayview Drive. The project site is located within a single family residential neighborhood with homes to the north and northwest. A coastal bluff is located to the southwest of the subject property, a coastal arroyo is located to the northeast, and adjacent vacant parcels are located along the coastal bluff to the southeast. The project site is located within the scenic viewshed of the public beach to the south and Hidden Beach park to the east.

Project Scope

This application includes a proposal to demolish the existing, one-story, single family dwelling (approximately 3,500 square feet) that straddles parcels 043-161-57 and 043-161-58, and to construct a two-story single family dwelling of about 4,600 square feet on parcel 043-161-58. A separate Coastal Development Permit application (07-0325) is currently in process for the construction of another two-story single family dwelling (approximately 4,250 square feet) on parcel 043-161-57. Another Coastal Development Permit application (07-0474) is currently in process to construct three separate two-story single family dwellings on each of the three vacant parcels to the southeast.

Zoning & General Plan Designation

The subject property is approximately 18,419 square feet (in two parcels), located in the R-1-6 (Single-family residential - 6,000 square feet minimum) zone district, a designation which allows residential uses. A single-family dwelling is a principal permitted use within the zone district and the density proposed is consistent with the site's (R-UL) Urban Low Density Residential General Plan designation.

The proposed residence complies with the site standards for the zone district, as outlined below:

	R-1-6 Site Standards	Proposed
Front yard setback	20'	About 27'
Rear yard setback	15' (or coastal bluff setback)*	About 27'
Side yard setbacks	5' and 8'	5' and 8'
Maximum height	28'	28'
Maximum % lot coverage	30%	29.9%
Maximum Floor Area Ratio	50%	48%

*Coastal bluff setback also applies - minimum of 25 feet from coastal bluff edge (per technical reports).

Adequate parking will be provided on site for the four-bedroom residence, and the amount of paving for circulation and parking purposes will be limited to no more than 50% of the front yard setback area as a condition of approval.

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Design Review & Scenic Resources

The design of the proposed residence was evaluated from both the context of views from the surrounding neighborhood and views from the public beach. As viewed from Bayview Drive, the residence will fit into the surrounding neighborhood. The proposed residence will be located down-slope from other residences in the neighborhood and away from the traveled way of Bayview Drive. Views from the public beach are discussed in detail below.

The subject property is located within the scenic viewshed of the public beach south and public park to the east. An analysis of the beach viewshed was performed by staff, including an evaluation of all of the residences constructed along the bluff side of Bayview Drive. This analysis included a review of previously approved projects and a visual inventory of the existing residences along Bayview Drive. There are both one and two-story structures along the bluff side of Bayview Drive. In the majority of cases, the two-story residences appear to be sufficiently set back from the bluff edge to screen the lower floor from public views on the beach below. In cases where more than one story is clearly visible, the structure is located within an existing pattern of urbanized development along the bluff edge. This proposal will vary from the existing pattern of development, in that it will result in the construction of a two-story residence at the down-coast end of Bayview Drive in a more prominent and visible location.

The project site is located at a point of transition between the up-coast section of Bayview Drive and remaining vacant parcels down-coast. The elevation of the coastal bluff along Bayview Drive is relatively consistent from the arroyo that lies between Seaview Drive and Bayview Drive to the southeastern end of Bayview Drive. At the subject property, the top edge of the coastal bluff begins to drops downward, with the slope increasing downward to the southeast. As the elevation of the coastal bluff is reduced, the angle of view changes and more of the structures constructed on these properties will be visible from the beach below. Additionally, the residential development at the base of the bluff along Beach Drive ends to the northwest of the site. The lack of development below the bluff increases the visibility of development on the subject property and vacant parcels to the southeast. The structures to be constructed in this area will be in greater contrast to the natural landform below and adjacent to the project site than other developed parcels along Bayview Drive.

In summary, staff believes that the visual setting of this property is at a point of transition from an existing residential neighborhood along a higher bluff edge to a lower, undeveloped section of bluff which is highly visible from the public beach and park to the south and east. For these reasons, staff has suggested a range of options for reducing potential visual impacts for the current design to the project applicant. These suggestions included: reducing the apparent bulk and mass of the structure by lowering plate heights, altering the roof pitch, and reconfiguring the floor plan; the use of colors and materials which would cause the structure to appear subordinate to the surrounding natural backdrop; and landscaping in the form of appropriate evergreen trees to screen the proposed residence.

Although staff has suggested design changes to the project applicant, there has been an unwillingness to redesign the project to reduce visibility of the proposed residence. The current design may result in an increased level of visual impact to the public beach viewshed over

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alternate designs which incorporate the changes suggested by staff. However, the project site is at a point of transition between the existing residential neighborhood and the more visually prominent vacant sites located down-coast to the south and east. The resulting visual impact of the proposed residence is therefore reduced when compared to these adjacent sites. The Zoning Administrator may choose to incorporate any of the suggested design changes, as appropriate or necessary, to further protect the public viewshed.

Existing Retaining Wall, Coastal Bluff, and Geologic Hazards

The project site is located adjacent to a coastal bluff, and an existing retaining wall is located below the project site. Though this wall was constructed by the prior property owner in 1982 and was later repaired in 1995 to address changing site conditions, it was recently discovered to have been constructed on the adjacent property. Shortly before the 8/17/07 Zoning Administrator hearing, the slope adjacent to the wall experienced a minor failure. This created a concern regarding the long term maintenance and performance of the wall and the potential effect on the proposed development.

The applicant was notified of these concerns and the need to address the cause of the failure. Additional materials were provided, indicating that the failure was due to irrigation being left on in the rear yard of the existing residence and that no further action was needed. However, the questions of long term maintenance of the existing retaining wall and the effects of the possible failure of the wall remained. Performing an independent analysis, the County Geologist has determined that the loss of the wall and backfill would modify the coastal bluff line in one location by up to seven feet. However, the proposed residence is located in a manner which would still meet the minimum 25 feet bluff setback requirement.

Geologic and geotechnical reports have been reviewed and accepted for this application. The proposed residence will comply with the required coastal bluff setback and site drainage will be captured and dispersed away from the coastal bluff edge.

Conclusion

The proposed development will result in the construction of a single family residence on a legal lot of record adjacent to a coastal bluff. The proposed two-story residence will be visible within the protected scenic viewshed and the design could be modified to reduce the visibility of the proposed structure. However, the project site is at a point of transition between the existing residential neighborhood and the more visually prominent vacant sites located down-coast to the south and east. The resulting visual impact of the proposed residence is therefore reduced when compared to these adjacent sites. Additional design changes have been suggested which could further protect the public views from the beach and park (to the south and east) but have not been incorporated into the design by the project applicant.

Please see Exhibit "B" ("Findings") for a complete listing of findings and evidence related to the above discussion.

Staff Recommendation

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- **APPROVAL** of Application Number **07-0117**, based on the attached findings and conditions.

Supplementary reports and information referred to in this report are on file and available for viewing at the Santa Cruz County Planning Department, and are hereby made a part of the administrative record for the proposed project.

The County Code and General Plan, as well as hearing agendas and additional information are available online at: www.co.santa-cruz.ca.us

Report Prepared By: Randall Adams
Santa Cruz County Planning Department
701 Ocean Street, 4th Floor
Santa Cruz CA 95060
Phone Number: (831) 454-3218
E-mail: randall.adams@co.santa-cruz.ca.us

Recording requested by:

COUNTY OF SANTA CRUZ

When recorded, return to:
Planning Department
Attn: Randall Adams
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Conditions of Approval

Development Permit No. 07-0117
Property Owner: Kelley and Cindy Trousdale
Assessor's Parcel No.: 043-161-57 and 043-161-58

Exhibit A: Project plans, 10 sheets; sheets P1 through P6 drawn by Matson-Britton Architects on 3/6/07; sheets C-1 through C-3 drawn by RI Engineering Inc. and dated 2/07; sheet 1 drawn by Gary Ifland and dated 4/4/06.

I. This permit authorizes the demolition of an existing single-family dwelling and construction of a two-story, *4 bedroom* single-family dwelling on APN 043-161-58. *(Amended at ZA 5/2/08)* 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 Demolition Permit from the Santa Cruz County Building Official. *Comply with all requirements of the Monterey Bay Unified Air Pollution Control District. (Amended at ZA 5/2/08)*

C. Obtain a Building Permit from the Santa Cruz County Building Official.

D. Obtain a Grading Permit from the Santa Cruz County Building Official, if more than 100 cubic yards of grading is proposed, if cuts exceed 5 feet, or if fill exceeds 2 feet in height.

E. Obtain an Encroachment Permit from the Department of Public Works for all off-site work performed in the County road right-of-way.

F. The placement of windows as shown on Sheets P3 & P4 shall be followed. (Added at ZA 5/2/08)

II. Prior to issuance of a Building Permit the applicant/owner shall:

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

B. Submit final architectural plans for review and approval by the Planning Department. The final plans shall be in substantial compliance with the plans marked Exhibit "A" on file with the Planning Department. Any changes from the approved Exhibit "A" for this development permit on the plans submitted for the Building Permit must be clearly called out and labeled by standard architectural methods to indicate such changes. Any changes that are not properly called out and labeled will not be authorized by any Building Permit that is issued for the proposed development. The final plans shall include the following additional information:

1. One elevation shall indicate materials and colors as they were *revised and* approved by this Discretionary Application. *The color of the main body of the residence shall be darkened to minimize visual impacts. The revised colors shall be submitted to the Zoning Administrator for review and approval. (Amended at ZA 5/2/08)*

2. An engineered grading plan prepared, wet stamped, and signed by a licensed civil engineer.

3. A final engineered drainage plan, prepared, wet stamped, and signed by a licensed civil engineer, with the following additional information as required by the County Geologist and DPW Drainage:

   a. Provide final review letters from the project geotechnical engineer and project geologist stating that the proposed drainage plan will ~~not cause any erosion or stability problems on this site or downstream from the site.~~ *be consistent with the approved reports. Drainage problems may not be created on site or off site. (Amended at ZA 5/2/08)*

   b. Provide a copy of a recorded drainage easement for APN 043-161-57 drainage facilities that will collect upstream runoff and connect to the drainage system on APN 043-161-58.

   c. Show that the drainage outlets on APN 043-161-57 are in a location outside of the coastal bluff setback as determined by the project geologist.

4. A detailed erosion control plan for review and approval by Environmental Planning staff.

5. The building plans must include a roof plan and a surveyed contour map of the ground surface, superimposed and extended to allow height measurement of all features. Spot elevations shall be provided at points on

the structure that have the greatest difference between ground surface and the highest portion of the structure above. This requirement is in addition to the standard requirement of detailed elevations and cross-sections and the topography of the project site which clearly depict the total height of the proposed structure. The height must match the approved Exhibit "A" for this permit and may not exceed a maximum of 28 feet.

6. Revised site plans and engineered plans showing the driveway does not exceed more than 50% of the front yard setback area.

7. Plans shall include a statement that the project will comply with the accepted geologic and geotechnical reports for this project, and both the building plans and engineering plans must clearly show the accepted geologic building envelope.

8. Details showing compliance with fire department requirements, including all requirements of the Urban Wildland Intermix Code, if applicable.

9. Plans shall show protective fencing around all trees within 20 feet of the area of disturbance, except for the single tree proposed to be removed.

10. Show the proposed location of on-site sewer lateral(s), clean out(s), and connection(s) to the existing public sewer. Existing sewer laterals must be properly abandoned prior to issuance of the demolition permit.

11. Landscape plan shall be prepared by a licensed landscape architect. The objective of the plan is to buffer the impacts of the dwelling on Bayview Drive and the beach and is to be reviewed and approved by the County geologist and Zoning Administrator. (Added at ZA 5/2/08)

12. Evidence shall be presented from a licensed engineer or surveyor certifying the net lot size is 10,539 square feet. (Added at ZA 5/2/08)

C. Submit four copies of the approved Discretionary Permit with the Conditions of Approval attached. The Conditions of Approval shall be recorded prior to submittal, if applicable.

D. Meet all requirements of and pay Zone 6 drainage fees to the County Department of Public Works, Drainage. Drainage fees will be assessed on the net increase in impervious area.

E. Meet all requirements and pay any applicable plan check fee of the Aptos/La Selva Fire Protection District.

F. Submit plan review letters from both the project geotechnical engineer and project geologist, confirming the building, grading, drainage, and erosion control plans conform to the recommendations of the geotechnical and geologic reports. A minimum of three (3) copies of each letter shall be submitted for review and approval.

G. Provide required off-street parking for three cars. Parking spaces must be 8.5 feet wide by 18 feet long and must be located entirely outside vehicular rights-of way. Parking must be clearly designated on the plot plan.

H. Submit a written statement signed by an authorized representative of the school district in which the project is located confirming payment in full of all applicable developer fees and other requirements lawfully imposed by the school district.

I. Sign, date, and record a Declaration of Geologic Hazards (to be prepared by Environmental Planning staff prior to Building Permit submittal). **You shall not alter the wording of this declaration.** Please return a copy of the recorded document to the Planning Department as proof of recordation.

J. The project shall comply with the maximum 30% lot coverage and maximum 50% Floor Area Ratio requirements. (Added at ZA 5/2/08)

III. All construction shall be performed according to the approved plans for the Building Permit. Prior to final building inspection, the applicant/owner must meet the following conditions:

A. All site improvements shown on the final approved Building Permit plans shall be installed.

B. All inspections required by the building permit shall be completed to the satisfaction of the County Building Official.

C. The project must comply with all recommendations of the approved geologic and geotechnical reports.

D. 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 Sheriff-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains. The procedures established in Sections 16.40.040 and 16.42.100, shall be observed.

E. Retaining wall landscaping shall be maintained on the adjacent property, as required by permit 95-0149. This requirement may be waived if the property owner does not authorize the maintenance. (Added at ZA 5/2/08)

IV. Operational Conditions

A. 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.

B. *The hours and days of construction shall be limited to the hours between 8 AM and 5 PM, weekdays. (Added at ZA 5/2/08)*

C. *Any damage done to the cul de sac as a result of construction shall be repaired. (Added at ZA 5/2/08)*

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.

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 the effective date on the expiration date listed below unless you obtain the required permits and commence construction.

Approval Date: 5/2/08

Effective Date: 5/16/08

Expiration Date: 5/16/10

Don Bussey
Deputy Zoning Administrator

Randall Adams
Project Planner

Appeals: Any property owner, or other person aggrieved, or any other person whose interests are adversely affected by any act or determination of the Zoning Administrator, may appeal the act or determination to the Planning Commission in accordance with chapter 18.10 of the Santa Cruz County Code.

CCC Exhibit 3A
(page 14 of 17 pages)

Application #: 07-0117
APN: 043-161-57 and 043-161-58
Owner: Kelley and Cindy Trousdale

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 designation.

This finding can be made, in that the property is zoned R-1-6 (Single-family residential, 6,000 square foot minimum), a designation which allows residential uses. The proposed single-family dwelling is a principal permitted use within the zone district, consistent with the site's (R-UL) Urban Low Density Residential General Plan designation.

2. That the project does not conflict with any existing easement or development restrictions such as public access, utility, or open space easements.

This finding can be made, in that the proposal does not conflict with any existing easement or development restriction such as public access, utility, or open space easements in that no such easements or restrictions encumber the project site.

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.

This finding can be made, in that the proposed residence is compatible with other residences within the Bayview Drive neighborhood. The project site is located within a scenic resource area at a point of transition between the existing residential neighborhood and the more visually prominent vacant sites located down-coast to the south and east. The subject property is located at the end of the developed parcels along the coastal bluff side of Bayview Drive and the elevation of the bluff in this location is lower than it is along the majority of Bayview Drive. As a result, the project site is more visible than other properties along Bayview Drive and a project of reduced scale, *increased landscaping, or darker color* would provide for increased protection of scenic resources. Although this project will be visible from the beach in this location, the project site is not as prominent as other adjacent sites down-coast to the south and east and the resulting visual impact is therefore reduced when compared to adjacent properties. *(Amended at ZA 5/2/08)*

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 2.5 and Chapter 7, and, as to any development between and nearest public road and the sea or the shoreline 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 Act commencing with section 30200.

This finding can be made, in that the project site is located between the shoreline and the first public road, with developed public beach access in the vicinity at Hidden Beach park. Consequently, the proposed project will not interfere with public access to the beach, ocean, or any nearby body of water. Further, 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.

This finding can be made, in that residential uses are allowed uses in the R-1-6 (Single-family residential, 6,000 square foot minimum) zone district of the area, as well as the General Plan and Local Coastal Program land use designation.

Application #: 07-0117
APN: 043-161-57 and 043-161-58
Owner: Kelley and Cindy Trousdale

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 detrimental to the health, safety, or welfare of persons residing or working in the neighborhood or the general public, and will not result in inefficient or wasteful use of energy, and will not be materially injurious to properties or improvements in the vicinity.

This finding can be made, in that the project is located in an area designated for residential uses. Construction will comply with prevailing building technology, the Uniform Building Code, the County Building ordinance, and the recommendations of the geologic and geotechnical reports to insure the optimum in safety and the conservation of energy and resources. The proposed single-family dwelling will not deprive adjacent properties or the neighborhood of light, air, or open space, in that the structure meets all current setbacks that ensure access to light, air, and open space in the neighborhood.

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 purpose of the zone district in which the site is located.

This finding can be made, in that the proposed location of the single-family dwelling and the conditions under which it would be operated or maintained will be consistent with the purpose of the R-1-6 (Single-family residential, 6,000 square foot minimum) zone district in that the primary use of the property will be one single-family dwelling that meets all current site standards for the zone district.

The proposed residence will comply with the County's Geologic Hazards Ordinance, in that the project will comply with the minimum setback from the coastal bluff to ensure 100-year stability of the structure.

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.

This finding can be made, in that the proposed residential use is consistent with the use and density requirements specified for the Urban Low Density Residential (R-UL) land use designation in the County General Plan.

The proposed single-family dwelling will not adversely impact the light, solar opportunities, air, and/or open space available to other structures or properties, and meets all current site and development standards for the zone district as specified in Policy 8.1.3 (Residential Site and Development Standards Ordinance).

The project will comply with General Plan/LCP Policy 5.10.7 (Development on Open Beaches and Blufftops) in that the proposal will result in the development of a single family residence on an existing lot of record.

A specific plan has not been adopted for this portion of the County.

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4. That the proposed use will not overload utilities and will not generate more than the acceptable level of traffic on the streets in the vicinity.

This finding can be made, in that the proposed residence is to replace an existing residence on the project site. The expected level of traffic generated by the proposed project is anticipated to remain constant and will not adversely impact existing roads and intersections in the surrounding area.

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.

This finding can be made, in that the proposed structure is located in a neighborhood containing both one and two-story homes of a similar size, and the proposed single-family dwelling is consistent with the land use intensity and density of the neighborhood.

6. The proposed development project is consistent with the Design Standards and Guidelines (sections 13.11.070 through 13.11.076), and any other applicable requirements of this chapter.

This finding can be made, for the reasons specified in Coastal Development Finding #3, above.

REVISED
4-25-08

NOTICE OF FINAL LOCAL ACTION ON COASTAL PERMIT

County of Santa Cruz

Date of Notice: 8/1/08

Notice Sent to (via certified mail):
California Coastal Commission
Central Coast Area Office
725 Front Street, Ste. 300
Santa Cruz, CA 95060

FINAL LOCAL ACTION NOTICE

REFERENCE # 3-SCO-08-219
APPEAL PERIOD 8/6-8/19-2008

Please note the following **Final Santa Cruz County Action** on a coastal permit, coastal permit amendment or coastal permit extension application (all local appeals have been exhausted for this matter):

Project Information

Application No.: 07-0325
Project Applicant: Kelley & Cindy Trousdale
Applicant's Rep: Matson-Britton Architects
Project Location: 660 Bayview Drive, Aptos

Project Description: Proposal to construct a single family dwelling and associated improvements

Final Action Information

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CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

Final Local Action: Approved with Conditions

Final Action Body:
- X Zoning Administrator
- __ Planning Commission
- __ Board of Supervisors

Required Materials Supporting the Final Action	Enclosed	Previously sent (date)
Staff Report	XXX	
Adopted Findings	XXX	
Adopted Conditions	XXX	
Site Plans	XXX	
Elevations	XXX	

Additional Materials Supporting the Final Action	Enclosed	Previously sent (date)
CEQA Document	XXX	
Geotechnical Reports		
Biotic Reports		
Other:		
Other:		

Coastal Commission Appeal Information

This Final Action is:

__ **NOT appealable** to the California Coastal Commission. The Final County of Santa Cruz Action is now Effective.

X **Appealable** to the California Coastal Commission. The Coastal Commission's 10-working day appeal period begins the first working day after the Coastal Commission receives adequate notice of this Final Action. The Final Action is not effective until after the Coastal Commission's appeal period has expired and no appeal has been filed. Any such appeal must be made directly to the California Coastal Commission Central Coast Area Office in Santa Cruz; there is no fee for such an appeal. Should you have any questions regarding the Coastal Commission appeal period or process, please contact the Central Coast Area Office at the address listed above, or by phone at (831) 427-4863.

Copies of this notice have also been sent via first-class mail to:
- Applicant
- Interested parties who requested mailing of notice

CCC Exhibit 3B
(page 1 of 16 pages)

COUNTY OF SANTA CRUZ
Planning Department

COASTAL DEVELOPMENT PERMIT

Owner: KELLEY & CINDY TROUSDALE
Address: 660 BAYVIEW DRIVE
APTOS, CA 95003

Permit Number: 07-0325
Parcel Number(s): 043-161-57, -58

PROJECT DESCRIPTION AND LOCATION

Permit to demolish an existing one story single-family dwelling and to construct a two-story single-family dwelling of about 4,200 square feet, to remove two significant trees (38 inch diameter and 58 inch diameter), and to grade approximately 79 cubic yards of cut and 159 cubic yards of fill. Requires a Coastal Development Permit and a Preliminary Grading Approval. Project located at the southern end of Bayview Drive, approximately 1600 feet southeast of Toledo Drive. (660 Bayview Drive)

SUBJECT TO ATTACHED CONDITIONS

Approval Date: 7/11/08
Exp. Date (if not exercised): see conditions
Denial Date:

Effective Date: 7/25/08
Coastal Appeal Exp. Date: Call Coastal Com
Denial Date:

___ This project requires a Coastal Zone Permit, which is not appealable to the California Coastal Commission. It may be appealed to the Board of Supervisors. The appeal must be filed within 14 calendar days of action by the decision body.

__X__ 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 business days of receipt by the Coastal Commission of notice of local action. Approval or denial of the Coastal Zone Permit is appealable. The appeal must be filed within 14 calendar days of action by the decision body.

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 7/11/08

Distribution: Applicant, File, Clerical, Coastal Commission

Staff Report to the Zoning Administrator

Application Number: 07-0325

Applicant: Matson-Britton Architects
Owner: Kelley and Cindy Trousdale
APN: 043-161-57 & -58

Agenda Date: 7/11/08
Agenda Item #: 9
Time: After 10:00 a.m.

Project Description: Proposal to demolish an existing one story single-family dwelling and to construct a two-story single-family dwelling of about 4,200 square feet, to remove two significant trees (38 inch diameter and 58 inch diameter), and to grade approximately 79 cubic yards of cut and 159 cubic yards of fill.

Location: Project located at the southern end of Bayview Drive, approximately 1600 feet southeast of Toledo Drive. (660 Bayview Drive)

Supervisoral District: 2nd District (District Supervisor: Ellen Pirie)

Permits Required: Coastal Development Permit, Preliminary Grading Approval
Technical Reviews: Geologic Report Review & Soils Report Review (completed under 07-0117)

Staff Recommendation:

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- Approval of Application 07-0325, based on the attached findings and conditions.

Exhibits

A.	Project plans	F.	Zoning, General Plan, & Location maps
B.	Findings	G.	Site Photographs
C.	Conditions	H.	Photo Simulations
D.	Categorical Exemption (CEQA determination)	I.	Comments & Correspondence
E.	Assessor's parcel map		

Parcel Information

Parcel Size:	8,481 square feet
Existing Land Use - Parcel:	Single-family residence
Existing Land Use - Surrounding:	Single-family residential neighborhood, Coastal bluff
Project Access:	Bayview Drive
Planning Area:	Aptos
Land Use Designation:	R-UL (Urban Low Density Residential)

Zone District:	R-1-6 (Single-family residential, 6,000 square foot minimum)
Coastal Zone:	_X_ Inside __ Outside
Appealable to Calif. Coastal Comm.	_X_ Yes __ No

Environmental Information

Geologic Hazards:	Coastal bluff at rear of property
Soils:	Report reviewed and accepted (under 07-0117)
Fire Hazard:	Not a mapped constraint
Slopes:	3-5% slopes & edge of coastal bluff at southwest property line
Env. Sen. Habitat:	Not mapped/no physical evidence on site
Grading:	Approximately 79 cubic yards of cut, 159 cubic yards of fill
Tree Removal:	Two trees (38" diameter & 58" diameter) to be removed
Scenic:	Mapped scenic resource - beach viewshed
Drainage:	Drainage system at rear of property graded to drain away from bluff
Archeology:	Not mapped/no physical evidence on site

Services Information

Urban/Rural Services Line:	_X_ Inside __ Outside
Water Supply:	Soquel Creek Water District
Sewage Disposal:	Santa Cruz County Sanitation District
Fire District:	Aptos/La Selva Fire Protection District
Drainage District:	Zone 6

History

This application follows the approval of Coastal Development Permit application 07-0117 to construct a single family dwelling and attached garage on the adjacent parcel (APN 043-161-58). The existing residence (660 Bayview Drive) which straddles both parcels (APNs 043-161-57 & -58) will be removed to accommodate the proposed development. At the time of writing of this staff report, Coastal Development Permit application 07-0117 has been appealed by a neighbor to the California Coastal Commission.

Project Setting

The subject property is located at the southeast end of Bayview Drive, at 660 Bayview Drive. The project site is located within a single family residential neighborhood with homes to the north and northwest. A coastal bluff is located to the southwest of the subject property, a coastal arroyo is located to the northeast, and vacant parcels are located along the coastal bluff to the southeast. The subject property is located within the scenic viewshed of the public beach to the south and Hidden Beach park to the east.

Project Scope

This application includes a proposal to construct a single family dwelling of about 4,200 square feet. A separate Coastal Development Permit application (07-0117) was recently approved for

the construction of another two-story single family dwelling (approximately 4,600 square feet) on parcel 043-161-58. Three additional Coastal Development Permit applications are proposed to construct three separate two-story single family dwellings on each of the three remaining vacant parcels to the southeast.

Zoning & General Plan Designation

The subject property is approximately 8,481 square feet, located in the R-1-6 (Single-family residential - 6,000 square feet minimum) zone district, a designation which allows residential uses. A single-family dwelling is a principal permitted use within the zone district and the density proposed is consistent with the site's (R-UL) Urban Low Density Residential General Plan designation.

The proposed residence complies with the site standards for the zone district, as outlined below:

	R-1-6 Site Standards	Proposed
Front yard setback	20'	About 23'
Rear yard setback	15' (or coastal bluff setback)*	About 30'
Side yard setbacks	5' and 8'	5' and 8'
Maximum height	28'	28'
Maximum % lot coverage	30%	29.28%
Maximum Floor Area Ratio	50%	49.84%

*Coastal bluff setback also applies - minimum of 25 feet from coastal bluff edge (per technical reports).

Adequate parking will be provided on site for the four-bedroom residence.

Design Review & Scenic Resources

The design of the proposed residence was evaluated from both the context of views from the surrounding neighborhood and views from the public beach. As viewed from Bayview Drive, the residence will fit into the surrounding neighborhood. The proposed residence will be located adjacent to other residences in the neighborhood and away from the traveled way of Bayview Drive. Views from the public beach are discussed below.

The subject property is located within the scenic viewshed of the public beach to the south and the public park to the east. An analysis of the beach viewshed was performed by staff, including an evaluation of all of the residences constructed along the bluff side of Bayview Drive. This analysis included a review of previously approved projects and a visual inventory of the existing residences along Bayview Drive. There are both one and two-story structures along the bluff side of Bayview Drive. In the majority of cases, the height of the bluff combined with the setback from the bluff edge obstructs views of the lower floor of the two story residences from the public beach below. This proposal is located adjacent to existing development along Bayview Drive at an area where the bluff edge is similar in elevation to the majority of existing developed parcels. (The lot adjacent on the downcoast side is currently vacant but there is a coastal permit for a single family dwelling pending at the Coastal Commission). The height of the bluff in this area typically obstructs views of the lower floors of existing residences from the public beach below.

As a component of the visual analysis, a photo-simulation is required which depicts the residence from within the public beach viewshed. When this information was requested, the applicant provided a photo-simulation taken from a distant location on the beach. The photo-simulation that was provided is inadequate, in that it is difficult to identify the subject property or to discern how the proposed residence will appear when viewed from the public beach below the project site.

Regardless of the lack of an adequate photo-simulation, it is anticipated that the bluff height at the project site will obstruct views of the lower floor of the proposed residence from the public beach below. For this reason, structural design changes to reduce visibility of the proposed residence have not been requested . Use of colors and materials which would cause the structure to appear subordinate to the surrounding natural backdrop are advised, as would be for all residences located along a bluff edge within the scenic beach viewshed.

Tree Removals

The proposal includes the removal of two significant (38 inch diameter & 58 inch diameter) Monterey Pine trees in order to accommodate the location of site improvements within the front yard. The removal of the two trees will result in the reduction of the amount of tree backdrop behind and above the proposed residence. The loss of this tree backdrop will result in increased visibility of the proposed residence above the coastal bluff edge from the public beach.

The applicant has had two arborists evaluate the trees. The first arborist determined that the 38 inch tree is in fair health, but exhibits poor structure and that the 58 inch tree is in poor health and structure. The second arborist concurred. Although the applicant was advised that an alternate location and design for the driveway could avoid these trees (and preserve the tree backdrop) the site design has not been altered in an attempt to preserve them. The smaller tree, in particular, can be avoided without extensive changes to the plans. There may also be methods of supporting the tree that will decrease any hazard associated with it.

Coastal Bluff and Geologic Hazards

The project site is located adjacent to a coastal bluff to the southwest. The rear of the project site will be graded to capture drainage and direct it into the drainage system for the adjacent proposed residence (APN 043-161-58). Geologic and geotechnical reports have been reviewed and accepted for this application. The proposed residence will comply with the required coastal bluff setback and site drainage will be dispersed away from the coastal bluff edge.

Conclusion

The proposed development will result in the construction of a single family residence on a legal lot of record adjacent to a coastal bluff. The proposed two-story residence will be visible within the protected scenic viewshed in a location where the height of the bluff will obstruct portions of the lower floor from view. Although further modifications could be made to reduce the visibility of the proposed residence, this is not necessary due to the height of the bluff at the subject property and the location of the project site between existing developed parcels to the northwest and an approved residence to the southeast.

Please see Exhibit "B" ("Findings") for a complete listing of findings and evidence related to the above discussion.

Staff Recommendation

- Certification that the proposal is exempt from further Environmental Review under the California Environmental Quality Act.
- **APPROVAL** of Application Number **07-0325,** based on the attached findings and conditions.

Supplementary reports and information referred to in this report are on file and available for viewing at the Santa Cruz County Planning Department, and are hereby made a part of the administrative record for the proposed project.

The County Code and General Plan, as well as hearing agendas and additional information are available online at: www.co.santa-cruz.ca.us

Report Prepared By: Randall Adams
Santa Cruz County Planning Department
701 Ocean Street, 4th Floor
Santa Cruz CA 95060
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E-mail: randall.adams@co.santa-cruz.ca.us

Recording requested by:

COUNTY OF SANTA CRUZ

When recorded, return to:
Planning Department
Attn: Randall Adams
County of Santa Cruz
701 Ocean Street
Santa Cruz, CA 95060

Conditions of Approval

Development Permit No. 07-0325
Property Owner: Kelley and Cindy Trousdale
Assessor's Parcel No.: 043-161-57 & -58

Exhibit A: Project plans, 10 sheets; sheets P1 through P6 drawn by Matson-Britton Architects, revised 2/15/08; sheets C-1 through C-3 drawn by RI Engineering Inc., revised 2/13/08; sheet 1 drawn by Gary Ifland, revised 1/23/07.

I. This permit authorizes the demolition of the existing residence and the construction of a *4 bedroom,* two-story, single-family dwelling on APN 043-161-57. Prior to exercising any rights granted by this permit including, without limitation, any construction or site disturbance, the applicant/owner shall: *(Revised at ZA 7/11/08)*

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 Demolition Permit from the Santa Cruz County Building Official. *Comply with all requirements of the Monterey Bay Unified Air Pollution Control District during demolition. (Revised at ZA 7/11/08)*

C. Obtain a Building Permit from the Santa Cruz County Building Official.

D. Obtain a Grading Permit from the Santa Cruz County Building Official, if more than 100 cubic yards of grading is proposed, if cuts exceed 5 feet, or if fill exceeds 2 feet in height.

E. Obtain an Encroachment Permit from the Department of Public Works for all off-site work performed in the County road right-of-way.

II. Prior to issuance of a Building Permit the applicant/owner shall:

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

B. Submit final architectural plans for review and approval by the Planning Department. The final plans shall be in substantial compliance with the plans marked Exhibit "A" on file with the Planning Department. Any changes from the approved Exhibit "A" for this development permit on the plans submitted for the Building Permit must be clearly called out and labeled by standard architectural methods to indicate such changes. Any changes that are not properly called out and labeled will not be authorized by any Building Permit that is issued for the proposed development. The final plans shall include the following additional information:

1. One elevation shall indicate materials and colors as they were approved by this Discretionary Application.

2. An engineered grading plan prepared, wet stamped, and signed by a licensed civil engineer. The plan shall include all grading volumes (cut and fill) and the total extent of disturbance for all grading activities.

3. A final engineered drainage plan, prepared, wet stamped, and signed by a licensed civil engineer, with the following additional information as required by the County Geologist and DPW Drainage:

   a. Provide final review letters from the project geotechnical engineer and project geologist stating that the proposed drainage plan will ~~not cause any erosion or stability problems on this site or downstream from the site~~ *be consistent with the approved reports. Drainage problems may not be created on or off site. (Revised at ZA 7/11/08)*

   b. Provide a copy of a recorded drainage easement to connect to the drainage system on APN 043-161-58.

4. A landscape plan which shows all proposed rear yard landscaping and improvements, for review and approval by the Urban Designer. The installation or use of permanent irrigation of landscaping within the rear yard is not allowed.

5. A detailed erosion control plan for review and approval by Environmental Planning staff.

6. The building plans must include a roof plan and a surveyed contour map of the ground surface, superimposed and extended to allow height measurement of all features. Spot elevations shall be provided at points on the structure that have the greatest difference between ground surface and the highest portion of the structure above. This requirement is in addition to the standard requirement of detailed elevations and cross-sections and the topography of the project site which clearly depict the total height of

the proposed structure. The height must match the approved Exhibit "A" for this permit and may not exceed a maximum of 28 feet.

7. All ~~glazing shall be clear, low E glass without tinting or applied films~~ *ocean facing windows (and any applied films) shall be "low reflective".* The project architect shall propose a method to reduce the impact of the large "picture windows" at the rear of the structure, for review and approval by the Urban Designer. *(Revised at ZA 7/11/08)*

8. Plans shall include a statement that the project will comply with the accepted geologic and geotechnical reports for this project, and both the building plans and engineering plans must clearly show the accepted geologic building envelope.

9. Details showing compliance with fire department requirements, including all requirements of the Urban Wildland Intermix Code, if applicable.

10. Show the proposed location of on-site sewer lateral(s), clean out(s), and connection(s) to the existing public sewer. Existing sewer laterals must be properly abandoned prior to issuance of the demolition permit.

C. Submit four copies of the approved Discretionary Permit with the Conditions of Approval attached. The Conditions of Approval shall be recorded prior to submittal, if applicable.

D. Meet all requirements of and pay Zone 6 drainage fees to the County Department of Public Works, Drainage. Drainage fees will be assessed on the net increase in impervious area.

E. Meet all requirements and pay any applicable plan check fee of the Aptos/La Selva Fire Protection District.

F. Submit plan review letters from both the project geotechnical engineer and project geologist, confirming the building, grading, drainage, and erosion control plans conform to the recommendations of the geotechnical and geologic reports. A minimum of three (3) copies of each letter shall be submitted for review and approval.

G. Provide required off-street parking for three cars. Parking spaces must be 8.5 feet wide by 18 feet long and must be located entirely outside vehicular rights-of way. Parking must be clearly designated on the plot plan.

H. Submit a written statement signed by an authorized representative of the school district in which the project is located confirming payment in full of all applicable developer fees and other requirements lawfully imposed by the school district.

I. Sign, date, and record a Declaration of Geologic Hazards (to be prepared by Environmental Planning staff prior to Building Permit submittal). **You shall not alter the wording of this declaration.** Please return a copy of the recorded document to the Planning Department as proof of recordation.

J. *Pay the current fees for Parks and Child Care mitigation for 4 bedroom(s). Currently, these fees are, respectively, $1,000 and $109 per bedroom. (Added at ZA 7/11/08)*

K. *Pay the current fees for Roadside and Transportation improvements for 1 unit(s). Currently, these fees are, respectively, $2,360 and $2,360 per unit. (Added at ZA 7/11/08)*

III. All construction shall be performed according to the approved plans for the Building Permit. Prior to final building inspection, the applicant/owner must meet the following conditions:

A. All site improvements shown on the final approved Building Permit plans shall be installed.

B. All inspections required by the building permit shall be completed to the satisfaction of the County Building Official.

C. The project must comply with all recommendations of the approved geologic and geotechnical reports.

D. 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 Sheriff-Coroner if the discovery contains human remains, or the Planning Director if the discovery contains no human remains. The procedures established in Sections 16.40.040 and 16.42.100, shall be observed.

IV. Operational Conditions

A. 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.

B. The installation or use of permanent irrigation of landscaping within the rear yard is not allowed.

C. *Any decks must be under 30 inches in height within the required geologic setback (25 feet or 100 year stability, whichever is the greater distance) and any deck in excess of 18 inches in height must meet the required yard setbacks. (Added at ZA 7/11/08)*

D. *No structures are allowed within the required geologic setback (25 feet or 100 year stability, whichever is the greater distance). (Added at ZA 7/11/08)*

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.

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 the effective date listed below unless a building permit (or permits) is obtained for the primary structure described in the development permit (does not include demolition, temporary power pole or other site preparation permits, or accessory structures unless these are the primary subject of the development permit). Failure to exercise the building permit and to complete all of the construction under the building permit, resulting in the expiration of the building permit, will void the development permit, unless there are special circumstances as determined by the Planning Director.

Approval Date: 7/11/08

Effective Date: 7/25/08

Expiration Date: 7/25/10

Don Bussey
Deputy Zoning Administrator

Randall Adams
Project Planner

Appeals: Any property owner, or other person aggrieved, or any other person whose interests are adversely affected by any act or determination of the Zoning Administrator, may appeal the act or determination to the Planning Commission in accordance with chapter 18.10 of the Santa Cruz County Code.

Application #: 07-0325
APN: 043-161-57 & -58
Owner: Kelley and Cindy Trousdale

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 designation.

This finding can be made, in that the property is zoned R-1-6 (Single-family residential, 6,000 square foot minimum), a designation which allows residential uses. The proposed single-family dwelling is a principal permitted use within the zone district, consistent with the site's (R-UL) Urban Low Density Residential General Plan designation.

2. That the project does not conflict with any existing easement or development restrictions such as public access, utility, or open space easements.

This finding can be made, in that the proposal does not conflict with any existing easement or development restriction such as public access, utility, or open space easements in that no such easements or restrictions encumber the project site.

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.

This finding can be made, in that the proposed residence is compatible with other residences within the Bayview Drive neighborhood. The project site is located within a scenic resource area and will be visible from the public beach below the subject property. The subject property is located between existing developed parcels along the coastal bluff side of Bayview Drive and an approved residence to the southeast. The elevation of the bluff in this location is similar in elevation to the majority of existing developed parcels along Bayview Drive. Although this project will be visible from the beach in this location, the height of the bluff edge at the project site will obstruct views of the majority of the lower floor of the proposed residence from the public beach below. As a result, the visual impact of the proposed project will be similar to existing residential development along the bluff side of Bayview Drive.

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 2.5 and Chapter 7, and, as to any development between and nearest public road and the sea or the shoreline 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 Act commencing with section 30200.

This finding can be made, in that the project site is located between the shoreline and the first public road, with developed public beach access in the vicinity at Hidden Beach park. Consequently, the proposed project will not interfere with public access to the beach, ocean, or any nearby body of water. Further, 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.

This finding can be made, in that residential uses are allowed uses in the R-1-6 (Single-family residential, 6,000 square foot minimum) zone district of the area, as well as the General Plan and Local Coastal Program land use designation.

Application #: 07-0325
APN: 043-161-57 & -58
Owner: Kelley and Cindy Trousdale

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 detrimental to the health, safety, or welfare of persons residing or working in the neighborhood or the general public, and will not result in inefficient or wasteful use of energy, and will not be materially injurious to properties or improvements in the vicinity.

This finding can be made, in that the project is located in an area designated for residential uses. Construction will comply with prevailing building technology, the Uniform Building Code, the County Building ordinance, and the recommendations of the geologic and geotechnical reports to insure the optimum in safety and the conservation of energy and resources. The proposed single-family dwelling will not deprive adjacent properties or the neighborhood of light, air, or open space, in that the structure meets all current setbacks that ensure access to light, air, and open space in the neighborhood.

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 purpose of the zone district in which the site is located.

This finding can be made, in that the proposed location of the single-family dwelling and the conditions under which it would be operated or maintained will be consistent with the purpose of the R-1-6 (Single-family residential, 6,000 square foot minimum) zone district in that the primary use of the property will be one single-family dwelling that meets all current site standards for the zone district.

The proposed residence will comply with the County's Geologic Hazards Ordinance, in that the project will comply with the minimum setback from the coastal bluff to ensure 100-year stability of the structure.

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.

This finding can be made, in that the proposed residential use is consistent with the use and density requirements specified for the Urban Low Density Residential (R-UL) land use designation in the County General Plan.

The proposed single-family dwelling will not adversely impact the light, solar opportunities, air, and/or open space available to other structures or properties, and meets all current site and development standards for the zone district as specified in Policy 8.1.3 (Residential Site and Development Standards Ordinance).

The project will comply with General Plan/LCP Policy 5.10.7 (Development on Open Beaches and Blufftops) in that the proposal will result in the development of a single family residence on an existing lot of record.

A specific plan has not been adopted for this portion of the County.

4. That the proposed use will not overload utilities and will not generate more than the acceptable level of traffic on the streets in the vicinity.

This finding can be made, in that the proposed residence is to be constructed on an existing undeveloped lot. The expected level of traffic generated by the proposed project is anticipated to be only one peak trip per day (1 peak trip per dwelling unit), such an increase will not adversely impact existing roads and intersections in the surrounding area.

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.

This finding can be made, in that the proposed structure is located in a neighborhood containing both one and two-story homes of a similar size, and the proposed single-family dwelling is consistent with the land use intensity and density of the neighborhood.

6. The proposed development project is consistent with the Design Standards and Guidelines (sections 13.11.070 through 13.11.076), and any other applicable requirements of this chapter.

This finding can be made, for the reasons specified in Coastal Development Finding #3, above.

TROUSDALE RESIDENCE

NEW RESIDENCE

660 BAYVIEW DRIVE, LOT B
APTOS, CA 95003

FIRE NOTES (6)

1. THESE PLANS SHALL COMPLY WITH CALIFORNIA BUILDING AND FIRE CODES (2001) AND DISTRICT AMENDMENTS..

2. OCCUPANCY R-3, TYPE V-N, SPINKLERED.

3. DESIGNER/INSTALLER SHALL SUBMIT THREE SETS OF PLANS AND CALCULATIONS FOR THE UNDERGROUND AND OVERHEAD RESIDENTIAL AUTOMATIC SPRINKLER SYSTEM TO THE FIRE PROTECTION DISTRICT OF SANTA CRUZ COUNTY. PLANS SHALL COMPLY W/ THE UNDERGROUND FIRE PROTECTION SYSTEM INSTALLATION POLICY HANDOUT. FOR THE APTOS/LA SELVA FIRE DEPARTMENT.

4. ADDRESS NUMBERS SHALL BE POSTED AND MAINTAINED AS SHOWN ON THE SITE PLAN. NUMBERS SHALL BE A MINIMUM OF 4 INCHES IN HEIGHT AND OF A COLOR CONTRASTING TO THEIR BACKGROUND.

5. ROOF COVERING SHALL BE NO LESS THAN CLASS "B" RATED.

6. THE JOB COPIES OF THE BUILDING AND FIRE SYSTEMS PLANS AND PERMITS MUST REMAIN ON-SITE DURING INSPECTIONS.

7. BUILDING TO BE PROTECTED BY AN APPROVED AUTOMATIC FIRE SPRINKLER SYSTEM COMPLYING WITH CURRENTLY ADOPTED EDITION OF NFPA 13D & ADOPTED STANDARDS OF APTOS/LA SELVA FIRE DEPARTMENT.

8. PUBLIC FIRE HYDRANT REQUIRED WITHIN 250 FT. OF ANY PORTION OF THE BUILDING WITH A MINIMUM 1000 GALLON FIRE FLOW.

9. THIRTY (30) FOOT CLEARANCE TO BE MAINTAINED WITH NON-COMBUSTIBLE VEGETATION AROUND ALL STRUCTURES OR TO THE PROPERTY LINE, WHICHEVER IS SHORTER DISTANCE.

PROJECT SUMMARY (1)

OWNERS: KELLEY AND CINDY TROUSDALE
660 BAYVIEW DRIVE
APTOS, CA 95003

A. P. N.: - 043 - 161 - 36

ZONING: R-1-6

OCCUPANCY GROUP: R-3 & U-1 (PER 2001 U.B.C.)

CONSTRUCTION TYPE: V-N, FULLY SPRINKLERED

PROJECT DESCRIPTION:
THIS PROJECT CONSISTS OF A NEW TWO STORY SINGLE FAMILY DWELLING WITH FOUR BEDROOMS, 3.5 BATHS, AN ATTACHED TWO CAR GARAGE AND OUTDOOR COURTYARD. THE EXISTING RESIDENCE IS TO BE DEMOLISHED.

CODE COMPLIANCE:
THIS RESIDENTIAL CONSTRUCTION COMPLIES WITH TITLE 24, AND THE FOLLOWING CODES; 2001 UBC, 1997 UMC, 1997 UPC, AND 1997 NEC.

LOT SIZE: 10584 S.F.

GROSS FLOOR AREAS:

FPROPOSED FIRST FLOOR:	2450 SQ. FT.
GARAGE:	500 SQ. FT.
PROPOSED SECOND FLOOR:	1665 SQ. FT.
AREA HEIGHT OVER 16'	531 S.Q. FT.
TOTAL FLOOR AREA:	2450+500+1665+531=5146 SQ. FT.
LESS COUNTY GARAGE CREDIT:	-225 SQ. FT.
COVERED AREA:	71 SQ. FT.
ADJUSTED TOTAL FLOOR AREA:	5146-225+71=4992 SQ. FT.
SECOND FLOOR OVERHANG:	202 SQ. FT.
TOTAL LOT COVERAGE:	2450+500+202=3152 SQ. FT.

F.A.R.: 4992 S.F. / 10584 S.F. = 47.37%
LOT COVERAGE: 3152 S.F. / 10584 S.F. = 29.91%

CONSULTANTS (2)

ARCHITECTS: MATSON BRITTON ARCHITECTS
728 N. BRANCIFORTE
SANTA CRUZ, CA 95062
831-425-0544 F 831-425-4795

SURVEYORS: GARY IFLAND & ASSOCIATES
1100 WATER STREET, STE. C
SANTA CRUZ, CA 95062
831-426-7941 F 831-426-6286

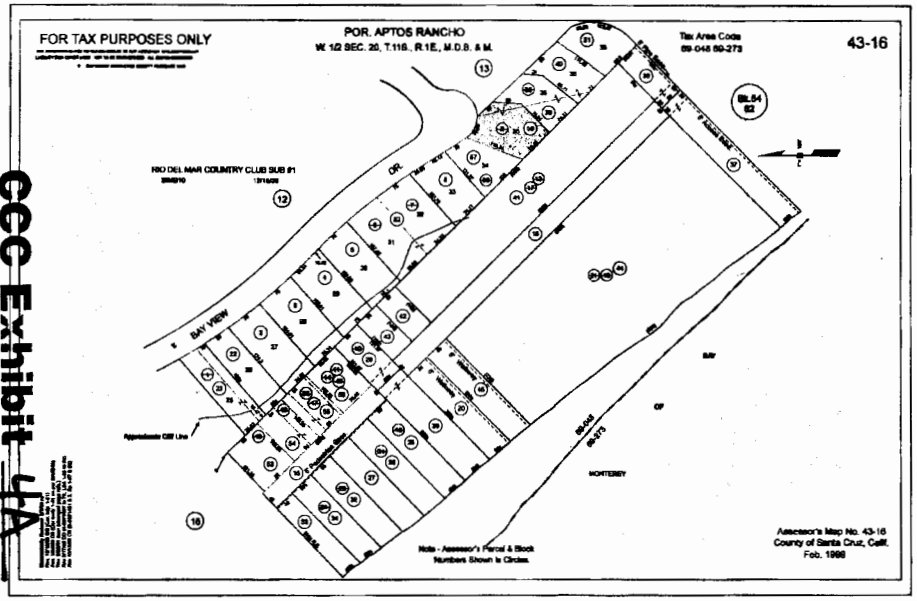
SOILS: PACIFIC CREST ENGINEERING
444 AIRPORT BLVD. STE. 106
WATSONVILLE, CA 95076
831-722-9646 F 831-722-4158

DRAINAGE & GRADING: RICHARD IRISH ENGINEERING
309 POTRERO STREET, BLDG. 42-202
SANTA CRUZ, CA 95060
831-425-3401 F 831-425-1522

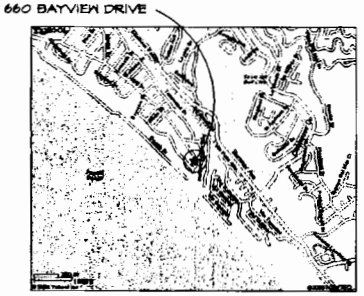
GEOLOGY: ZINN GEOLOGY
3085 CARRIKER LANE, SUITE B
SOQUEL, CA 95073
831-476-8443 F 831-476-1491

SHEET INDEX (3)

A.P.N. MAP (7)

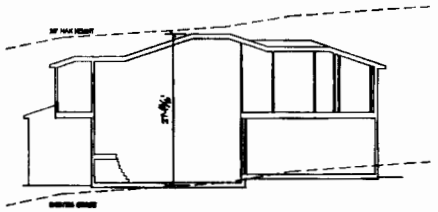


VICINITY MAP (4)



SECTION @ HIGH PT. (5)

3/32"=1'



MATSON

TROUSDALE RESIDENCE
660 BAYVIEW DRIVE, LOT "B"
APTOS, CA 95003
APN: 043-161-36

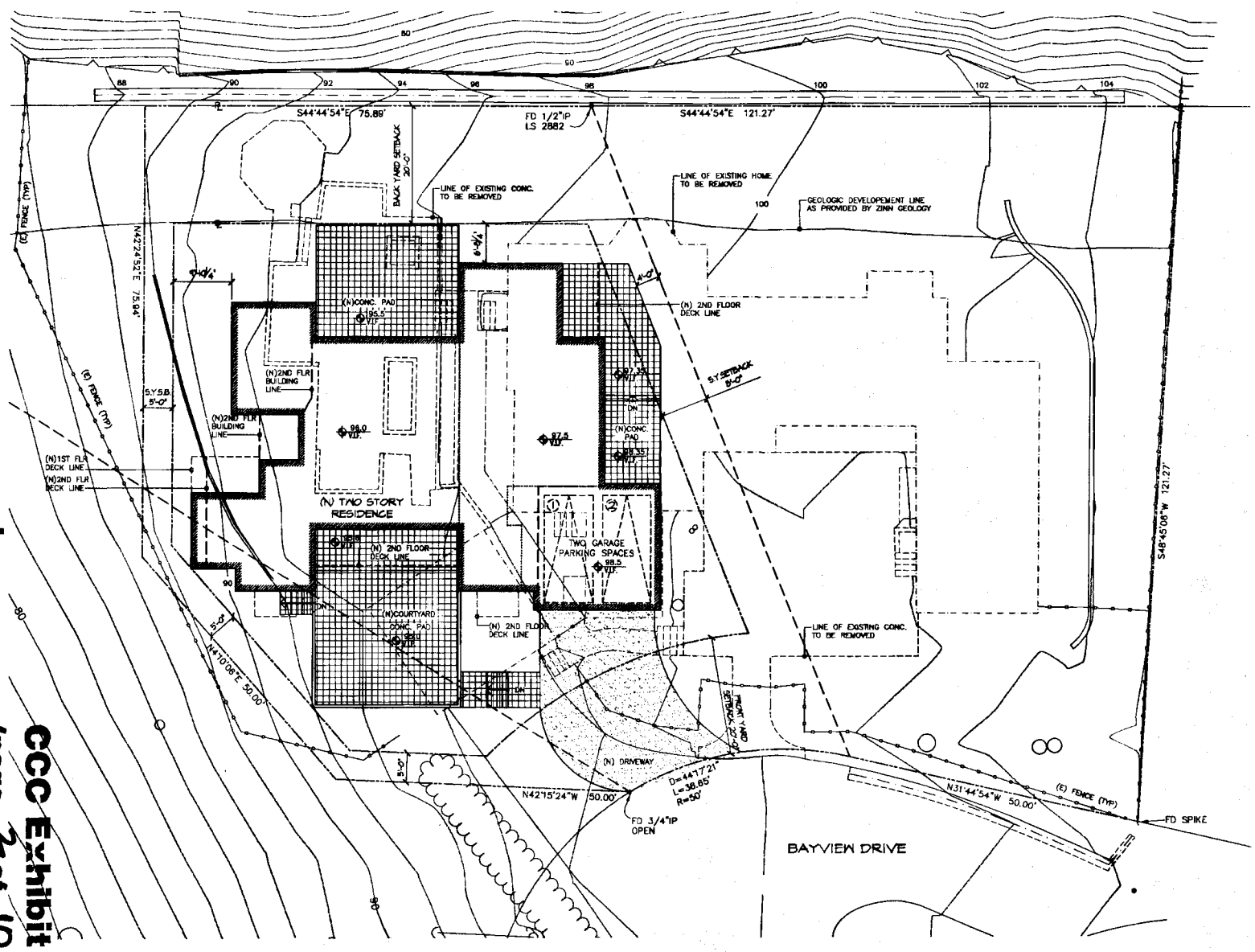
TITLE SHEET

08/08/07

NH/ZG.

TROUSDALE BAYVIEW LOT "B"

P1



SITE LEGEND

- PROPERTY LINE
- SETBACK LINE
- (N) OVERHANG ABOVE
- (E) CONC. (TO BE REMOVED)
- (E) FENCE (TO BE REMOVED)
- (E) HOUSE (TO BE DEMOLISHED)
- (N) RESIDENCE
- (N) DRIVEWAY
- (N) PATIO

NOTES:
THE PLAN IS PREPARED WITH INFORMATION PROVIDED BY THE SURVEY PREPARED BY GARY IELAND & ASSOC. SEE ORIGINAL SURVEY LOCATED AS THE LAST SHEET OF THIS SET.

SITE PLAN

SCALE: 1/8" = 1' - 0"

TOTAL LOT AREA: 10539 SQ. FT.

N

MATSON

TROUSDALE RESIDENCE
660 BAYVIEW DRIVE LOT 'B'
APTOS, CA 95003
APN: 048-181-56

SITE PLAN

08/06/07
ZG.
TROUSDALE BAYVIEW LOT 'B'

P2

CCC Exhibit 4A (page 2 of 10 pages)

MARTSON

TROUSDALE RESIDENCE
660 BAYVIEW DRIVE LOT "B"
APTOS, CA 95003
APN: 043-181-56

FIRST FLOOR PLAN

1	08/08/07	
2		
3		
4		
5		
6		
7	PROPOSAL BAYVIEW LOT "B"	

P3

FRAMING LEGEND

- 2x4 WOOD STUDS @ 16" O.C. U.N.O.
- 2x6 WOOD STUDS @ 16" O.C. U.N.O.
- 2x6 WOOD STUDS @ 16" O.C. W/2x4 FLAT WOOD STUDS @ 16" O.C. UNO OUTSIDE

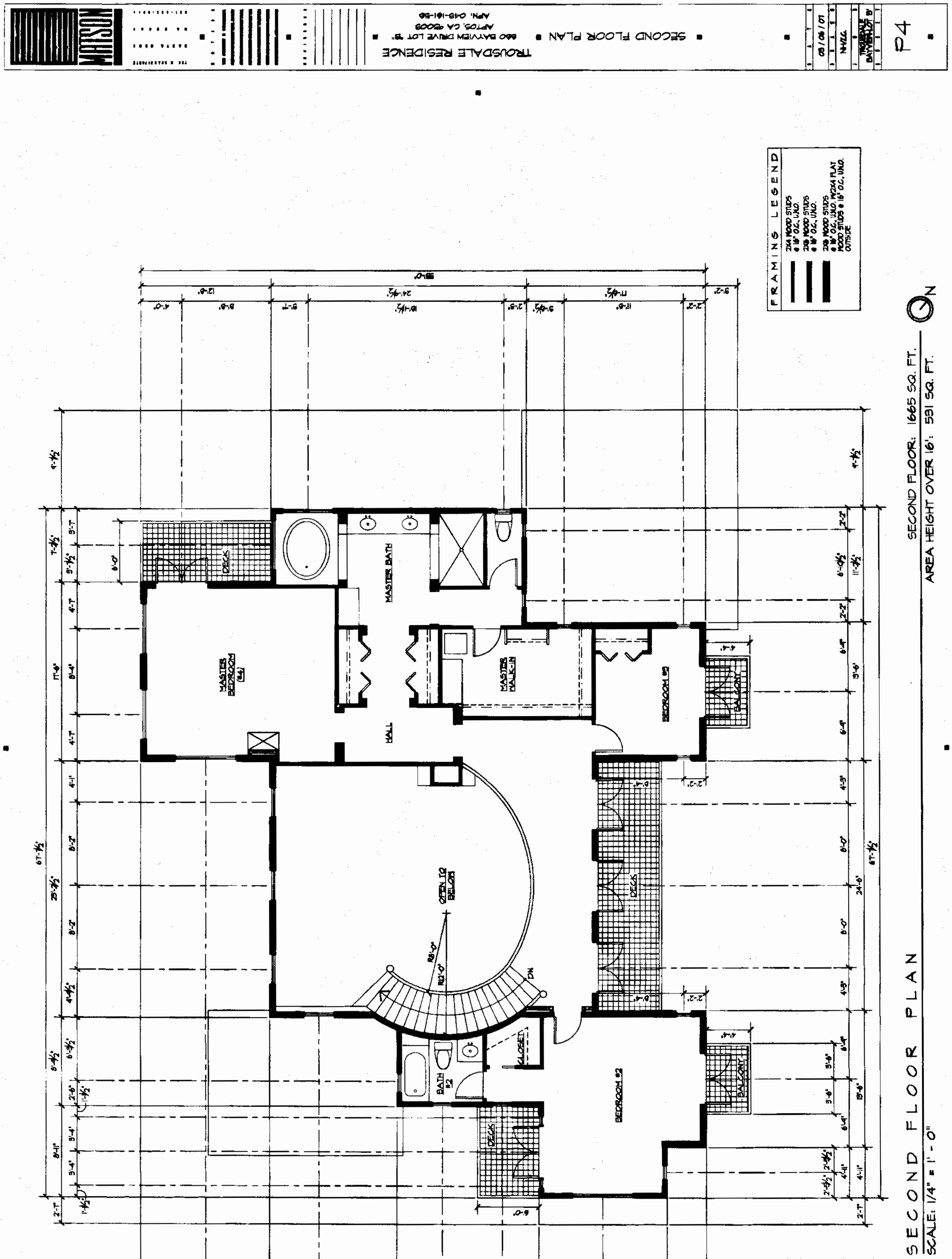
FIRST FLOOR: 2450 SQ. FT.
GARAGE: 500 SQ. FT.

N

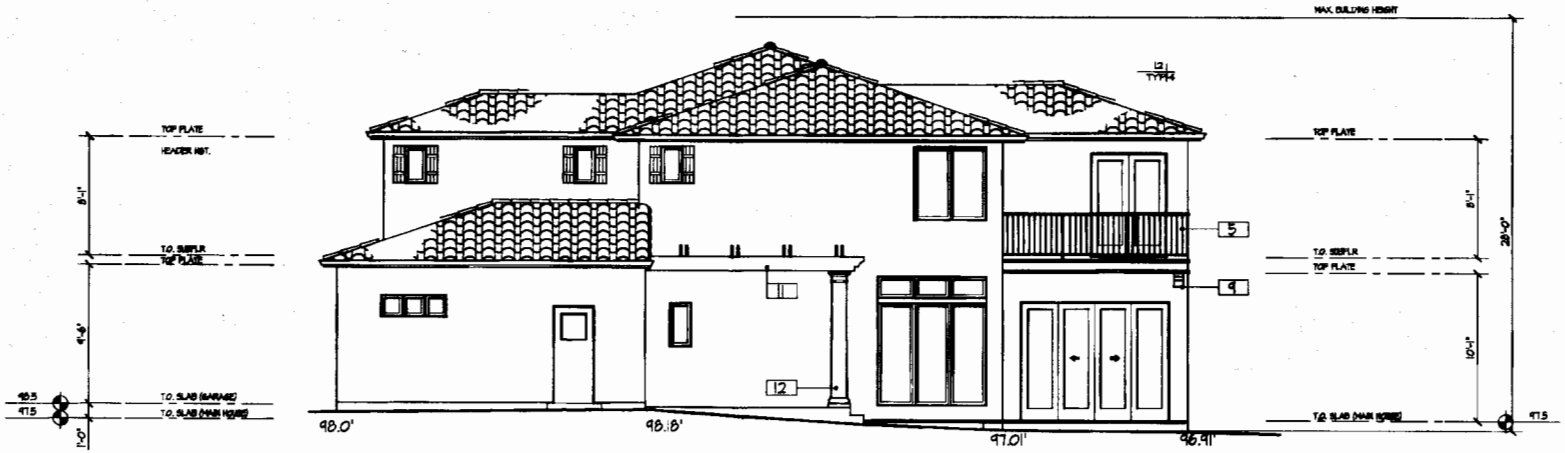
FIRST FLOOR PLAN

SCALE: 1/4" = 1' - 0"

CCC Exhibit 4A
(page 3 of 10 pages)



CCC Exhibit 4A
(page 4 **of** 10 **pages)**



ELEVATION NOTES	
1	CLAY TILE ROOF
2	HAND TROWEL STUCCO W/ INTEGRAL COLOR
3	"EL DORADO" LIMESTONE
4	PRECAST CONCRETE TRIM
5	WROUGHT IRON BALCONY RAIL
6	WOOD SHUTTER
7	COPPER 6.1. GUTTERS
8	COPPER CHIMNEY CAP
9	STAINED WOOD CORBEL
10	STAINED WOOD
11	STAINED WOOD TRELLIS
12	PRECAST CONC. COLUMN

WEST ELEVATION

SCALE: 1/4" = 1' - 0"

NORTH ELEVATION

SCALE: 1/4" = 1' - 0"

CCC Exhibit 4A
(page 5 of 10 pages)

MATSON

TROUSDALE RESIDENCE
660 BAYVIEW DRIVE LOT "B"
APTOS, CA 95003
APN: 043-161-56

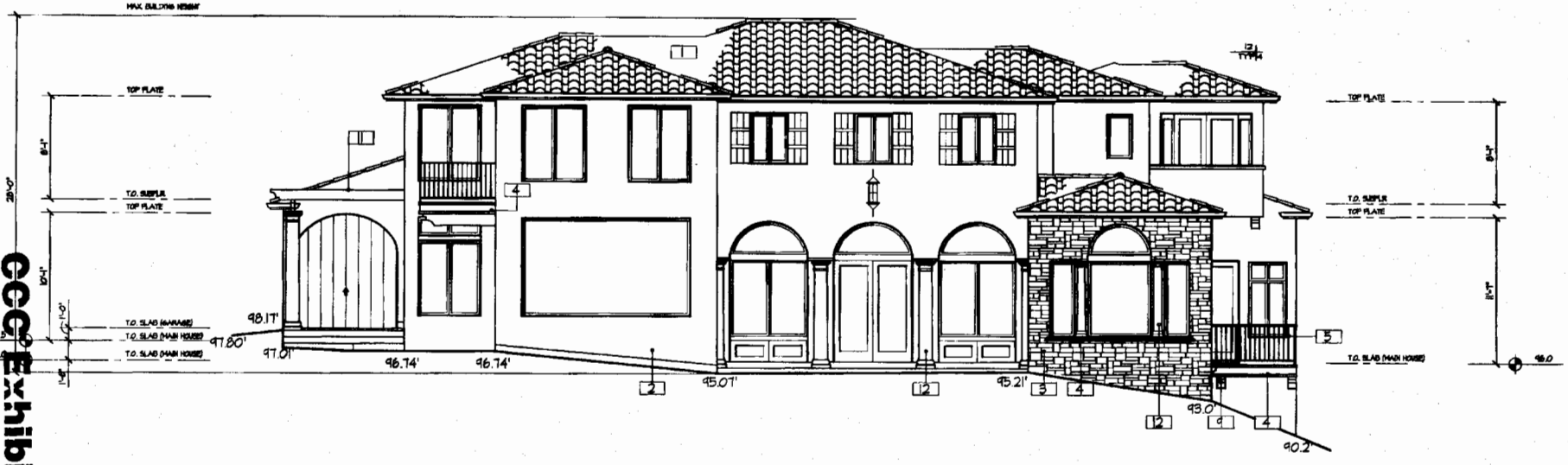
NORTH & WEST ELEVATIONS

08 / 08 / 07
J.C.
TROUSDALE BAYVIEW-LOT "B"

P5

EAST ELEVATION

SCALE: 1/4" = 1' - 0"



SOUTH ELEVATION

SCALE: 1/4" = 1' - 0"

ELEVATION NOTES

1	CLAY TILE ROOF
2	HAND TROWEL STUCCO W/ INTEGRAL COLOR
3	"EL DORADO" LIMESTONE
4	PRECAST CONCRETE TRIM
5	WROUGHT IRON BALCONY RAIL
6	WOOD SHUTTER
7	COPPER G.I. GUTTERS
8	COPPER CHIMNEY CAP
9	STAINED WOOD CORBEL
10	STAINED WOOD
11	STAINED WOOD TRELLIS
12	PRECAST CONC. COLUMN

MATSON

TROUSDALE RESIDENCE
660 BAYVIEW DRIVE LOT "B"
APTOS, CA 95003
APN: 043-161-56

SOUTH & EAST ELEVATIONS

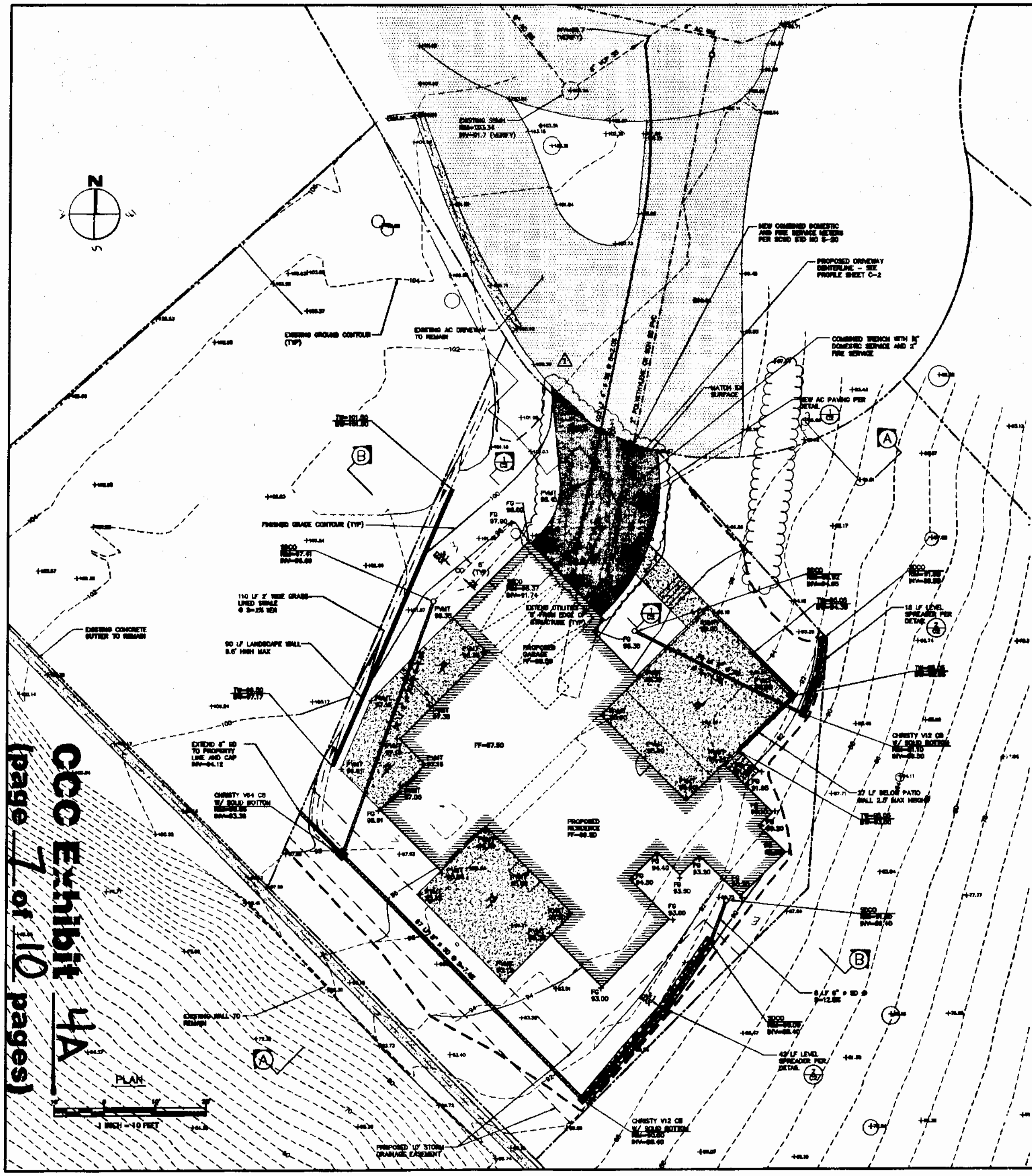
08 / 06 / 01

ZC

TROUSDALE BAYVIEW LOT 'B'

P6

CCC Exhibit 4A (page 6 of 10 pages)



CCC Exhibit 4A
(page 7 of 10 pages)

EARTHWORK AND GRADING

1. WORK SHALL CONSIST OF ALL CLEARING, GRUBBING, STRIPPING, PREPARATION OF LAND TO BE FILLED, EXCAVATION, SPREADING, COMPACTION AND CONTROL OF FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING TO CONFORM TO THE LINES, GRADES, AND SLOPES, AS SHOWN ON THE APPROVED PLANS.

2. ALL GRADING OPERATIONS SHALL CONFORM TO SECTION 19 OF THE CALTRANS STANDARD SPECIFICATIONS, AND SHALL ALSO BE DONE IN CONFORMANCE WITH THE REQUIREMENTS OF THE COUNTY OF SANTA CRUZ. THE MOST STRINGENT GUIDELINE SHALL PREVAIL.

3. REFERENCE IS MADE TO THE GEOTECHNICAL INVESTIGATIONS BY PACIFIC CREST ENGINEERING, INC., ENTITLED "GEOTECHNICAL INVESTIGATION FOR LANDS OF TROUSDALE", DATED AUGUST 2006. THE CONTRACTOR SHALL MAKE A THOROUGH REVIEW OF THIS REPORT AND SHALL FOLLOW ALL RECOMMENDATIONS THEREIN. THE CONTRACTOR SHALL CONTACT PACIFIC CREST ENGINEERING, INC. FOR ANY CLARIFICATIONS NECESSARY PRIOR TO PROCEEDING WITH THE WORK.

4. THE CONTRACTOR SHALL GRADE TO THE LINE AND ELEVATIONS SHOWN ON THE PLAN AND SHALL SECURE THE SERVICES OF A LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER TO PROVIDE STAKES FOR LINE AND GRADE.

5. THE GEOTECHNICAL ENGINEER SHOULD BE NOTIFIED AT LEAST FOUR (4) DAYS PRIOR TO ANY SITE CLEARING AND GRADING OPERATIONS.

6. ENGINEERED FILL SHOULD BE PLACED IN THIN LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS, MOISTURE CONDITIONED, TO 1 TO 3 PERCENT ABOVE THE LABORATORY OPTIMUM VALUE AND COMPACTED TO AT LEAST 90 PERCENT RELATIVE COMPACTION.

7. THE UPPER 8 INCHES OF SUBGRADE IN PAVED AREAS AND ALL AGGREGATE SUBBASE AND AGGREGATE BASE SHALL BE SCARIFIED, MOISTURE CONDITIONED TO PRODUCE A MOISTURE CONTENT WITHIN 1 TO 3 PERCENT ABOVE THE LABORATORY OPTIMUM VALUE, AND UNIFORMLY COMPACTED TO AT LEAST 95 PERCENT RELATIVE COMPACTION. RECOMPACTED SECTIONS SHOULD EXTEND 5' BEYOND ALL BUILDINGS AND PAVEMENT AREAS.

8. MATERIAL USED FOR ENGINEERED FILL SHALL MEET THE REQUIREMENTS OF THE AFOREMENTIONED REPORT BY PACIFIC CREST ENGINEERING, INC.

9. IMPORTED FILL MATERIAL USED AS ENGINEERED FILL FOR THE PROJECT SHALL BE:

a. free of organics, debris, and other deleterious materials,
b. free of "recycled" materials such as asphaltic concrete, concrete, brick, etc.,
c. granular in nature, well graded, and contain sufficient binder to allow utility trenches to stand open,
d. free of rocks in excess of 2 inches in size,
e. have a Plasticity Index between 4 and 12,
f. have a minimum Sand Equivalent of 20, and
g. have a minimum Resistance "R" Value of 30, and be non-expansive.

10. SAMPLES OF ANY PROPOSED IMPORTED FILL PLANNED FOR USE ON THIS PROJECT SHALL BE SUBMITTED TO PACIFIC CREST ENGINEERING, INC. FOR APPROPRIATE TESTING AND APPROVAL NOT LESS THAN 4 WORKING DAYS BEFORE JOBSITE DELIVERY.

APPROXIMATE EARTHWORK QUANTITIES

EXCAVATION	98	CUBIC YARDS	
FILL	40	CUBIC YARDS	
NET	58	CUBIC YARDS	(EXCAVATION)

NOTES:
1. EARTHWORK QUANTITIES ARE APPROXIMATE AND SHALL BE INDEPENDENTLY VERIFIED BY THE CONTRACTOR FOR BIDDING PURPOSES.
2. EARTHWORK VOLUMES INCLUDE EXCAVATION TO ROUGH GRADE FOR CONSTRUCTION OF THE PROPOSED RESIDENCE. EARTHWORK VOLUMES REQUIRED TO CONSTRUCT THE FOUNDATIONS HAVE NOT BEEN INCLUDED.
3. EXCESS SOIL SHALL BE HAULED OR PLACED IN A COUNTY APPROVED LOCATION.

ABBREVIATIONS

Ø	DIAMETER
CB	CATCH BASIN
DWY	DRIVEWAY
EX	EXISTING
EL	ELEVATION
FF	FINISH FLOOR
FL	FLOW LINE
FG	FINISHED GRADE ELEVATION
HP	HIGH POINT
INV	INVERT ELEVATION
LF	LINEAR FEET
MAX	MAXIMUM
NTS	NOT TO SCALE
PVMT	PAVEMENT ELEVATION
RIM	RIM ELEVATION
S	SLOPE
SCCO	COUNTY OF SANTA CRUZ
SCWD	SOQUEL CREEK WATER DISTRICT
SSCO	SANITARY SEWER CLEANOUT
SDCO	STORM DRAIN CLEANOUT
TYP	TYPICAL

LEGEND

- PROPOSED AC PAVING PER DETAIL
- EXISTING AC PAVEMENT TO REMAIN
- PROPOSED CONCRETE
- EXISTING CONCRETE TO REMAIN
- LIMIT OF GRADING

GENERAL NOTES

1. THE CONTRACTOR SHALL MAKE A DETAILED AND THOROUGH STUDY OF THESE PLANS IN THEIR ENTIRETY PRIOR TO ANY WORK ON THE JOBSITE. THE CONTRACTOR IS TO VERIFY ALL EXISTING CONSTRUCTION CONDITIONS AND IS TO COORDINATE THESE DRAWINGS WITH ALL OTHER TRADE DISCIPLINES FOR THE COMPLETED WORK. THE CONTRACTOR IS ALSO TO UNDERSTAND THAT ANY FEATURE OF CONSTRUCTION NOT FULLY SHOWN OR DETAILED SHALL BE OF THE SAME TYPE AS SHOWN FOR SIMILAR CONDITIONS.

2. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY DISCREPANCY OCCURRING ON THE DRAWINGS OR FOUND IN HIS COORDINATION WORK. NO CHANGES IN APPROVED PLANS SHALL BE MADE WITHOUT PRIOR WRITTEN APPROVAL OF THE PROJECT ENGINEER AND THE COUNTY OF SANTA CRUZ DEPARTMENT OF PUBLIC WORKS.

3. ANY REQUEST FOR ALTERATIONS OR SUBSTITUTIONS MUST BE PRESENTED DIRECTLY TO THE PROJECT ENGINEER, ACCOMPANIED BY A DETAILED SKETCH, FOR REVIEW, BEFORE ANY APPROVAL WILL BE GIVEN AND BEFORE PROCEEDING WITH THE WORK. ABSOLUTELY NO ALTERATIONS OF THESE DOCUMENTS OF ANY KIND WILL BE APPROVED ON ANY SHOP DRAWINGS.

4. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS (CALTRANS), LATEST EDITION, THE COUNTY OF SANTA CRUZ DESIGN CRITERIA AND ALL APPLICABLE CODES AND ORDINANCES.

5. THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THE PLANS WERE OBTAINED FROM RECORD DRAWINGS AND MAY NOT REPRESENT TRUE LOCATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION AND DEPTH OF THESE UTILITIES PRIOR TO CONSTRUCTION, AND TO NOTIFY THE PROJECT ENGINEER IN CASE OF CONFLICT.

6. THE CONTRACTOR SHALL SECURE ALL REQUIRED CONSTRUCTION PERMITS FROM THE COUNTY OF SANTA CRUZ PRIOR TO THE START OF WORK.

7. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD PROJECT ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE PROJECT ENGINEER.

8. GRADING SHALL BE DONE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL INVESTIGATIONS AND THE REQUIREMENTS OF THE COUNTY OF SANTA CRUZ.

9. THE CONTRACTOR SHALL NOTIFY THE COUNTY GRADING INSPECTOR, GEOTECHNICAL ENGINEER, THE COUNTY CONSTRUCTION ENGINEER AT LEAST 48 HOURS PRIOR TO TO THE START OF CONSTRUCTION.

10. WORK SHALL BE LIMITED TO 8:00 A.M. TO 5:00 PM WEEKDAYS. NON-NOISE PRODUCING ACTIVITIES, SUCH AS INTERIOR PAINTING, SHALL NOT BE SUBJECT TO THIS RESTRICTION.

11. ALL FIGURE (FIG.) REFERENCES, UNLESS OTHERWISE SPECIFIED, REFER TO STANDARD DRAWINGS IN THE CURRENT EDITION OF THE "COUNTY OF SANTA CRUZ DESIGN CRITERIA."

12. NO LAND CLEARING, GRADING OR EXCAVATING SHALL TAKE PLACE BETWEEN OCTOBER 15 AND APRIL 15 UNLESS THE PLANNING DIRECTOR APPROVES A SEPARATE WINTER EROSION CONTROL PLAN.

13. BETWEEN OCTOBER 15 AND APRIL 15, EXPOSED SOIL SHALL BE PROTECTED FROM EROSION AT ALL TIMES. DURING CONSTRUCTION SUCH PROTECTION MAY CONSIST OF MULCHING AND/OR PLANTING OF NATIVE VEGETATION OF ADEQUATE DENSITY. BEFORE COMPLETION OF THE PROJECT, ANY EXPOSED SOIL ON DISTURBED SLOPES SHALL BE PERMANENTLY PROTECTED FROM EROSION.

14. THE CONTRACTOR SHALL APPLY WATER TO ALL EXPOSED EARTH SURFACES AT INTERVALS SUFFICIENT TO PREVENT AIRBORNE DUST FROM LEAVING THE PROJECT SITE. ALL EXPOSED EARTH SHALL BE WATERED DOWN AT THE END OF THE WORK DAY.

15. WHILE IN TRANSIT TO AND FROM THE PROJECT SITE, ALL TRUCKS TRANSPORTING FILL SHALL BE EQUIPPED WITH TARPS.

16. 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 ARCHEOLOGICAL 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 SHERIFF–CORONER IF THE DISCOVERY CONTAINS HUMAN REMAINS, OR THE PLANNING DIRECTOR IF THE DISCOVERY CONTAINS NO HUMAN REMAINS. THE PROCEDURES ESTABLISHED IN SECTIONS 16.40.040 AND 16.42.100, SHALL BE OBSERVED.

17. ALL CONSTRUCTION STAKING FOR CURB, GUTTER, SIDEWALK, SANITARY SEWER, STORM DRAINS AND WATER LINES SHALL BE DONE UNDER THE SUPERVISION OF A LICENSED LAND SURVEYOR OR REGISTERED CIVIL ENGINEER.

18. THE DIRECTOR OF PUBLIC WORKS, OR HIS AUTHORIZED REPRESENTATIVE, SHALL HAVE THE AUTHORITY TO "STOP WORK" IF THE WORK IS NOT BEING DONE IN ACCORDANCE WITH THE APPROVED IMPROVEMENT PLANS.

19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF CONSTRUCTION QUANTITIES PRIOR TO BIDDING ON ANY ITEM. QUANTITY REFERENCES SHOWN ON THESE PLANS, OR ENGINEER'S ESTIMATES ARE FOR ESTIMATING PURPOSES ONLY AND SHALL NOT BE CONSIDERED AS A BASIS FOR CONTRACTOR PAYMENT. CONSULTANT SHALL NOT BE RESPONSIBLE FOR ANY FLUCTUATIONS IN SUCH QUANTITIES AND ESTIMATES.

20. THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE FOR, OR LIABLE FOR, UNAUTHORIZED CHANGES TO, OR USES OF, THESE PLANS. ALL CHANGES MUST BE IN WRITING AND MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.

21. UNDERGROUND UTILITY LOCATIONS SHOWN ARE COMPILED FROM INFORMATION SUPPLIED BY UTILITY AGENCIES, AND ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY LOCATIONS OF AFFECTED UTILITY LINES PRIOR TO ANY TRENCHING OR EXCAVATING AND POTHOLE THOSE AREAS WHERE POTENTIAL CONFLICTS EXIST OR WHERE DATA IS OTHERWISE INCOMPLETE. FOR LOCATION, CALL USA 1-800-624-1444.

22. ANY EXISTING UTILITIES THAT ARE REQUIRED TO BE RELOCATED AS A PART OF THIS CONSTRUCTION SHALL BE RELOCATED AT THE DEVELOPER'S EXPENSE.

STORM DRAINAGE NOTES

1. CULVERTS SHALL BE REINFORCED CONCRETE PIPE (RCP), POLYVINYL CHLORIDE (PVC), OR HIGH DENSITY POLYETHYLENE (HDPE) AND SHALL HAVE A SMOOTH INTERIOR CONFORMING TO SECTION E – STORM DRAINAGE FACILITIES OF COUNTY OF SANTA CRUZ DESIGN CRITERIA.

2. INLETS SHALL BE CHRISTY CONCRETE PRODUCTS OR APPROVED EQUAL.

3. CONNECT ALL DOWNSPOUTS TO PERIMETER STORM DRAIN.

TOPOGRAPHIC SURVEY

THE TOPOGRAPHIC SURVEY AND BOUNDARY INFORMATION PROVIDED HEREON WAS COMPLETED BY GARY IFLAND AND ASSOCIATES LAND SURVEYING. RI ENGINEERING INC. MAKES NO GUARANTEE AS TO THE ACCURACY OF BOTH. THE CONTRACTOR SHALL VERIFY THE BOUNDARY LOCATION AND TOPOGRAPHIC INFORMATION PRIOR TO COMMENCING WORK.

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THIS SURVEY IS CALIFORNIA COORDINATE SYSTEM 1983 (CCS83–1991.35) GRID BEARINGS AS ESTABLISHED FROM GPS OBSERVATIONS AT HPGN CONTROL MONUMENTS 04AJ (SOQUEL) AND 04AK (WATSONVILLE WEST) AND LOCAL CONTROL FOR THIS SURVEY.
THE GRID BEARING BETWEEN 04AK AND 04AJ IS NORTH 67°37'42.28" WEST

BENCHMARK

ELEVATIONS FOR THIS SURVEY ARE BASED ON SANTA CRUZ COUNTY BENCHMARK 39A, A CONCRETE MONUMENT II–36 AT THE END OF CLIFF DRIVE EAST OF THE COASTAL ACCESS GATE TO HIDDEN BEACH. ELEVATION=62.88' THE TEMPORARY BENCHMARK FOR THIS SURVEY IS A PK NAIL AND SHINER SET IN THE AC ROAD. T.B.M. ELEVATION IS DETERMINED USING COUNTY BENCHMARK 39A T.B.M. ELEVATION=104.40'

1 REVISED PER COUNTY COMMENTS, MAY 2007

RICHARD J. IRISH No. 40889 Exp. 12–31–08 CIVIL STATE OF CALIFORNIA

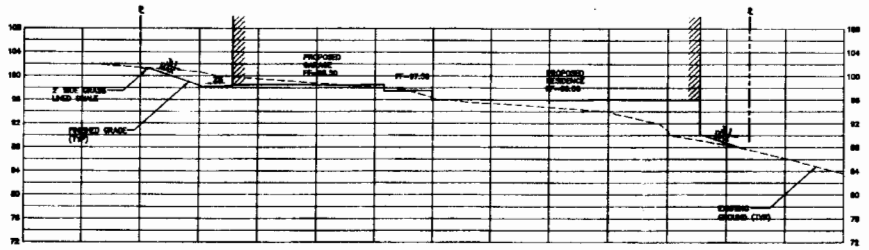
RI Engineering, Inc.
303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-425-3901 www.riengineering.com

TROUSDALE RESIDENCE
FOR
KELLEY AND CINDY TROUSDALE
880 BAYVIEW DRIVE
RIO DEL MAR, CALIFORNIA
APN 043-161-50

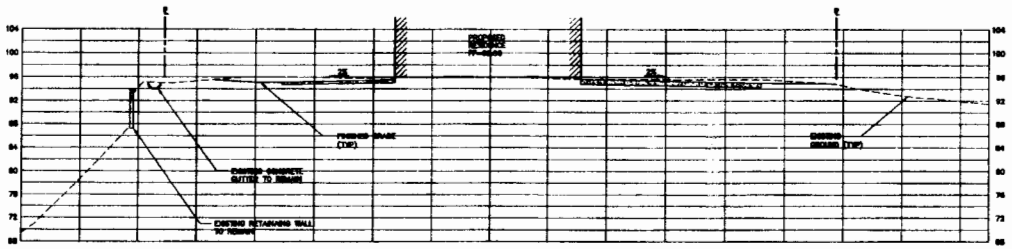
GRADING AND DRAINAGE PLAN

project no. 07-005-1
date MAY 2007
scale AS SHOWN
dwg name CIVIL.dwg

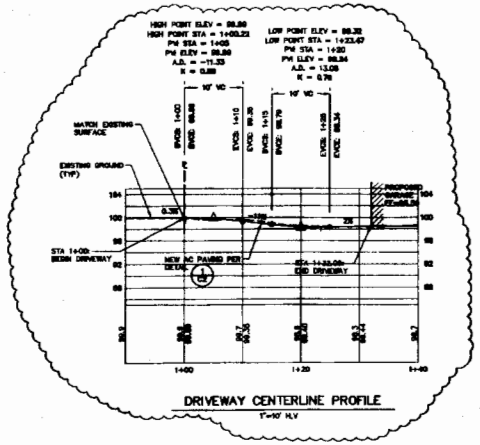
C-1



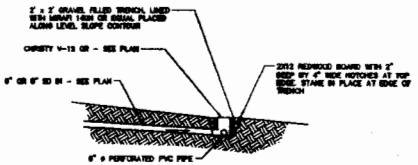
SECTION B–B
1"=10' H,V



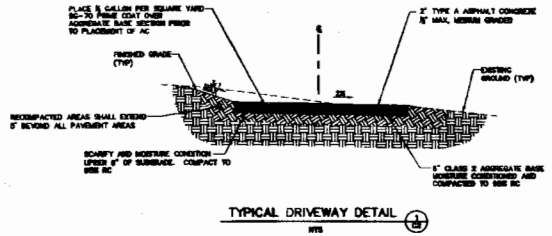
SECTION A–A
1"=10' H,V



DRIVEWAY CENTERLINE PROFILE
1"=10' H,V



LEVEL SPREADER DETAIL
NTS



TYPICAL DRIVEWAY DETAIL
NTS

REVISED PER COUNTY COMMENTS, MAY 2007

R.I Engineering, Inc.
303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-425-3901 www.rlengineering.com

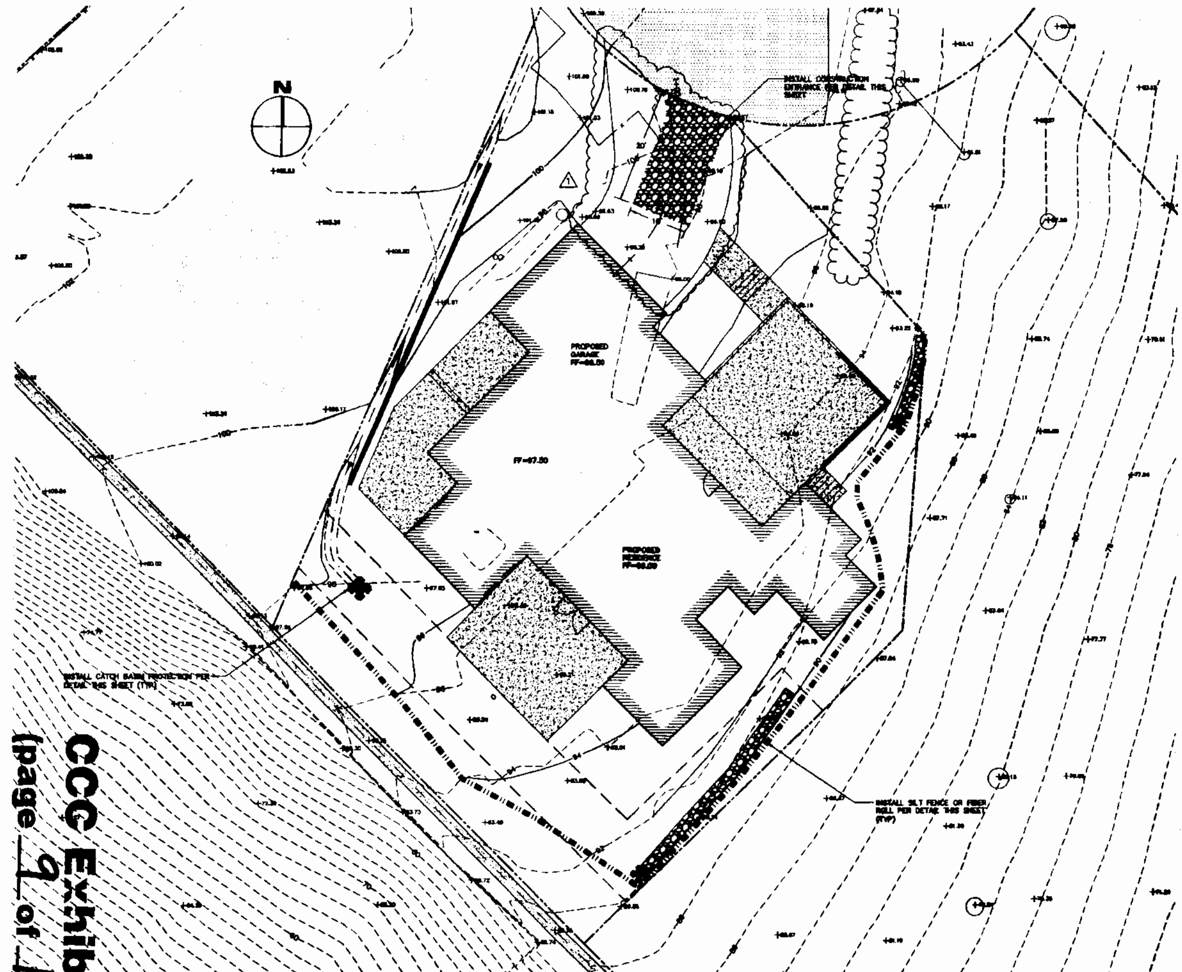
TROUBLEDALE RESIDENCE
FOR
KELLEY AND CINDY TROUBLEDALE
860 BAYVIEW DRIVE
RIO DEL MAR, CALIFORNIA
APN 043-161-50

DETAILS AND SECTIONS

project no. 07-005-1
date MAY 2007
scale AS SHOWN
dwg name CIVIL.dwg

C-2

CCC Exhibit 4A (page 8 of 16 pages)



PLAN

1 INCH = 10 FEET

EROSION CONTROL LEGEND

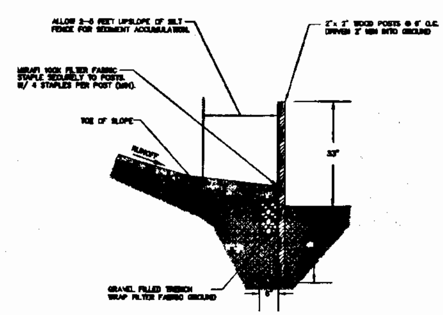
(symbol)	INSTALL STABILIZED CONSTRUCTION ENTRANCE PER DETAIL THIS SHEET
(symbol)	INSTALL SILT FENCE OR FIBER ROLL PER DETAILS THIS SHEET
(symbol)	INSTALL CATCH BASIN PROTECTION PER DETAIL THIS SHEET

EROSIOIN CONTROL MEASURES

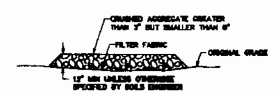
1. EROSION IS TO BE CONTROLLED AT ALL TIMES ALTHOUGH SPECIFIC MEASURES SHOWN ARE TO BE IMPLEMENTED AT A MINIMUM BY OCTOBER 15.
2. UNLESS SPECIFIC MEASURES ARE SHOWN OR NOTED ON THIS PLAN, ALL COLLECTED RUNOFF SHALL BE CARRIED TO DRAINAGE COURSES IN LINED CONDUITS. DISCHARGE SHALL BE IN THE LOCATIONS SHOWN ON THE PLANS.
3. THE DESIRED END RESULT OF THESE MEASURES IS TO CONTROL SITE EROSION AND PREVENT SEDIMENT TRANSPORT OFF THE SITE. IT SHALL BE THE DEVELOPER'S RESPONSIBILITY TO SEE THAT ANY ADDITIONAL MEASURES NECESSARY TO MEET THIS GOAL ARE IMPLEMENTED. IF FAILED INSPECTIONS BY CITY STAFF SHOW THIS GOAL IS NOT BEING MET, ADDITIONAL MEASURES MAY BE REQUIRED.
4. ALL DISTURBED AREAS NOT CURRENTLY BEING USED FOR CONSTRUCTION SHALL BE SEEDED WITH THE FOLLOWING SEED MIXTURE:

BROMUS CARINATUS	10#/ACRE
LEYMUS TRITICOIDES	10#/ACRE
HORDEUM BRACHYANTHERUM	6#/ACRE

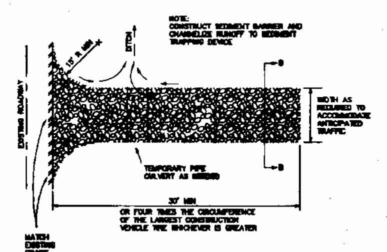
5. AFTER SEEDING, STRAW MULCH WILL BE APPLIED IN 4" (AVG.) LAYERS.
6. AMMONIUM PHOSPHATE FERTILIZER, 6-3-3, SHALL BE APPLIED AT A RATE OF 30 LBS. PER ACRE. ON SLOPES GREATER THAN 10% EROSION CONTROL BLANKET (NORTH AMERICAN GREEN) SHALL BE APPLIED.
7. SILT BARRIERS SHALL BE PLACED END TO END AND STAKED DOWN ALONG THE BOTTOM OF ALL GRADED SLOPES.



SILT FENCE DETAIL
NTS

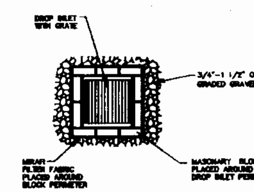


SECTION B-B
NTS



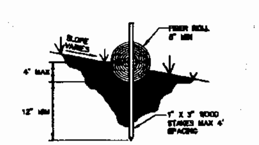
PLAN
NTS

CONSTRUCTION ENTRANCE DETAIL
NTS

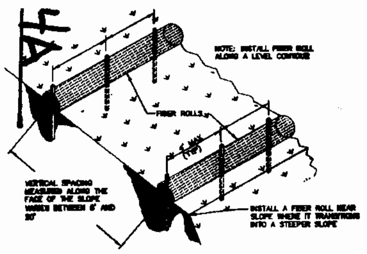


PLAN

BLOCK AND GRAVEL FILTER DETAIL
N.T.S.



FIBER ROLL DETAIL IN SLOPE AREA
NTS



TYPICAL FIBER ROLL INSTALLATION
NTS

⚠1 REVISED PER COUNTY COMMENTS, MAY 2007

RJ Engineering, Inc.
303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-425-3901 www.rjengineering.com

TROUSDALE RESIDENCE
FOR
KELLEY AND CINDY TROUSDALE
660 BAYVIEW DRIVE
RIO DEL MAR, CALIFORNIA
APN 043-181-50

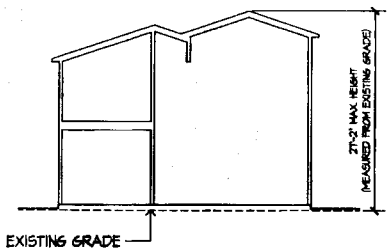
EROSION CONTROL PLAN

project no.	07-005-1
date	MAY 2007
scale	AS SHOWN
dwg name	CIVIL.dwg

C-3

CCC Exhibit 4A
(page 9 of 10 pages)

CCC Exhibit 4A
(page 10 of 10 pages)



SECTION @ HIGH PT.

SCALE: 1/8" = 1' - 0"

TROUSDALE RESIDENCE

NEW RESIDENCE

660 BAYVIEW DRIVE, LOT A

APTOS, CA 95003

PROJECT SUMMARY

OWNERS:	KELLEY AND CINDY TROUSDALE 660 BAYVIEW DRIVE APTOS, CA 95003
A. P. N.:	043 - 161 - 57
ZONING:	R-1-6
OCCUPANCY GROUP:	R-3 & U-1 (PER 2001 U.B.C.)
CONSTRUCTION TYPE:	V-N, FULLY SPRINKLERED

PROJECT DESCRIPTION:
THIS PROJECT CONSISTS OF A NEW TWO STORY SINGLE FAMILY DWELLING WITH FOUR BEDROOMS, 3 1/2 BATHS, FAMILY ROOM, LIVING ROOM, KITCHEN, DINING, AND AN ATTACHED TWO CAR GARAGE.

PROJECT CALC'S

LOT SIZE:	8481 SQ. FT.
GROSS FLOOR AREAS:	
FPROPOSED FIRST FLOOR:	2042 SQ. FT.
PROPOSED SECOND FLOOR:	1768 SQ. FT.
TOTAL CONDITIONED AREA:	
GARAGE:	441 SQ. FT.
TOTAL FLOOR AREA:	425 SQ. FT.
LESS COUNTY GARAGE CREDIT:	-225 SQ. FT.
ADJUSTED TOTAL FLOOR AREA:	4026 SQ. FT.
AREA OVER 16' IN HEIGHT	201 S.Q. FT.

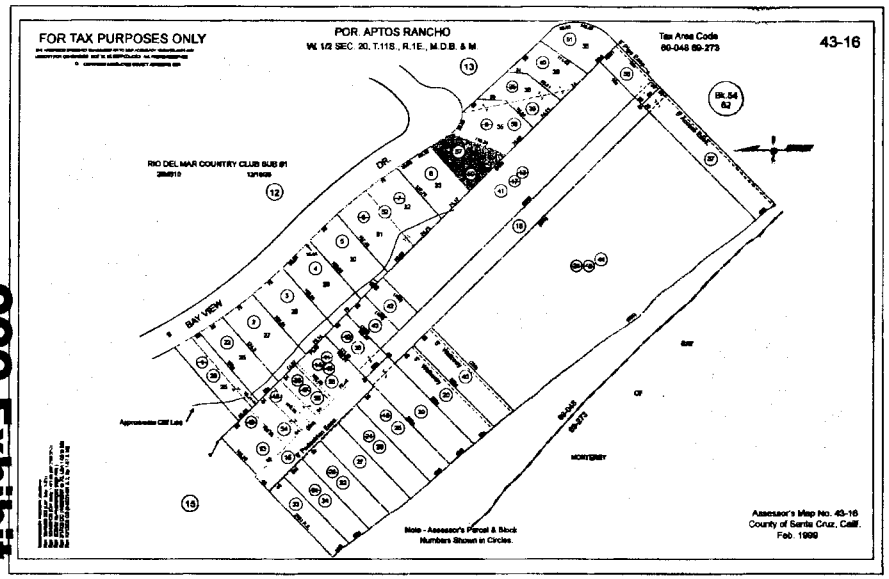
ALLOWABLE F.A.R. = 50%

F.A.R.: (4026+201) 4227 S.F. / 8481 S.F. = 49.84%

TOTAL LOT COVERAGE (2042+441) : 2483 SQ. FT.

ALLOWABLE LOT COVERAGE = 30%

LOT COVERAGE: 2483 S.F. / 8481 S.F. = 29.28%



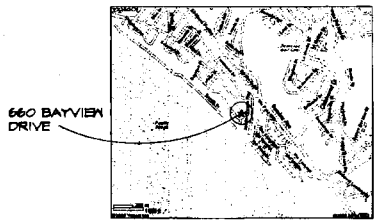
A.P.N. MAP

N.T.S.

CONSULTANTS

ARCHITECTS	MATSON BRITTON ARCHITECTS 728 N. BRANCIFORTE SANTA CRUZ, CA 95062 PHONE: 831-425-0544 FAX: 831-425-4795 EMAIL: denise@matsonbritton.com CONTACT: DENISE FORBES
SOILS:	PACIFIC CREST ENGINEERING 444 AIRPORT BLVD., STE. 106 MATSONVILLE, CA 95076 PHONE: 831-722-9446 FAX: 831-722-9156 EMAIL: elizabeth@pacengineering.net CONTACT: ELIZABETH MITCHELL
GEOLOGY:	ZINN GEOLOGY 3085 CARRIKER LANE SOQUEL, CA 95073 PHONE: 831-476-8448 FAX: 831-476-1491 EMAIL: enzinn@cruzio.com CONTACT: ERIC ZINN
GRADING & DRAINAGE	R.I. ENGINEERING 908 POTRERO STREET, STE. 42-202 SANTA CRUZ, CA 95060 PHONE: 831-425-9901 FAX: 831-425-1522 EMAIL: richard@riengineering.com CONTACT: RICHARD IRISH
SURVEY:	GARY IFLAND & ASSOCIATES 908 POTRERO, STE. 43-108 SANTA CRUZ, CA. 95060 PHONE: 831-426-7941 FAX: 831-426-6266 EMAIL: kevin@ifandsurvey.com CONTACT: KEVIN SMITH

SHEET INDEX



VICINITY MAP

N.T.S.

MATSON

REV. 2/15/08

TROUSDALE RESIDENCE
660 BAYVIEW DRIVE LOT "A"
APTOS, CA 95003
APN: 043-161-57

TITLE SHEET

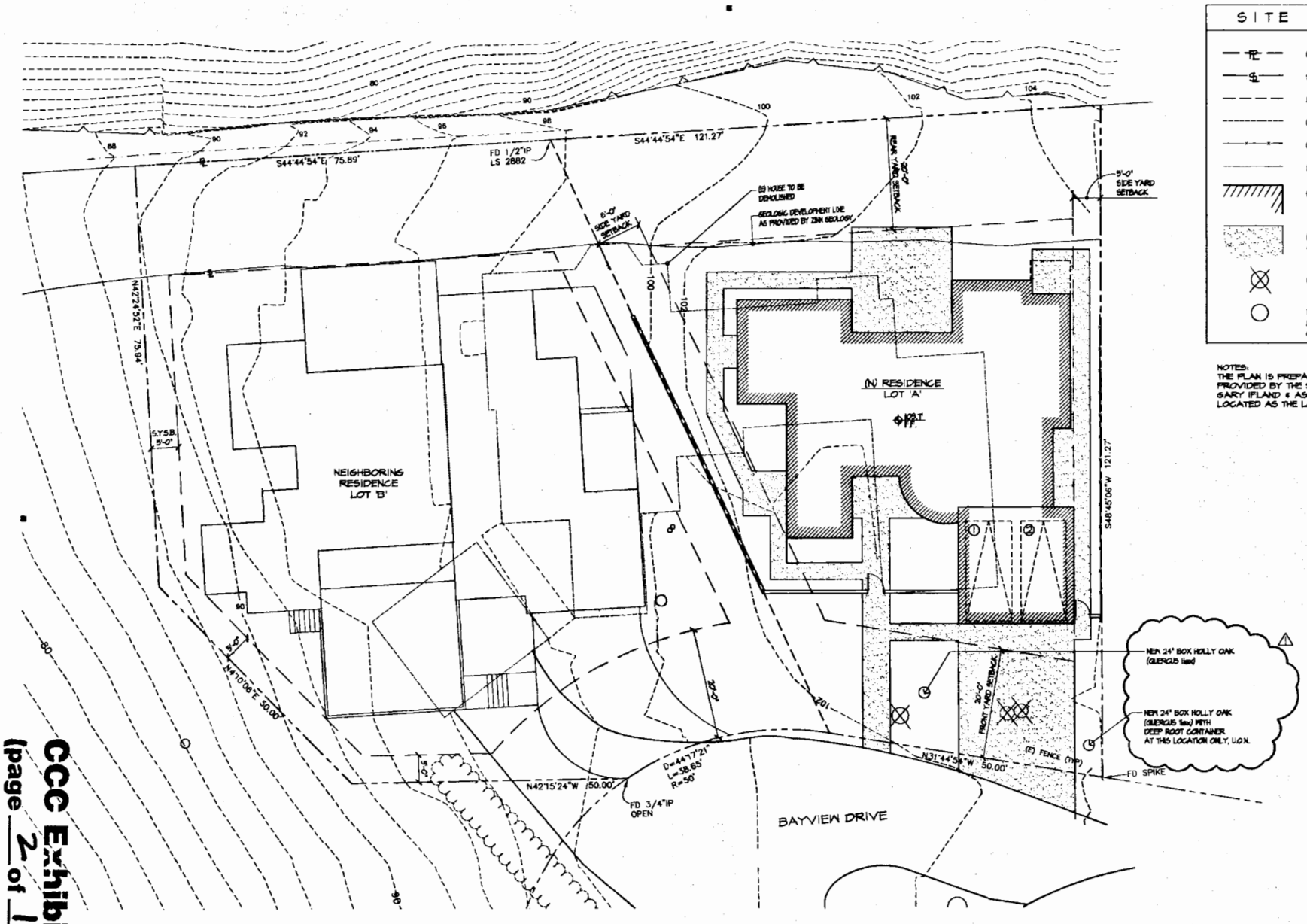
06 / 21 / 07

RJF.

TROUSDALE BAYVIEW-LOT 'A'

P1

CCC Exhibit 4B (page 1 of 12 pages)



SITE LEGEND

- PROPERTY LINE
- SETBACK LINE
- LINE OF OVERHANG ABOVE
- (E) HOUSE TO BE DEMOLISHED
- (E) HOUSE TO BE DEMOLISHED
- (E) HOUSE TO BE DEMOLISHED
- (N) RESIDENCE
- (N) CONCRETE DRIVEWAY AND WALKWAYS
- (E) TREE TO BE REMOVED
- NEW TREE - SEE INDIVIDUAL LOCATION FOR SPECIES & SIZE OF REPLACEMENT TREE

NOTES:
THE PLAN IS PREPARED WITH INFORMATION PROVIDED BY THE SURVEY PREPARED BY GARY IPLAND & ASSOC. SEE ORIGINAL SURVEY LOCATED AS THE LAST SHEET OF THIS SET.

SITE PLAN
SCALE: 1/8" = 1'-0"

N

MATSON

REV. 1/30/07

TROUSDALE RESIDENCE
880 BAYVIEW DRIVE LOT "A"
APTOS, CA 95003
APN: 043-161-57

SITE PLAN

08 / 21 / 07

R.P.

TROUSDALE BAYVIEW.DWG

P2

CCC Exhibit 4B
(page 2 of 10 pages)

MATSON

TROUSDALE RESIDENCE
880 BAYVIEW DRIVE LOT 'A'
ARTOS, CA 95003
APN: 048-181-07

FIRST FLOOR PLAN

08/21/07

P3

FIRST FLOOR: 2042 SQ. FT.
GARAGE: 441 SQ. FT.

FIRST FLOOR PLAN

SCALE: 1/4" = 1'-0"

CCC Exhibit 4B
(page 3 of 10 pages)

TROUSDALE RESIDENCE
660 BAYVIEW DRIVE LOT 'A'
APTOS, CA 95003
APN: 040-161-57

SECOND FLOOR PLAN

08/27/07

P4

SECOND FLOOR PLAN
SCALE: 1/4" = 1'-0"

SECOND FLOOR: 1768 SQ. FT.

N

CCC Exhibit 4B
(page 4 of 10 pages)

MATSON

TROUSDALE RESIDENCE
660 FAIRVIEW DRIVE LOT 'A'
APTOS, CA 95003
APN: 043-181-37

EAST & NORTH ELEVATIONS

05/18/07

P5

ELEVATION NOTES

1. CLAY TILE ROOF
2. COPPER ONCE GUTTERS
3. 2 COAT HAND TROWEL STUCCO W/ INTEGRAL COLOR
4. STONE VENEER, EL DORADO XERETO FIELDSTONE
5. PRECAST CONCRETE COLUMNS
6. PRECAST CONCRETE TRIM
7. WROUGHT IRON BALCONY GUARD RAIL
8. WOOD SHUTTERS
9. WOOD CORBEL
10. WOOD TRELLIS
11. GLAZED WOOD WINDOWS AND FRENCH DOORS
12. FLASH WOOD DOORS
13. WINDOWS W/ CONCEALED METAL FRAME

EAST ELEVATION
SCALE: 1/4" = 1'-0"

NORTH ELEVATION
SCALE: 1/4" = 1'-0"

CCC Exhibit 4B
(page 5 of 10 pages)

WEST ELEVATION ②

SCALE: 1/4" = 1' - 0"

SOUTH ELEVATION ①

SCALE: 1/4" = 1' - 0"

ELEVATION NOTES

1. CLAY TILE ROOF
2. COPPER OGEE GUTTERS
3. 2 COAT HARD TROWEL STUCCO W/ INTEGRAL COLOR
4. STONE VENEER, EL DORADO VENETO FIELDLEDGE
5. PRECAST CONCRETE COLUMNS
6. PRECAST CONCRETE TRIM
7. WROUGHT IRON BALCONY GUARD RAIL
8. WOOD SHUTTERS
9. WOOD CORBEL
10. WOOD TRELLIS
11. CLAD / WOOD WINDOWS AND FRENCH DOORS
12. PLANK WOOD DOORS
13. WINDOWS W/ CONCEALED METAL FRAME

MATSON

TROUSDALE RESIDENCE
880 BAYVIEW DRIVE LOT "A"
APTOS, CA 95003
APN: 043-161-57

WEST & SOUTH ELEVATIONS

05/16/01

P6

CCC Exhibit 12
(page 6 of 10 pages)

SITE IMPROVEMENTS
FOR
KELLY AND CINDY TROUSDALE
660 BAYVIEW DRIVE
SANTA CRUZ COUNTY, CALIFORNIA
APN 043-181-37
GRADING AND DRAINAGE PLAN
project no. 07-005-2
date SEPTEMBER 2007
scale AS SHOWN
drawn by
check_date.dwg
C-1
REVISED PER COUNTY COMMENTS, SEPTEMBER 2007
REVISED PER COUNTY COMMENTS, FEBRUARY 13, 2008
RJ Engineering, Inc.
303 Potrero St., Suite 42-202, Santa Cruz, CA 95060
831-426-3901 www.rengineering.com
GENERAL NOTES
EARTHWORK AND GRADING
ABBREVIATIONS
APPROXIMATE EARTHWORK QUANTITIES
LEGEND
STORM DRAINAGE NOTES
TOPOGRAPHIC SURVEY
BASIS OF BEARINGS
BENCHMARK
PLAN
CCC Exhibit 4B
(page 7 of 10 pages)

CCC Exhibit 4B
(page 8 of 10 pages)

CCC Exhibit 4B
(page 9 of 10 pages)

GARY IRLAND & ASSOC.
SURVEYING | MAPPING | GPS

Cindy Trousdale
000 Bay View Drive, Aptos, CA

CCC Exhibit 4B
(page 10 of 10 pages)

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060-4508
VOICE (831) 427-4863 FAX (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: Fay H. Levinson
Mailing Address: 650 Hidden Beach Way
City: Aptos Zip Code: 95003 Phone: 688-9041

SECTION II. Decision Being Appealed

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

2. Brief description of development being appealed:
660 Bay View, Aptos
tear down existing home; develop 2 large lots with larger homes; remove existing trees.

3. Development's location (street address, assessor's parcel no., cross street, etc.):
660 Bay View Dr; Aptos 95003
Application 07-0117

4. Description of decision being appealed (check one.):

- ☐ Approval; no special conditions
- ☒ Approval with special conditions:
- ☐ Denial

RECEIVED
JUN 02 2008
CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

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-08-029
DATE FILED: June 5, 2008
DISTRICT: Central Coast

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

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

☒ Planning Director/Zoning Administrator
☐ City Council/Board of Supervisors
☒ Planning Commission
☐ Other

6. Date of local government's decision: May 2008

7. Local government's file number (if any): 07-0117

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: Cove Britton

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

(1)

(2)

(3)

(4)

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 3)

SECTION IV. Reasons Supporting This Appeal

PLEASE 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.
- 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.)
- This 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.

The development of the bluff which abuts a public beach (Hidden Beach) is inconsistent with the area. Public Viewshed would be significantly compromised. The bluff additionally, has proven to be unstable and erodes more each year. This is the only bluff left undeveloped in the area and the public Viewshed would be significantly impacted by the development of these two lots as proposed.

CCC Exhibit 5
(page 3 of 9 pages)

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

SECTION V. Certification

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

Signature of Appellant(s) or Authorized Agent

Date: 5-29-08

Note: If signed by agent, appellant(s) must also sign below.

Section VI. Agent Authorization

I/We hereby authorize _____
to act as my/our representative and to bind me/us in all matters concerning this appeal.

Signature of Appellant(s)

Date: _____

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, Governor

CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060-4508
VOICE (831) 427-4863 FAX (831) 427-4877

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JUL 29 2008
CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT

Please Review Attached Appeal Information Sheet Prior To Completing This Form.

SECTION I. Appellant(s)

Name: Fay H. Levinson
Mailing Address: 650 Hidden Beach Way
City: Aptos Zip Code: 95003 Phone: 688-9041

SECTION II. Decision Being Appealed

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

2. Brief description of development being appealed:
660 ~~Bayview Aptos~~; tear down existing home & develop 2 large lots with larger homes; remove existing trees. Lot split in to two lots from one existing house

3. Development's location (street address, assessor's parcel no., cross street, etc.):
660 Bayview Dr., ~~Aptos~~, 95003
Appn. 5 043-61-57 and 58.

4. Description of decision being appealed (check one.):

☐ Approval; no special conditions
☒ Approval with special conditions:
☐ 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-08-042
DATE FILED: August 19, 2008
DISTRICT: Central

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

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

- ☑ Planning Director/Zoning Administrator
- ☐ City Council/Board of Supervisors
- ☐ Planning Commission
- ☐ Other

6. Date of local government's decision: July 11, 2008

7. Local government's file number (if any): APN 043-161-57 and 58

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: Cove Britton

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

(1)

(2)

(3)

(4)

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 3)

SECTION IV. Reasons Supporting This Appeal

PLEASE 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.
- 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.)
- This 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.

As in the previous appeal to the tear-down of 660 Bayview a second home on the bluff will significantly impact the viewshed from the beach below (which is being transferred current by to the state/county). The bluff is the only undeveloped parcel left in the area and the stability of the bluff is also questionable due to natural erosion.

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

SECTION V. Certification

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

Signature of Appellant(s) or Authorized Agent

Date: 7-24-08

Note: If signed by agent, appellant(s) must also sign below.

Section VI. Agent Authorization

I/We hereby
authorize _____
to act as my/our representative and to bind me/us in all matters concerning this appeal.

Signature of Appellant(s)

Date: _____

Susan Craig

From: fay and joe [fayjoe1@comcast.net]
Sent: Wednesday, August 06, 2008 3:16 PM
To: Susan Craig
Cc: fay and joe
Subject: Lot Split Appeal and Development of Cliff at 660 BayView Drive, Aptos

The following is an amendment to my two appeals on 660 BayView Drive, Aptos: is the lot split legal? Are there really two lots there which the Planning/Zoning Department has approved with conditions? Is this really one lot that is being divided illegally into two "buildable" lots?

Please let me know if you need any additional information from me and if I can be of any help in ascertaining information on this development proposal. Thank you very much!

Fay Levinson

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400

18 June 2009

GEOTECHNICAL REVIEW MEMORANDUM

To: Susan Craig, Coastal Program Analyst
From: Mark Johnsson, Staff Geologist
Re: Appeals A-3-SCO-08-029, A-3-SCO-08-042, A-3-SCO-09-001, A-3-SCO-09-002, A-3-SCO-09-003 (Trousdale, Frank)

In connection with the above-referenced appeals, I have reviewed the following documents:

G.E. Weber Geologic Consultant, 2009, "Projecting future sea-level rise: What is a reasonable estimate for the next century?" 8 p. report dated 24 February 2009 and signed by G.E. Weber (CEG 1495).

Pacific Crest Engineering, 2009, "Response to California Coastal Commission comments, Trousdale residence, A.P.N. 043-161-57, 660 Bayview Drive, Rio del Mar, Santa Cruz County, California", 18 p. Geotechnical Report dated 26 February 2009 and signed by E.M. Mitchell (GE 2718).

Pacific Crest Engineering, 2009, "Response to California Coastal Commission comments, Lands of Frank, Bayview Drive, A.P.N. 043-161-51, -40, -39, Rio del Mar, Santa Cruz County, California", 27 p. Geotechnical Report dated 26 February 2009 and signed by E.M. Mitchell (GE 2718).

Zinn Geology, 2009, "Supplemental analysis in response to California Coastal Commission comments, Bayview Drive, Aptos, California, County of Santa Cruz APN 043-161-57 and 043-161-50", 9 p. letter report to Kelley and Cindy Trousdale dated 26 February 2009 and signed by E.N. Zinn (CEG 2139).

Zinn Geology, 2009, "Supplemental analysis in response to California Coastal Commission comments, Parcels southeast of Bayview Drive, Aptos, California, County of Santa Cruz APN's 043-161-51, -40, & -39", 9 p. letter report to Neil Frank dated 26 February 2009 and signed by E.N. Zinn (CEG 2139).

As is apparent from their titles, these reports were written in response to questions that I raised in an earlier review of geotechnical reports related to the proposed development of these parcels. Specifically, a request was made to evaluate future coastal erosion and bluff retreat to be expected on these parcels over the 100-year design life of the proposed development taking into account anticipated acceleration of the current rate of sea level rise. Further, I requested refined quantitative slope stability analyses that would supplement earlier analyses which I felt were too restrictive of potential failure mechanisms.

Future Sea Level Rise

The report by Weber, referenced above, is an evaluation of the amount of sea level rise that may occur over the next century. The report references much of the recent literature on sea level rise, and emphasizes estimates by the Intergovernmental Panel on Climate Change (2007) that range between 9 and 87 cm of sea level rise (with 90% confidence limits on the range 18-60 cm) by the year 2100. Weber states that "These ranges are generally consistent with the findings of other workers (Rahmsdorf [sic], 2007; Cayan et al., 2006)." Weber then goes on to emphasize the uncertainty in predicting future sea level rise, particularly pointing out uncertainty discussed in papers by Jevrejeva, Moore and Grinsted (2008), Church and White (2006), and Jevrejeva et al. (2008). Citing such uncertainty, he concludes that the least conservative estimate for sea-level rise should apply to single family residences (such as the proposed development), while "critical facilities" should assume a more conservative amount of sea-level rise. Weber concludes that for the proposed development

> "a reasonable assumption for sea level rise in the next century, to be applied to geologic hazard and risk analysis for single family residences is ... equal to or greater than the total sea level rise in the 20th century and consistent with the rate of rise (acceleration) over the past 20-30 years. This number would lie someplace between 300-340 mm, approximately 11 to 13 inches."

I note that this amount of sea level rise is at the low end of what most researchers are now predicting for sea level rise over the next century. Indeed, as reported in a New York Times editorial (21 February 2009), the assumptions behind the 2007 IPCC estimates already appear to be outdated.

Commission staff has recently been recommending that analysis for the effects of sea level rise take a "sensitivity analysis" approach; assuming a minimum rate of 3 feet per century and a maximum of 6 feet per century. This recommendation is based on staff's research into the recent literature. The Commission recently adopted such an approach in an amendment to the City of Crescent City Local Coastal Plan, and it is staff's recommendation that this approach be adopted into future Local Coastal Programs as they are revised.

The rationale for this approach is explained in the findings for the City of Crescent City LCP Amendment No. CRC-MAJ-1-09:

> Sea level rise is an important consideration for the planning and design of projects in coastal settings. Such changes in sea level will exacerbate the frequency and intensity of wave energy received at shoreline sites, including both storm surge and tsunamis, resulting in accelerated coastal erosion and flooding in such locales. There are many useful records of historic sea level change, but little certainty about how these trends will change with possible large increases in atmospheric greenhouse gas emissions and air temperatures. Notwithstanding the controversy and uncertainties about future global or local sea levels, guidance on how to address sea level rise in planning and permitting process is evolving as new information on climate change and related oceanic responses become available.
>
> The Commission, like many others permitting agencies, have undertaken past assessments of sea level rise effects using the principal of "uniformitarianism" as guidance — that natural processes such as erosion, deposition, and sea level changes occur at relatively uniform rates over time

rather than in episodic or sudden catastrophic events. As a result, future ocean surface elevations have been extrapolated from current levels using historical rates of sea level rise measured over the last century. For much of the California coast, this equates to a rate of about eight inches per 100 years. Rates of up to one foot per century have typically been used to account for regional variation and to provide for some degree of uncertainty in the form of a safety factor. This rate of rise is then further adjusted upward or downward as needed depending upon other factors, such as localized subsidence or tectonic uplift

...

Most climate models now project that the historic trends for sea level rise, or even a 50% increase over historic trends, will be at the very low end of possible future sea level rise by 2100. Satellite observations of global sea level have shown sea level changes since 1993 to be almost twice as large as the changes observed by tide gauge records over the past century. Recent observations from the polar regions show rapid loss of some large ice sheets and increases in the discharge of glacial melt. The 2007 Fourth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC) notes that sea level could rise by 7 to 23 inches from 1990 to 2100, provided there is no accelerated loss of ice from Greenland and West Antarctica.[1] Sea level rise could be even higher if there is a rapid loss of ice in these two key regions.

The IPCC's findings were expanded to incorporate some increase in sea level rise by accelerated ice melt through a 2007 report prepared by Dr. Stefan Rahmstorf of the Potsdam Institute for Climate Impact Research (hereinafter "Rahmstorf Report"). This report has become the central reference point for much of recent sea level rise planning. The Rahmstorf Report developed a quasi-empirical relationship between historic temperature and sea level change. Using the temperature changes projected for the various IPCC scenarios, and assuming that the historic relationship between temperature and sea level would continue into the future, he projected that by 2100 sea level could be between 20 inches and 55 inches (0.5 to 1.4 meters) higher than the 1990 levels (for a rate of 0.18 to 0.5 inches/year). These projections for future sea level rise anticipate that the increase in sea level from 1990 to 2050 will be from about 8 inches to 17 inches (for a rate of 0.13 to 0.28 inches/year); from 1990 to 2075, the increase in sea level would be from about 13 inches to 31 inches (for a rate of 0.15 to 0.36 inches/year) and that the most rapid change in sea level will occur toward the end of the 21st century. Most recent sea level rise projections show the same trend as the projections by Rahmstorf — that as the time period increases the rate of rise increases and that the second half of the 21st century can be expected to have a more rapid rise in sea level than the first half.

Several recent studies have projected future sea level to rise as much as 4.6 feet from 1990 to 2100. For example, in California, the Independent Science Board (ISB) for the Delta Vision Plan has used the Rahmstorf Report projections in recommending that for projects in the San Francisco Delta, a rise of 0.8 to 1.3 feet by 2050 and 1.7 to 4.6 feet by 2100 be used for planning purposes.[2] This report also recommends that major projects use the higher values to be conservative, and that some projects might even consider sea level projections beyond the year 2100 time period. The ISB also recommends "developing a system that can not only withstand a design sea level rise, but also minimizes damages and loss of life for low-probability events or unforeseen circumstances that exceed design standards. Finally the board recommends the specific incorporation of the potential for higher-than-expected sea level rise rates into long term infrastructure planning and design."

---

1 The IPCC is a scientific intergovernmental body established by the World Meteorological Organization (WMO) and the United Nations Environmental Programme to provide the decision-makers and others interested in climate change with an objective source of information about climate change; http://www.ipcc.ch/ipccreports/assessments-reports.htm

2 Independent Science Board, 2007. Sea Level Rise and Delta Planning, Letter Report from Jeffrey Mount to Michael Healey, September 6, 2007, CALFED Bay-Delta Program: http://deltavision.ca.gov/BlueRibbonTaskForce/Sept2007/Handouts/Item_9.pdf

The Rahmstorf Report was also used in the California Climate Action Team's Climate Change Scenarios for estimating the likely changes range for sea level rise by 2100.[3] Another recent draft report, prepared by Philip Williams and Associates and the Pacific Institute for the Ocean Protection Council, the California Energy Commission's Public Interest Energy Research (PIER) Climate Change Research Program, and other agencies also identifies impacts from rising sea level, especially as relate to areas vulnerable to future coastal erosion and flooding.[4] This report used the Rahmstorf Report as the basis to examine the flooding consequences of both a 40-inch and a 55-inch centurial rise in sea level, and the erosion consequences of a 55-inch rise in sea level.

On November 14, 2008, Governor Schwarzenegger issued Executive Order S-13-08, directing various state agencies to undertake various studies and assessments toward developing strategies and promulgating development review guidelines for addressing the effects of sea level rise and other climate change impacts along the California coastline.[5] Consistent with the executive order, at its June 4, 2009 meeting the governing board of the Coastal Conservancy will consider the adoption of interim sea level rise rates: (a) 16 inches (40 cm) by 2050; and (b) 55 inches (140 cm) by 2100 for use in reviewing the vulnerability of projects it funds [adopted 4 June 2009]. These rates are based on the PEIR climate scenarios. If adopted, these criteria would be utilized until the study being conducted by the National Academy of Sciences regarding sea level rise, requested by a consortium of state resource and coastal management agencies pursuant to the executive order, is completed.

Concurrently, in the Netherlands, where flooding and rising sea level have been national concerns for many years, the Dutch Cabinet-appointed Deltacommissie has recommended that all flood protection projects consider a regional sea level rise (including local subsidence) of 2.1 to 4.2 ft by 2100 and of 6.6 to 13 ft. by 2200.[6] Again, the Rahmstorf Report was used by the Delta Committee as a basis in developing their findings and recommendations.

Given the general convergence of agreement over the observed and measured geodetic changes world wide in ocean elevations over the last several decades, most of the scientific community has ceased debating the question of whether sea level will rise several feet higher than it is today, but is instead only questioning the time period over which this rise will occur. However, as the conditions causing sea level rise continue to change rapidly, prognostications of sea level rise are similarly in flux. As a result of this dynamism, anticipated amounts and rates of sea level rise used in project reviews today may be either lower or higher than those that will be utilized ten years from now. This degree of uncertainty will continue until sufficient feedback data inputs are obtained to allow for a clear trend to be discerned from what is now only a complex and highly variable set of model outputs. Accordingly, in the interest of moving forward from the debate over specific rates and amounts of rise to a point where the effects of sea level rise greater than those previously assumed in the past may be considered, one approach is to undertake an analysis on the development project and site to ascertain the point when significant changes to project stability would result based on a series or a range of sea level rise amounts. The analysis would be structured to use a variety of sea level rise projections, ranging from the relatively gradual rates of

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3 Cayan et al. 2009. Draft Paper: Climate Change Scenarios and Sea Level Estimates for the California 2008 Climate Change Scenarios Assessment; CEC-500-2009-014-D, 62 pages; http://www.energy.ca.gov/2009publications/CEC-500-2009-014/CEC-500-2009-014-D.PDF

4 Heberger, et al. 2009. Draft Paper: The Impacts of Sea Level Rise on the California Coast; California Climate Change Center, California Energy Commission; CEC-500-2009-024-D, March 2009, 99 pages; http://www.pacinst.org/reports/sea_level_rise/index.htm

5 Office of the Governor of the State of California, 2008. Executive Order S-13-08; http://gov.ca.gov/index.php?/print-version/executive-order/11036/

6 Delta Committee of the Kingdom of the Netherlands, 2008. Working Together with Water: A Living Land Builds for its Future, Findings of the Deltacommissie, 2nd Ed. November 2008; http://www.deltacommissie.com/en/advies

rise indicated by the IPCC and Rahmstorf models, to scenarios involving far more rapid rates of sea level rise based upon accelerated glacial and polar sea and shelf inputs.

For example, for the most typical development projects along the coast (i.e., residential or commercial), consideration of a two to three foot rise in level rise over 100 years could be assumed to represent the minimum rate of change for design purposes. However, in the interest of investigating adaptive, flexible design options, sensitivity testing should also include assessing the consequences of sea level rise at three to five times greater rates, namely five to six feet per century, for critical facilities or development with a long expected project life. The purpose of this analysis is to determine, if there is some "tipping point" at which a given design would rapidly become less stable, and to evaluate what would be the consequences of crossing such a threshold. This type of analysis would make the property owner aware of the limitations, if any, of the initial project design early in the planning process. Depending upon the design life of the development, the economic and technical feasibility of incorporating more protective features, and levels of risk acceptance, the project proponent could propose, or the permitting agency may require, that greater flexibility be provided in the design and siting of the development, or other mitigation be identified, to accommodate the higher rates of sea level rise.

This sea level range approach would allow accelerated rates of sea level rise to be considered in the analysis of projects. Such evaluations provide some flexibility with regard to the uncertainty concerning sea level rise, providing an approach to analyze project in the face of uncertainty that would not involve the imposition of mandatory design standards based upon future sea level elevations that may not actually be realized, and allowing flexibility in the acceptable amount of sea level rise for specific projects and for the best available scientific information at the time of review. Given the nonobligatory and adaptive nature of this approach to hazards avoidance and minimization, as necessitated by such scientific uncertainty, it will remain important to include new information on sea level trends and climate change as iterative data is developed and vetted by the scientific community. Accordingly, any adopted design or siting standards that may be applied to development projects should be re-examined periodically to ensure the standard is consistent with current estimates in the literature before being reapplied to a subsequent project.

Regardless of its particular rate, over time elevated sea level will have a significant influence on the frequency and intensity of coastal flooding and erosion. Accordingly, rising sea level needs to be considered to assure that full consistency with Section 30253 can be attained in the review and approval of new development in shoreline areas.

Staff has always recommended consideration of sea level rise when evaluating future erosion rates. Until recently, this has been done only qualitatively and was based on historic trends in sea level rise. Given our evolving understanding of the mechanisms of sea level rise, staff is now recommending an upward revision of the rate of sea level rise, to a minimum of 3 ft/century.

Coastal bluff retreat

The reports by Zinn Geology use the recommended sea level rise figure from the Weber report to estimate the amount of coastal bluff retreat to be expected over the next century at the subject sites. Given the discrepancy between the Weber value of sea level rise and the value recommended by staff, it is not surprising that the amount of upper bluff retreat estimated in these reports differs than what I estimate below.

The Zinn reports assume that in order for the proposed structures to be threatened, the beach fronting the coastal bluff would need to be removed by coastal erosion or drowned by rising sea

level; then the colluvial wedge at the base of the bluff would need to be eroded; and finally the coastal bluff would need to be eroded until a vertical projection of the base of the bluff would intersect the buildings' foundations. Working backwards from the latter condition, and assuming a bedrock erosion rate of 1 to 2 feet per year, the reports estimate that buildings sited as proposed would be threatened in 120.5 to 176 years (for the Trousdale parcels) and 107 to 161.5 to years (for the Frank parcels).

There are several assumptions built into this analysis with which I disagree. Most important is the assumption that the buildings will be threatened by *upper* bluff retreat at the same time as the bedrock has been eroded to a point vertically beneath the buildings' foundations. The bluffs at these locations, like most areas in coastal California, are not vertical. According to the cross sections in the Zinn reports, the entire bluff, including the colluvial wedge mantling its base, has an overall angle of approximately 48 degrees from the vertical; the inferred angle of the bedrock and marine terrace deposits beneath the colluvial wedge is approximately 30 degrees from the vertical. The bluffs are not vertical because of a combination of subaerial erosion processes and the fact that the bluff materials have insufficient strength to stand vertically. Accordingly, the upper bluff edge will intersect the building foundation long before the toe of the bluff lies vertically beneath them.

Second, the buildings will be "threatened" long before the upper bluff edge actually intersects the foundations. The LCP requires that stability be assured for the 100-year economic life of the development. The industry standard definition of stability for natural and artificial slopes is generally taken as a factor of safety against sliding of 1.5; that is, the forces tending to resist slope movement (essentially the strength of the bluff materials) must exceed the forces tending to initiate slope movement (essentially, the weight of the bluff materials as projected onto the most likely slide plane) by 50%. As discussed below, the point at which this level of stability is achieved is some distance landward of the bluff edge

Finally, this "working backward" approach does not account for the episodicity of coastal bluff erosion. Although there currently is a colluvial wedge mantling the site, reducing the rate of erosion of the toe of the bluff, its gradual removal will result in increased instability of the upper bluff, likely leading to catastrophic failure during which the bluff will retreat far faster than the 1 to 2 feet per year long term average cited in the report.

In my opinion, it is far preferable to evaluate the movement of the upper bluff edge through time and, taking account the distance from the upper bluff edge that a factor of safety of 1.5 is achieved, evaluate setbacks with respect to the upper bluff edge.

Slope Stability

During an initial assessment of slope stability of these properties, Pacific Crest Engineering assumed a particular failure surface based on "the project geologist's understanding and experience with bluff failures along this area of coastline." Unlike typical slope stability analyses, a minimum factor of safety of all potential failure modes was not determined. The factor of safety calculated for these assumed failure surfaces ranged from 2.54 (for the Frank

parcels) to1.89 (for the Trousdale parcels). These are much higher factors of safety than typically reported for coastal bluffs of this height and inclination. Indeed, a failure of the upper bluff on the southernmost Frank parcel that occurred in late February or early March 2009 (see attached photos, taken 4 March 2009) demonstrates that these bluffs have no such unusually high factors of safety. A bluff failure indicates that, at that location and time, the forces driving the slide exceed the resisting forces; that is, the factor of safety has dropped below 1.0.

Accordingly, I asked the project geotechnical engineer to 1) provide justification for the soil strength parameters used and; 2) calculate the minimum factor of safety for a circular failure surface through these materials. The two referenced Pacific Crest Engineering reports were subsequently prepared. Supporting material was provided for the soil strength parameters, with which I concur. However, only a circular failure of the upper bluff terrace deposits was calculated. While this is the most likely type of failure, it would have been useful to also have examined the global stability of the entire bluff.

The results of these slope stability analyses indicate that a factor of safety of 1.5 is reached about 18 feet landward of the bluff edge on the Trousdale parcels. A pseudostatic analysis showed that the 1.1 factor of safety line is seaward of this point, indicating that the static condition is determinative for stability. On the Frank parcels, no static factor of safety was calculated for the coastal bluff; but the 1.1 factor of safety line for the pseudostatic condition was found to be about 8 feet landward of the bluff edge. On two different cross sections of the arroyo-facing slope on the Frank parcels, static factors of safety were 1.6 to 2.2, indicating that the bluffs are stable at their current configurations.

Regional studies by the U.S. Geological Survey and the California Energy Commission

A 2007 report released by the U.S. Geological Survey, as part of its National Assessment of Shoreline Change used historic T-sheets and 1997 LIDAR data to evaluate the long-term bluff erosion rate along the cliffed portion of the California coast. For this stretch of the coast, erosion rates were generally 0.2-0.3m (0.66-0.98 ft)/yr. These numbers are consistent with those previously reported (as, for example, in Griggs et al. (2005) "Living with the Changing California Coast," and are consistent with those used by the applicants.

In March 2009 the California Energy Commission released a report prepared by the Pacific Institute with the help of Phillip Williams and Associates that evaluated the impacts of future sea level rise on the California coast. Citing sea-level rise forecasts developed at the Scripps Institute of Technology of 1.0 and 1.4meters by 2100 (for low- and moderate-greenhouse-gas-emissions scenarios, respectively), it evaluated the effects of sea level rise on the area inundated by a 100-year storm event and on increased dune and bluff erosion rates. A key product was a set of hazard maps showing the area inundated by the 100-year storm event today and in the year 2100, and the zone at high risk from coastal erosion by the year 2100. The erosion high hazard zone was calculated by prorating the historic bluff retreat rate (taken from the 2007 USGS study) by the increased amount of time that the base of the bluff would be subjected to wave attack under the 1.4 meter sea level rise scenario.

For the subject sites, the erosion high hazard area on these maps lies approximately 112 feet from the current bluff edge.

Staff Recommendation for 100-year bluff top setback

The USGS National Assessment of Shoreline Change (2007) reports long-term erosion rates of 0.2-0.3m (0.66-0.98 ft)/yr for this stretch of coastline. Using the higher value (to make some allowance for potential increase in the historic rate due to, for example, accelerated sea level rise), this would predict about 98 feet of bluff top recession over the course of the next 100 years.

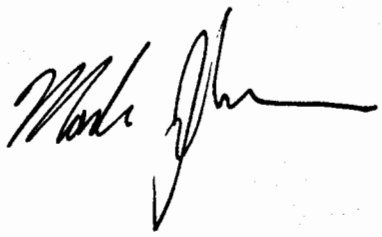
The applicant, when pressed, presented slope stability analyses indicating that, for a circular failure of the upper terrace deposits, a static factor of safety of 1.5 is attained about 18 feet landward of the present bluff edge. A factor of safety of 1.1 for a pseudostactic (earthquake analysis) lies seaward of this, making the static factor of safety determinative for a stability setback.

Following the method outlined in Johnsson (2005); the staff recommended setback would thus be 116 feet. Note that this value does not explicitly include increases in bluff retreat rate due to sea level rise; however, the conservative use of the upper end of observed historic long-term bluff retreat rates serves as a proxy. This value is, indeed, in close agreement with the erosion high hazard area mapped in the Pacific Institute report.

Because the slopes on the arroyo side of the Frank parcels exceed a 1.5 factor of safety (static) and 1.1 (pseudostatic), and because they are seldom subject to wave attack, a much smaller setback is necessary. Ideally, long-term bluff retreat data could provide guidance as to the amount of bluff retreat expected due to stream and subaerial erosion over the next 100 years, but these data have not been provided. Nevertheless, my own judgment is that the 25-foot setback recommended by the applicant's consultants should be sufficient.

I hope that this review is helpful. Please do not hesitate to contact me with any further questions.

Sincerely,



Mark Johnsson, Ph.D., CEG, CHG
Staff Geologist

Changing Climate Numbers

New York Times
February 21, 2009

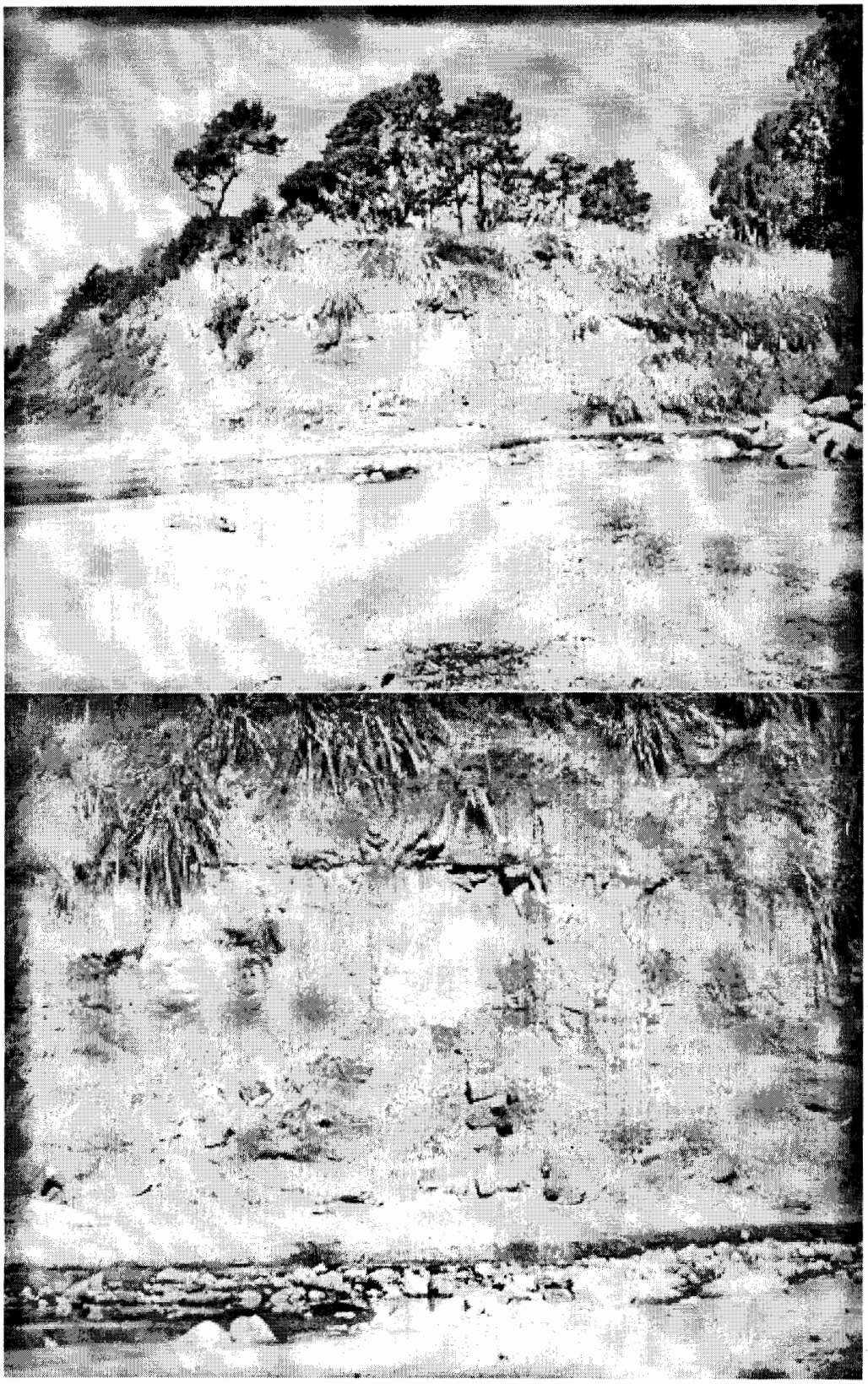
In 2007, the Intergovernmental Panel on Climate Change released its fourth assessment report, summarizing evidence collected and weighed by scientists around the world. At the time, it was the best estimate of where the planet was, climatically speaking, and where it was likely to be going, and the news the report offered was daunting.

There was unequivocal evidence of a warming climate, with human activity the dominant cause. The panel warned that further warming could have devastating consequences for societies around the world, including rising seas and widespread drought.

The 2007 assessment established a base line of expectation, but it is already looking outdated. From all over the globe, in bits and pieces, data are accumulating that suggest we may have already left behind the world of possibilities portrayed in the panel's report. Sea ice has melted more quickly than expected. And, according to a recent report from the United States Geological Survey, sea levels in 2100 could increase by more than double the 1.5 feet rise projected by the Intergovernmental Panel on Climate Change (it chose not to add in water from eroding ice sheets because they remain poorly understood). Add to that the hard reality that carbon dioxide is a long-lived gas, and the picture of global warming is both volatile and forbidding.

The authors of the climate-change panel's report knew that events could overtake their findings. A fifth assessment is currently under way. And while the worldwide recession might provide a slight breather, population pressures and energy demands are likely to drive emissions inexorably higher without a major shift to new energy sources.

It is imperative, of course, that the Obama administration — and every other government around the world — keep abreast of the changing data. What is equally imperative is that the governments tailor any prescriptions to the possibility of more ominous news in the future.



Recent bluff failure on APN 043-161-51; photos taken 4 Mar 2009

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Projecting Future Sea-level Rise:

What is a Reasonable Estimate for the Next Century?

Introduction

This report presents a brief discussion of recently published scientific literature regarding the magnitude of sea-level rise that is expected to occur over the next 100 years. The premise that sea-level is going to continue to rise is based on: 1) the slow warming of the earth over the past several hundred years as we emerged from the Little Ice Age; 2) the clearly measurable historic rise of sea level during that time period; and 3) the projections that the earth will continue to warm over the next 100 years. The driving force in the rise of sea-level is "global warming" which warms the earth's oceans and atmosphere.

This slow increase in temperature results in two processes that contribute to the rise of sea-level. These are:

1) Thermal expansion of ocean water which leads to a greater volume of water.
2) Melting of glacial ice and ice sheets which increases the mass of the oceans by adding water.

If the earth's atmosphere and oceans continue to warm, both thermal expansion and glacial melt will continue and sea-level will continue to rise. Consequently predictions of sea-level rise must take into account projections of anticipated global warming and how this may affect the two processes noted above. I believe it should be clearly stated that this analysis is based on the following premises: First, global temperature is presently increasing and has been increasing for the past several hundred years. Second, evidence from both tide gauges and more recently from satellite studies indicates that sea level has been slowly rising over the past two centuries (Jevereva et al., 2008; Church and others 2008; Cayan et al, 2006; and Cabanes, et al, 2001).

Unfortunately, what are not clear are the rates of change in both the warming of the atmosphere and the oceans; and the relationship between these rates of change and the volume of CO_2 in the atmosphere. Therefore, all projections of the total amount of sea-level rise that will occur over the next century are based on interpretations and/or assumptions of how rates of global warming, thermal expansion of the oceans, and mass increase of the oceans from melting glaciers will change over time.

Projections of Sea-level Rise

There is considerable uncertainty in how global warming affects melting of alpine glaciers, the Greenland and Antarctic ice sheets, and the thermal expansion of the oceans; and how these in turn affect sea-level. The wide range in the estimates of how much

sea-level will rise in the next century is shown in Figure 6 of Church and others (2008). Their graph is reproduced as Figure 1 of this report, which shows the projected sea-level rise for the 21st century.

Note that the IPCC (International Panel on Climate Change) projections with 90% confidence limits project somewhere between 18 to 60 centimeters (7 inches to 2 feet) of sea-level rise by 2100. The outermost lines on the graph, those that *include an allowance for additional land-ice uncertainty,* range from 9 centimeters (about 4 inches) of sea-level rise to as much as 0.875 meters (34 inches – about 3 feet). These ranges are generally consistent with the findings of other workers (Rahmsdorf, 2007; Cayan et al, 2006). In general most projections of sea-level rise contain caveats regarding what could possibly occur. These usually take the form of stating that sea-level rise in the next century could be considerably higher than the models predict.

Although there is general agreement among researchers as to the range of sea-level rise over the next century, there is also agreemeent that problems and inconsistencies are present in their analysis. A desire for more and better data pervades all of the publications cited in this report. Some of the problems and inconsistencies that shed doubt on the robustness of the projections are discussed below, from several relevant recent articles.

Jevrejeva, Moore and Grinsted, 2008: ***Relative importance of mass and volume changes to glacial sea level rise.*** Journal of Geophysical Research

In this study the authors examine the relationship between global sea level rise, thermal expansion of sea water due to warming, and increased mass related to melting of glacial ice and ice sheets. The goal of the study is to determine the role of each of these mechanisms in the rise of sea level over a period of 47 years (1955-2003). The results of the study are:

1. The average rate of sea-level rise as measured from tide gauges was 1.6 mm/year. (6.2 inches per hundred years)
2. The average rate of sea-level rise due to thermal expansion was 0.41 mm/year (26% of global sea-level rise). (1.6 inches per hundred years)
3. The average rate of sea-level rise due to increased mass from melting ice was 0.75 mm/year (47% of global sea-level rise). (2.9 inches per hundred years)
4. **This leaves 0.44 mm/year of sea-level rise (27%) not adequately explained. (1.7 inches per hundred years)**

The authors discuss the unexplained residual and conclude that to some extent it could be accounted for by a variety of changes in continental water storage as snow pack, soil moisture and ground water – which could range between 0.1 and 0.25 mm/year. However, it is probable that the unexplained residual is even greater than 27%. From page 5:

"It has also been suggested recently (Gouretski and Koltermann, 2007) that due to instrument related biases the global ocean heat content might be overestimated by Levitus et al. (2005). That would lead to the reduction of 25% in the sea-level rise contribution from ocean heat content, increasing unexplained residuals."

In summation, this study clearly indicates it is impossible at present to fully explain the existing sea-level rise in light of what we know about ocean heat content and ocean volume changes due to mass increases.

Church and White, 2006: *A 20th century acceleration in global sea-level rise.* Geophysical Research Letters

The authors state that an acceleration in sea-level rise is present in tide gauge data for the 20th century. The reconstruction indicates that between 1870 and the end of 2004 the total sea-level rise is 195 mm – an average rate of 1.44 mm/year. For the 20th century the rise is about 160 mm, a rate of 1.7 mm/year. However, they note a clear change in the rate of sea-level rise at about 1930, and by fitting liner regressions to the lines come up with a result *"...implying an acceleration of 0.017 ± 0.007 mm/ year/ year (95%)."*

They conclude that if the acceleration is maintained through the 21st century, sea-level in 2100 would be 310 ± 30 mm higher than in 1990. Once again this is generally consistent with other projections of sea-level over the 21st century. This is because they assume a constant rate of acceleration. However, the authors also point out that the acceleration in the 20th century was not uniform over time but variable. Periods of more rapid sea-level rise appear to be related to periods of low volcanic activity (with about a 20-year lag). For example, the 1930s through 1960s acceleration occurred during a period of little volcanic activity. Contrastingly, the volcanic eruptions of Mt. Agung (1963), El Chichon (1982) and Mt. Pinatubo (1991) were all followed by short periods of reduction in global mean sea-level or in the rate of rise. They suggest that the volcanic eruptions may explain why little acceleration of sea-level rise has been observed over the second half of the 20th century.

Jevrejeva, Moore, Grinsted and Woodworth, 2008: *Recent global sea level acceleration started over 200 years ago?* Geophysical Research Letters

The authors present a reconstruction of global sea-level since 1700 in an attempt to determine when the acceleration started and to understand how it changed through the past 300 years. They conclude that *"...global sea level acceleration up to the present has been about 0.01 mm/yr² and appears to have started at the end of the 18th century."* They also point out that the time variable trend suggests that there are periods of slow and fast sea level rise including a 60-year variability that appears to be global. The causative mechanism for this cycle is not well understood. Refer to Figure 2 of this report which is reproduced from Figure 3 of the article. The 60-65 year cycle is clearly visible in the bottom half of the figure.

They note that the fastest sea-level rise during the 20th century was between 1920-50 and appears to have been a combination of the peaking of the 60-65 year cycle and a period of low volcanic activity.

The authors conclude that sea-level rose 28 cm (about 11 inches) between 1700-2000; and that a simple extrapolation of their data leads to a 34 cm (13 inches) sea-level rise between 1990 and 2090. This is consistent with the projections shown in Figure 1 of this report. However, the authors note that this projection (34 cm) is probably too low and that sea-level will probably rise faster, once again reflecting uncertainty in what might or will happen.

Discussion and Conclusions

The difficult portion of this review follows. We must now make a decision on: What is a reasonable rate of sea-level rise to utilize in performing coastal geologic hazard and risk analyses for proposed single-family residential development?

The recent scientific literature clearly indicates that there are some apparently significant uncertainties in respect to predicting how fast sea-level will rise. These uncertainties include, but are not limited to the following:

1. The relationship between the volume of CO_2 in the atmosphere and the rate of change in the warming of the atmosphere and the oceans is not well understood or quantified.

2. Attempts to explain the existing sea-level rise in light of what we know about volumetric increase of the ocean due to ocean heat content and ocean volume changes due to mass increases are clearly inaccurate. As much as 25% and probably more of the volumetric change cannot be explained.

3. Rates of sea-level rise vary greatly through time. Researchers see a 60-65 year cycle in the rate of sea-level rise, which again is not easily explained or clearly understood. In addition there is good evidence that the rate of change can be significantly changed depending upon the frequency of large volcanic eruptions.

Other uncertainties also exist, but those stated above are sufficient to cast some doubt on the estimates of global sea-level rise during the next century. Despite the uncertainties there appears to be agreement among researchers in respect to the "best estimates for sea-level rise in the coming century." Most of the projections fall within the envelope presented as Figure 1 of this report – from the IPCC 2001 report, with updated AR4 IPCC projections. This graph indicates that sea-level will most likely rise somewhere between 18 to 60 centimeters (7 inches to 2 feet) by 2100. It also includes an allowance for additional land-ice uncertainty, which increases the range from 9 centimeters (about 4 inches) of sea-level rise to as much as 0.875 meters (34 inches – about 3 feet), almost an order of magnitude difference.

It seems reasonable to deal with the uncertainty that exists in projected sea-level rise in the same way the definition of "active fault" is used in geologic hazard evaluation. The definition varies in respect to the nature of the construction; in that critical facilities must use a more conservative definition of "active fault" than single family residences.

The amount of sea–level rise that should be planned for in next century should be based on the nature of the proposed construction and a future sea-level rise that can be reasonably well-defined. Consequently, the least conservative estimate for sea-level rise should apply to single family residences, while facilities with a lower acceptable risk threshold, such as "critical facilities" should have to assume a more conservative amount of sea-level rise. Clearly, critical facilities such as government infrastructure, highways, port facilities, hospitals, fire stations, etc. should have to assume the most conservative estimates (the highest estimates) of sea level rise.

Based on the range shown in Figure 1, I suggest that a reasonable assumption for sea level rise in the next century, to be applied to geological hazard and risk analyses for single family residences, is as follows:

It should be equal to or greater than the total sea level rise in the 20th century and consistent with the rate of rise (acceleration) over the past 20-30 years. This number would lie someplace between 300-340 mm, approximately 11 to 13 inches.

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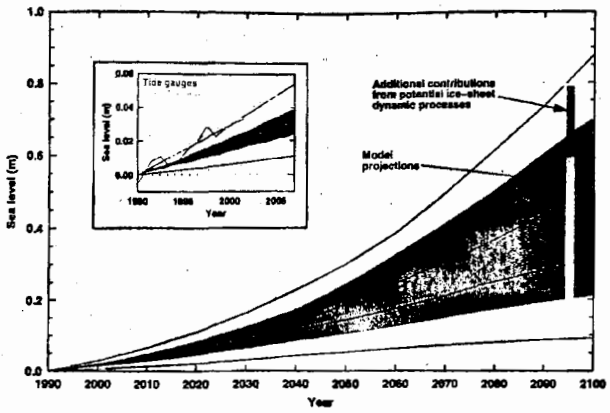

Fig. 6 Projected sea-level rise for the 21st century. The projected range of global-averaged sea-level rise from the IPCC (2001) assessment report for the period 1990–2100 is shown by the *lines* and *shading* (the *dark shading* is the model average envelope for all SRES greenhouse gas scenarios, the *light shading* is the envelope for all models and all SRES scenarios, and the *outer lines* include an allowance for an additional land-ice uncertainty). The updated AR4 IPCC projections (90% confidence limits) made in 2007 are shown by the *bars* plotted at 2095, the *magenta bar* is the range of model projections and the *red bar* is the extended range to allow for the potential but poorly quantified additional contribution from a dynamic response of the Greenland and Antarctic ice sheets to global warming. Note that the IPCC AR4 states that "larger values cannot be excluded, but understanding of these effects is too limited to assess their likelihood or provide a best estimate or an upper bound for sea-level rise." The *inset* shows the 2001 projection compared with the observed rate estimated from tide gauges (*blue*) and satellite altimeters (*orange*) (based on Church et al. 2001; Meehl et al. 2007; Rahmstorf et al. 2007)

Figure 1. At left is Figure 6, reproduced from Church and others (2008)

Figure 2. At right is Figure 3, reproduced from Jevejeva, Moore, Grinsted and Woodworth (2008).

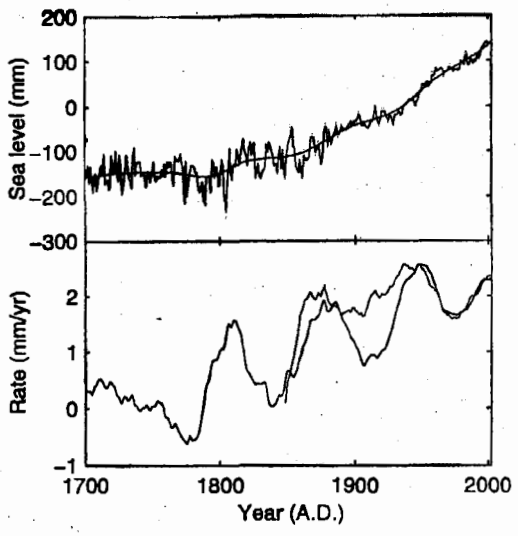

Figure 3. (top) Time series of yearly global sea level and time variable trend detected by method based on MC-SSA with 30year windows, grey shading represents (top) the standard errors. (bottom) The evolution of the rate of the trend (black line) since 1700. Blue line corresponds to the rate of North East Atlantic regional sea level rise since 1850.

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December 15, 2009

Ms. Susan Craig
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Re: Appeal Numbers A-3SCO-09-001, - 002, - 003 (Frank)

Dear Ms Craig:

I have been asked by the applicant in the above-referenced appeals, Donald Neil Frank, to submit this analysis of the rate of coastal bluff retreat at Hidden Beach which is the site of his proposed project. This letter responds in part to certain issues raised by Dr. Mark Johnsson's Geotechnical Review Memorandum dated June 18, 2009. The analysis and conclusions in this letter apply as well to the site of the proposed project of Mr. and Mrs. Trousdale.

In particular, this letter addresses the geologic setting at the subject site, the process of erosion modification on coastal bluffs, and the site-specific erosional history at the project site. My analysis and conclusions are based on my professional qualifications and 39 years professional and personal studies of coastal processes and observations of coastal bluff erosion along the Santa Cruz, San Mateo, and Monterey County coastlines. A resume of my professional qualifications, education and experience is attached for your reference. I have lived and worked in Santa Cruz County for the past 39 years, and among my professional positions I have served as the County Geologist for the Santa Cruz County Planning and Environmental Health Departments, and served on an occasional basis in the same manner for San Benito and San Luis Obispo Counties. In addition I have been on the faculty of the Earth Sciences Department at the University of California, Santa Cruz for over 20 years as a lecturer teaching field geology, geomorphology and engineering geology.

The attached PowerPoint presents photographic evidence of the erosional history of the sea cliff at Hidden Beach, which fronts the subject property. The photos clearly show that there has been no wave erosion at the base of the sea cliff over the last 30 – 39 years. They also show that over the past 39 years there have been only two clear episodes of exceedingly minor bluff retreat. One of these episodes is referred to by Dr. Johnsson on page 7 in his Memorandum. If one closely examines the photographs in the Power Point it is clear that the referenced failure consisted of 2 or 3 blocks of soil, vegetation and terrace sands that fell out of the face of the cliff. These types of failures are typical of

what occurs on abandoned sea cliffs (refer to Figures 1 & 2 in the Power Point). The triggering mechanism of failures of this sort are typically related to the growth of vegetation (root wedging, added weight, wind pressure on plants), seismic shaking, shrink-swell of clays in the soil and localized over-saturation by water. These sorts of failures are not "slides" as typically defined by geologists and engineers. They should not be used as criteria for determining the parameters used in quantitative slope stability analyses for the site. To do so would be inappropriate.

The photos also show that the estimates of rates of cliff retreat published in U.S.G.S. Open-File Report 2007-1133, (by Hapke and Reid, 2007) are erroneous for this specific site, as are the estimated rates of retreat in Living With the Changing California Coast (Griggs, Patsch and Savoy, 2005). Both of these publications are broad regional surveys and should not be used for the determination of coastal bluff retreat rates at a specific site.

Historic photos – the past 29 years:

The photos in the Power Point Presentation are from my relatively large personal collection of geologic and coastal photographs of the central California coastline taken over the past 39 years. In the early 1970's when I began studying the coastal geology of this area it became obvious that "time series of photographs" would be a valuable tool for studying coastal erosion. Fortuitously, during the past 39 years I have taken photographs of the sea cliff at Hidden Beach. These photos, including several taken following the large oceanic storms of the early 1980's, are the basis of the PowerPoint presentation.

To avoid confusing the reader it is important to clearly define the terms that I will use in this discussion. Please refer to Figure 1.

1. In **"Stage 1"** the ***base of the erosional sea cliff*** is at the intersection of the sea cliff formed by wave erosion and the "wave cut" ocean floor. Between New Brighton Beach and Pajaro Dunes this base of the cliff is covered by a colluvial wedge (aka talus pile) as shown in "Stage 2." When the base of the erosional sea cliff is buried by a colluvial wedge it becomes an *"abandoned sea cliff"* because active wave erosion has ceased.

2. *Sea cliff.* This is a generic term for a cliff at the edge of the ocean that was created by wave erosion. However, the term by itself does not imply present day activity, and the original cliff may have been modified by any of a variety of geologic processes. The geologic processes that operate on an abandoned sea cliff are known as **sub–aerial erosional processes,** because they occur in the air, not in the ocean. These include soil and rock falls, landslides, erosion by running water, root wedging, etc.

Figure 2 presents the three stages that typically occur as a sea cliff is abandoned by the ocean. Note two aspects of the geologic processes: 1. During a "relative drop" in sea level wave erosion ceases. 2. Once the sea cliff has been abandoned (not subjected to

wave attack) sub-aerial erosion continues to modify the cliff face. The retreat of the top of the cliff is originally rapid but then decreases through time. As the slope angle of the sea cliff decrease through time the **rate of retreat of the top of the sea cliff slows.** Consequently, the rate of cliff retreat at the top of the cliff **is not constant,** but continually decreasing.

When wave erosion no longer cuts into the base of the cliff, sub-aerial weathering and erosion become the dominant geologic processes operating on the cliff face. The upper portion of the cliff slowly fails and falls down slope to the base of the cliff. The top of the cliff slowly "lays back" while at the same time the base of the cliff becomes progressively buried by the material that has eroded and sloughed from the top of the cliff. This reduces the steepness of the slope as the material eroding from the upper half of the cliff buries the lower half.

In the presentation of sequential photographs (Figures 3 – 9) the colored arrows point to identical locations on the face of the sea cliff. The most informative comparisons are those in which the photographs taken in 1980 are compared with photos taken in 2007 and 2009 (Figures 4 & 5). The photo comparisons clearly confirm the following interpretations:

1. The outermost edge of the colluvial wedge (talus) at the base of the sea cliff has experienced only very minor wave erosion over the past 29 years (refer to comparative photos – Figures 10 & 11). The bulk of the colluvial wedge (greater than 95%) has not been eroded during this time period. The base of the old "abandoned" sea-cliff remains buried under the colluvial wedge and has never been touched by wave erosion during the past 39 years.

2. The exposed portion of the cliff face above the colluvial wedge (talus) has experienced only minor sloughing and earth falls. These typically occur during large storm events and/or earthquakes but can occur randomly. This process of minor sloughing (earth falls and small rock falls) creating a colluvial wedge that is burying the lower sea cliff is consistent with the erosional modification that occurs along all "abandoned" sea cliffs as indicated in Figure 2.

3. The sea cliff at Hidden Beach is "abandoned" (and indeed the coastline from New Brighton Beach to about Sunset Beach) is characterized by an abandoned sea cliff, the base of which has not been touched by wave erosion for the past 39 years based on my personal observations. There is strong evidence that the cliff has probably not been touched by wave erosion for a much longer time period.

Aerial Photographs – the past 80 years, & historic maps – the past 150 years:

Interpretation of vertical aerial photographs, beginning with the 1928 and the 1930s photographs and ending with photos taken in the past 10 years, reveal no evidence that the base of the abandoned sea cliff at the subject property has been touched by wave erosion over the past 81 years. In addition a comparison of aerial photographs and

modern maps with the 1860s shoreline maps prepared by the U.S. Coastal Survey suggests very strongly that there has been little if any erosion in the past 160 years. However, the 1860s maps are difficult to register with modern maps and aerial photographs; which makes it difficult to draw firm conclusions as to what actually happened between the 1860s and about 1930. However, the relatively low slope of the face of the cliff and the colluvial wedge themselves are strong evidence that these cliffs have not been subjected to wave attack for a very long period of time.

The storms of January 1983

During 39 years of walking Santa Cruz County beaches there is only one year in which I witnessed almost complete removal of the beach between New Brighton Beach and Sunset Beach (which encompasses the subject property) by wave erosion during major storms. During late January and early February of 1983 a series of large oceanic storms pounded the coastline. Large storm waves superimposed on high tides and a storm surge temporarily stripped sand off the beaches and eroded small scarps into the "toes" of the colluvial wedges at the base of the sea cliffs. It is probable that the storm surge associated with several of these large storms during an El Nino year raised relative sea-level several feet, suggesting very strongly that the base of the coastal bluff along this stretch of coastline is generally above the level of wave attack. This in turn suggests that erosion at the base of the cliff will not occur on a regular basis until sea-level rises several feet.

Figure 10 presents two photos of the extent of the erosion immediately south of Via Gaviota. Note that the waves have only eroded into the toe of the colluvial wedge, and have not eroded the base of the abandoned sea cliff. Figure 11 is taken north of Via Gaviota showing the beach in front of the subject property. The colluvial wedge is barely eroded. This is the thinnest beach that I have personally observed in this area over the past 39 years. Figure 12 shows the beach fronting the subject property in November 2000.

The same storms severely damaged homes along Via Gaviota and at Pajaro Dunes (Figure13) and elsewhere along the northern Monterey Bay shoreline. The homes at Pajaro Dunes which are built at the upwind edge of an active dune field on the active beach were severely damaged. Yet a short distance north at Sunset Beach (Figure 13) the waves created only a small scarp in the colluvial wedge at the base of the sea cliff. At Hidden Beach which fronts the subject property, the same storms stripped sand off of the beach exposing the risers for the sewer line, but only slightly eroded into the toe of the colluvial wedge at the base of the cliff (Figure 11).

The storms of 1983 provide an excellent illustration of the difference in exposure to wave attack that is present on the active beach versus the toe of the sea cliff. They also clearly demonstrated that the beach between New Brighton and Pajaro Dunes lies at the base of an abandoned sea cliff.

Summation:

To summarize, there is no evidence of erosion at the base of the sea cliff in the past 29 years based on my photographs, and 39 years based on my personal observations. In addition, vertical aerial photographs taken between 1928 and 2006 indicate that it is highly probable that there has been no erosion at the base of the cliff for the past 80 years. The toe of the colluvial wedge has been nicked by wave erosion on at least one occasion but the old erosional sea cliff has not been touched by erosion. Even though there is no wave erosion occurring at the base of the cliff the sea cliff continues to slowly erode through a variety of natural "slope processes" which consist of a slow retreat of the top of cliff and burial of the base of the cliff by colluvium.

I recognize that Dr. Johnsson did not have this site-specific information at his disposal when forming his initial conclusions, but rather was relying on the general surveys referenced above. It is a well-accepted scientific practice, however, that site-specific data and conditions are the superior and preferred means of assessing coastal erosion. In this instance the site specific information is comprehensive and was sampled over a lengthy time interval with a significant number of episodes.

These site-specific observations and the photos constitute a direct contradiction to the analysis and conclusions drawn by Dr. Johnsson. On page 8 of his Memorandum he states:

> *The USGS National Assessment of Shoreline Change (2007) reports long-term erosion rates of 0.2-0.3 meters (0.66 – 0.98 ft)/yr for this stretch of coastline. ...this would predict 98 feet of bluff top recession over the course of the next 100 years."*

However, this analysis is clearly incorrect. This can be demonstrated by using the erosion rates presented in the USGS OFR to calculate the amount of erosion that should have occurred at the subject property between 1970 and 2009. Using the published rates of 0.2-0.3 m/yr (0.66 – 0.99 ft/yr) it is clear that between 1970 and 2009 the **coastal bluff at Hidden Beach should have retreated between 26 and 38 feet.** However, there has been no measurable retreat. A simple look at the photographs tells the story - there has been no erosion. Thus Dr. Johnsson's analysis and use of the rates published in OFR 2007 - 1133 are not applicable to this site. In addition, if Dr. Johnsson is correct, then the entire coastline, from the subject property south to Sunset Beach, should have retreated a similar amount: 26-38 feet. There is no evidence that this has happened. Thus, Dr. Johnsson's analysis is clearly incorrect.

Based on both photographic evidence and my personal observations over the past 39 years it is clear that the sea cliff in front of the subject property is truly "abandoned." It has not been attacked by wave action during my 39 years of observation and aerial photos indicate that it has not experienced erosion for approximately 80 years. In addition the presence of a large colluvial wedge at the base of the coastal bluff indicates that the bluff

is not routinely subjected to wave erosion, and may not have experienced any substantial wave erosion over the past 150 years.

These observations and conclusions also affect any attempts to predict the effects of sea level rise at the subject property. The only stripping of the beach occurred in an El Nino year during large storms associated with a storm surge of at least several feet. This clearly indicates that the sea cliff will not be subjected to routine yearly wave attack until the relative mean sea level has raised a similar amount. Consequently, any analysis of the effects of sea level rise on coastal cliff retreat rates in the area of Hidden Beach cannot rely on the generally simplistic assumptions that are presently the basis of most attempts to predict where the shoreline will be at the start of the 22nd century.

If you have any questions regarding these materials, my observations and conclusions please contact me.

Sincerely,

Gerald E. Weber

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February 2, 2010

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Re: Appeal Numbers A-3SCO-09-001, - 002, - 003 (Frank)

Subject: Projections of Sea-level Rise in the 21st century:

Dear Ms. Craig:

Introduction

In my letter to you of December 15, 2009, I explained the site-specific erosion and bluff top retreat rates at the site of the Frank projects at Hidden Beach which are the subject of the above appeals. In that letter it was explained that the specific conditions prevailing at this site, based on observations and data that are comprehensive, differed considerably from the data that Dr. Mark Johnsson utilized in his Geotechnical Review Memorandum dated June 18, 2009. Dr. Johnsson did not have the benefit of all of this comprehensive data in forming his initial recommendations. However, two things are clear from his Memorandum as well as his article and the other papers he cites on bluff top retreat. First, erosion conditions and rates can vary significantly by site location, so it is always site-specific data that is both preferred and the most reliable in evaluating erosion/bluff top retreat at any given site. Second, the data that we have on erosion and bluff top retreat at Hidden Beach is comprehensive, and that data as well as our use of it is consistent with the protocol set forth by Dr. Johnsson himself in his paper on coastal bluff setbacks; principally, it extends over a lengthy period of time (well over the 50 years recommended by Dr. Johnsson), and includes several episodic events. Indeed, it was the intent to follow that protocol, to the extent it comports with accepted professional geological standards, in evaluating the Frank site.

This letter report now addresses certain issues related to future sea level rise raised in Dr. Johnsson's Geotechnical Review Memorandum. In his Memorandum Dr. Johnsson presents the view of the California Coastal Commission that sea level will rise 3 feet (one meter) in the next century. This number is stated as a minimum; and he suggests that sea level could rise in excess of 4 feet. It appears that this number is to be taken into account in determining erosion rates and the "setback distance" for construction on the subject properties.

In assessing the possible effects of an assumed value for sea level rise, as pointed out above, one must first put it into context with the **site-specific conditions** on the properties. Consequently, the effect of sea level rise on these properties must be evaluated in the light of the specific geologic conditions of these properties.

The following analysis of the effects of sea-level rise is based on the site-specific conditions and not upon regional or generic studies. Of particular significance is the elevation of the toe of the colluvial wedge in respect to sea level and the height at which coastal erosion may be initiated.

Site-Specific Geologic Conditions

Historic Coastal Erosion

Photographic Evidence: As indicated in my letter of December 15, 2009, both the photographic evidence and my personal observations over the past 40 years indicate that the cliff in front of the subject property is an "abandoned sea cliff." It has not been attacked by wave action during my 40 years of observation.

Analysis of historic vertical aerial photographs (beginning with the 1928 flight) extends this period of "non erosion" to 80 years. There is no indication of erosion of the sea cliff at the subject properties between 1928 and the present. The large colluvial wedge at the base of the abandoned sea cliff is present in both the 1928 and the 1931 photographs. This period of "non erosion" can be extended even further. Comparison of the aerial photographs with the maps produced by the first coastal surveys performed in the mid 1800's also show no indication of cliff erosion. I want to make it clear that because of the large time gaps between sequential aerial photographs; and the difficulty of comparing them with the mid 1880's maps; it is impossible to be 100% certain that minor amounts of erosion of the toe of the colluvial wedge did not occur in the 1800's. Regardless, one can use these sources to conclude that there has been little, if any, erosion of the toe of the colluvial wedge during the past 80 years, and probable that no significant erosion has occurred for the past 150 years.

The Colluvial Wedge: The conclusion stated above is supported by a second line of reasoning – the presence of the colluvial wedge itself at the base of the sea cliff. The large colluvial wedge at the base of the cliff is present on all aerial photographs, and appears to be present on the mid 1800's maps. This colluvial wedge presently has a slope angle of about 30 – 40 degrees, and there is no discernable difference in slope between the 1980 and the 2009 photographs. The shape and size of the wedge is essentially unchanged by 40 years of sub-aerial erosion and deposition on the wedge. This clearly indicates that sub-aerial erosion is degrading the sea cliff very slowly, and that the top of sea cliff is retreating at an extremely slow rate. The presence of a well developed colluvial wedge on the 1928 and 1931 aerial photographs is clear evidence that this is the same colluvial wedge that is present today. We know this has to be true because of the limitations of the deposition rates on the formation of these wedges. This obviates any other conclusion.

Hypothetically, if one assumes that the colluvial wedge which is present on the 1928-31 aerial photographs was completely eroded away by a series of large storms in the late 1930's, then the wedge we see today would have to have been deposited between the late 1930's and 1970 – a little over 35 years - and then experienced no noticeable change for the next 40 years. This is not possible. The colluvial wedge has to have been there for well over 80 years. This in turn indicates that the colluvial wedge had to begin forming many years before 1928. This supports the conclusion that it is highly probable that the coastline has not experienced significant erosion since the mid 1800's.

On January 23, 2010 I visited the Hidden Beach area to assess the condition of the sea cliff following the recent series of storms. These storms were associated with the present El Nino, had occurred during a period of neap tides when the daily high tide was between 5.1 and 5.5 feet, and had significant wave height of approximately 15 ± feet. The toe of the colluvial wedge had not been eroded.

Tectonic Uplift: the 1989 Loma Prieta Earthquake

During the Loma Prieta earthquake along the San Andreas Fault Zone the area west of the fault moved northwest and up, while the area east of the fault moved southward and down (Plafker and Galloway, eds. 1989; and Anderson, R. S., 1990). In both papers the maps showing uplift are based on data obtained from laser geodometer (geodolite) and GPS measurements made within days of the earthquake. The Plafker and Galloway article shows between 8 – 9 inches of uplift, while Anderson shows about 35 centimeters (10.2 inches) of uplift during the earthquake. More recently (Burgmann, and others 1994, Figure 12) a model of recent Santa Cruz Mountains deformation was created using fission track ages and geodetic data. The model suggests that uplift at the subject properties was about 200 millimeters (approximately 8 inches). Although these studies all show uplift in the range of 7-10 inches, other studies suggest it may be less. For example, Arnadottir and Segal (1994) using a variety of geodetic data indicate an uplift of about 10 centimeters (about 4 inches) at the subject properties.

The effect of the uplift of the mainland relative to sea level during the 1989 earthquake places the toe of the colluvial wedge higher above sea level than the colluvial wedge was in 1989. This provides an even greater margin of safety in regard to wave erosion than was present in 1983 – the only year in the last 39 years during which wave action eroded the beach back to the toe of the colluvial wedge.

The above referenced data can be used to project the effect of this uplift on the potential for future erosion at the subject properties. Here are four possible interpretations, using two different sea level curves. These are the IPPC 2007 projections which range from 18 cm to 90 cm (7 inches – 35 inches); and the Rahmstorf 2007 projections which range from 60 cm to 145 cm (2 feet to 4 ¾ feet).

Using the **IPCC 2007** model of projected global sea level we can assess the effect of the tectonic uplift resulting from this single event as follows:

1. Assume that uplift at the site was 9 inches (229 mm), and use the middle of the range of "model projections" - 380 mm by 2100: Then the properties in question will have the same relationship to sea level in the year 2065 as they had in 1989. This suggests that the toe of the colluvial wedge will not be subjected to erosion until well after the middle of the 21st century.

2. Assume that uplift at the site was 9 inches (229 mm), and use the maximum projected sea level rise – 900 mm by 2100: Then the properties in question will have the same relationship to sea level in the year 2040 ± as they had in 1989. This suggests that the toe of the colluvial wedge will not be subjected to erosion until about the middle of the 21st century.

3. Assume that uplift at the site was 4 inches (102 mm), and use the middle of the range of "model projections" – 380 mm by 2100: Then the properties in question will have the same relationship to sea level in the year 2033 ± as they had in 1989.

4. Assume that uplift at the site was 4 inches (102 mm), and use the maximum projected sea level rise – 900 mm by 2100: Then the properties in question will have the same relationship to sea level in the year 2016 ± as they had in 1989.

Using the **Rahmstorf 2007** model of projected sea level (p. 31 of Cayan et al, 2009):

1. Assume that uplift at the site was 9 inches (229 mm); and use the middle of the range of projections – 1000 mm by 2100: Then the properties in question will have the same relationship to sea level in the year 2037± as they had in 1989. This suggests that the toe of the colluvial wedge will not be subjected to erosion until 25 – 30 years in the future.

2. Assume that uplift at the site was 9 inches (229 mm), and use the maximum projected sea level rise – 1400 mm by 2100: Then the properties in question will have the same relationship to sea level in the year 2030 ± as they had in 1989.

3. Assume that uplift at the site was 4 inches (102 mm), and use the middle of the range of projections – 1000 mm by 2100: Then the properties in question will have the same relationship to sea level in the year 2022 ± as they had in 1989.

4. Assume that uplift at the site was 4 inches (102 mm), and use the maximum projected sea level rise – 1400 mm by 2100: Then the properties in question will have the same relationship to sea level in the year 2014 ± as they had in 1989.

Discussion: I want to emphasize that these projections reflect **only the effect of the uplift of the coastline during the Loma Prieta earthquake.** It projects when the properties will have the same relationship to sea level as they had in 1989. Although there is some uncertainty regarding the exact amount of uplift that occurred, it is clear

that the toe of the colluvial wedge will be higher above sea level than it was in 1989 for a minimum of 4 years and a maximum of 55 years.

El Nino Caused Elevations in Sea Level

During the 1980's and 90's the central California coastline was subjected to two major El Ninos in which sea level was raised well above average. The colluvial wedge at the site was not subjected to erosion during these El Ninos. This provides information as to the height sea level must rise in order to initiate erosion of the colluvial wedge. I emphasize that this methodology has been recommended previously by other researchers. A paper in the *Proceedings of the Coastal Zone 07* (Ewing, L., 2007) suggests the following (italics are mine):

> "Some steps toward examination of the coastal responses to a rapid rise in sea level are *(1) using current or historic surrogate conditions, such as El Ninos, floods, tsunamis, or subsidence, as qualitative models of future shoreline change*; (2) assessing sea level adaptability of various natural and constructed coastal features; *(3) determining the sea conditions which would exceed the adaptive capacity of various coastal features*; and (4) examining the implications for current coastal management efforts."

The 1982-83 El Nino: The Fort Point tide gauge shows that during the 1982-83 El Nino sea level was temporally elevated **9 inches above** the "present day sea level." This elevation of 9 inches is related to the El Nino oscillation and does not include the wind induced storm surge. Beach erosion during this El Nino occurred during several exceedingly large storms associated with high tides and a storm surge of several feet. Despite this the toe of the colluvial wedge at the subject site was barely nipped by wave erosion.

The 1997-98 El Nino: The Fort Point tide gauge shows that during the 1997-98 El Nino sea level was temporarily elevated **11.5 inches above** the "present day sea level." Again this does not include the wind induced storm surge. The total effect of all factors associated with a major storm system (high tides, high waves, El Nino, storm surge) can elevate sea level a large amount. Cayan et al (2009, p. 13) state that during one of the storms in February 1998 all of the factors that affect sea level coincided to raise sea level by up to 5 feet (1.5 meters) above normal in San Francisco Bay. I am of the opinion that it would be inappropriate to transfer this number directly to the outer coast; but it is reasonable to infer that during this El Nino sea level was probably raised several feet (3 feet at a minimum) at Hidden Beach. During this storm there was no erosion at the toe of the colluvial wedge at the subject properties.

Discussion – Tectonics and El Ninos

The only historic stripping of the beach in front of the subject properties during the past 40 years (personal observation) occurred in the 1982-83 El Nino year during large storms associated with a storm surge of at least several feet added on top of a high tide and a sea

level that was already elevated 9 inches (by the El Nino) in respect to today's mean sea level. If one adds to this 9 inch elevation to the 2 -7 inches of relative uplift associated with the Loma Prieta earthquake, and add the fact that the erosion occurred at the highest tides of the year on top of a storm surge; it is clear that the beach was barely eroded by storm waves at a relative sea level that was more than 3 feet above the present level.

How Much Must Sea Level Rise to Initiate Erosion of the Colluvial Wedge?

Site Specific Erosion: The sea cliff fronting the subject property is clearly above the level of wave attack. The same appears to be true for the entire length of coastline between New Brighton Beach and Sunset Beach. I have personally observed that there has been no erosion of the sea cliff over the past 40 years. Historic vertical aerial photos indicate there has been no erosion over the past 80 years, and comparison of these photos with the mid 1800's coastal surveys suggests that there has been little if any erosion over the past 150 years. The reason for this is not known. There are a minimum of three hypotheses that could explain this anomalous condition. None can be either proven or rejected.

What is clear is that even under conditions where sea level was 3 feet higher than at present, during large storms with significant wave heights of 7 meters (23 feet) and during periods of high tide, there was no erosion of the toe of the colluvial wedge. Clearly, sea level must rise 3 feet (or more) before it will be high enough to begin to erode the toe of the colluvial wedge on more than an occasional basis. Using the two sea level curves used earlier we can approximate when this will happen for sea level elevations of 2 ft (609 mm), 2 ½ feet (762 mm) and 3 feet (914 mm).

Using the most radical projection (highest) of **Rahmstorf 2007,** those levels would be reached on about 2061, 2070 and 2077 respectively.

Using the highest projection of the **IPCC 2007,** those levels would be reached on about 2078, 2090 and 2100 respectively

Consequently, using the highest projections of sea level from both sets of projections, I anticipate that we will not see the initiation of erosion of the toe of the colluvial wedge at the subject properties until well after mid century. Considering all of the uncertainties and assumptions involved in the construction of the computer models used to predict both global warming and sea level rise, and the exceedingly short time period on which these projections have been based, it is likely that there will be no erosion of the toe of the colluvial wedge until around 2090.

In summation, it is clear that a close examination of the site specific geologic conditions reveals a geologic setting for the coastal bluff that is quite different than that portrayed in USGS Open-File Report 2007-1133 (Hapke, and Reid, 2007). It is important to point out that the Hapke and Reid paper is a generalized approach to evaluating trends in erosion

for the entire California coastline. It was not intended to be used in site-specific evaluations. As is clearly stated in Hapke and Reid (2007, p. 2) under **Use of Data:**

> *"The results and products prepared by the USGS **are not intended for comprehensive detailed site specific analysis of cliff retreat,** nor are they intended to replace any official sources of cliff erosion information identified by local or state government agencies, or other federal entities that are used for regulatory purposes."*
>
> ***"The results are not intended for predicting future cliff edge positions** or future rates of cliff retreat."*

The toe of the colluvial wedge has barely been touched by erosion in the past 40 years. It is highly probable that the toe has not been eroded by waves over the past 80 years; and indeed may not have been touched by erosion for 150 years. It is also clear that the toe of the colluvial wedge is elevated a minimum of 2 ½ feet above the level of wave attack; and that a sea level rise of over 3 feet will be needed to place the subject properties in a position where the toe of the colluvial wedge will be subject to routine wave erosion. This will most likely occur late in the 21st century.

Planning Issues

Projections of Sea Level Rise

As stated in my earlier response (March, 2009) regarding projections of sea level rise, there is a great deal of uncertainty in these projections. The projections are typically calculated from computer generated global coupled ocean-atmosphere general circulation models (GCMs). These models are driven by scenarios of future greenhouse gas concentrations that are in turn determined by such variables as future population, the level of economic activity and wealth along with other variables. In addition, computer projections on the total amount of sea-level rise during the next century will be based in part on interpretations and/or assumptions of how rates of global warming, thermal expansion of the oceans, and mass increase of the oceans from melting glaciers will change over time.

One of the great uncertainties lies in the rate of change of sea level rise. At present scientists do not have an adequate understanding of the rate of change in the warming of the atmosphere and the oceans, and their relationship to the rate of change in the volume of CO_2 in the atmosphere. Examples of recent studies that reflect the uncertainty include:

1) Jevrejeva, Moore and Grinsted, 2008: ***Relative importance of mass and volume changes to glacial sea level rise.*** Journal of Geophysical Research

In this study the authors examine the relationship between global sea level rise, thermal expansion of sea water due to warming, and increased mass related to melting of glacial ice and ice sheets. The authors found that despite their efforts they could not explain

where 27 % of the water added to the ocean came from. Glacial melt water and thermal expansion of the oceans could only account for 77% of the additional water. This clearly indicates it is impossible at present to fully explain the existing sea-level rise in light of what we know about ocean heat content, ocean volume changes due to mass increases, and the amount of glacial meltwater. If it is not possible to determine what the relative components are that contribute to observed sea level rise over the past decades and century, it raises serious doubts about the validity of projections of sea level rise in the future.

2) Jevrejeva, Moore, Grinsted and Woodworth, 2008: *Recent global sea level acceleration started over 200 years ago?* Geophysical Research Letters

The authors present a reconstruction of global sea-level since 1700 in an attempt to determine when the acceleration started and to understand how it changed through the past 300 years. They conclude that *"...global sea level acceleration up to the present has been about 0.01 mm/yr² and appears to have started at the end of the 18th century."* However, they note that there are periods of slow and fast sea level rise including a 60-year variability that appears to be global. The causative mechanism for this cycle is not understood. They also point out the importance of random events such as large volcanic eruptions that cool the earth. They conclude that an extrapolation of the data between 1700 - 2000 indicates there will be a 34 cm (13 inches) sea-level rise between 1990 and 2090. However, the authors note that this projection (34 cm) is probably too low and that sea-level will probably rise faster, once again reflecting uncertainty in what might or will happen.

3) Flick, R. E., and Ewing, L. C., 2009: *Sand volume needs of Southern California beaches as a function of future sea-level rise rates.* Shore & Beach, Vol. 77, No. 4, pp. 36-45

The authors deal primarily with a deficiency in sand in the littoral drift systems along the Southern California coastline. However, they discuss both Past Sea-Level Rise and Possible Future Sea-Level Rise near the end of the article. In respect to past sea-level rise they point out that while west coast tide gauges typically show about 20 centimeters of rise over the past 100 years , the *"...tide gauge data from La Jolla suggest that local sea-level off southern California rose much more slowly or may actually have dropped slightly, since about 1980. The reason for this is not known; it may relate to influences from the Pacific Decadal Oscillation."*

In regard to future sea-level rise, they state, page 40: *"Few geophysical phenomena can be accurately predicted, including sea level rise."* They continue by stating that projections can be made and scenarios created using a general understanding of principles and processes and projecting these into the future. These scenarios can then be modified over time. They also point out: *"Each approach requires certain assumptions, which can only be refined as time goes on and observations become available."* And yet again, the authors clearly state that great uncertainties exist in the prediction of sea level rise in the next century.

Discussion: Sea-level has been rising slowly since the end of the "Little Ice Age." The Fort Point tide level gauge shows approximately 8 inches (203 mm) of sea level rise over the past century. In addition a slow acceleration in the rate of sea level rise has been identified from global studies. However, neither the amount of sea level rise nor the acceleration of sea level rise has been constant throughout the oceans of the world (Fletcher, 2009; Jevrejeva, et al 2008). In particular, the causes of the changes in the rate of sea level rise are not understood. Although some processes (i.e. large volcanic eruptions, as ice-calving - ice-sheet dynamic processes) that can affect sea level have been identified, there are others which have not been neither identified nor adequately quantified. Consequently, any projection of sea level rise over the coming 90-100 years must be regarded as highly speculative.

Regardless, the projected rise of sea level for the period ending 2100 (based on a review of articles listed in the Bibliography) can be summarized as follows:

1. The majority of the projections lie between about 40 cm (16 inches) and 60-80 cm (24 – 32 inches).

2. The highest projections are from Pfeffer, Harper & O'Neel (2008), who project a rise of between 0.8 meters (32 inches) and 2.0 meters (79 inches – 6.6 feet).. They include a component for ice-sheet calving.

3. The IPCC (2007) predicts a rise between about 20 cm (8 inches) and 70 cm (27 inches); but include a projection including ice sheet dynamic processes the indicates a sea level rise of about 90 cm (36 inches).

Many of the projections contain the caveat that larger values cannot be excluded.

This leaves us with projections that range from a low of 20 centimeters to a high of 200 centimeters – a ten fold difference. This by itself demonstrates the tremendous amount of uncertainty incorporated in any projections of sea level rise. The requirement for the use of a 3-4 foot rise in sea level in estimating erosion at the site is clearly at the high end of an extremely wide spread of predicted values.

Conclusions

Historic Erosion: Historic photographs clearly show that the subject properties lie at the top of an abandoned sea cliff fronted by a broad beach; and that it has not been subjected to wave erosion for the past 40 years. They also show that the top of the sea cliff has retreated a very small amount over this time period. In addition, the large colluvial wedge that forms the face of the abandoned sea cliff has been untouched by wave erosion over this time period. In the winter of 1982-83 large storms with 15-20 foot waves, on top of a storm surge, on top of high tides, occurring during an El Nino year when sea-level was raised about 9 inches, stripped the beach back to the toe of the colluvial wedge. During the El Nino year of 1997-98 with a sea level elevation or 11 ½ inches (due to El Nino) there was no erosion of the toe of the colluvial wedge.

Vertical aerial photographs from 1928 and the early 1930's of the subject area show that the sea cliff has a broad, well developed colluvial wedge at its base, very much like today. There is no evidence of erosion of the colluvial wedge on the historic aerial photographs. From this we can conclude that there has been no erosion of the colluvial wedge for the past 80 years. The absence of erosion can be extrapolated back to about the mid 1800's when the first coastal maps were prepared by the United States Coastal Survey. It appears that the coastline is unchanged in this area and that a colluvial wedge is present at the base of the cliff. Consequently this section of coastline has probably not been subjected to significant amounts of erosion (if any) for the past 150 years or so. The exact reason for this is not known, but these facts are known and documented.

El Ninos and Storms: During the past 40 years the coastline has been subjected to several El Ninos (1982-83 & 1997-98) during which relative sea level was raised between 9 – 11 inches in respect to what mean sea level is today. During the 1982-83 El Nino (9 inch rise in relative sea level) the coast was subjected to series of very large storms during the months of January and February. These storms rode into the coastline on top of high tides and a storm surge with 20-25 foot waves. During these storms the beach at the subject property was stripped out to the toe of the colluvial wedge, but the wedge was not cut back by the storm waves. I estimate that sea level during these storms was a minimum of 3 feet higher than the present day mean sea level – and may have been considerably more.

The 1997-98 El Nino raised sea level about 11 inches in respect to today's mean sea level and did not erode the toe of the colluvial wedge, and there was less overall impact to the coastline in general than in 1982-83. This may be because the storms were not as severe as in 1982-83.

Loma Prieta Earthquake: The 1989 Loma Prieta earthquake raised the southwestern side of the Santa Cruz Mountains in respect to the northeast side. The coastline at the subject properties was raised between 2 and 7 inches in respect to today's mean sea level.

Predicted Sea Level Rise and Cliff Erosion: Using this information it is reasonable to conclude that even a rise in sea level of 2 ½ to 3 feet will not result in erosion of the colluvial wedge at the subject property. Since storms surges such as occurred in 1982-83 are relatively rare events, it is highly probable that it will take over 3 feet of sea level rise to initiate erosion at the base of the sea cliff. This will most likely occur some time between sometime between 2070 and 2090. That erosion, when and if it occurs, will be intermittent. It will not occur on a yearly basis until well after 2100.

This analysis of the site specific geologic and oceanographic conditions at the subject properties suggests that the pending rise in sea level will probably not initiate erosion at the toe of the colluvial wedge for at least 60 years. Consequently, I suggest that any analysis of sea cliff erosion should use as a starting point for "sea cliff" erosion the year 2075 as the worst possible scenario.

Projections of Sea Level Rise: Review of the scientific literature on climate change and sea level rise reveals that there is a great amount of uncertainty in the prediction of these processes. The computer models are approximations at best, at this time. Climate has been slowly warming and sea level has slowly risen over the last century, but there is great uncertainty as to what will occur in the future. Computer models used to project climate change and sea level rise all suffer from a lack of certainty because of the complexities of the systems and the relationship between these two systems. Over the next 10 – 20 years, as the data base expands, these models will be improved and the predictions will become more reliable. As Neils Bohr once said; "Prediction is very difficult, especially if it's about the future."

Summation: The subject properties lie at the top of an abandoned sea cliff that has not experienced active wave erosion for a long time – perhaps 100-150 years. When one considers the absence of erosion on these properties, the occurrence of tectonic uplift, the absence of erosion during El Nino elevated sea levels, and the absence of erosion during exceedingly large storms associated with storm surges, it is clear that the area is elevated above the level of present day wave erosion by at least 3 feet, and probably more. When this information is plotted on the IPCC and Rahmstorf projected sea level curves it is clear that wave erosion will not be routinely occurring at the base of the colluvial wedge until after 2070 and perhaps not until after 2100.

If you have any questions regarding these materials, my observations and conclusions please contact me.

Sincerely,

Gerald E. Weber

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R.G. #714
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Comparison of Photographs of the
Coastal Bluff; Neil Frank Property
by
Dr. Gerald Weber
Source: Personal collection of author

Figure 1. Abandonment of the Erosional Sea Cliff

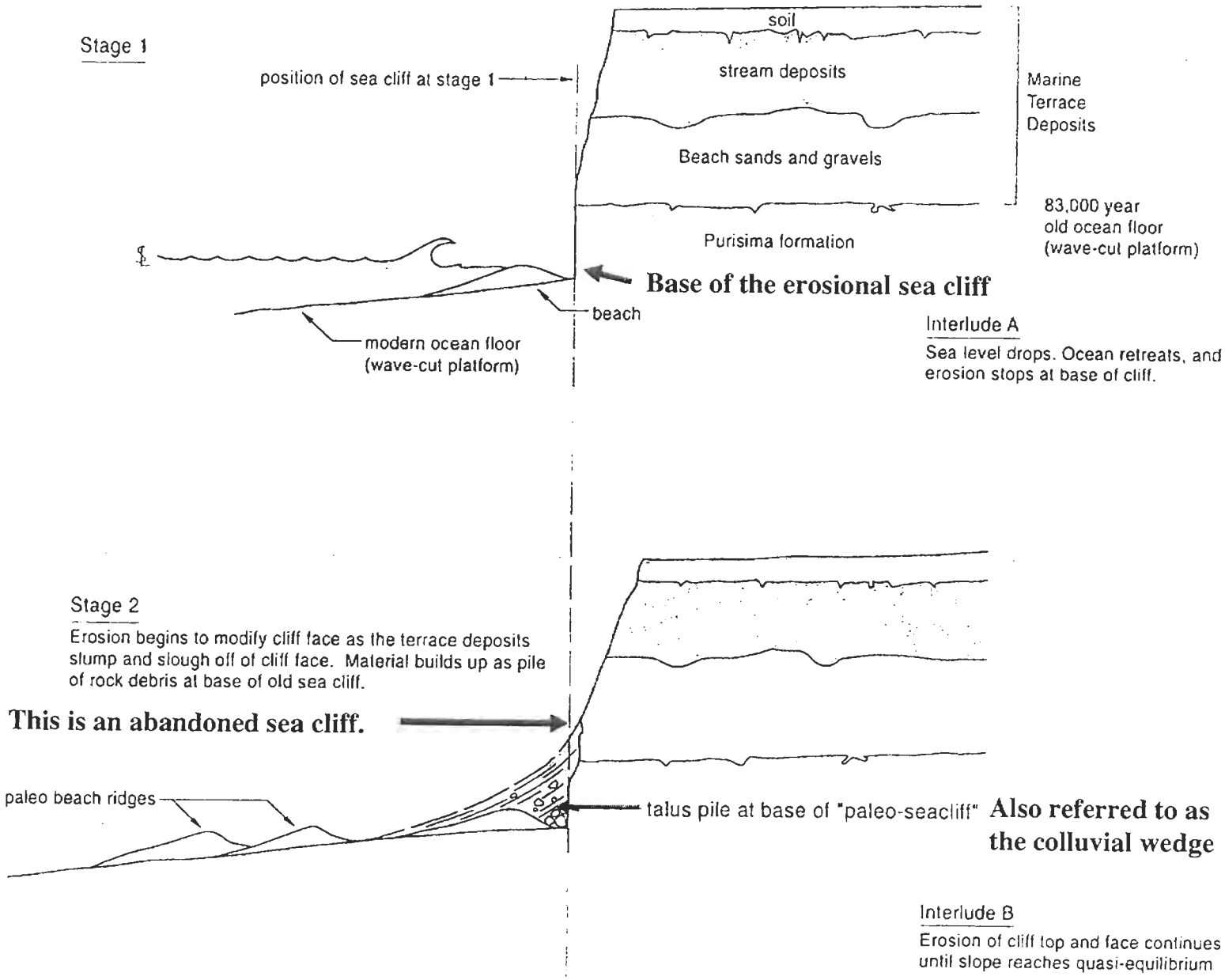
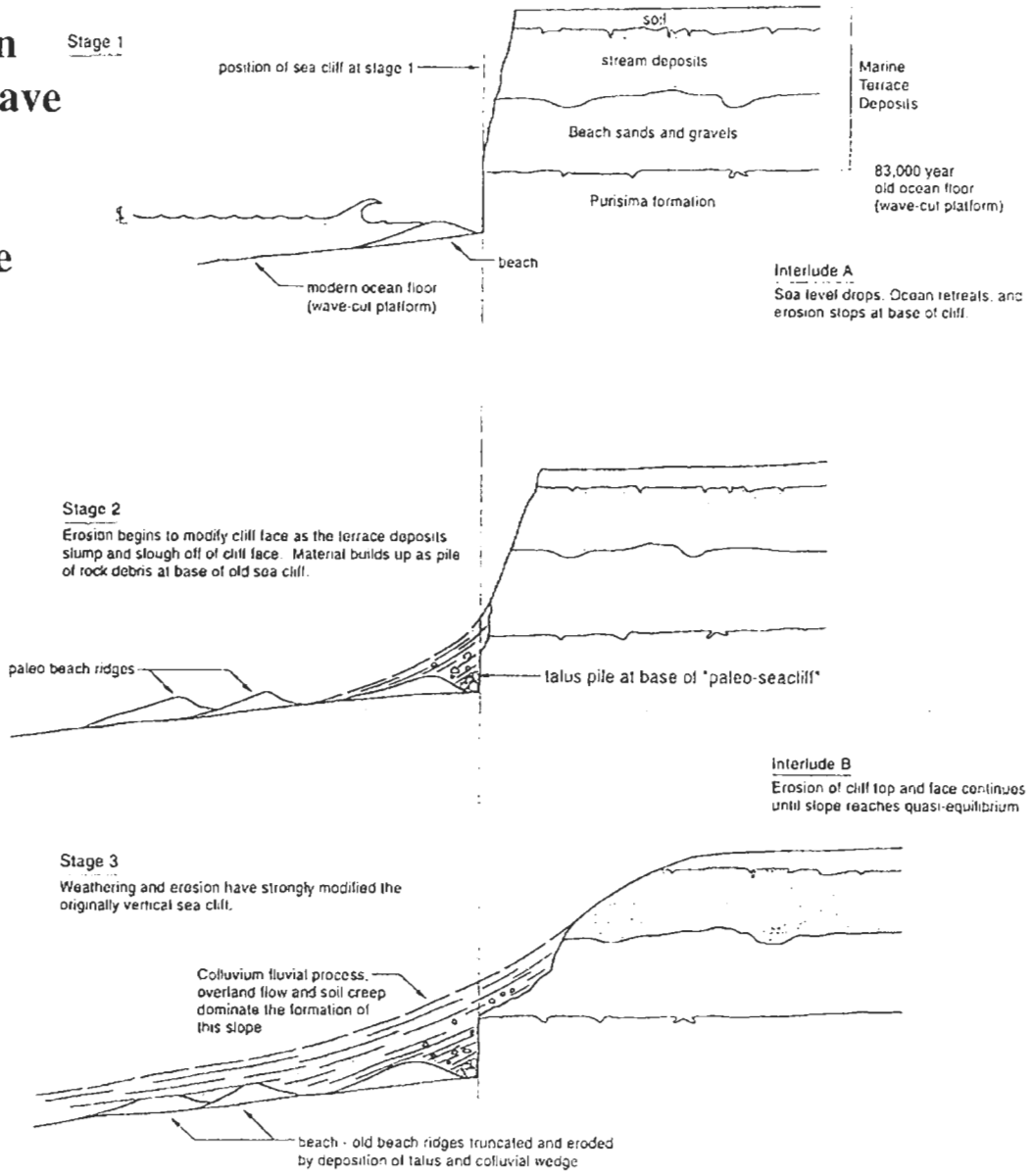


Figure 2. Erosional modification of an abandoned sea cliff. No wave erosion at base, accompanied by a slow build up of colluvium which has been derived from the top of the sea cliff.



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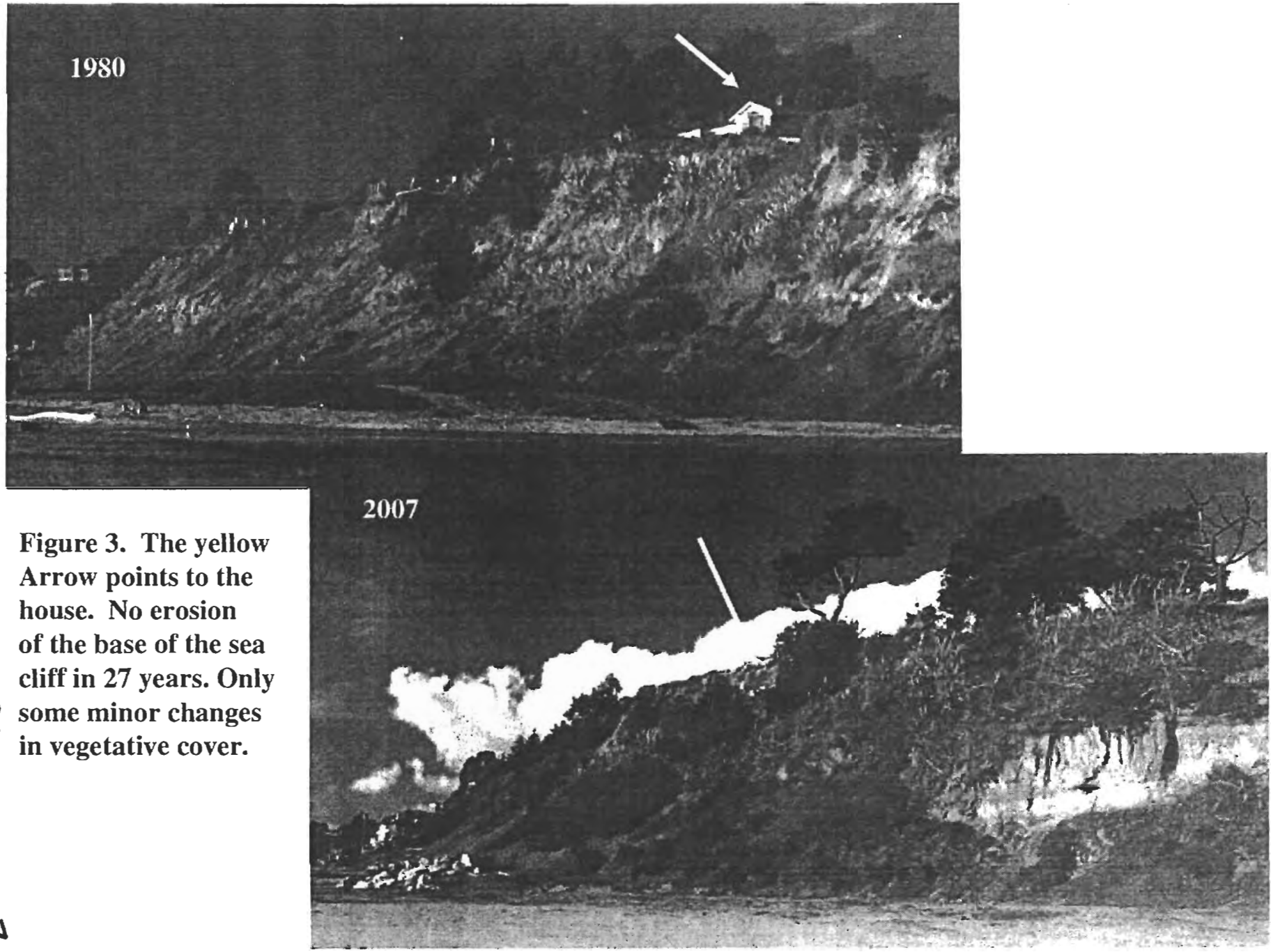


Figure 3. The yellow Arrow points to the house. No erosion of the base of the sea cliff in 27 years. Only some minor changes in vegetative cover.

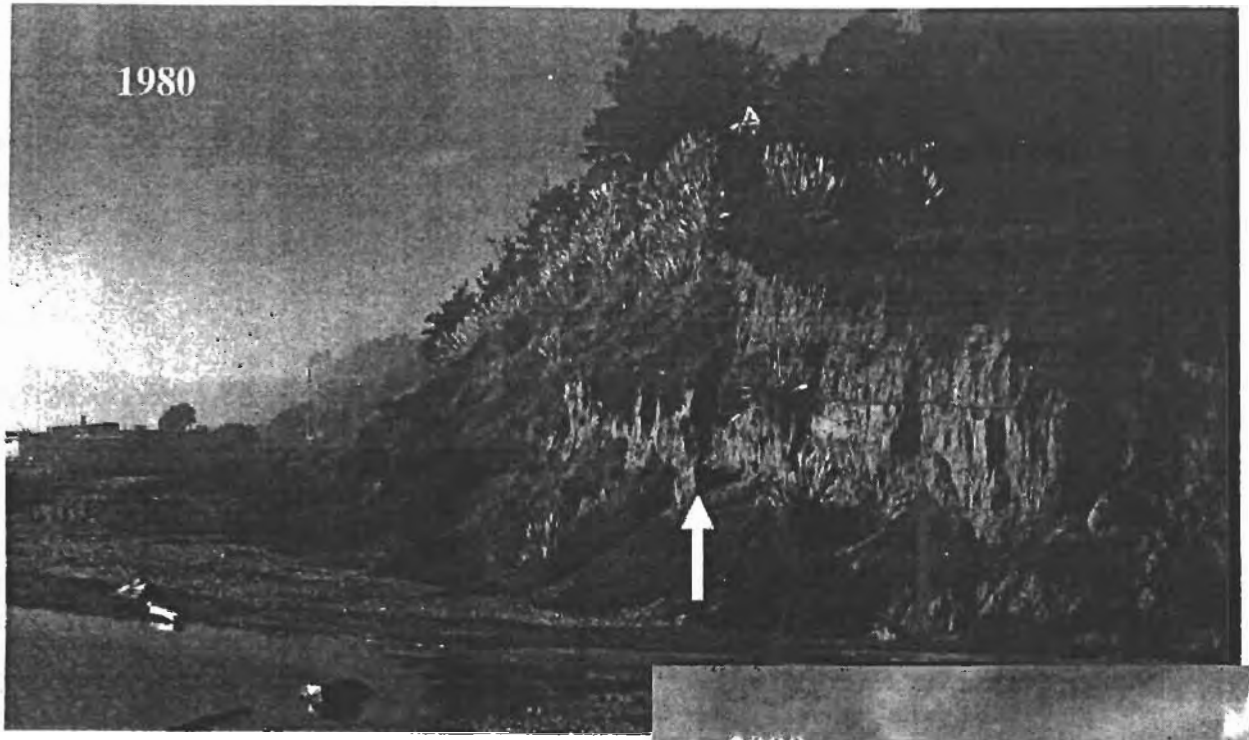


Figure 4. Nearly 30 years and no significant erosional change. Possibly a foot or two of soil and terrace deposits have sloughed off of the top of the sea cliff.

The arrows indicate the same points on the cliff face.

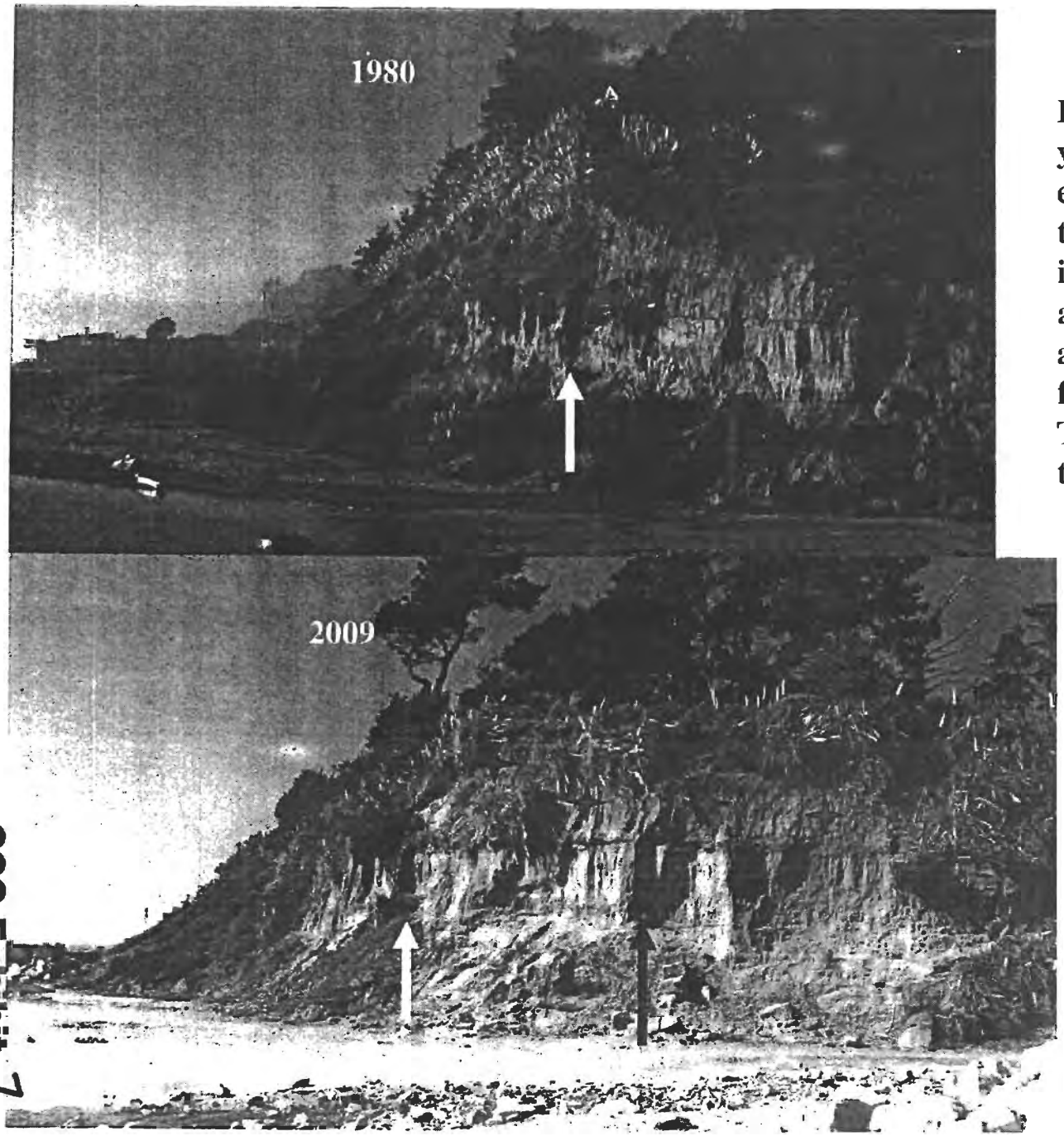
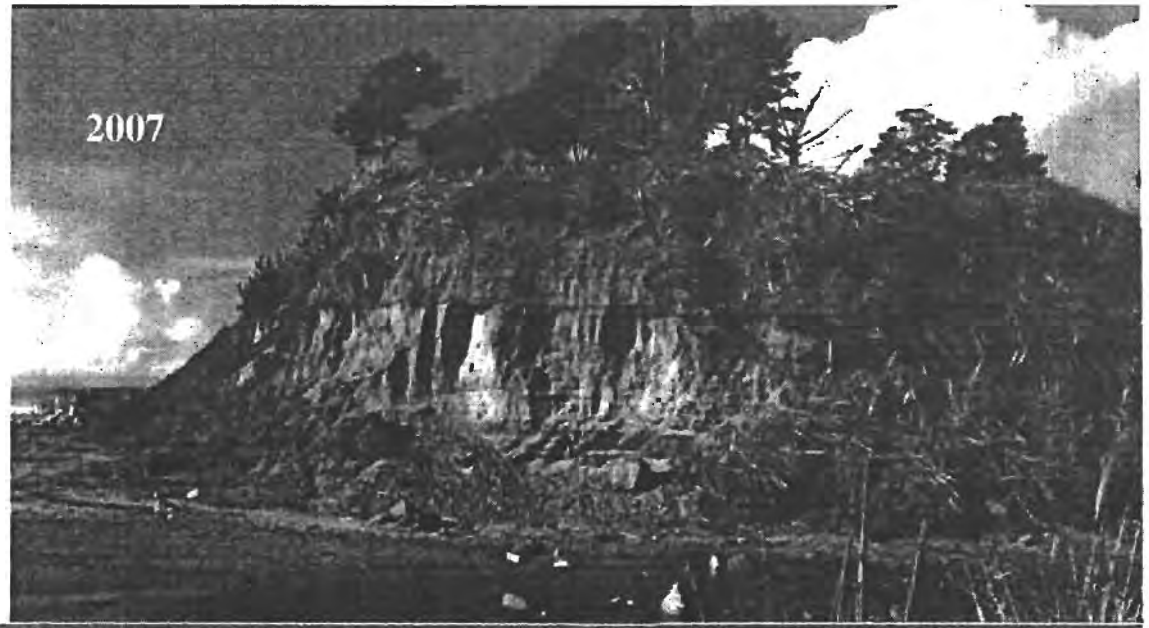


Figure 5. Again, nearly 30 years and no significant erosional change. The bare talus slope has slightly increased in size and the bare area (red stars – 2009 photo) are sites of small recent soil failures off of the cliff face. There has been no erosion at the base of the sea cliff.

Figure 6. Very little change in 2 years. It appears 2 small soil blocks have fallen (red stars). These apparently are the erosional changes alluded to by Mark Johnsson in his memorandum.

The blue arrows point the same spot in both photos.



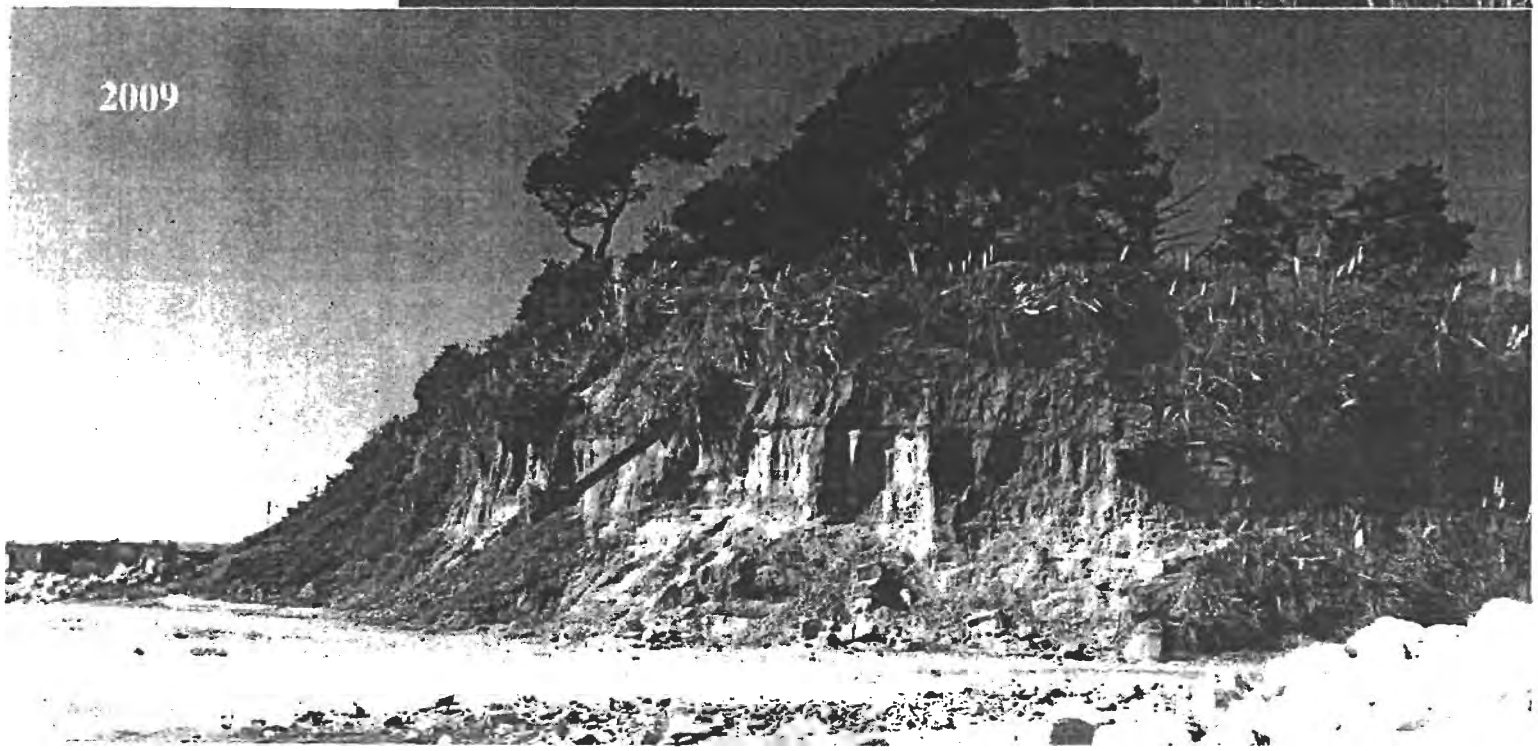


Figure 7. Aerial obliques of the subject property.

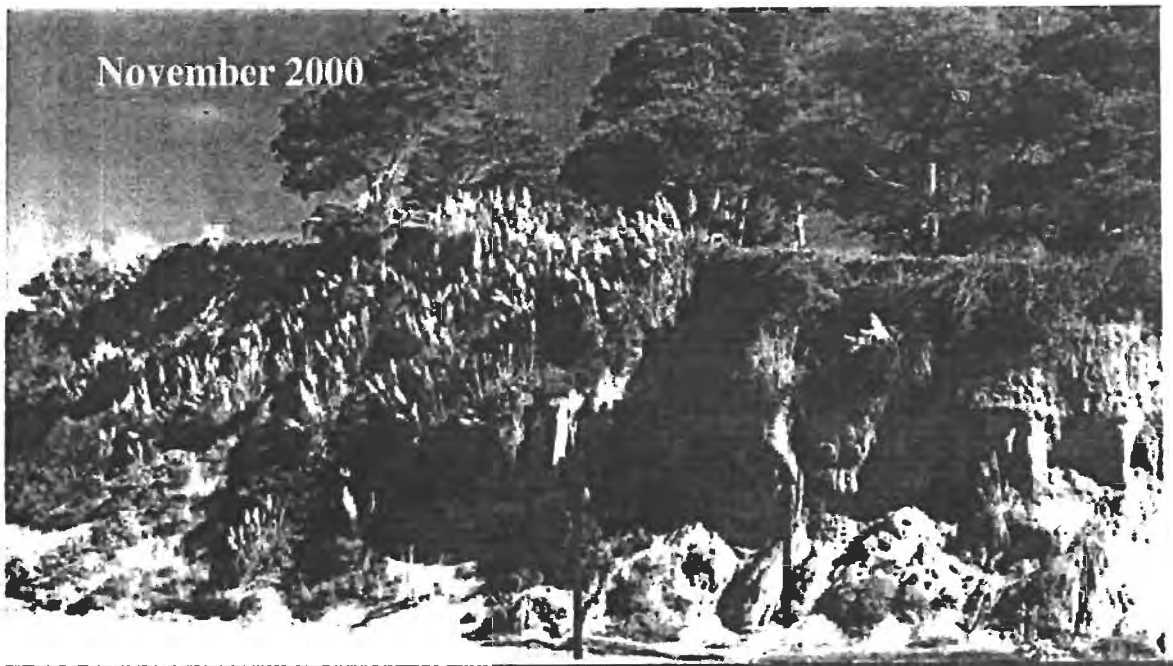


Figure 8. Seven years of change. The only change is The formation of minor failures off the upper cliff face (red stars). No erosion at the base of the cliff.

CCC Exhibit 7
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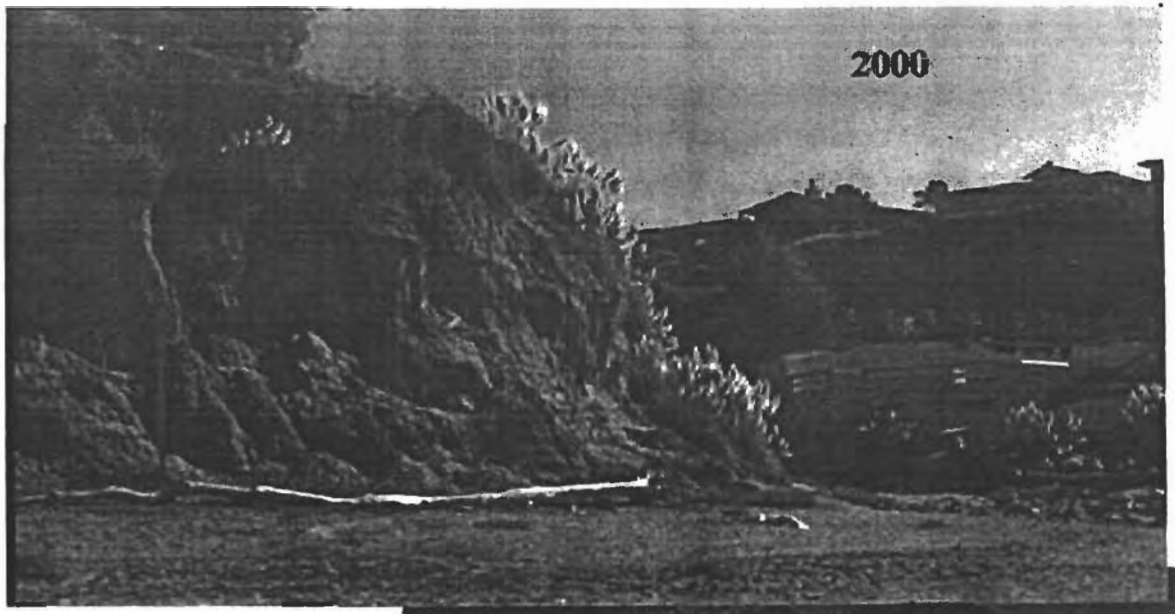

Figure 9. These photos were taken at the same time as in Figure 8. No evidence of wave erosion at the base of cliff.

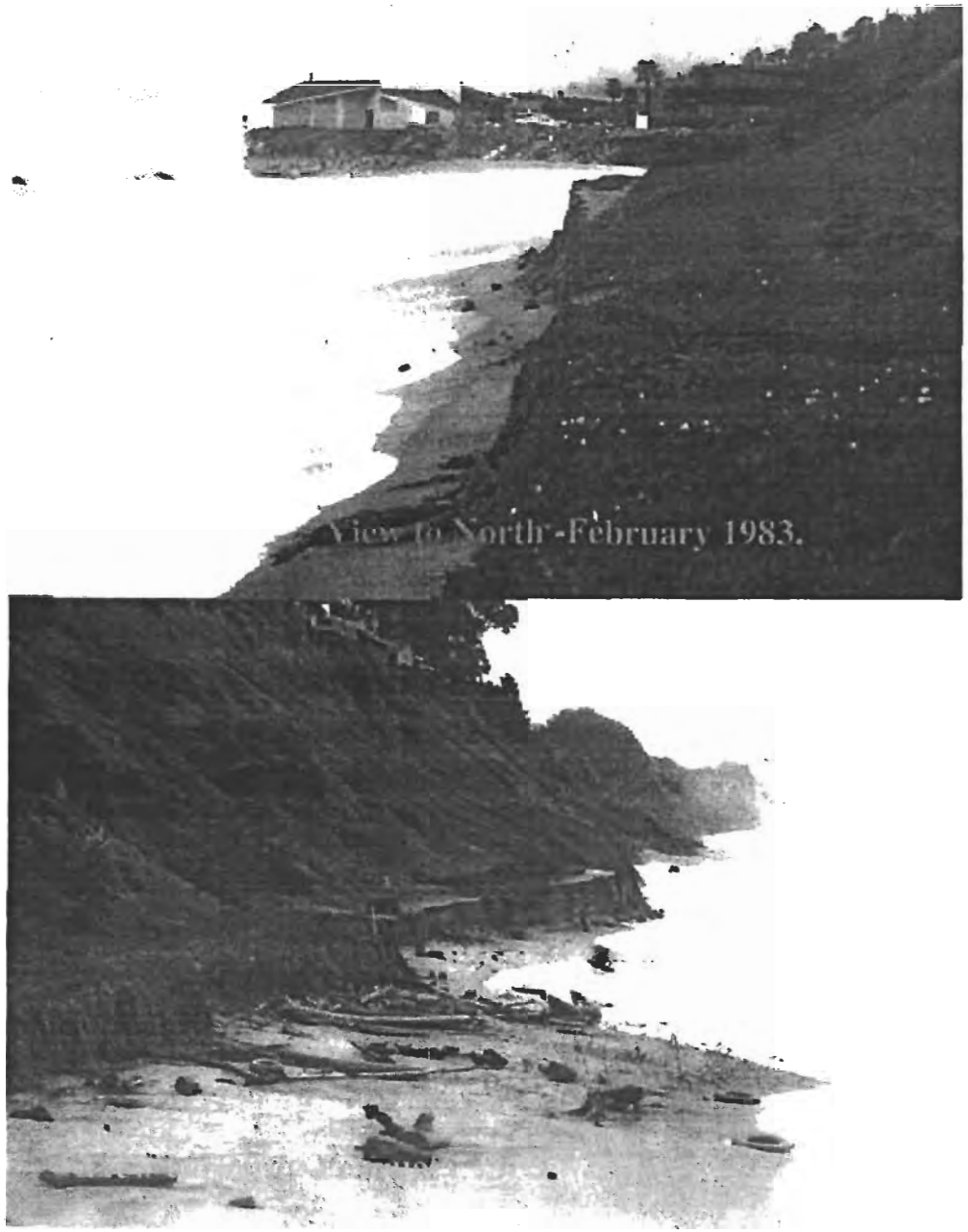

Figure 10. Two photos taken of the same area south of Via Gaviota. There has been only slight erosion of toe of colluvial wedge at base of the sea cliff. Note that the storm has stripped The beach and nipped into the toe of the colluvial wedge. This is the maximum amount of erosion I have observed in this area over the past 39 years. Note the base of the erosional sea cliff, which is buried, has not been touched by erosion. This lack of erosion during the largest storm in 40 + years supports my contention that the base of the sea cliff is above the reach of normal wave attack.

Figure 11. Wave erosion at subject properties – January 23, 1983. The only time the beach has been stripped in the past 39 years. Evidence that the base of the erosional sea cliff is above the level of wave attack.

Figure 12. Beach in front of the subject properties, November 2000. Same location as in figure 11. Note the growth of vegetation out onto the upper beach, a sign that this area is generally not within the reach of the waves.

Figure 13. Two examples of erosion associated with the 1983 storm.

At Sunset Beach (north of Pajaro Dunes) the colluvial wedge was eroded, but the waves did not erode base of the abandoned erosional sea cliff.

At Pajaro Dunes the storm eroded *active dune sands (very soft and easily eroded)* that were recently deposited on the beach face. These homes were built on the active beach as opposed to the top of the sea cliff. This is the result.

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26 February 2009 Job #2006009-G-SC

Neil Frank
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Matson - Britton Architects
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Re: Supplemental analysis in response to California Coastal Commission comments
Parcels southeast of Bayview Drive
Aptos, California
County of Santa Cruz APN's 043-161-51, -40, & -39

Dear Mr. Frank:

Our firm is pleased to respond to your request for supplemental analysis of the long term bluff retreat for the above-listed parcels. The work summarized in this letter is in direct response to comments issued by the California Coastal Commission [CCC] Geologist, Dr. Mark Johnsson. Dr. Johnsson has requested that we revisit our analysis completed in August 2006, in light of recently published papers on projected sea-level rise over the next century. Dr. Johnsson has asked us to substantiate our 100-year long term coastal bluff retreat setback for your project in light of the CCC"s concern that sea level will continue to rise at an accelerated rate within the next 100 years. The following sections summarize our analysis.

OVERVIEW OF PREDICTING FUTURE UPPER COASTAL BLUFF RETREAT

The primary process that drives the retreat of the sea cliff in the Monterey Bay is hydraulic impact and scour from wave action. The sea cliff fronting the subject property appears to have been largely untouched by wave action since at least 1939. Ironically the top of the coastal bluff has continued to lay back through the process of erosion and shallow landsliding, resulting in the build up of a wedge of sediments in front of the bluff, herein referred to as a "colluvial wedge". The toe of the bluff, which includes the colluvial wedge, actually appears to be aggrading (moving seaward) overall through time. We are aware of only one coastal storm event in the last 70 years that has touched the colluvial wedge, a large oceanic storm piled upon a very high tide in early January 1983, which resulted in a small scarplet being cut into the toe of the colluvial

wedge, where the colluvial wedge contacts the beach sand. The wedge has since refreshed itself and continues to grow seaward as the top of the bluff continues to lay back.

In order to calculate a future shoreline angle (where the coastal bluff intersects the wave cut platform abraded by the ocean) location for rising sea levels for this project, a geologist will need to consider the following parameters: sea-level rise and position, the rate at which the specific rising sea level will remove or drown the broad beach that fronts the bluff at a given sea-level rise rate, the rate at which the colluvial wedge will erode and retreat for a given sea-level rise rate, and finally the rate at which the sandstone bedrock that underlies the site and forms the sea cliff will erode and retreat for a given sea-level rise rate. The answer for this four variable equation would be the ultimate position of the coastal bluff for whatever time period is stipulated. The following subsections discuss each of these parameters and what might be a reasonable assumption for each parameter.

It is important to note that there are other parameters that could potentially be inserted into the bluff retreat equation, such as frequency and intensity of future storms. Even if we could accurately predict the future changes in such parameters, they are less likely to affect the long term retreat rate of the bluff then the aforementioned four primary parameters.

Sea Level Rise

Dr. Gerald E. Weber has written an entire letter on this topic for this project, available under separate cover. His synthesis of this topic and how it applies to this project is far more exhaustive than what we have presented below. The reader should refer to Dr. Weber's letter, which will be submitted under separate cover with this letter, for a much more detailed discussion of this topic.

The study of climate and sea level changes has become a hot scientific topic in the last 5 years, as evidenced by the number of peer-reviewed journal papers issued on the topic. We specifically reviewed the following papers for our supplemental analysis: Ekstrom et al., 2006; Domingues et al., 2008; Church and White, 2006; Church et al., 2008; Cayan et al., 2006; Cabanes et al., 2001; Vaughan et al., 2007; Rahmstorf, 2007; Pfeffer et al., 2008; Overpeck et al., 2006; Joughin et al., 2008; Jevrejeva et al., 2008a; Jevrejeva et al., 2008b; Collins and Sitar, in press..

All of the papers assume that the sea level will continue to rise because: 1. geological evidence clearly indicates that the earth has overall been slowly warming since the last sea-level low stand approximately 18,000 years, including the emergence from the Little Ice Age in the late 1700's-early 1800's.; 2. recorded historic sea levels clearly reflect a continuing rising sea level; 3. the processes driving global warming will continue into the foreseeable future; 4. the current warming trend is thought to be directly related to anthropogenic contributions to CO_2 concentrations. Hence, since sea level has been slowly rising as the earth slowly warms, this will continue in response to rising CO_2 levels. This continuing slow increase in temperature results in

two processes that contribute to the rise of sea-level: 1. thermal expansion (heating) of the ocean and 2. increase in mass due the addition of water from the melting of glacial ice and polar ice sheets.

The unifying theme in these peer reviewed articles is that there is a direct relationship between rates of atmospheric warming, oceanic warming, and atmospheric CO_2 concentration, even though this connection is poorly understood. Consequently, researchers have had to make tacit assumptions as to how these variables interact in order to calculate projected sea levels and the rates at which the sea level will rise. It is important to note how profoundly important these assumptions are to the outcome of the researchers sea level predictions. If any of these unproven assumptions are incorrect, the predicted sea-level rise will be incorrect.

The papers listed at the beginning of this section, as well as the results published by the International Panel on Climate Change (IPCC) indicated that projected sea level rise is somewhere between 7 inches to 2 feet by 2100. An added uncertainty sea level rise factor between 4 inches and 34 inches has been added to account for their poor understanding of the volume of ice that currently exists on the continents.

In our opinion, the most reasonable approach for dealing with something as uncertain as projected sea-level rise should mirror the approach used in characterizing the hazard and risk for a given project with respect to the uncertainties present in calculating seismic shaking forces for a structure. The presumptive criteria utilized for assessing the acceptable risk is directly tied to occupancy and use of the structure being constructed. In that example, facilities such as hospitals are designed for higher seismic shaking values than single-family residences, since the hospitals have greater exposure to potential injuries and deaths and therefore a lower acceptable risk threshold than residences.

Based on the aforementioned information, and the excellent summary presented by Dr. Gerald E. Weber in his letter, it is my opinion that a reasonable assumption for sea-level rise in the next century to be applied to analyses for single-family residences should be equal to or greater than the total sea level rise in the 20th century and consistent with the rate of rise over the past 20-30 years. This number would lie someplace between approximately 11 to 13 inches. Hence, we have utilized an assumed sea-level rise of about one foot for the next 100 years for this supplemental analysis.

Removal and/or Drowning of the Broad Beach Fronting the Subject Property

The width of the broad beach fronting the subject property is defined as the distance from the toe of the colluvial wedge to the high tide line at any given time.. This distance has been and will continue to be highly variable. The single instance in which the beach was almost completely removed by storm waves was in early January 1983. Typically the beach ranges in widths up to well over 300 feet. The average value (based on interpretation of historic aerial photographs)

CCC Exhibit 7
(page 45 of 60 pages)

over the last 70 years is approximately 300 feet. Although minor differences in width are common, we were unable to discern a clear trend toward either a thinner or wider beach . The minor variations noted in beach width are clearly the result of seasonal changes (summer berm versus winter berm) in beach mass and width and the intensity and frequency of oceanic storms prior to the date of the photographs.

The back beach in front of the subject property is currently 10 feet above mean sea level (see the attached cross section – Plate 1). This area has only been eroded by waves once within the last 70 years (January 1983), during a large storm combined with a storm surge piled upon a very high tide. Since then the beach has built back out to its' average width. It is difficult to predict how many tens of years it will take to **permanently** remove the beach so that wave action can routinely impinge on the base of the colluvial wedge. Additionally, it appears there is no standard of care, no published statute, no ordinance or published peer-reviewed paper that presents a clear formula for the direct relationship between the rate of sea level rise and the rate at which the shoreline on a broad beach will advance landward.

Because of the lack of information in respect to this parameter, we must assume a value. Consequently, for this analysis we have assumed that it will take approximately 50 years,(corresponding to a sea level rise of 6-inches) for the permanent removal of the existing broad beach during the winter season.. This value is within the estimates for the IPCC (2001) assessment and AR4 updated projections (refer to Church et al., 2008, Figure 6). When one considers that this beach has only been removed once over the past 70 + years it is difficult to rationalize that a 6-inch rise in sea level would lead to a complete and permanent removal of the winter beach. However, in order to deal with a hypothetical process we need to assume a number that is far in excess of what we feel is probably valid. Therefore this is an ultra conservative analysis that would place the shoreline at the toe of the colluvial wedge 50 years from today.

Colluvial Wedge Retreat Rate

The same dilemma of lack of published data and formulas relates to the rate at which the colluvial wedge will retreat, if it is routinely attacked by wave erosion on a yearly or bi-yearly basis. We presume that the rate would be fairly high, considering the fact that the colluvial wedge is composed of unconsolidated sediments, roughly similar in composition to the underlying beach sand.

If one assumes a future shoreline angle elevation of one foot below mean sea level, the aggregate thickness of colluvium that needs to be removed before the bedrock is reached is approximately 10 feet.

Considering the lack of information for this parameter, we once again will have to assume a rate, so for this analysis we have assumed it would take approximately 3 years for the sea level to rise

to the point high enough to advance the shoreline to the contact between the bedrock and the colluvial wedge.

Sea Cliff Retreat Rate

Published and unpublished average long term bluff retreat rates for the sea cliff up shore (northwest) of the subject site range from nil to upwards of 2 feet, depending upon the stratigraphy and structure of the bedrock and the orientation of the coastline. There are no published long term rates for sea cliff retreat by wave erosion anywhere near the site because the coastal bluff in this area has been protected by a broad beach (from New Brighton Beach State Park - up coast and northwest of the site - to Sunset Beach – down coast and southeast of the site) for 70+ years. Any bluff retreat rates for this stretch of sea cliff are basically rates that record the retreat of the top of the bluff due to rainfall erosion, drainage erosion, rock falls and shallow landslides - all terrestrial processes. Considering the geological setting, we have conservatively assumed that if the ocean ever forms a shoreline angle within the underlying Purisima Formation sandstone bedrock, it will do so at about one foot below mean sea level and will erode the shoreline angle back at an average annual rate of about one to two feet per year.

We have no reason to believe that the above listed assumed annual average bluff retreat rate values are too low or too high. Collins and Sitar (in press) attempted to quantify another way to deal with quantifying coastal bluff erosion, but their paper addresses a stretch of coastline along the Pacifica, California area that is underlain by entirely different earth materials. Additionally, it is important to note that if the sea level rise rate significantly exceeds the rate at which the shoreline angle can be abraded into the bedrock and advanced landward, there is every chance that the retreat rate might stabilize or slow down due to deeper water conditions in front of the shoreline angle (i.e. a drowned shore line angle). In any event, it is best to use predictable and reproducible rates for comparable geological conditions, where available, instead of creating fictitiously assumed rates.

WHAT DO WE DO WITH THESE PARAMETERS?

If the retreat rate for each component was rigid and simplified, the calculation would be easy to do. Unfortunately, as noted, we are very unsure of how quickly the broad beach will disappear and then how rapidly the colluvial wedge will be removed if sea level rises about one foot within the next 100 years. Hence, we feel it is reasonable to work backwards from the imminent failure of the residence, and deal with the envelope of uncertainty from the contact between the colluvial wedge and bedrock seaward toward the modern day shoreline.

In order to do this, we need to set the stage for imminent failure of the proposed residence. Assuming a vertical bluff that has just exposed the piers for the residence, which is presumptively built right upon the edge of our envelope, with a shoreline angle at about one foot below mean sea level, we note from our cross section that there is approximately 108 ½ feet of

bedrock seaward of this point. If we assume a bedrock/bluff retreat rate of 1 foot per year, then it would take 108 ½ years for the proposed residence to become endangered after the bedrock is breeched by the rising sea. If we assume a bedrock/bluff retreat rate of 2 feet per year, then it would about 54 years for the proposed residence to become endangered after the bedrock is breeched by the rising sea.

If the bedrock retreat rate is one foot per year, then the proposed residence is obviously set back far enough to fulfill the intent of the Local Coastal Plan of a stipulated 100-year design life. Nonetheless, to carry out the calculation, we would then add 3 years for the removal of the colluvial wedge and 50 years for the removal of the beach resulting in a hypothetical lifetime of 161 ½ years.

Using a similar tally for a bedrock retreat rate of 2 feet per year (i.e. bedrock+colluvial wedge+beach = 54 years + 3 years + 50 years) results in a lower value of 107 years for the hypothetical lifetime.

CONCLUSIONS

The above analysis clearly shows that the proposed residences continue to be geologically feasible and that they conform to the intent of the Local Coastal Plan. The calculated life of the residences with respect to hypothetical bluff retreat lies between 107 and 161 ½ years, even after assuming a reasonable sea-level rise of one foot or more for the next 100-years and assigning conservative assumptions for loss of the broad beach, loss of the colluvial wedge and abrasion of the sandstone bedrock. We stand behind our original conclusions and recommendations issued in 2006 - the residences constructed within our stipulated envelope are geologically feasible.

It is important to note that we have performed this research at the behest of the California Coastal Commission Geologist, Dr. Mark Johnsson. To our knowledge, none of the work outlined in this letter adheres to standard of care for coastal geology investigations in Santa Cruz County or in any approved ordinances, prescriptive codes or statutes. We have assembled a plausible geological model for what we consider to be a reasonable assumption for a future sea level rise rate. There is no end of possibilities and ways to model this situation, if the geologist is almost completely unconstrained by data or calculations, as is the case here. As noted in the above sections, the only rate that appears to be even remotely constrained by data is the retreat of the Purisima Formation bedrock, located well up coast of the subject property. Considering the inherent uncertainty in all of the work done to date by the researchers, there is no reason to pursue this matter any further for this project and continue to debate the merits of all the different

assumptions that one could conceivably make. To continue this pursuit any further would only unnecessarily forestall the issuance of the permit for the project, without furthering our understanding of the geology of the site, which has been determined to be suitable for the proposed development.

Sincerely

Zinn Geology

PROFESSIONAL GEOLOGIST
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CERTIFIED
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GEOLOGIST
STATE OF CALIFORNIA

By: Erik N. Zinn
Principal Geologist
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Attachment: Plate 1 - Cross Section Used For Bluff Retreat Calculation

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February 26, 2009 Project No. 0630-SZ70-D63

Mr. Neil Frank
c/o Matson-Britton Architects
728 N. Branciforte Drive
Santa Cruz, CA 95062

Subject: **Response To California Coastal Commission Comments**
Lands of Frank
Bayview Drive
A.P.N. 043-161-51, -40 and -39
Rio Del Mar, Santa Cruz County, CA

Reference: **Review of Geotechnical and Geologic Investigation Reports**
Dr. Mark Johnsson, California Coastal Commission, dated November 10, 2008

Dear Mr. Frank,

As requested, we have reviewed the comments expressed by Dr. Mark Johnsson of the California Coastal Commission. Our response is based upon those comments, as well as discussions with Dr. Johnsson and Susan Craig during a meeting at their office on January 6, 2009. We offer the following response:

Comment #1
The minimum factor of safety of all potential failure modes was not determined. Instead, an assumed failure surface was specified and its factor of safety calculated. This is not standard practice and does not assure that the specified surface is, indeed the most likely failure surface."

As outlined in our geotechnical report, long-term bluff retreat rates were calculated on the basis of the project geologist's understanding and experience with bluff failures along this area of coastline. Such failures inherently included all the geological processes (erosion, landsliding, co-seismic failures, etc.) which could conceivably contribute to retreat of the bluff over the next 100 years. The purpose of our slope stability analysis was to quantify a worse-case failure surface using this analytical process and demonstrate consistency with observed slope failures, particularly those triggered by seismic shaking. In our opinion the most likely failure surface was adequately demonstrated using this approach and was consistent with numerous observations along the coastal bluffs.

Nevertheless, Dr. Johnsson asked us to perform additional slope stability analysis in accordance with the procedures outlined in the 16 January 2003 memorandum, titled "Establishing Setbacks from Coastal Bluffs". In general, the procedures outlined in this document require demonstrating a static safety factor of 1.5 or greater assuming circular failure surfaces through generally homogeneous materials.

The recommended setback is then determined on the basis of this failure plane, or a failure plane demonstrating a 1.1 safety factor with a horizontal seismic coefficient of 0.15g, whichever lies furthest landward. The results of our analysis are enclosed with this letter and demonstrate that, although the approach is not in our opinion a realistic model for coastal bluff landslide analysis, the recommended setback as outlined in the geologic and geotechnical reports lies landward of these postulated failure planes and remains appropriate from a geotechnical standpoint.

The results of our analysis suggest that retreat of the terrace deposit materials may encounter portions of the foundation piers for the seaward edge of the residence near the end of the structure's design life. The portion of the pier extending into bedrock will not be exposed however, suggesting continued support or mitigation measures that would not require the need for a coastal protection structure.

Comment #2
"No data are presented in support of the assumed shear strength parameters used in the analysis. Indeed the friction angle assumed for the Purisima Formation is unusually high"

As discussed with Dr. Johnsson, the following is a tabulated summary of shear strength values that have been obtained from laboratory testing of samples from this and adjacent properties (starting with the property furthest to the northwest and proceeding down coast):

Property Location	Reported By	Sample Depth	Cohesion	Phi Angle
Terrace Deposit Materials:				
A.P.N. 043-161-52 (650 Bayview Drive)	Steven Raas & Associates	5'	1420 psf	35°
		10'	790 psf	40°
		15	1230 psf	30°
		20	710 psf	45°
A.P.N. 043-161-08 (656 Bayview Drive)	Steven Raas & Associates	5'	2150 psf	36°
		16'	985 psf	42°
A.P.N. 043-161-57 (660 Bayview Drive)	Pacific Crest Engineering	6'	0 psf	39°
		16'	0 psf	38°
A.P.N. 043-161-58	Pacific Crest Engineering	2'	0 psf	31°
A.P.N. 043-161-39	Pacific Crest Engineering	12'	700 psf	45°
	Haro, Kasunich & Associates	5'	880 psf	45°
		13'	100 psf	50°
		21'	300 psf	40°
A.P.N. 043-161-40	Pacific Crest Engineering	23'	175 psf	43°
A.P.N. 043-161-51	Haro, Kasunich & Associates	17'	0 psf	38°
Average Strength Values:			***630 psf***	***40°***

Purisima Formation Bedrock:

A.P.N. 043-161-52 (650 Bayview Drive)	Steven Raas & Associates	35'	1670 psf	37°
A.P.N. 043-161-08 (656 Bayview Drive)	Steven Raas & Associates	26'	1115 psf	33°
A.P.N. 043-161-58	Pacific Crest Engineering	27'	275 psf	45°
A.P.N. 043-161-51	Haro, Kasunich & Associates	29'	410 psf	34°
	Pacific Crest Engineering	22'	1150 psf	61°
		27	500 psf	48°
Average Strength Values:			***850 psf***	***43°***

As can be seen from the laboratory test results presented above, the soil stratigraphy is highly variable within the marine and fluvial terrace deposit materials, with resulting variations in laboratory-derived soil strength parameters. Our review of laboratory test results from this site and the adjacent properties up and down-coast confirm a wide variation in shear strength properties within the soils that overlie bedrock contact.

The slope profile was modeled using three predominant soil/rock types. Direct shear testing of soil samples within the wedge of marine and fluvial terrace deposits overlying the bedrock at this site indicate that cohesion appears to be the dominating strength component within the upper ten feet, with a more frictional component dominating the underlying sand strata to the bedrock contact. The strength values were conservatively selected and fall within the range of test results outlined above.

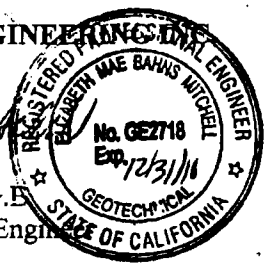
Comment #3
"The statement that "we do not expect failure geometries to encroach beyond the boundary [as specified by Zinn] and onto the building envelopes within the next 100 years" is not supported by facts or calculations."

Our 2006 analysis presented our interpretation of worse-case failure geometries and demonstrated that they would occur within the recommended structural setback outlined by the project geologist. Observed and calculated failure planes along these coastal bluffs suggest failures occurring at angles of about 35 degrees from horizontal, both statically and seismically. The increase in calculated safety factors therefore does not support failure geometries flatter than 35 degrees that could encroach beyond the recommended setback.

We appreciate the opportunity to be of service. If you have any questions, please contact our office. We can be reached at (831) 722-9446.

Sincerely,

PACIFIC CREST ENGINEERING INC.



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Copies: 1 to Client
5 to Matson-Britton Architects
1 to Zinn Geology
1 to Dr. Gerald Weber

Enclosure: Quantitative Slope Stability Analysis

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July 3, 2009

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VIA EMAIL AND REGULAR MAIL

Susan Craig
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California Coastal Commission
725 Front Street, Suite 300
Santa Cruz, CA 95060

Re: Appeal Numbers A-3-SCO-09-001, -002, -003 (Frank)

Dear Susan and Dan:

I wanted to summarize in this letter my understanding of the salient points of geologic information and standards that have been disseminated in the various reports, counterreports, critiques, etc. for Neil Frank's project. In summarizing this information, this is in part my own attempt at trying to comprehend the information and grasp its significance from a practical standpoint. I am not a geologist so I am sure I may miss something, but it seems worth the effort to try to make some sense out of the points from a lay standpoint and try to understand how three professional geologists could reach such a dramatically different conclusion on the bluff setback.

Initially, as to the standard utilized by the Coastal Commission in measuring coastal erosion and establishing setbacks based thereon, I have read twice now in recent Coastal Commission reports[1] that the standard for gauging future coastal erosion is the historical coastal erosion rate; accelerating sea level rise is not a factor that is calculated into the future rate because of the numerous uncertainties and indeed considerable disagreement over what that amount might be. This Commission policy is made clear in the Monterey Bay Shores Appeal Staff Report dated April 24, 2009, in which it is stated at page 47:

> "There is no single, widely-accepted methodology for explicitly including sea level rise into projections of future bluff retreat. Rather, the Commission's practice in the past has been to base the recommended setback on the highest historic bluff retreat rate for [sic] in order to minimize the risk of coastal erosion hazards, and not to assume a specific amount

[1] Monterey Bay Shores Appeal Staff Report dated April 24, 2009, and the Staff Report for the Crescent City LCP Amendment cited in Dr. Johnsson's June 18, 2009 Geotechnical Review Memorandum on the Frank project.

of retreat to the effects from sea level rise. This approach is particularly compelling given the uncertainty in sea level rise projections, including that associated with the potential melting of ice sheets and glaciers."[2]

Reviewing the geologic information submitted on the Frank project, we have Erik Zinn, the project geologist from Santa Cruz County, and Dr. Gerald Weber, a consulting geologist who was formerly the Santa Cruz County Geologist and is presently Lecturer Emeritus, Earth and Planetary Sciences Department, at the University of California, Santa Cruz. Mr. Zinn reviewed stereopair aerial photographs dating back to 1928 which were site-specific to the project location at Hidden Beach, and determined that the historic erosion rate at the site over almost 80 years varied from 0.27 to 0.30 feet per year on the beach bluffs and 0.05 feet per year on the along the arroyo bluff. Bluff top recession setbacks for the structures over a 100 year period were established accordingly at a minimum of 25 feet (as required by the Santa Cruz County LCP) up to 30 feet.

Dr. Weber was given the assignment of independently reviewing Mr. Zinn's report to critique its accuracy and conclusions in light of his own knowledge and experience. Dr. Weber concurred with Mr. Zinn's conclusions; in fact Dr. Weber concluded that Mr. Zinn's projected future rate was a very conservative estimate of the future bluff top recession at this location.

A couple of important conditions at this site were discussed in Mr. Zinn's report. One factor noted was that the base of the bluff of the Frank site has experienced no erosion at all since 1939. Another factor is that Hidden Beach is extremely wide, such that it is rare and only during the severest of coastal storms that wave run up ever reaches the base of the bluff. With no erosion occurring at the base of the bluff, the bluff top erosion will occur only as the angle of the bluff "lays back" to reach what I would call an angle of repose. This angle of repose was calculated and the erosion/setback rate was based upon it. Dr. Weber concurred in these conclusions and observations based on his own experience, and in fact explained that he believed that future bluff top retreat could well be less than in the past because (as I understand it) the base of the bluff was not eroding and the bluff angle had already "laid back" to some degree.

Mr. Zinn also noted that among the circumstances of which he could not take account were any future accelerated increases in ongoing sea level rise and any increasing intensity of

[2] In the recent Geotechnical Review Memorandum (June 18, 2009) provided by Dr. Johnsson on the Frank project, Dr. Johnsson states "Staff has always recommended consideration of sea level rise when evaluating future erosion rates. Until recently, this has been done only qualitatively and was based on historic trends in sea level rise. Given our evolving understanding of the mechanisms of sea level rise, staff is now recommending an upward revision of the rate of sea level rise, to a minimum of 3 ft/century." Yet this is only a recommendation of staff, and to our knowledge it has not yet been adopted as a policy or rule by the Commission, particularly on the order of 3 feet which is extremely high given the "uncertainty concerning sea level rise" repeatedly cited by Dr. Johnsson. And it is entirely inappropriate to apply this new "staff recommendation", if indeed it is one, to a small residential project such as the Frank project, which would effectively prohibit the project in a location where similarly-situated bluff top owners have been allowed to build for years.

coastal storms, because they were simply subject to too many variables and too uncertain to predict. As I understand it, however, a sea level rise of at least 8 inches is already imputed into the future erosion rate (because the historic rate includes 8 inches of sea level rise that occurred over the past 100 years), as well as the effects of intense coastal storms which are documented to have occurred over the past 80 years. So the future erosion rate, being based on the historic erosion rate, already includes some amount of sea level rise and the effects of a certain amount of intense coastal storms.

On the other hand, Dr. Mark Johnsson in his Geotechnical Review Memorandum of June 18, 2009 reaches a dramatically different conclusion on the appropriate bluff top recession setback. But prior to reaching the point in his memorandum (as well as the Monterey Bay Shores report) where Dr. Johnsson states what he is adopting as his recommended setback based on "observed historic long-term bluff retreat rates", he recites that he has requested the applicants in each case to go through what I believe he refers to as a "sensitivity" analysis of sea level rise. This involves requiring the geologists to extrapolate and fold into the projections of future coastal erosion various scenarios of accelerated sea level rise. This produces a series of increasingly severe projections of coastal erosion and therefore presumed setback requirements, without explicitly ever stating that these are being relied on or required. Why this exercise is insisted upon escapes me, because in the end all that is required in terms of a setback is the highest historical coastal erosion rate, which Dr. Johnsson picks, more or less as a "safety factor" to account for an accelerated rise in sea level which may (or may not) occur.

For the Frank project, in the end Dr. Johnsson selects the USGS National Assessment of Shoreline Change (2007) long-term erosion rates, which he reports as 0.2 – 0.3 meters (0.66 – 0.98 feet) per year "for this stretch of coastline". He then chooses the highest value, which is three times higher than Mr. Zinn's site-specific rate. What " this stretch of coastline" refers to is not the defined or described, nor is the support for Dr. Johnsson's quoted rate apparent from the USGS Study[3]. Dr. Johnsson then establishes the setback at the bluff top recession over the course of the next 100 hundred years (which is correct under the Santa Cruz County LCP), but

[3] I have reviewed the 2007 USGS Study and I cannot find that the erosion rates reported by Dr. Johnsson are cited in the Study. The Study reports an average erosion rate for all of the Monterey Bay shoreline at 0.4 meters per year, but this includes the very high erosion rates in southern Monterey Bay at Sand City and Marina. No specific erosion rates are cited in the text for Hidden Beach or indeed even the Santa Cruz/northern Monterey Bay shoreline. Figure 23 is a graph chart showing erosion rates at various locations from Davenport to Sand City, which is somewhat crude and imprecise. From it one could easily conclude that the erosion rate at Hidden Beach is – 0 –. The problem is compounded by Dr. Johnsson's lack of definition of "this stretch of coastline;" the results from location to location vary dramatically, indicating (I believe) that there is no substitute for a site-specific evaluation.

Further on this point, I cannot find anywhere in his Review Memorandum that Dr. Johnsson actually critiques or disagrees with Mr. Zinn's established site-specific erosion rates. All he critiques is Mr. Zinn's analysis of accelerated sea level rise. Mr. Zinn calculated the site-specific erosion rate from stereopair aerial photographs dating back to 1928, which are readily available for Dr. Johnsson's own review. Nor does Dr. Johnsson comment on or account for the particular unusual circumstances at Hidden Beach, discussed by Mr. Zinn, that militate against a higher erosion rate.

having taken the highest value of the erosion rate for "this stretch of coastline" and then adding a safety factor for stability (which I frankly do not comprehend) and then "following the method outlined in Johnsson (2005)", which method is not described, Dr. Johnsson comes up with a recommended set back of 116 feet for the beach bluff top lots, which of course is considerably greater than the depth of any of the lots and would preclude any development at all.

To me this is perplexing and surprising, because Santa Cruz County and the cities within Santa Cruz County and the Coastal Commission itself have for years approved development on the bluff top (and even on the beach) with far less of a setback, with findings that such development is consistent with the policies of the Coastal Act and the Santa Cruz County LCP. Mr. Zinn tells me that Dr. Johnsson's approach has never been taken before in analyzing Santa Cruz bluff top projects for single family residences. Indeed, as recently as 2008 and 2009, two bluff top developments were approved which had far lesser setbacks than that designated by Dr. Johnsson.[4] With Dr. Johnsson's conclusions, however, it appears that in no less than 100 hundred years (and likely much sooner, perhaps 25 years) the amount of "this stretch of coastline" will have the line of houses along the beach inundated, and many of the houses on the bluff top having collapsed on top them or onto the beach.

Some of the maps and data cited by Dr. Johnsson predict a disaster of gargantuan proportions, yet those maps apparently do not even trust themselves. The Pacific Institute maps on which Dr. Johnsson relies indicate on the maps themselves that they are not to be relied upon to assess actual coastal hazards.[5] But, in any event, even if they were, the conclusions would have tremendous implications for the public health and safety, not to speak of precluding any further development on the Santa Cruz County coast. The implications would be such that all houses presently along the bluff line on "this stretch of coastline" will shortly be a public hazard to the persons who inhabit them, and prudence would indicate that evacuation plans should be developed soon.

Distilling the essence of these reports, and to summarize my understanding.

1. The Coastal Commission does not impute an accelerated increase in sea level rise in its calculations of future erosion rates to establish development setbacks, but only historic erosion rates.

2. In establishing the historic erosion rate for the Frank project, Dr. Johnsson did not use a site-specific historic erosion rate but an erosion rate with varying values for a stretch of coastline that is not defined and is not site-specific, and took the highest erosion rate.

[4] These were A-3-SCO-06-006 (Willmot) approved by the Commission in 2008, and Appeal A-3-SCO-09-019, for which the Commission found No Substantial Issue on June 10, 2009.

[5] The maps state: "This work shall not be used to assess actual coastal hazards...." A similar caution is found on page 2 of the 2007 USGS Study which states in pertinent part that "The results...are not intended for comprehensive detailed site specific analysis of cliff retreat..."

3. Mr. Zinn calculated a site-specific historic erosion rate based on stereopair aerial photographs specifically applicable to this beach and site, which was concurred in by Dr. Weber based upon his independent review and evaluation and his experience with the Santa Cruz County coastline in a position of responsibility.

4. Mr. Zinn cited specific factors that explained the historic erosion rate and minimized the risk of future higher erosion rates, including the breadth of the beach and the fact that the base of the bluff has shown no erosion over the past 75 years.

5. Permits approved regularly along the Santa Cruz County bluff tops over the years under the Coastal Act have not assumed a position or calculated an erosion rate or setback line anywhere approaching what Dr. Johnsson has come up with for the Frank project.

6. As a consequence, Dr. Johnsson's review and recommendations are not an appropriate basis for analyzing this project or for applying to this project.

I look forward to communicating with you further on this topic so we can, hopefully, dispense with this as an issue in the appeal.

Very truly yours,

FENTON & KELLER
A Professional Corporation

Thomas H. Jamison

Thomas H. Jamison

THJ:tob

cc: Neil Frank
Cove Britton
Susan McCabe
Erik Zinn
Dr. Gerald Weber

Applicable Santa Cruz County LCP Policies and Implementation Plan Standards

LCP VISUAL RESOURCE OBJECTIVES

Objective 5.10a Protection of Visual Resources
(LCP) To identify, protect and restore the aesthetic values of visual resources.

Objective 5.10b New Development in Visual Resource Areas
(LCP) To ensure that new development is appropriately designed and constructed to have minimal to no adverse impact upon identified visual resources.

LCP VISUAL RESOURCE POLICIES AND IP STANDARDS

5.10.1 Designation of Visual Resources
(LCP) Designate on the General Plan and LCP Resources Maps and define visual resources as areas having regional public importance for their natural beauty or rural agricultural character. Include the following areas when mapping visual resources: vistas from designated scenic roads, Coastal Special Scenic Areas, and unique hydrologic, geologic and paleontologic features identified in Section 5.9.

5.10.2 Development Within Visual Resource Areas
(LCP) Recognize that visual resources of Santa Cruz County possess diverse characteristics and that the resources worthy of protection may include, but are not limited to, ocean views, agricultural fields, wooded forests, open meadows, and mountain hillside views. 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. Require discretionary review for all development within the visual resource area of Highway One, outside of the Urban/Rural boundary, as designated on the GP/LCP Visual Resources Map and apply the design criteria of Section 13.20.130 of the County's zoning ordinance to such development.

5.10.3 Protection of Public Vistas
(LCP) Protect significant public vistas as described in policy 5.10.2 from all publicly used roads and vista points by minimizing disruption of landform and aesthetic character caused by grading operations, timber harvests, utility wires and poles, signs, inappropriate landscaping and structure design. Provide necessary landscaping to screen development which is unavoidably sited within these vistas. (See policy 5.10.11.)

5.10.6 Preserving Ocean Vistas
(LCP) 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.

5.10.7 Open Beaches and Bluff-tops
(LCP) Prohibit the placement of new permanent structures which would be visible from a public beach, except where allowed on existing parcels of record, or for shoreline protection and for public beach access. Use the following criteria for allowed structures:
(a) Allow infill structures (typically residences on existing lots of record) where compatible with the pattern of existing development.
(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.

IP Section 13.20.130(b)(1)
Entire Coastal Zone. The following Design Criteria shall apply to projects sited anywhere in the coastal zone: 1. Visual Compatibility. 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)
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.

IP Sections 13.20.130(c)(2)(3)
2. Site Planning. Development shall be sited and designed to fit the physical setting carefully so that its presence is subordinate to the natural character of the site, maintaining the natural features (streams, major drainage, mature trees, dominant vegetative communities). Screening and landscaping suitable to the site shall be used to soften the visual impact of development in the viewshed.
3. Building Design. Structures shall be designed to fit the topography of the site with minimal cutting, grading, or filling for construction. Pitched, rather than flat roofs, which are surfaced with non-reflective materials except for solar energy devices shall be encouraged. Natural materials and colors which blend with the vegetative cover of the site shall be used, or if the structure is located in an existing cluster of buildings, colors and materials shall repeat or harmonize with those in the cluster.

LCP GEOLOGICAL HAZARDS 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.

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.

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.

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.

6.2.16 Structural Shoreline Protection Measures (in relevant part)
(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.

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.

6.4.3 Development on or Adjacent to Coastal Bluffs and Beaches
(LCP) Allow development in areas immediately adjacent to coastal bluffs and beaches only if a geologist determines that wave action, storm swell and tsunami inundation are not a hazard to the proposed development or that such hazard can be adequately mitigated. Such determination shall be made by the County Geologist, or a certified engineering geologist may conduct this review at applicant's choice and expense. Apply Coastal Bluffs and Beaches policies.

APPLICABLE LCP IMPLEMENTATION PLAN STANDARDS RE: HAZARDS

Section 16.10.070(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.

16.10.070(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.

16.10.070(h)(3)(i) Shoreline Protection.

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.

16.22.070 Runoff control.

Runoff from activities subject to a building permit, parcel approval or development permit shall be properly controlled to prevent erosion. The following measures shall be used for runoff control, and shall be adequate to control runoff from a ten-year storm:

(a) On soils having high permeability (more than two inches/hour), all runoff in excess of predevelopment levels shall be retained on the site. This may be accomplished through the use of infiltration basins, percolation pits or trenches, or other suitable means. This requirement may be waived where the Planning Director determines that high groundwater, slope stability problems, etc., would inhibit or be aggravated by onsite retention, or where retention will provide no benefits for groundwater recharge or erosion control.

(b) On projects where onsite percolation is not feasible, all runoff should be detained or dispersed over nonerodible vegetated surfaces so that the runoff rate does not exceed the predevelopment level. Onsite detention may be required by the Planning Director where excessive runoff would contribute

to downstream erosion or flooding. Any policies and regulations for any drainage zones where the project is located will also apply.

(c) Any concentrated runoff which cannot be effectively dispersed without causing erosion, shall be carried in nonerodible channels or conduits to the nearest drainage course designated for such purpose by the Planning Director or to on-site percolation devices. Where water will be discharged to natural ground or channels, appropriate energy dissipators shall be installed to prevent erosion at the point of discharge.

(d) Runoff from disturbed areas shall be detained or filtered by berms, vegetated filter stips, catch basins, or other means as necessary to prevent the escape of sediment from the disturbed area.

(e) No earth or organic material shall be deposited or placed where it may be directly carried into a stream, marsh, slough, lagoon, or body of standing water.

Proposed Bluff Top Development At Hidden Beach

Located between Seascape and Rio del Mar

By Bill Comfort

Five huge two-story structures are proposed to be built above Hidden Beach

- One gracious single-story structure is proposed to be replaced by five hotel-like structures.
- Four of the proposed structures are distributed along the Hidden Beach ocean bluff, and a fifth structure is bordered by the Hidden Beach arroyo bluff.
  - All bluffs are natural, with the exception of the currently failing retaining wall over a small fraction of the ocean bluff.
- All proposed structures are near maximum possible floor area and height with near minimum bluff setbacks of approximately 25 feet.

CCC Exhibit 9
(page 2 of 22 pages)

Overview of Hidden Beach

CCC Exhibit 9
(page 3 **of** 22 **pages)**

The Hidden Beach bluffs are unique in this area

- This is the only ocean bluff where beach sand meets the bluff between Seacliff and Seascape.
  - All other areas are obscured by structures, roads, or parking lots.
- The arroyo bluff supports a trail used by many locals, and affords a protected area which includes a sandy-cove beach

Overview of Hidden Beach from beach toward bluffs

CCC Exhibit 9
(page 5 of 22 pages)

View of the bluff (*and current single story house, left*) from Hidden Beach

CCC Exhibit 9
(page 6 of 22 pages)

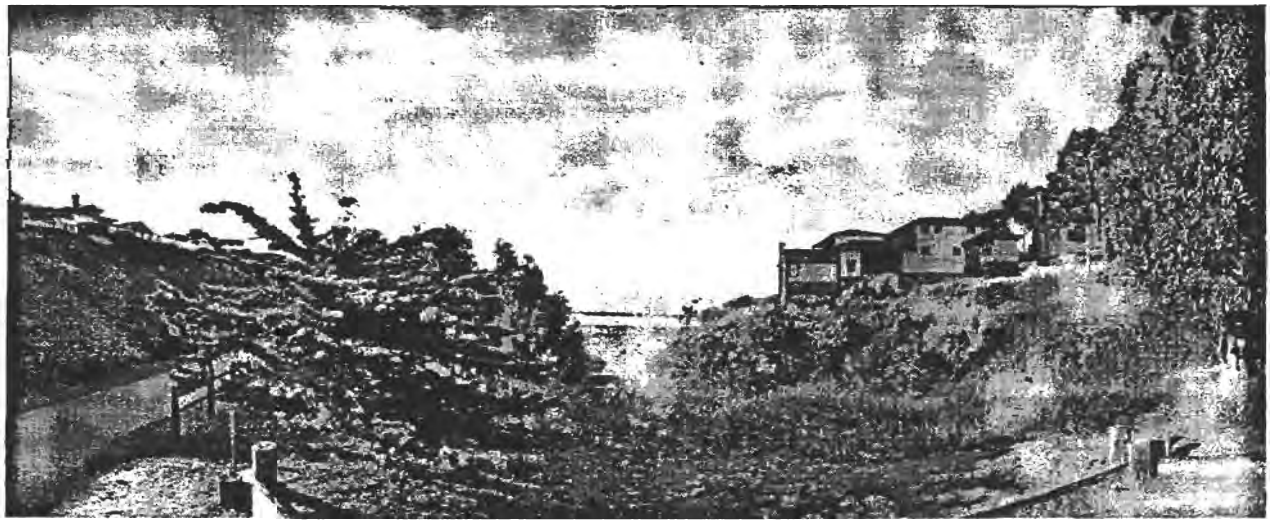
The current beach view shed includes nearly all low-profile bluff-top houses

- Seascape houses near the beach and across the arroyo from the proposed development are low-profile; single-story from the street
  - Some have second levels below the street level
  - Low-profile reduces impact on beach view shed
- The house proposed to be replaced is single story
- There is only one two-story house above Hidden Beach near the Beach Drive border
  - This house is larger than proposed houses, but less intrusive because of larger set-back and gracious design

Public View Shed Issues

- Public beach view shed will be dominated by four huge two-story structures.
- Proposed minimum bluff set-backs for these large structures increases their dominance of the public beach view shed.
- Existing retaining wall is in disrepair, and very visible from the public beach, detracting from the beauty of the natural bluffs.
- Two of the structures bounded by the arroyo bluff would dominate the view toward the beach from Hidden Beach Park trail to Hidden Beach.

View from Hidden Beach Park trail: before & after proposed development



CCC Exhibit 9
(page 9 of 22 pages)

CCC Exhibit 9
(page 10 of 22 pages)

Hidden Beach Park trail to beach affords view of natural bluff top

- Views of bluff top will be obliterated by proposed development
- Three of the five two-story houses will occupy this space

Bluff Fragility Issues

- Ocean bluffs have been demonstrated to be fragile
  - Experience of General Hart's house during Loma Prieta earthquake demonstrates the fragility of the bluffs in the area
  - Experience on the Assar structure in which three houses below were red-tagged because of a slippage and soil ejection during the Assar construction
  - A landslide was produced on the property simply by over-watering.
  - New retaining walls will likely be required in the future which would further degrade the natural beauty of the bluffs and public viewshed
  - Significant sloughing of the arroyo bluffs on the property proposed for development have occurred during winter storms.
- Minimum setbacks of structures from the bluff increase the risk of further damage to the bluff:
  - Earthquake and unforeseen geologic conditions (General Hart)
  - Rising sea-levels have not been accounted for in bluff recession estimates for proposed development(s)
  - Both the ocean and the arroyo bluffs are subject to erosion by winter waves and wind and outflow from the creek that separates Seascape and Rio del Mar

Wave action and creek runoff flows erode the ocean- and arroyo-bluffs

- Waves and runoff have caused erosion and land-slides along the arroyo bluffs and over the public trail (left)

- Driftwood logs provide evidence of wave action: 14 feet above sea level and more than 300 feet from the ocean

Over-watering damage on the left, failing retaining wall on the right

Drainage issues are risks to both ocean and arroyo bluffs

- Drainage for several of the lots is directed into property that is and will be owned by other parties
- Drainage into the arroyo risks washouts of existing trails along the arroyo
  - Trails have been damaged in the past
  - Proposed angle drilling to accommodate drainage pose further risks to already fragile public trail

Beach Access Issues

- The trail parcel for public access is being subsumed by the changes in lot lines.
- The trail parcel is the only direct beach access available for homes along the ocean bluff
- Long-time residents remember the trail to the beach from Bay View
- Historical aerial photographs show a trail from Bay View Drive to the beach on the trail parcel
- Trail deviations have occurred because of sloughing of arroyo bluffs and subsequent poison oak regrowth

Mitigation of the damage to beach and arroyo bluffs and view sheds

- Increase set-backs from the bluffs
  - Account for sea-level rise in keeping with Governor's Executive Order S-13-08
  - Reduce the overbearing dominance of the proposed structures
  - Reduce the probability of bluff damage and requisite retaining walls to protect structures in future
- Require single-story structures in this critical area.
  - Single-story and low-profile houses line the arroyo and ocean bluffs near the beach on the Seascape side of the arroyo
  - A single-story house is adjacent to the proposed development.
- Disallow future retaining walls on these parcels; if bluff retreat threatens structures, move or remove the structures.

Photographs and Measurements of Wave Intrusion on Hidden Beach

William J. Comfort III

Summary

I have assembled photographs showing wave action and beach coverage during a storm in the Winter of 1994-95. In addition, I have deduced wave action from debris in the arroyo above the beach. The photographs and results are presented herein.

Storm Photographs

I photographed wave action and beach coverage several years ago (Winter of 1994-95) during a storm. Please note that these photographs were not taken at the peak of the storm. Figures 1 through 6 were taken within 1/2 hour of one another.

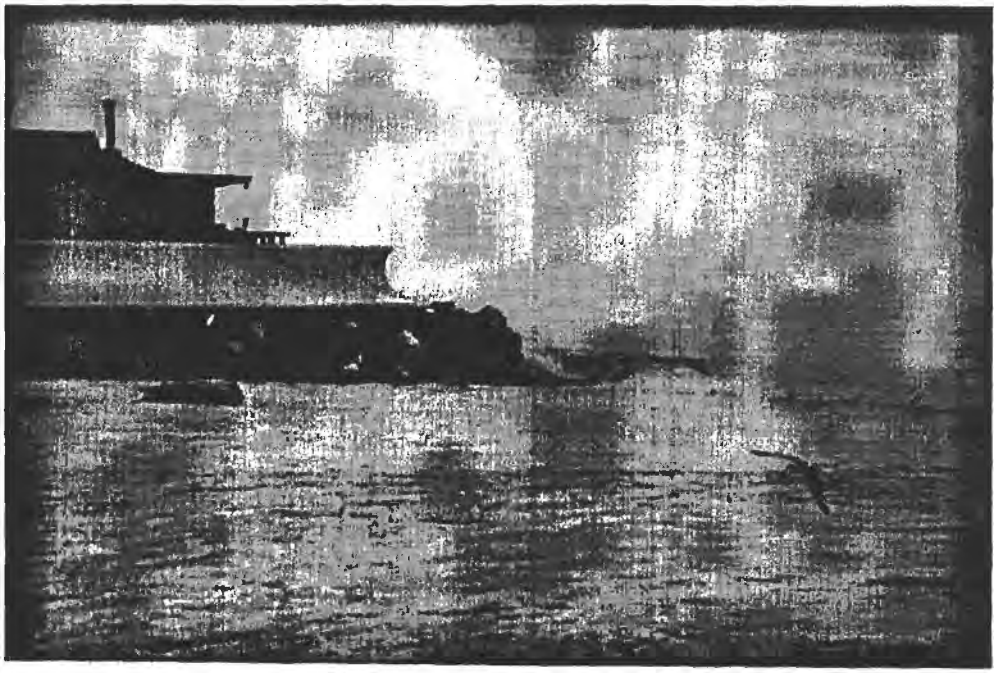


Figure 1: Photographed from high ground opposite the sewer pumping plant, looking toward the existing seawall. Note the beach coverage and the wave hitting the seawall. During storms it is not unusual to find that seaweed and debris litter the walkway on the seawall, above the rip-rap.

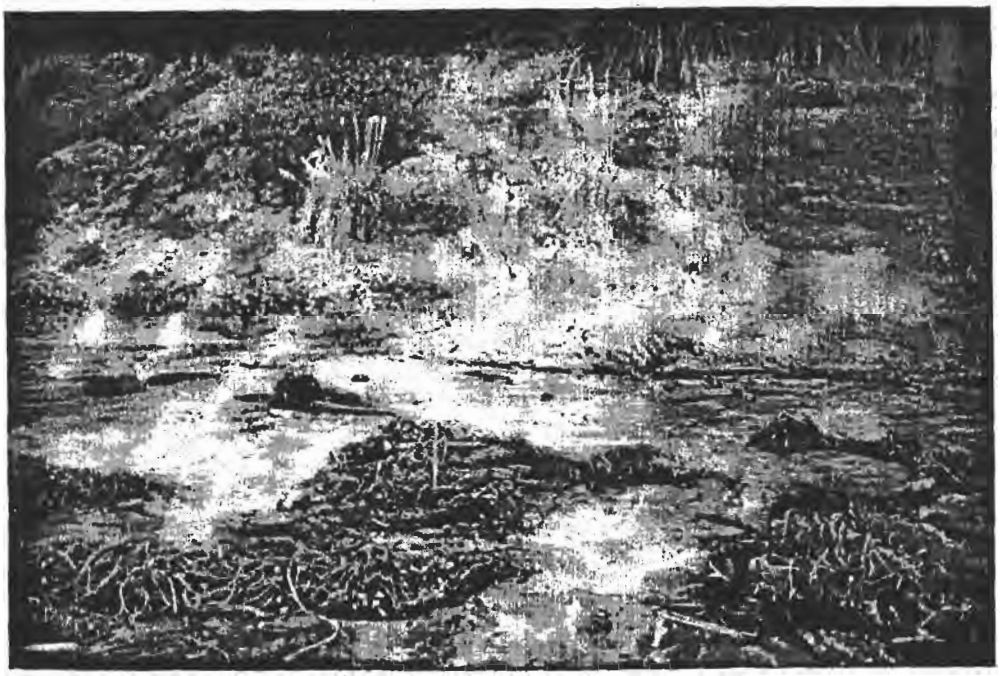


Figure 2: Photographed from a rock, surrounded at that moment by the sea, looking toward the cliff facing the ocean and immediately across the stream-mouth from the sewer pumping plant. This is the widest part of Hidden Beach. Note the seaweed that has been brought up by previous, larger intrusions that day.

Figs. 3 & 4: Photographed from the mouth of the stream looking west (toward Capitola) along the bluff behind the widest part of Hidden Beach. Note the seaweed and debris.

The Photographs in the next sequence were taken on 7/25/01 at approximately 10:00 AM. The tide level was approximately 0.0. Using a hand-held sighting level I estimated the height of the debris in the arroyo from which wave-action levels can be deduced. My measurements indicate an elevation change of 14 feet from the tide level to the height of the debris in the arroyo.

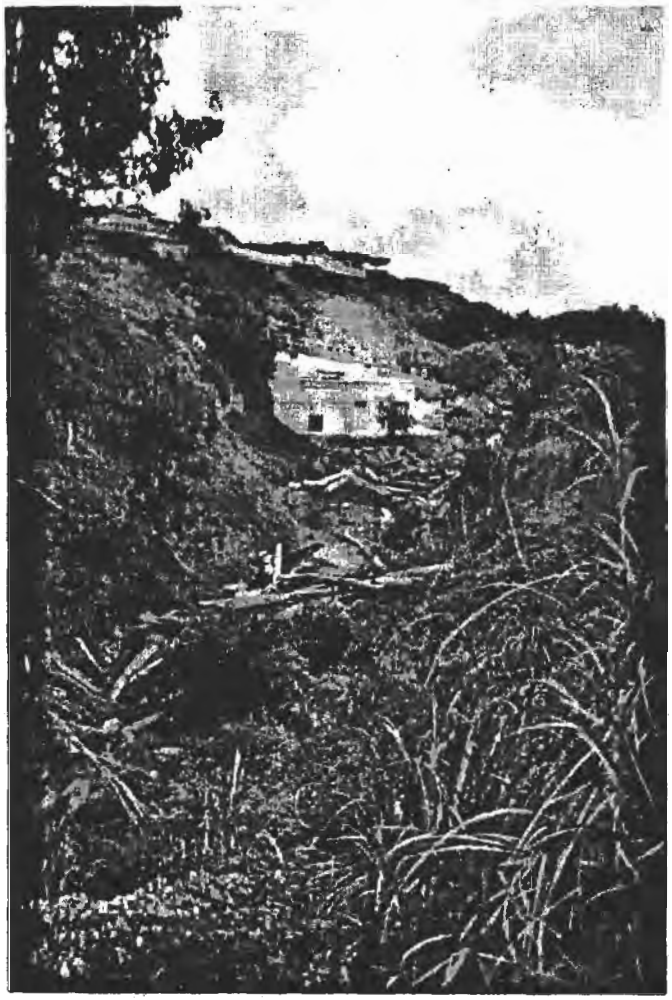


Figure 7: Photographed from the path across from the sewer pumping plant, looking toward the sewer pumping plant along the arroyo (and stream bed).

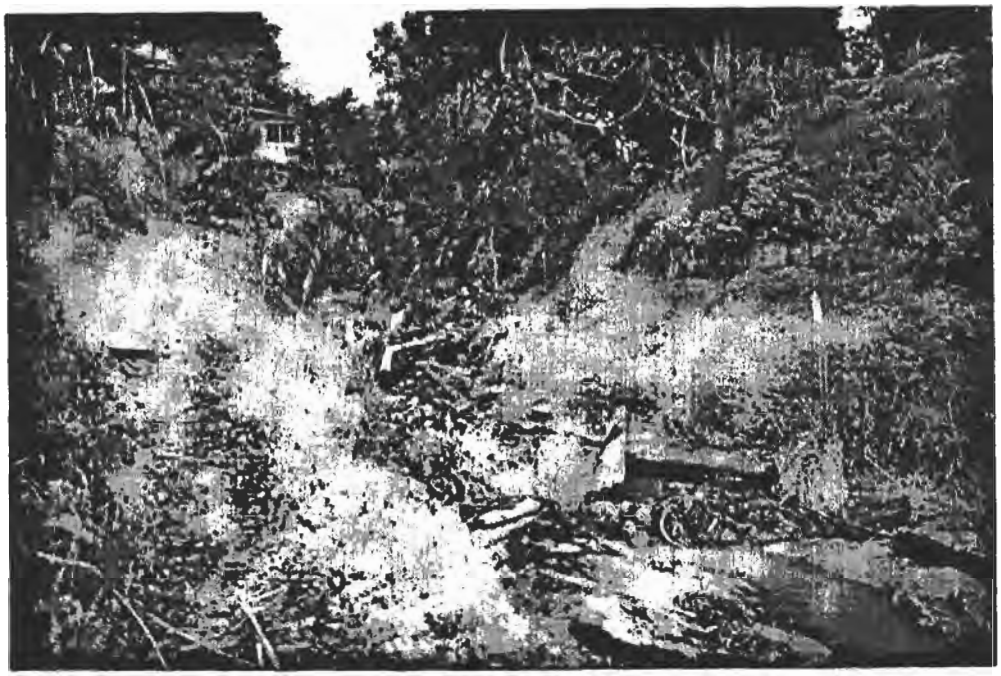


Figure 5: Taken from the path across from the sewer pumping plant, looking into the arroyo. Note the seaweed far up in the arroyo. Note also that the stream very small, indicating that runoff is minimal. Figures 1 through 4 cannot be attributed to a swollen stream.

Figure 6: Taken from the base of the mouth of the stream looking into the arroyo.

Figure 8: Photographed into the arroyo from the stream bed. Note the logs and debris. Comparing this with Figure 6 (which is not taken from the identical point, but a position very nearby), there is a significant increase in the amount of debris in the arroyo compared to 1995. There are tons of material here that have been brought in by the sea. This past winter (2001) I witnessed a 30 foot log being tossed like a toothpick as the stream became a torrent and waves interacted with it during a storm.

Summary and Conclusion

There is clear evidence that waves reach the cliffs and push debris well into the arroyo (some 14 feet above sea level). Though some of the debris may be attributed to trimming of local trees, the majority of the wood in the arroyo had to have come in from the ocean. This provides a benchmark for the wave action during storms.