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CENTRAL COAST DISTRICT OFFICE
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Appeal Filed:	4/18/2001
49th day:	Waived
Substantial Issue found:	3/12/2009
Staff report prepared:	6/18/2009
Staff report prepared by:	J.Bishop
Staff report approved by:	D.Carl
Hearing date:	7/9/2009

APPEAL STAFF REPORT
DE NOVO HEARING

Appeal number.....**A-3-SLO-01-040, Brett Revetment**

Applicant.....**Harold Brett**

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

Local government.....San Luis Obispo County

Local decision.....Approved with conditions on March 16, 2001 (Minor Use Permit/Coastal Development Permit (CDP) File Number D980047P).

Project location.....Bluffs and beach area fronting 463 Lucerne Road at t/he north end of Cayucos State Beach in Cayucos (Estero Planning Area), San Luis Obispo County.

Project description.....Recognition of an engineered rock rip-rap revetment (along roughly 65 linear feet of shoreline) that was authorized and constructed in 1998 under an emergency County coastal permit (emergency CDP number P980250E).

File documents.....San Luis Obispo County CDP file number D980047P and emergency CDP file number P980250E; San Luis Obispo County certified Local Coastal Program (LCP); Coastal Commission CDP file numbers 52-1, 96-20, and 411-17.

Staff recommendation ...**Approve with Conditions**

A.Staff Recommendation

1. Summary of Staff Recommendation

On March 16, 2001, San Luis Obispo County approved a coastal development permit to recognize the installation of an engineered rock rip-rap revetment that was originally authorized and constructed in late 1998 under an emergency County coastal permit. The revetment is located on the beach and bluffs at the north end of Cayucos State Beach in San Luis Obispo County. The County approved project was intended to protect an existing blufftop residence from erosion, and in particular from a "sink hole" that had formed near the bluff edge within roughly 15 feet of the house foundation.

On March 12, 2009, the Commission found that the appeal raised a substantial issue in terms of the project's conformance with the LCP and took jurisdiction over the CDP for the project. This hearing and

staff report are thus the de novo consideration of the CDP application in this case.

The certified LCP allows shoreline protective structures only when proven necessary to protect existing structures in danger from erosion. If a shoreline protective structure is found to be the least environmentally damaging feasible option for protecting an endangered existing structure, then the LCP requires that such a project: eliminate or mitigate impacts to local sand supply; not preclude public access; be visually compatible with adjacent structures and natural features; minimize erosion impacts on adjacent properties; and not adversely affect fish and wildlife. Per the LCP, all areas seaward of permitted shoreline protective devices must be dedicated for public access.

The Commission's staff geologist has evaluated the relevant materials and has visited the site and has concluded that there is an existing residence at this site that is in danger from erosion. The erosion danger is primarily due to underground water seeps that have destabilized the bluff, where this is most obviously manifested in terms of a roughly 10-foot diameter sink hole that precipitated the original emergency permit back in 1998. Thus, there is little doubt that there is an existing structure in danger from erosion necessitating some action to protect it consistent with the LCP. The fundamental question raised in this case is which of the various alternatives capable of providing such protection have the least impact on coastal resources, including by appropriately mitigating any unavoidable impacts associated with such alternative.

The proposed rip-rap revetment is inconsistent with the LCP because it is not the least environmentally damaging feasible option to protect the existing blufftop residence from erosion. The revetment can serve to protect the residence from the erosion danger, but it does not avoid and limit coastal resource impacts, and it does not mitigate for its unavoidable impacts to coastal resources. Specifically, the revetment footprint results in a direct loss of usable public beach area (in an already dedicated and accepted public access easement), it has not been sited and designed to minimize visual impacts, and the project fails to mitigate for long-term sand supply and related beach recreational access impacts at a popular beach area. In sum, although some type of protection project can be found consistent with the LCP, the proposed project cannot because a less environmentally damaging feasible alternative project is available that reduces, and in some cases completely avoids these impacts.

Staff is recommending an LCP approvable alternative structure that will protect the endangered residence from erosion but that avoids impacts to coastal resources to the maximum degree feasible, and that minimizes and mitigates those impacts that are unavoidable as required by the LCP and the Coastal Act access and recreation policies. In this case, a semi-vertical (i.e., sloped to match the original grade of the bluff) contoured concrete wall tied back to the bluff with abundant drainage to address saturation issues will protect the endangered structure while avoiding encroachment into the already dedicated and accepted lateral public access easement at the toe of the bluff. Such a wall can be camouflaged to mimic the natural bluff landform, and the blufftop area in the wall vicinity landscaped in such a way as to further stabilize bluff soils and provide natural softening and screening of the wall itself. As part of such an approved project, the existing revetment would have to be removed, and the underlying areas (i.e., those areas not occupied by the sloped wall structure) restored back to their pre-development condition. Finally, compensatory mitigation for the impacts to sand supply and public recreational beach access is required. Lacking a program in this area to which such a project can contribute in that respect, this

approval is conditioned for the Applicant to submit a fee of $53,875, calculated using the Commission's beach sand impact methodology, to State Parks or another appropriate entity to be used exclusively for beach recreational access improvements in the immediate area. Although this fee is calculated with respect to sand supply impacts, in this case Staff believes that the fee will adequately offset both sand supply and public recreational beach access impacts, including because the sand supply impact in this case is ultimately a beach recreational access impact in a public access sense. As conditioned, the project will be in conformance with the Coastal Act and with the LCP's coastal hazards and shoreline armoring policies, and staff recommends that the Commission approve a CDP for the project. The motion and resolution to approve the project subject to the staff recommendation are found directly below.

2. Staff Recommendation on CDP Application

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

Motion. I move that the Commission approve Coastal Development Permit Number A-3-SLO-01-040 pursuant to the staff recommendation.

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

Resolution to Approve a CDP. The Commission hereby approves the coastal development permit on the grounds that the development as conditioned, will be in conformity with the policies of the San Luis Obispo County Local Coastal Program and the public access and recreation policies of the Coastal Act. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

Report Contents

B.Findings and Declarations

The Commission finds and declares as follows:

1. Previous CDP History

The onsite two-story residential development was originally approved by the Commission on June 26, 1975 (CDP 52-1). At that time, the Commission found that the project would "dominate the bluff front view" resulting in "adverse but not substantial visual impact on the coastal zone" because the large "box-like structure" would be seen from public areas around Cayucos Pier and Cayucos State Beach. To

address these and related concerns and issues, the Commission's approval was conditioned to provide a rear setback of 25 feet from the top of bluff and submittal of a drainage plan prior to construction.

When CDP 52-1 was approved, the Commission was aware that the Applicant intended to add a carport after the residence was completed. Although the project as proposed did not specifically include a carport or garage, the foundation and retaining wall for the garage were laid at the time the residence was under construction (erection of the garage at the proposed location required a County variance to allow a two foot front yard setback on the lot). This variance was granted on June 8, 1976 (Resolution 76-479). Subsequent to the completion of the residence and garage foundation, the Applicant began construction on the garage without a valid CDP. The project was nearly complete when the Applicant was notified by the Commission (by letter dated August 27, 1976) that development of the garage was a violation and was advised to stop construction. Construction was ceased and the Applicant submitted an application to allow for completion of the project. The Commission approved completion of the project on November 4, 1976 (CDP 96-20).

On March 7, 1980 the Commission approved development of a 320 square foot one-story addition to the existing onsite residence (CDP 411-17). Approval of the addition project was subject to three Special Conditions. First, the Applicant agreed that the authorized development shall not prejudice any subsequent assertion of public rights (e.g. prescriptive rights, public trust, etc). Second, the Applicant was required to record a deed restriction providing that: a) the Applicant understands that the site is subject to extraordinary hazards from waves during storms and from erosion; b) the Applicant unconditionally waives any claim of liability on the part of the Commission or any other regulatory agency for any damage from such hazards; and c) the Applicant understands that construction in the face of these known hazards may make them ineligible for public disaster funds or loans for repair, replacement, or rehabilitation of the property in the event of storms and landslides. Third, the approval required the Applicant to record an offer to dedicate (OTD) an easement for public access and passive recreational use running from the mean high tide line to the toe of the bluff (OTD number 25130). The County of San Luis Obispo accepted the OTD on December 18, 1996 (acceptance number 1997-072256), which the Coastal Commission acknowledged on November, 14, 1997.

See Exhibits G, H, and I for copies of past permits and the recorded lateral public access and recreation property restrictions.

2. Project Description and Setting

The proposed rock rip-rap revetment is located on the beach and bluffs fronting Cayucos State Beach at 463 Lucerne Road in the community of Cayucos in San Luis Obispo County (see Exhibit A). Because the revetment was approved on a temporary basis pursuant to a County emergency permit, the proposed development has already been constructed on the bluff and beach seaward of the Applicant's residence, and has been in place for over a decade since late 1998.

On October 28, 1998, citing bluff erosion conditions, potential loss or severe damage to the existing residence, and the length of the regular permit processing time frame in relation to the immediate threat of the sink hole adjacent to the residence, the County issued an emergency permit for the proposed

revetment (emergency CDP number D980047P). In November of 1998, the revetment was constructed. Subsequently, the County processed the required follow-up regular coastal development permit to recognize the emergency revetment as permanent, approving the permit on March 16, 2001. Thus, the specific development proposed consists of an engineered rock rip-rap revetment (approximately 65 feet long and 30 feet high) keyed into bedrock at the base of the bluff, combined with a piped drainage system and blufftop landscaping (see Exhibits B and C).

The revetment is designed to protect an existing residence located on top of the nearly vertical coastal bluff (approximately 30 feet high). The bluff face consists of about 25 feet of exposed bedrock topped by a 5-6 foot layer of marine terrace deposits and vegetation. At the base of the bluff is a narrow stretch of sandy/cobbly beach where the proposed revetment would be (has been) constructed. This beach transitions into the rocky intertidal and surf zone seaward and to the north. The beach area is an extension of the larger Cayucos State Beach that is located north of the Cayucos Pier. The beach fronting the bluff and stretching downcoast from the project site is a much used public beach and a popular area for tidepooling. Rocky intertidal areas extend south and well to the north and are backed by bluffs similar to the project site (see Exhibit C).

Because the County approved the revetment as an emergency, the "proposed" project has already been constructed. However, for the Commission's CDP review purposes, the revetment must be treated as a proposed revetment. Where appropriate, though, on the ground observations and information about the project as constructed are provided.

3. CDP Jurisdiction

The Commission retains coastal permit jurisdiction over tidelands, submerged lands, and/or public trust lands. Other areas within the County's coastal zone are within the County's delegated coastal permit jurisdiction. Historically, it has been relatively difficult to determine the precise jurisdictional boundary with respect to shoreline armoring projects (like revetments), and this case is no different. There is some question as to whether the proposed revetment would encroach on public lands, including an area below the mean high tide line (MHTL). This uncertainty was also part of the basis of the appeal that was submitted (see Exhibit F).

Documentation submitted by the applicant shows that a portion of the project, in particular the area of the "keyway" trenched into bedrock, apparently extends below the MHTL shown on the plans. Although the applicant's consulting engineer has surveyed the site and indicates that the rock was placed above the MHTL, the State Lands Commission has not evaluated this survey, and it is not clear at this time whether that is the case. In addition, the location of the MHTL is ambulatory, meaning that at certain times of the year, the revetment may sit below the mean high tide. Thus, although the information to date on the jurisdictional boundary line is inconclusive, it appears that the project is likely located within the Commission's retained coastal permit jurisdiction.

If the project is located within the Commission's coastal permit jurisdiction, then the County does not have the legal authority to approve a coastal permit for the project, and its action would be deemed moot for that reason, and the applicant would instead need to apply to the Commission directly for the

proposed project. Given that the evidence presented to date regarding the Commission's jurisdiction is inconclusive, however, the Commission will analyze the project as it has been presented, but it in no way waives the right to assert jurisdiction over the original coastal development permit if evidence is presented that shows that the project is located within the Commission's retained coastal permit jurisdiction.

Thus, the standard of review for this coastal development permit determination is the San Luis Obispo County LCP and, because the project lies between the first public road and the sea, the public access and recreation policies of the Coastal Act.

4. San Luis Obispo County CDP Approval

On March 16, 2001, San Luis Obispo County approved a Minor Use Permit/CDP to recognize an engineered rock rip-rap revetment subject to conditions (see Exhibit E for the County's adopted findings, conditions, and related materials supporting this action). A Negative Declaration under CEQA was completed for the project on March 24, 2000, and was approved at the same time. Notice of the County's action on the project was received in the Commission's Central Coast District Office on April 4, 2001. The Commission's ten-working day appeal period began on April 5, 2001 and concluded at 5pm on April 18, 2001. One valid appeal was received during the appeal period.

5. Commission Hearing History

The appeal was filed on April 14, 2001. Pursuant to Section 30621 of the Coastal Act, an appeal hearing must be set within 49 days from the date that an appeal is filed. The 49th day in this case was June 6, 2001. On May 29, 2001, the applicant waived the right for a hearing to be set within the 49-day period. The matter was subsequently set for a July 2001 hearing. On June 23, 2001, the Applicant exercised his one right to postpone the de novo hearing on their application[1] so that he could develop additional information for consideration by the Commission. Several years later, this information was provided to Commission staff for review. Additional technical information related to this submittal was then requested by Commission staff in order to adequately analyze the project for LCP and Coastal Act conformance. It wasn't until more recently that the Applicant completed and submitted this material, which has been considered in this report, and the item was set for the Commission's March 2009 hearing calendar. On March 12, 2009, the Commission found that the appeal raised a substantial issue in terms of the project's conformance with the San Luis Obispo County LCP. As a result, the Commission took jurisdiction over the CDP for the project. At the March 2009 hearing in Monterey, the Applicant requested that the de novo hearing be continued to allow for additional time to review and respond to Staff's recommendations. The Commission granted the continuance request, and, with the Applicant's concurrence, the item was subsequently set for the Commission's July 2009 hearing calendar in San Luis Obispo.

6. Coastal Development Permit Determination

[1] Pursuant to California Code of Regulations Section 13073(a).

The standards of review for this application are the County of San Luis Obispo certified LCP and the public access and recreation policies of the Coastal Act.

A. Hazards

1. Applicable Policies

Hazards Policy 1, 2, 4 and 5 of the County LCP address the use and design of shoreline protective devices:

> ***Hazards Policy 1: New Development.*** *All new development proposed within areas subject to natural hazards from geologic or flood conditions (including beach erosion) shall be located and designed to minimize risks to human life and property. Along the shoreline new development (with the exception of coastal-dependent uses or public recreation facilities) shall be designed so that shoreline protective devices (such as seawalls, cliff retaining walls, revetments, breakwaters, groins) that would substantially alter landforms or natural shoreline processes, will not be needed for the life of the structure. Construction of permanent structures on the beach shall be prohibited except for facilities necessary for public health and safety such as lifeguard towers. [This policy shall be implemented as a standard.]*
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> ***Hazards Policy 2:*** *Erosion and Geologic Stability. New development shall ensure structural stability while not creating or contributing to erosion or geological instability. [This policy shall be implemented as a standard and pursuant to Section 23.07.086 of the CZLUO.]*
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> ***Hazards Policy 4: Limitations on the Construction of Shoreline Structures.*** *Construction of shoreline structures that would substantially alter existing landforms shall be limited to projects necessary for:*
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> *a. protection of existing development (new development must ensure stability without depending upon shoreline protection devices);*
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> *b. public beaches and recreation areas in danger of erosion;*
>
> *c. coastal dependant uses;*
>
> *d. existing public roadway facilities to public beaches and recreation areas where no alternative routes are feasible.*
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> *These structures shall be permitted provided they are sited and designed to eliminate or mitigate adverse impacts on local shoreline sand supply, fish and wildlife provided that non-structural methods (e.g., artificial nourishment) have been proven to be infeasible or impracticable.*
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> *Shoreline structures include revetments, breakwaters, groins, harbor channels, seawalls, cliff-retaining walls and other such structures that alter natural shoreline processes. Retaining walls shall be permitted only where necessary to stabilize bluffs where no less environmentally damaging alternative exists or where necessary for those projects defined above. Where shoreline structures are necessary to serve the above, siting shall not preclude public access to*

and along the shore and shall be sited to minimize the visual impacts, erosive impacts on adjacent unprotected property, encroachment onto the beach and to provide public overlooks where feasible and safe. The area seaward of the protective devices shall be dedicated for lateral public access. The protective devices shall utilize materials which require minimum maintenance and shall specify within the plans the agencies or persons responsible for maintenance.

In addition to county review, most shoreline structures require review by federal and state agencies. These may include permits required by the federal Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Department of Fish and Wildlife, California Regional Water Quality Control Board, State Lands Commission, California Coastal Commission, etc. [This policy shall be implemented as a standard.]

***Hazards Policy 5: Design and Construction of Shoreline Structures**. Shoreline structures developed consistent with Policy 4 (including projects for maintenance and repair) shall be designed and constructed to mitigate or eliminate effects on local shoreline sand movement and supply. Construction activities shall be carefully managed to minimize unnecessary effects on natural landforms and shoreline processes. Upland grading and drainage shall be designed and constructed to avoid adverse impacts on bluff lines by channeling drainage away from the bluff where feasible. [This policy shall be implemented as a standard and pursuant to Section 23.05.090 of the CZLUO.]*

Hazards Policy 5 is implemented as a standard (above) and also pursuant to Section 23.05.090 of the CZLUO:

***CZLUO Section 23.05.090 – Shoreline Structures.** Seawalls, cliff retaining walls, revetments, breakwaters and groins and other shoreline protective devices are subject to the following requirements.*

***a. Where allowed.** Construction of shoreline structures that would substantially alter existing landforms shall be limited to projects necessary for:*

(1) Protection of existing coastal development; or

(2) Protection of public beaches and recreation areas in danger of erosion;

(3) Coastal dependent uses; or

(4) Existing public roadway facilities to public beaches and recreation areas where no alternative routes are feasible.

***b. Permit requirement.** Minor Use Permit, unless a Development Plan is otherwise required by Chapters 23.03 or 23.08 of this title or planning area standards of the Land Use Element for the proposed use of the site. Structures located below mean high tide line or within the Coastal Commission's original permit authority may also require a permit from the California Coastal Commission.*

c. ***Required findings****. In order to approve a land use permit for a shoreline structure, the Planning Director or other applicable review body shall first find that the structure is designed and sited to:*

(1) Eliminate or mitigate adverse impacts on the local shoreline sand supply as determined by a registered civil engineer or other qualified professional; and

(2) Not preclude public access to and along the coast where an accessway is consistent with the provision of Section 23.04.420 (Coastal Access Required); and

(3) Be visually compatible with adjacent structures and natural features to the maximum extent feasible; and

(4) Minimize erosion impacts on adjacent properties that may be caused by the structure; and

(5) Not adversely impact fish and wildlife; and

(6) That non-structural methods of protection (artificial sand nourishment or replacement) have been proven to be impractical or infeasible.

2. Geologic Hazard Analysis

The existing single-family residence is located approximately 20 feet from the edge of the bluff. A revetment is normally not allowed when a 20-foot bluff setback exists. However, due to site-specific bluff erosion conditions, including what the County describes as a 10 cubic yard rock fall and "sink hole" located between the house and the bluff edge, the County found that immediate action was necessary and approved the installation of the rip-rap revetment on an emergency basis in 1998.[2] According to the County, the sink hole apparently opened on the property sometime between July and October 1998. Evidence was submitted in support of the proposed emergency permit for the proposed revetment showing an undermined area near the bluff edge, and within approximately 15 feet of the house on the property (see Exhibit D). The emergency revetment was constructed in November 1998. At or near this time, the undermined area and any emergent sinkhole was apparently back-filled, but the manner and method of filling remains in question. The County subsequently recognized the emergency development as permanent through its action on CDP number D980047P.

A. Allowing Shoreline Armoring

The LCP sections cited above acknowledge that seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" methods designed to forestall erosion also alter natural landforms and natural shoreline processes. Accordingly, with the exception of new coastal-dependent uses, the LCP limits the construction of shoreline protective works to those required to protect existing structures or

[2] County emergency CDP number P980250E.

public beaches in danger from erosion.[3] The LCP provides these limitations because shoreline structures can have a variety of negative impacts on coastal resources including adverse affects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach.

LCP Policy 4 and CZLUO Section 23.05.090 provide specific requirements for development of seawalls and other shoreline protective devices. As applicable to this case, the LCP limits the construction of shoreline structures to those necessary to protect existing structures in danger from erosion.

Under LCP Policy 4, permits for shoreline protective devices may only be approved if (1) found to eliminate or mitigate impact to local sand supply; (2) not preclude public access; (3) be visually compatible with adjacent structures and natural features; (4) minimize erosion impacts on adjacent properties; (5) not adversely affect fish and wildlife; and (6) if non-structural methods of protection have been proven to be impracticable or infeasible. LCP Policy 4 also provides that areas seaward of permitted shoreline protective devices shall be dedicated for public access.

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

Existing Structure to be Protected

For the purposes of shoreline protective structures, the LCP distinguishes between development that is allowed shoreline armoring, and development that is not. Under LCP Hazards Policy 1, new development is to be designed, sited, and built to allow the natural process of erosion to occur without creating a need for a shoreline protective device. Coastal development permittees for new shorefront development are thus making a commitment to the public (through the approved action of the Commission and San Luis Obispo County) that, in return for building their project, the public will not lose public beach access, offshore recreational access, sand supply, visual resources, and natural landforms, and that the public will not be held responsible for any future stability problems.

In addition, the Commission has generally interpreted the LCP to apply only to existing principal structures. The Commission must always consider the specifics of each individual project, but has generally found that accessory structures (such as patios, decks, gazebos, stairways, etc.) are not required to be protected under the LCP, or can be protected from erosion by relocation or other means that do not involve shoreline armoring. The Commission has generally historically permitted at grade structures within geologic setback areas recognizing that they are expendable and capable of being removed rather than requiring a protective device that would alter natural landforms and processes along bluffs, cliffs, and beaches.

LCP Policy 4 and CZLUO Section 23.05.090 allow for shoreline protection in certain circumstances (if

[3] The LCP also includes "existing public roadway facilities to public beaches and recreation areas where no alternative routes are feasible" as an allowable protection category. This category is not applicable in this case.

warranted and otherwise consistent with other LCP policies) for "existing" structures. One class of "existing structures" refers to those structures in place prior to the effective date of the Coastal Act. Coastal zone development approved and constructed prior to the time the Coastal Act went into effect was not subject to Coastal Act and LCP requirements. Although some local hazard policies may have been in effect prior to the Coastal Act, these pre-Coastal Act structures have not necessarily been built in such a way as to avoid the future need for shoreline protection (in contrast to those evaluated pursuant to LCP Policy 4).

A second class of existing structures refers to those structures that have been permitted since the effective date of the Coastal Act. There has long been discussion that these structures should not constitute "existing structures" for purposes of Section 30235 because they were developed pursuant to 30253 (and/or similar LCP) standards so as not to require shoreline armoring in the future. The Commission, though, has, in some cases, interpreted "existing" to mean structures existing at the time the armoring proposal is being considered, whether these structures were originally constructed before or after the Coastal Act, and has not limited consideration of armoring only to those structures constructed prior to the Coastal Act.

In more recent years, the Commission has required applicants for blufftop structures to waive any right to a seawall that may exist pursuant to Section 30235; in other words to stipulate that they are not existing structures for 30235 purposes because the structures have been sited and designed to not need shoreline armoring in the future (pursuant to Section 30253 and LCP counterpart policies).

In this case, the structure for which protective armoring is being considered is the Commission-approved single-family residence. This structure was originally approved in 1975, and an addition to it was approved in 1980. This residence is the "existing structure" to be protected in this case pursuant to LCP Policy 4 and CZLUO Section 23.05.090.

Danger from Erosion

The LCP allows shoreline armoring to protect existing structures in danger from erosion, but doesn't define the term "in danger." There is a certain amount of risk in maintaining development along a California coastline that is actively eroding and can be directly subject to violent storms, large waves, flooding, earthquakes, and other geologic hazards. These risks can be exacerbated by such factors as sea level rise and localized geography that can focus storm energy at particular stretches of coastline. As a result, some would say that all development along the immediate California coastline is in a certain amount of "danger." It is the degree of threat that distinguishes between danger that represents an ordinary and acceptable risk, and danger that requires shoreline armoring per the LCP.

Lacking a LCP definition, the Commission's long practice has been to evaluate the immediacy of any threat in order to make a determination as to whether an existing structure is "in danger." While each case is evaluated based upon its own particular set of facts, the Commission has generally interpreted "in danger" to mean that an existing structure would be unsafe to occupy in the next two or three storm cycles (generally, the next few years) if nothing were to be done (i.e., the no project alternative). In this case, the Applicant has explicitly acknowledged this danger through the previously described deed restriction on the property that states that the site "is subject to extraordinary hazards from waves during

storms and from erosion." Through this property restriction, the Applicant has knowingly assumed responsibility for the hazards of building along an eroding shoreline.

A number of the geotechnical studies have been submitted by the Applicant to support the allegation that the existing residence is in danger from erosion.[4] A letter from the project engineer indicates the residence is setback approximately 20.4 feet from the bluff edge. The engineer used aerial photographs to estimate bluff retreat rates between 1952 and 1992 at a site approximately 100 feet west of the site. Due to the lack of reference features, only a 1978 and 1992 photograph could be use to estimate retreat rates, which for that interval apparently averaged approximately 6 inches per year. It should be noted that a time interval of only 14 years is not long enough to unambiguously assess long-term bluff retreat rates, but these results are roughly consistent with the results obtained from the other geotechnical bluff studies in the general area. No period of especially rapid bluff retreat was noted in the studies other than a "recent" block fall of approximately 10 cubic yards from the bluff edge at the southwesterly portion of the site.

The studies provide abundant evidence that groundwater processes are active at the site. A spring is noted in the July 16, 1998 GeoSolutions Inc. report, emerging from the contact between the marine terrace deposits and the underlying Franciscan Formation sandstone bedrock at the site. The ensuing saturated conditions are cited in this report as a significant contributor to bluff weakness and erosion. Further, surface drainage at the site generally flows over the bluff edge, exacerbating erosion. The report indicates that there is much that could be done to improve site stability by controlling surface and subsurface drainage.

A sinkhole opened on the property apparently sometime between July and October 1998. A letter from the consulting engineer contains a figure showing an undermined area near the bluff edge, and apparently within 15 feet of the house on the property. The revetment was constructed shortly thereafter in November 1998. At or near this time, the undermined area and any emergent sinkhole were apparently filled, but the manner and method of filling is not described in detail in any of the submitted reports, nor was it known to the project's geologist when discussed with Commission staff.

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[4] The project site has been well-reviewed from an engineering and geotechnical standpoint during the course of the Commission's original permit review, the County's review, as well as with materials developed since the project was appealed to the Commission. Important studies include: 1) Cotton, Shires and Associates, Inc. 2005, "Geotechnical Analysis – Stone Revetment"; 2) GeoSolutions Inc. 2002, "Alternative analysis for rock revetment, 463 Lucerne Road, Cayucos Area, San Luis Obispo, California", a 4 page letter report dated 15 April 2002 and signed by J. M. D. Kammer (CEG 2118 CHG 502); 3) Westland Engineering Company 2001, "Rock revetment on Brett property", a 2 page letter to John Belsher dated 31 October 2001 and signed by T. K. Orton (PE 21807); 4) GeoSolutions Inc. 2001, "Review of coastal bluff geologic conditions, 463 Lucerne Road, Cayucos Area, San Luis Obispo, California", a 3 page letter report dated 5 September 2001 and signed by J. M. D. Kammer (CEG 2118 CHG 502); 5) Westland Engineering Company 2001, "Brett Minor use permit D980047P", a 1 page letter to Martha Neder dated 19 January 2001 and signed by T. K. Orton (PE 21807); 6) GeoSolutions Inc. 1998, "Compliance report of final construction, rock revetment structure, 463 Lucerne Road, Cayucos area, San Luis Obispo County, California", a 3 page geologic report dated 1 December 1998 and signed by J. M. D. Kammer (CHG 502) and R. A. Pfost (CEG 1281); 7) Westland Engineering Company 1998, "Emergency permit for Brett property", a 1 page letter to Lauren LaJoie dated 13 October 1998 and signed by T. K. Orton (PE 21807); 8) GeoSolutions Inc. 1998, "Geologic assessment of bluff erosion and sea cliff retreat, 463 Lucerne Road, Cayucos area of San Luis Obispo County, California", a 14 page geologic report dated 16 July 1998 and signed by J. M. D. Kammer (CHG 502) and R. A. Pfost (CEG 1281); 9) John H. Wiese, 1980, "Construction of addition to Harold Brett residence, Lot 2, Locarno Tract (3 Lucerne Road), Cayucos, California", a 2 page letter to South Central Regional Coastal Commission dated 29 January 1980 and signed by J. H. Wiese (CEG 279); and 10) Central Coast Laboratories 1975, "Examination of geologic conditions, residential site near Seacliff, Lot 2, Locarno Tract, Cayucos, San Luis Obispo, California", a 4 page geologic report dated 1 April 1975 and signed by J. H. Wiese (CEG 279).

In addition to the erosion and bluff retreat process described above, coastal bluffs are subject to landslides, which have the capacity to place structures on bluff tops at risk. Measuring the degree of threat thus also requires evaluating the stability of the bluff materials themselves and their ability to resist failure. A landslide occurs because a number of factors come together; these include the overall geometry of the hillside (or bluff), decreases in the effective normal stress at depth caused by increased water in the slope (buoyancy forces), and the strength of the bluff materials themselves. Landslides on coastal bluffs occur at least partly because marine erosion continually undermines the toe of the bluff, creating an unsupported geometry that is prone to landsliding. The risk of landslide can be quantified, to some extent, by taking the forces resisting a landslide (principally the strength of the materials along a potential slide plane) and dividing them by the forces driving a landslide (principally the weight of the materials as projected onto the potential slide plane). If the quotient, called the factor of safety, is 1.0, failure is imminent. The factor of safety should never, in theory, be below 1.0, as a slide would have already occurred. A factor of safety greater than 1.0 leads to increasing confidence that the bluff is safe from failure.

Slope stability can be evaluated quantitatively by a "slope stability analysis." In practice, hundreds of potential slide planes are typically evaluated. The one with the lowest factor of safety is the one on which failure will occur. So the potential slide plane with the minimum factor of safety is the appropriate one to design for. If one steps back far enough from the edge of the bluff, potential slide planes intersecting the top of the bluff generally will have higher and higher factors of safety. A factor of safety of greater than or equal to 1.5 is the industry standard for new development to be "safe" from a landslide.

During an earthquake, additional forces act on the bluff, and a landslide is more likely. To test for the stability during an earthquake, a "pseudostatic" slope stability analysis can be performed. This analysis is rather crude, but the standard methodology is to apply a "seismic coefficient" of 15% of the force of gravity (0.15g), the force of which is added to the forces driving the landslide. The standard for new development in California is to assure a minimum factor of safety greater than or equal to 1.1 in the pseudostatic case.

In this case, a quantitative slope stability analysis was performed (Cotton, Shires and Associates, Inc., April 19, 2005) to help assess the degree of danger to the existing residence. The slope/bluff at this location is made up of Franciscan complex greywacke material overtopped by a roughly 5 to 6 foot layer of terrace deposit material. Some amount of Franciscan complex serpentinite material is also embedded deeper in the slope/bluff. The Cotton, Shires and Associates slope stability analysis concludes that without a revetment, the slope face failure plane daylights between 40 and 64 feet (depending on the factor of safety) landward from the slope/blufftop edge. Such an event would be enough to undermine the existing residence. The analysis further concludes that the stone revetment buttress results in reducing the upslope projection of hypothetical unstable slope conditions by approximately 40 feet. In sum, the report concludes that the revetment provides necessary buttressing support for protection of the residence and substantially reduces the potential for an additional landslide/bluff failure. The conclusions go on to recommend that surface water around the residence be collected and discharged into the municipal storm drain system if possible. Finally, the report recommends installation of an array of survey monuments which can be easily monitored on a regular basis in order to detect potential slope

instability prior to a full-scale failure.

Also applicable to the threat analysis is that it is generally understood and accepted that sea level is slowly rising. Although there are a variety of estimates, an upper bound estimate for future sea level rise is that it may rise by an additional 3 feet over the next 100 years.[5] Because a rise in sea level will intensify coastal erosion conditions (moving the intensity of ocean storms inland because shallow water is encountered by such storms closer inland than today),[6] more intense storms and a possible increase in erosion are possible. In addition, the frequency of damaging storms (i.e., storms that can damage the site) would be expected to increase from the historical averages so that more storms, and more intense storms, would be expected to occur at the site more often than has occurred in the past. The result is that future erosion danger will only increase as sea level rises relative to today.

The Commission's geologist has reviewed the slope stability and geologic analyses and has concluded that the conclusions are valid in light of the subterranean water piping failures and documented sinkhole collapse. The conclusions point to the real possibility of a slope failure threatening the residence. The Commission's geologist has concluded that the existing residential structure is "in danger" as that term is understood in an LCP context. As such, the blufftop residence qualifies as an existing structure in danger from erosion for the purposes of LCP Policy 4 and CZLUO Section 23.05.090.

Feasible Protection Alternatives to a Shoreline Structure

The next test under the LCP that must be met is that the proposal to alter the shoreline must be "required" to protect the existing threatened structure. Although LCP Policy 4 allows for the protection of structures in danger from erosion, revetments are not allowed unless they are also the "necessary" solution. CZLUO Section 23.05.090a(1) states in part:

> *23.05.090a: Construction of shoreline structures that would substantially alter existing landforms shall be limited to projects necessary for: (1) Protection of existing coastal development; …*

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5 The closest tidal stations with an adequate record to use for a 100-year projection were San Francisco and Santa Monica. Both those locations could, by the year 2100, have a rise in sea level approaching 3 feet, with a 10% probability that it would be higher than that, based on estimates of historic and future sea level change provided by the U.S. Environmental Protection Agency in Titus and Narayanan (1995) "The Probability of Sea Level Rise" (EPA 230-R-95-008). Thus the future 100 year-change in mean sea level for the Cayucos area may be higher than the estimated 2.7 feet (for San Francisco) or the estimated 2.85 feet (for Santa Monica), for both of which there is a 10% probability of being exceeded.

6 With global warming and sea level rise, increased relative wave heights and wave energy are expected. Along much of the California coast, the bottom depth controls the nearshore wave heights, with bigger waves occurring in deeper water. Since wave energy increases with the square of the wave height, a small increase in water depth and wave height can cause a significant increase in wave energy and wave damage. So, combined with the physical increase in water elevation, a small rise in sea level can expose previously protected back shore development to both inundation and wave attack, and those areas that are already exposed to wave attack will be exposed to more frequent wave attack with higher wave forces. Structures that are adequate for current storm conditions may not provide as much protection in the future.

A second concern with global warming and sea level rise is that the climatic changes could cause changes to the storm patterns and wave climate for the entire coast. As water elevations change, the transformation of waves from deep water will be altered and points of energy convergence and divergence could shift. The new locations of energy convergence would become the new erosion "hot spots" while the divergence points may experience accretion or stability. It is highly likely that portions of the coast will experience more frequent storms and the historic "100-year storm" may occur more often.

In other words, under the standards of the LCP, shoreline armoring shall be permitted if it is the least environmentally damaging feasible alternative capable of protecting the structure.[7] Other alternatives typically considered include: the "no project" alternative; abandonment of threatened structures; relocation of the threatened structures; a sand replenishment program; and other drainage and maintenance programs on or within the bluff itself. Because the no project alternative does not protect the existing endangered structure, it is not feasible.

The Applicant's geotechnical/coastal engineer evaluated a number of alternatives, including armoring alternatives (partial armoring, micropiles, retaining walls, caissons, soil nails and shotcrete facing, gravity walls, etc.) and non-armoring alternatives. In terms of non-armoring alternatives, the Applicant's engineer evaluated the types of alternatives typically considered by the Commission.

Alternative Evaluation Study

The Applicant has submitted an analysis of a series of alternatives to protect the residence (see Exhibit K). The alternatives analysis summarizes each alternative presented by the Applicant's engineer and its impact on a range of coastal issues, as follows:

- Relocate the Residence Landward. The option of moving the residence landward is constrained by a lack of space on the inland side of the property. As described previously, a variance to the front setback was already granted under an earlier CDP for the residence as a means to move development as far inland as possible so as to avoid bluff erosion issues. Although the component of the house added in 1980 (i.e., the 320 square foot addition) could possibly be relocated, thus increasing the setback by roughly 20 feet, this solution still does not address slope instability on the seaward half of the site. In other words, even if the existing residence were reconstructed in this way, it would still be endangered. In addition, the Applicant's structural engineer states that it is not feasible to move/relocate the residence landward because it is constructed on a concrete slab, making it "impractical to move."

- Subsurface Drainage Measures Only. The subsurface drainage option evaluated involves installation of horizontal drains into the base of the bluff. While beneficial in reducing water pressures, the Applicant's engineer contends that they would only address one aspect of slope instability and would likely be destroyed overtime by factors such as weak geologic materials and seismic shaking. The Applicant's engineer also highlights that a large number of drains would have to be installed in this case to be successful. Because of variability in the bluff materials, the Applicant's engineer questions the success of these measures alone. The Applicant's engineer believes that subsurface drains alone would not alleviate stability problems, and concludes that in order to be successful they must be installed in combination with a stabilization measure such as a wall or revetment.

- Micropiles. According to the Applicant's engineer, micropiles could be used to underpin the residence. However, the engineer concludes that micropiles alone do not have sufficient lateral load-

[7] Section 21080.5(d)(2)(A) of CEQA likewise prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available that would substantially lessen any significant adverse effect that the activity may have on the environment. Any action the Coastal Commission may be required to take to continue protecting existing structures at this location must be consistent with this section of CEQA as well as applicable Coastal Act and LCP policies.

carrying capacity to resist slumping or slope failures and would likely be compromised in the event of headward migration of the bluff instability, particularly under seismic loading. The Applicant's engineer believes that micropiles do not address the sinkhole, which would significantly weaken the bluff. The Applicant's engineer further concludes that micropiles would have no beach area footprint and a lifespan of 5 to 20 years depending on the geologic conditions at each pile location. The long-term shoreline retreat rate would continue and the system would continue to generate sand from the erosion.

- Drilled Caissons. Drilled caissons would provide lateral load-carrying capacity, but would allow the bluff to retreat until the caissons eventually became exposed. The Applicant's engineer contends that eventually a seawall would have to be built to retain the material from eroding between the caissons. Underpinning the house with caissons raises structural compatibility issues with the existing slab-on-grade foundation, and the Applicant's engineer asserts that the entire house foundation may have to be replaced if this alternative was pursued. With drilled caissons, there would be no beach area footprint and this alternative's anticipated life would equal the life of the structure. The long-term shoreline retreat rate would continue and the system would continue to generate sand from the erosion.

- Vertical Retaining Wall with Tiebacks. According to the Applicant's engineer, because of the height of the bluff face and weak materials involved, any vertical structure would likely require the use of tieback anchors. According to the engineer, the effectiveness of tie backs are an unknown until they are drilled and are dependent on the type of material encountered. With the known void (sinkhole) in the bluff, the Applicant's engineer asserts that conventional construction practice would not use tiebacks for this area. The engineer notes that such a wall would be very expensive and would have some visual impacts, but that such a project could be built to achieve slope stability. The beach area footprint is estimated by the engineer to be roughly 860 square feet based on a footing width of 15 feet. The anticipated life (with annual maintenance) would be 50 years. Without maintenance, the life span could be as low as 10 years, depending on wave and storm activity. According to the Applicant's engineer, long-term shoreline retreat would be negligible if such a wall is maintained and such a device would not allow the generation of beach sand from erosion.

- Soil Nails and Shotcrete Facing. According to the Applicant's engineer, soil nails could be drilled in the bluff with shotcrete facing. However, the engineer asserts that this alternative is costly, and the slope would have to be layed back first before the soil nails could be installed. In addition, the shotcrete would have to be keyed into bedrock at the base of the bluff and the thickness and reinforcing would have to be designed to resist wave attack. Maintenance of this alternative is considered high and aesthetics is also an issue raised by the engineer. According to the engineer, conventional construction practice would not use soils nails for the same reason tiebacks are not favored here. The beach area footprint is estimated by the engineer to be approximately 290 square feet based on a footing width of 5 feet. The anticipated life of such a structure with maintenance would be 25 to 50 years. With maintenance the engineer estimates that the long term shoreline retreat rate would be negligible and would generate approximately 5% of sand from erosion.

- Gravity Wall. Gravity walls include rock revetments, gabion walls, concrete walls, etc. The

Applicant's engineer asserts that the rock revetment is the preferred type of gravity wall, but does not completely evaluate other types. The Applicant's engineer asserts that the beach area footprint of the revetment is 230 square feet. The anticipated life of the revetment is estimated to be 75 to 100 years. According to the Applicant's engineer, a stone revetment is estimated to provide about 30% of sand from erosion, as the granite used for the revetment will breakdown to sand overtime.

- Beach Replenishment. The Applicant's consultants evaluated beach replenishment but concluded that it would be insufficient to protect the endangered structure in this case, including because of cost, feasibility, and unknown success probability, etc.

Alternative Analysis Conclusion

In this case, the "no project" alternative is not viable because the existing threatened structure would not be protected without some form of project that fixes the sinkhole, addresses the water piping failure in the vicinity of the house foundation, and that resolves the bluff stability issues associated with the geology of this site. In light of the specific geological factors at play in this case, "soft" solutions alone are likewise infeasible. It is clear that there are some non-armoring alternatives that could be pursued at this location, but it is equally clear that they are either infeasible or would not be sufficient to protect existing endangered structures for any length of time. Rather, they are alternatives that could extend the useful life of setbacks at this location. But, given the limited amount of space available, and the degree of threat currently to the structure (and as would continue in the future absent armoring), the useful life of the setback would not be expanded significantly in this case – and certainly not enough to protect the structure.

Given the geological danger area that applies to about half the site, and thus the infeasibility of moving the house or even major portions of it out of harms way, some form of a hard armoring project is necessary in this case. Based on the evaluations of the site, including the Applicant's alternatives analyses, the nature of the bluff materials and the ground water conditions present in the bluff dictate that an approvable alternative needs to address slope stability, subsurface and surface drainage control, and landscaping to help stabilize exposed soils. In designing such a structure, the intent is to ensure that it is the least environmentally damaging feasible alternative in that respect (see also findings that follow). It is clear that a sloped-vertical (i.e., matching the original grade of the bluff slope) concrete wall with tie backs would best form the basis for an approvable project. It would occupy the least amount of beach space and could be colored and contoured to mimic the bluff landform at this location. Such a wall would have to be tall enough to protect the bluff face from erosive wave forces and to provide the necessary buttress, where the height would in part depend on the nature of the drainage installed in the bluff itself. Thus, in this case, the Commission can only approve an engineered drainage system and sloped-vertical wall with tie-backs, consistent with the third test of the LCP. The Commission's coastal engineer and geologist have reviewed the relevant studies and concur that such a project must include the following components:

- Sloped-vertical concrete wall. The sloped-vertical (i.e., sloped to match the bluff slope) wall shall be constructed of reinforced concrete designed to match the bluff landform in slope, integral color and undulation; shall be the minimum width and height necessary to protect the bluff face and provide the required slope buttress (with a wall height high enough to provide stability and protection from

wave forces, but no taller than the height of the bluff itself); shall be embedded in the toe of the slope so as to avoid any undercutting or scour of the toe of the slope; and shall include sufficient structural tiebacks into the bluff to ensure its long term stability and effectiveness. The foundation shall conform to the general contours of the bluff toe and shore platform and with sufficient embedment to achieve stability and prevent undercutting or scour. Wall foundations such as this are typically no wider than 2 feet, and there is no compelling evidence in the record to suggest that a wider foundation would be necessary. Thus, the wall foundation has been conditioned to be the minimum feasible width.

As noted earlier, the Applicant's engineer has expressed some concern about the use of tie-backs in this area, but has concluded that, while costly, they can be effective. The proposed drainage system should reduce the soil piping and subsurface drainage and reduce the uncertainty about the long-term stability of the tie-back system. Subsurface sampling can be used to determine soil cohesion and develop the necessary tie-back parameters. An expanding tie-back design or anchoring system can also be considered. The Commission has experience with tie-back walls in poorly indurated rocks such as compromise the bluff here, and has found them to perform adequately in the past. When combined with proper drainage control, the Commission's geologist concludes that a comprehensive tie-back/concrete wall system is feasible at this location.

- Drainage. Drainage shall consist of a combination of a curtain drain near the bluff edge, and/or a series of drainage wells extending roughly parallel to the bluff edge that are equipped with sump pumps (or equivalent), and/or by drainage built into the vertical wall itself, where all such drainage mechanisms are designed to intercept subsurface water piping through the site and to direct it away from the bluff edge. There shall be as many such drainage mechanisms as is necessary to intercept enough of the subsurface drainage so that it doesn't collect to such a degree behind the vertical wall as to cause structural stability problems to the wall. If more wells or larger curtain drains can be used as a means to limit the height of the vertical wall, then preference shall be given to installing more wells and larger curtain drains. The wells' drainage mechanisms shall be supplemented by a surface drainage collection system designed to collect surface drainage before it can pool at or flow over the blufftop edge. All drainage, with the exception of weep holes in the wall itself necessary for its proper function, shall not be directed seaward of the blufftop edge, but rather shall be directed inland to appropriate collection areas (whether for use in on site irrigation or directed to street collection systems) if it is feasible. If it is not feasible, then such drainage shall be directed as inconspicuously as possible into a drainage swale in a manner that avoids exacerbating erosion.

- Landscaping. All areas between the top of the vertical wall and a line 5 feet inland from the blufftop edge shall be vigorously landscaped with bluff species native to the Cayucos area. Non-native and invasive species shall be removed.

Thus, in this case, the Commission finds that a hard structure is required to protect the existing structure in danger, but that the only hard structure that can be found consistent with the LCP in this regard is the above-described semi-vertical contoured wall, drainage, and landscaping project.

As noted in special condition 1, engineered plans for the sloped vertical wall with tie backs, and the comprehensive drainage system that are in substantial conformance with this general direction shall be

provided for review and approval of the Executive Director. Plans shall include the drainage plan, the wall and tie-back plan, foundation embedment plan, and any interconnections between the drainage system and the sloped vertical wall. The plans shall be accompanied by calculations of the 100-year runoff event and other drainage design elements, calculations for the tie-back system, calculations of the anticipated wave forces and estimates of future scour. A general monitoring and maintenance plan shall also be developed that will insure the stability of the drainage system and sloped vertical tie-back wall for the 50-year life of the structure.

The drainage system and sloped vertical tie-back wall alternative is environmentally superior to the proposed rip-rap revetment because it protects the endangered structure at the same time as it avoids a significant beach area footprint, is less visually intrusive, and eliminates concerns surrounding lateral public access and recreation impacts (see also findings that follow). As part of any approval of the vertical wall project, the rip-rap revetment must also be removed, and the area that is exposed from under the revetment (and not covered by the vertical wall) restored to its pre-revetment installation condition or better.

B. Sand Supply Impacts

Additional tests under LCP Policies 4, 5, and CZLUO Section 23.05.090c(1) require that shoreline structures be designed to eliminate or mitigate adverse impacts to local shoreline sand supply.

Shoreline Processes

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

These natural shoreline processes affecting the formation and retention of beaches can be significantly altered by the construction of shoreline armoring structures since bluff retreat is one of several ways that beach quality sand is added to the shoreline. Bluff retreat and erosion is a natural process resulting from many different factors (such as erosion by wave action causing cave formation, enlargement and

eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration); shoreline armoring directly impedes these natural processes.

The subject site is located within the Morro Bay Littoral Cell. The main source of sediment for the Morro Bay Cell is coastal streams such as Arroyo de la Cruz, Santa Rosa Creek, Chorro Creek, and likely from Cayucos Creek just downcoast of the project site. The dominant direction of sediment transport is to the south. The main sediment sinks are the dunes immediately south of Piedras Blancas, the Morro Dunes, and the Morro Bay Harbor. Over centuries, there have been many millions of cubic yards of sand added to the dune features. On average, 120,000 cubic yards of sand are dredged annually from the Morro Bay Harbor Channel, indicating the approximate volume of material that is being transported and deposited there. If sediment in the Morro Bay Cell is not trapped in the dunes or the Bay, it is transported further south and becomes a source of sediment for the Santa Maria Cell. Approximately 125,000 cubic yards of sediment is deposited onto the Pismo/Nipomo dune system annually. Sources of this sediment include 40,000 cubic yards from streams and the remainder from offshore sources.[8]

Some of the effects of engineered armoring structures on the beach (such as scour, end effects and modification to the beach profile) are temporary or are difficult to distinguish from all the other actions that modify the shoreline. Others are more qualitative (e.g., impacts to the character of the shoreline and visual quality). Some of the effects that a shoreline structure may have on natural shoreline processes can be quantified, however, including: (1) the loss of the beach area on which the structure is located; (2) the long-term loss of beach which will result when the back beach location is fixed on an eroding shoreline; and (3) the amount of material which would have been supplied to the beach if the back beach or bluff were to erode naturally. In this case, the sand supply impacts relate to both the temporary placement of the emergency rip-rap revetment that exists today (i.e., the impacts due to this revetment over the past 10 plus years), and the long-term placement of the alternative seawall approved under this permit.[9]

Fixing the back beach

Experts generally agree that where the shoreline is eroding and armoring is installed, as is the case here, the armoring will eventually define the boundary between the sea and the upland. On an eroding shoreline fronted by a beach, the beach will be present as long as some sand is supplied to the shoreline and the beach is not submerged by sea level rise. As erosion proceeds, the profile of the beach also retreats. This process stops, however, when the retreating shoreline comes to a revetment or a seawall. In such instance, while the shoreline on either side of the armor continues to retreat, shoreline retreat in front of the armor stops. Eventually, the shoreline fronting the armor protrudes into the water, with the mean high tide line fixed at the base of the structure. In the case of an eroding shoreline, this represents the loss of a beach as a direct result of the armor.

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8 From John Meisenbach, 1974, Pismo State Beach and Pismo Dunes Stave Vehicular Recreation Area General Development Plan, California Department of Parks and Recreation, April 1975.

9 The sand supply impact refers to the way in which the project impacts creation and maintenance of beach sand. Although this ultimately translates into beach recreational access impacts, the discussion here is focused on the first part of the issue and the way in which the proposed project would impact sand supply processes.

In addition, sea level has been rising slightly for many years. Also, there is a growing body of evidence that there has been an increase in global temperature and that acceleration in the rate of sea level can be expected to accompany this increase in temperature (some shoreline experts have indicated that sea levels could rise as much as 3 feet by the year 2100). Mean water level affects shoreline erosion several ways and an increase in the average sea level will exacerbate all these conditions. On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore. This, too, leads to loss of the beach as a direct result of the armor. These effects are also known as "passive erosion".

The Commission has established a methodology for calculating the long-term loss of public beach sand due to fixing the back beach, this impact being equal to the long-term erosion rate multiplied by the width of property that has been fixed by a resistant shoreline protective device.[10] In this case, the methodology used for calculating the long-term loss of beach must be calculated twice. This is due to the placement of the emergency rip-rap revetment at the project site in late November1998 that has remained in place until today (10.7 years),[11] and then the armoring of the site with a vertical seawall approved under this permit moving forward for the design life of the replacement seawall (in this case, presumed to be 50 years[12]).

Using this calculation for the temporary emergency revetment, the impact over the past ten plus years would translate in this case to 348 square feet.[13] To convert the 348 square foot loss of beach per year into the volume of sand necessary to restore the beach commensurately in cubic yards, coastal engineers use a conversion value representing units of cubic yards per square foot of beach.[14] In this case, the Commission has not been able to establish an actual conversion factor the Cayucos State Beach vicinity. However, if a 1.0 conversion factor is used (i.e., the low end of the spectrum of values typically assumed by coastal engineers), a conservative estimate of cubic yard equivalent of 348 square feet can be calculated. Using the sand conversion factor of 1.0, the direct loss of beach due to fixing the back beach (i.e., "passive erosion") translates into an impact of 348 cubic yards of sand due to the 10.7 years that

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[10] The area of beach lost due to long-term erosion (Aw) is equal to the long-term average annual erosion rate (R) times the number of years that the back-beach or bluff will be fixed (L) times the width of the property that will be protected (W). This can be expressed by the following equation: Aw = R x L x W.

[11] 10 years and 8 months, or 10.7 years, from November 1998 to July 2009.

[12] Shoreline structure design life varies considerably. In general, though, seawalls are typically understood to have a design life of 50 to 100 years. With repair and maintenance over time, some have argued that design life is even longer than this. In this case, 50 years (i.e., the lower end of the range) is identified based on the Commission's general practice of using an estimated 50-year lifetime for a seawall when none is otherwise clearly specified.

[13] That is, 6 inches per year (the long term average annual erosion rate used by the Applicant and the Applicant's consultants for demonstrating threat), multiplied by the 10.7 years the bluff has been fixed, multiplied by the 65 linear feet of bluff fronted by the revetment equals 347.75 (348 when rounded to a whole number) square feet.

[14] This conversion value is based on the regional beach and nearshore profiles, and overall characteristics. When there is no regional data to better quantify this value, it is often assumed to be between 1 and 1.5, the idea being that to build a beach seaward one foot, there must be enough sand to provide a one-foot wedge of sand through the entire region of onshore-offshore transport. If the range of reversible sediment movement is from -30 feet msl to +10 feet msl, then a one-foot beach addition must be added for the full range from -30 to +10 feet, or 40 feet total. This 40-foot by 1 foot square parallelogram could be built with 1.5 cubic yards of sand (40 cubic feet divided by 27 cubic feet per cubic yard). If the range of reversible sediment transport is less than 40 feet, it will take less than 1.5 cubic yards of sand to rebuild one square foot of beach; if the range of reversible sediment transport is larger than 40 feet, it will take more than 1.5 cubic yards of sand to rebuild one square foot of beach.

the rip-rap revetment has been in place.

Using this same calculation for the vertical wall approved under this permit, the impact going forward would translate in this case to 1,625 square feet.[15] To convert the 1,625 square foot loss of beach per year into the volume of sand necessary to restore the beach commensurately in cubic yards, again a conversion factor of 1.0 is used. For the approved vertical seawall project, the direct loss of beach due to fixing the back beach translates into an impact of 1,625 cubic yards of sand.

Thus the total passive erosion sand impact translates to 348 cubic yards of sand for the revetment and 1,625 cubic yards of sand for the seawall, for total impact of 1,973 cubic yards of sand.[16]

Encroachment on the Beach

Shoreline protective devices such as the seawall and revetment proposed are all physical structures that occupy space. When a shoreline protective device is placed on a beach area, the underlying beach area cannot be used as beach and its utility as part of the sand supply system is reduced. This generally results in a loss of public access (see public access and recreation findings that follow), and also results in an impact to sand supply processes as well. The area where the structure is placed will be altered from the time the protective device is constructed, and the extent or area occupied by the device will remain the same over time, until the structure is removed or moved from its initial location, or in the case of a revetment, as it spreads seaward over time. The beach area located beneath a shoreline protective device, referred to as the encroachment area, is the area of the structure's footprint.

Using the Commission's long-standing methodology, the revetment covers an area of bedrock, cobbled rocky intertidal areas, and some amount of beach sand that would otherwise contribute to the local sand supply and be a part of that sand supply system.[17] According to the Applicant's engineer, the revetment has a footprint of roughly 230 square feet. This footprint was calculated using figures showing a revetment base width of about 3.5 feet along 65 linear feet of bluff. A review of other materials, however, indicates that 230 square feet is a low estimate. Based on the *Compliance Report of Final Construction* prepared by GeoSolutions and dated December 1, 1998, the completed project included excavation of a 6-foot wide keyway across the toe of the bluff, which would result in a footprint of approximately 390 square feet (see Exhibit K). In addition, Commission staff assessment in the field indicates that the revetment appeared to extend out from the bluff face onto the beach area roughly 6 to 10 feet, which would translate into a footprint of between 390 and 650 square feet.[18] In sum, there is some uncertainty regarding the revetment's footprint. The conservative approach would estimate such coverage at the high end (i.e., above 650 square feet), or even at the middle end based on the as-built compliance report numbers (i.e., 390 square feet), but the Applicant's low end estimate is 230 square

[15] That is, 6 inches per year x 50 years x 65 feet = 1,625 square feet.

[16] Passive erosion was not quantified by the County, the Applicant, nor their consultants.

[17] As distinguished in this respect from the beach recreational use issues associated with the area of encroachment. In other words, the discussion here is focused on the sand supply impacts associated with the area of encroachment as opposed to broader public recreational access impacts.

[18] Commission staff made a site visit on May 1, 2008. Staff notes that the revetment extended below the beach sand on May 1, 2008, and it was difficult to determine how far back or "deep" the toe of the bluff was located beyond the first row of rocks on the beach. Because the field observations on that day were above the beach sand, they likely underestimate the actual width of the base of the revetment.

feet. Due to the lack of precision survey data collected before and after construction of the emergency rip-rap revetment, and so as not to unduly penalize the Applicant for this uncertainty, it is reasonable to rely on the consulting geologist's low estimation of 230 square feet because it is consistent among the estimates and thus subject to a certain level of agreement (i.e., all estimates are at least 230 square feet). Thus the 230 square foot revetment footprint figure will be used for analytical purposes throughout this report.

Thus, if the revetment were to stay put, it would have a sand supply impact related to its area of encroachment of 230 square feet. Using the conversion discussed above, this would translate into an impact of 230 cubic yards of sand. However, the Commission's methodology for calculating the sand supply impact from the area of encroachment is to apply it as a one-time calculation based on the structure being permitted. Such application is made complicated in this case because the beach encroachment area wouldn't be a permitted encroachment impact because the revetment is to be removed and replaced with a vertical wall that does not encroach onto usable beach space. In addition, the one-time sand supply impact calculation for encroachment onto the beach may be different than the area of the revetment's footprint in this case due to the variability of features upon which the emergency revetment was placed (i.e., bedrock, cobble, sand) and the lack of information regarding the precise proportion of each underlying the revetment. Clearly, it can be concluded that the rip-rap revetment (for the time since it was installed in November 1998 until the seawall were to take its place), has resulted (and would result if it were to remain) in a sand supply impact related to its footprint. However, for the above reasons, it is difficult to conclude on the magnitude of this impact with respect to the revetment that is not being permitted here. Thus, in this case, including so as to not unduly penalize the Applicant due to these complicating factors, the sand supply impact related to the revetment's footprint is considered to be zero for purposes of the Commission's sand supply calculation methodology.[19]

For a different reason, the permitted seawall is likewise considered to not have a footprint impact on sand supply. In this case, it is because the seawall would be constructed in such a way as to have little to no footprint at the toe of the slope here. Rather, the base of the seawall would be cut into the toe of the slope as necessary to avoid any encroachment onto the beach area seaward of it. To the extent the seawall foundation required a wider footprint (i.e., a scour apron or equivalent), this footprint could be embedded in the underlying materials and contoured in such a way as to continue to accommodate access atop it, including when beach sand covered any such footprint/apron. In either case, it would not have a significant encroachment onto the beach. Thus, for both the revetment (for ten plus years) and the seawall, the encroachment impact based on the Commission's sand supply methodology is considered to be zero and is not included in the mitigation calculation.[20]

Retention of Potential Beach Material

If natural erosion were allowed to continue (absent the proposed armoring), some amount of beach

[19] Again, as distinguished from other impacts that accrue to the revetment due to such area of encroachment in terms of a loss of usable beach area. See public access and recreation findings that follow in this respect.

[20] This is also appropriate inasmuch as there is some uncertainty as to the current revetment footprint (as indicated previously), and the precise seawall footprint is dependent upon revised plans where, as indicated, its footprint would be limited to the maximum degree feasible.

material would be added to the Cayucos State Beach and larger littoral cell sand supply system from the bluffs. In addition to the over 10 years that has lapsed since the rip-rap revetment was installed, the volume of total material that would have gone into the sand supply system over the lifetime of the shoreline structure would be the volume of material between (a) the likely future bluff face location with shoreline protection; and (b) the likely future bluff location without shoreline protection. Since the main concern is with the sand component of this bluff material, the total material lost must be multiplied by the percentage of bluff material that is beach sand, giving the total amount of sand that would have been supplied to the littoral system for beach deposition if the proposed device were not installed. The Commission has established a methodology for identifying this impact.[21]

In this case, the Applicant's consultants have estimated this impact to be approximately 3 cubic yards of sand per year that would be retained based on a retreat rate of 6 inches per year. Given only the top 5 or 6 feet of the bluffs are terrace deposits, this seems a reasonable accounting of the sand retention per year due to armoring at this location.

Therefore, applying that 3 cubic yard per year figure, the revetment has retained 32 cubic yards of sand (in 10.7 years), and the seawall would retain an additional 150 cubic yards of sand over its design lifetime (again, 50 years) for total retention impact of 182 cubic yards of sand.

Sand Supply Impacts Conclusion

Therefore, totaling the impacts just identified, the project would be expected to result in quantifiable beach access and sand supply impacts totaling 2,155 cubic yards.[22] Although relatively small in comparison to the total amount of littoral drift overtime, these impacts are not eliminated and constitute impacts for purposes of the LCP and the Coastal Act. The Applicant and his consultants indicate that that the project's effect on beach access and sand supply is not significant, and offer no mitigation directly tied to this impact.

It has proven difficult over the years to identify appropriate mitigation for such impacts. Partly this is due to the fact that creating an offsetting beach area is not an easy task, and finding appropriate properties that could be set aside to become beach area over time (through natural processes, including erosion) is difficult both due to a lack of such readily available properties and the cost of such coastal real estate more broadly. As a proxy, other types of mitigation typically required by the Commission for such direct sand supply impacts have been in-lieu fees and/or beach nourishment, and in some cases

[21] The equation is Vb = (S x W x L) x [(R x hs) + (1/2hu x (R + (Rcu - Rcs)))]/27. Where: Vb is the volume of beach material that would have been supplied to the beach if natural erosion continued (this is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structure); S is the fraction of beach quality material in the bluff material; W is the width of property to be armored; L is the design life of structure (again, 50 years assumed, though its lifetime can also be considered indefinite) or, if assumed a value of 1, an annual amount is calculated; R is the long term average annual erosion rate; hs is the height of the shoreline structure; hu is the height of the unprotected upper bluff; Rcu is the predicted rate of retreat of the crest of the bluff during the period that the shoreline structure would be in place, assuming no seawall were installed (this value can be assumed to be the same as R unless the Applicant provides site-specific geotechnical information supporting a different value); Rcs is the predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming the seawall has been installed (this value will be assumed to be zero unless the Applicant provides site-specific geotechnical information supporting a different value); and divide by 27 (since the dimensions and retreat rates are given in feet and volume of sand is usually given in cubic yards, the total volume of sand must be divided by 27 to provide this volume in cubic yards, rather than cubic feet).

[22] 1,973 cubic yards due to fixing the back beach and 182 cubic yards of lost sand to the beach system.

compensatory beach access improvements. With regards to beach nourishment, a formal sand replenishment strategy can introduce an equivalent amount of sandy material back into the system over time to mitigate the loss of sand that would be caused by a protective device over its lifetime. Obviously, such an introduction of sand, if properly planned, can feed into the Morro Bay Littoral Cell sand system to mitigate the impact of the project. However, as opposed to other areas with established programs (e.g., SANDAG in San Diego) there are not currently any existing beach nourishment programs directed at this beach area. Absent a comprehensive program that provides a means to coordinate and maximize the benefits of mitigation efforts in the area now and in the future, the success of piecemeal mitigation efforts, such as an Applicant-only project to drop equivalent amounts of sand over time at this location, is questionable.

With respect to using beach access improvements to offset impacts, such mitigation is typically applied by the Commission to public agencies that are in the beach management business when they have applied for armoring projects.[23] It is more difficult to put the burden for a public project on a private applicant and thus such mitigation is atypical.[24] In addition, the Commission is currently unaware of any specific projects in the Cayucos State Beach area that could benefit from such mitigation at this time.

As an alternative mitigation mechanism, the Commission oftentimes uses an in-lieu fee when in-kind mitigation of impacts is not available.[25] In situations where ongoing sand replenishment or other appropriate mitigation programs are not yet in place, the in-lieu mitigation fee is deposited into an account until such time as an appropriate program is developed and the fees can then be used to offset the designated impacts. When mitigation funds are pooled in this way for multiple projects in a certain area, the cumulative impacts can also be better addressed inasmuch as the pooled resources can sometimes provide for a greater mitigation impact than a series of smaller mitigations based on individual impacts and fees. In this case, the Commission finds that an in-lieu fee is the most appropriate and reasonable mitigation method given the above described factors.

Thus, in order to mitigate for the project's identified beach access and sand supply impact (and others related to it that are linked to beach recreational access loss and public view impacts),[26] this approval is conditioned for an in-lieu fee (see Special Condition 4). The fee is based on the volume of sand equivalent to the quantified impacts and the cost to replace this volume of sand.[27] The cost to supply beach quality sand varies widely, and averages about $25 per cubic yard in the Cayucos area.[28] Based

[23] For example, as recently required with respect to recreational access improvements along the Pleasure Point shoreline area of Santa Cruz County as part of the Commission's approval of a seawall fronting East Cliff Drive (CDPs A-3-SCO-07-015 and 3-07-019, approved December 13, 2007).

[24] Although the Commission has applied such a requirement for this type of impact before (see, for example, CDP 3-02-107, Podesto).

[25] See, for example, CDP 3-98-102 (Panattoni) and CDP 3-97-065 (Motroni-Bardwell).

[26] See also public viewshed findings, and public access and recreation findings that follow.

[27] As previously noted, the Applicant has not identified any impact to beach sand resources or any proposed mitigation. The sand supply method has been used in many cases by the Commission, although other methods have also been used, such as recent cases where beach surveys have been used to establish recreational values of beaches. In this case, beach use data and survey information is not readily available for this beach area, and it would be both costly and difficult to develop such information now. As a result, and as has been done in the past by the Commission, the sand replacement cost method is applied to this case.

[28] This figure is based on estimates from four commercial sand suppliers in the vicinity of the project (Cambria Rock; Winsor Construction; Santa Barbara Stone; and Air-Vol Block), as well as from other experiences the Commission has had calculating sand

on the cost estimates to supply sand to this location of $25 per cubic yard, the 2,155 cubic yards of sand translates into a fee of $53,875 to be paid into a fund for beach access improvements. In this case the $53,875 fee amount is premised on a 50-year presumed life of the structure. Consistent with current Commission practice regarding shoreline protective devices, at the end of the anticipated life of the structure the structure would need to be removed or replaced, and the need for a new fee (or similar mitigation) evaluated. Under special condition 4 the fee must be deposited into an interest-bearing account to be established and managed by State Parks or another appropriate entity. The sole purpose of the fee/account shall be for public beach recreational access improvements at Cayucos State Beach.

As conditioned, the project thus satisfies the tests of the LCP regarding required mitigation for sand supply impacts.[29]

C. Assumption of Risk

The Commission's experience in evaluating the consistency of proposed developments with LCP policies regarding development in areas subject to hazards, has been that development has continued to occur despite periodic episodes of heavy storm damage and other such occurrences. Development in such dynamic environments is susceptible to damage due to such long-term and episodic processes. Past occurrences statewide have resulted in public costs (through low interest loans, grants, subsidies, direct assistance, etc.) in the millions of dollars. As a means of allowing continued development in areas subject to these hazards while avoiding placing the economic burden for damages onto the people of the State of California, applicants are regularly required to acknowledge site hazards and agree to waive any claims of liability on the part of the Commission for allowing the development to proceed.

There are inherent risks associated with development on and around seawalls and eroding bluffs in a dynamic coastal bluff environment; this applies to the project proposed as well as for the development landward of the bluffs themselves. The approved project, and all development inland of it, is likely to be affected by shoreline erosion in the future. Although the Commission has sought to minimize the risks associated with the development proposed in this application (and in past actions with new development on this property), the risks cannot be eliminated entirely. Given that the Applicant has chosen to pursue the development despite these risks, the Applicant must again assume these risks. Accordingly, this approval is conditioned for the Applicant to assume all risks for developing at this location (see special condition 7(e)).

D. Off-site Impacts

Oftentimes there are also concerns that installing shoreline armoring where adjacent properties are not armored, such as is the case here at the upcoast (northern) end of the project, can result in increased

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supply costs statewide. The four commercial quotes range in price from $20 per cubic yard to $44 per cubic yard. Other factors to consider include the cost of delivery, availability of materials, as well as possible economies of scale that could be achieved from larger-scale regional sand nourishment programs. For example, the City of Encinitas gets about 5,000 cubic yards of sand each year for a public volleyball beach area and they pay roughly $30 per cubic yard for sorted and washed sand. The general fee for sand for larger beach nourishment projects is closer to $12 per cubic yard. Based on the specific characteristics of this project, as well as comparisons to other similar type projects, a cost of $25 per cubic foot of beach sand delivered to the project site is reasonable.

[29] Note that the proposed project, on the other hand, cannot be found consistent in this respect because it lacks sand supply mitigation.

erosion or other "end effects" at that location. This can lead to structural stability issues off-site. It should be noted that a sea cave has already formed upcoast of the existing revetment on the adjacent property. This effect is reduced downcoast of the project because rock armoring has already been placed there. In this case, based on the Applicant's geotechnical consultant's conclusions in this regard, and absent any evidence to the contrary, the proposed project would not be expected to result in any significant offsite end effects.

E. Monitoring, Maintenance, and Long-Term Stability

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

Therefore, in order to find the proposed project consistent with the LCP, the Commission finds that the condition of the seawall, the bluff plantings, and the drainage controls in their approved state must be maintained for the life of the seawall. Further, in order to ensure that the Applicant and the Commission know when repairs or maintenance are required, the Applicant must monitor the condition of the seawall and the bluff over the long term. The monitoring will ensure that the Applicant and the Commission are aware of any damage and can determine whether repairs or other actions are necessary to maintain the seawall and bluff measures in their approved state before such repairs or actions are undertaken. Finally, such future monitoring and maintenance activities must be understood in relation to clear as-built plans.

Therefore, special conditions are attached to this approval for the submittal of as-built plans to define the footprint and profile of the permitted development (see special condition 5) and drainage and non-invasive native vegetation parameters are required for the bluff area (see special conditions 1 and 7). For monitoring, the Applicant is responsible for ensuring adequate monitoring of the approved project and is required to submit a monitoring report on five year intervals that evaluates the condition and performance of the seawall, and related drainage and vegetation elements, and to submit the report with recommendations, if any, for necessary maintenance, repair, changes or modifications to the project (see special condition 6). All monitoring and maintenance commitments must be recorded as property restrictions to ensure long-term compliance, and to ensure that any future landowners are clearly notified of these commitments (see special condition 11). Finally, this approval is structured to allow future standard maintenance to the approved project to maintain it in its approved state subject to the same construction and restorations parameters of the initial development; the term of this future maintenance is indefinite until there are changed circumstances that require its reevaluation (see special condition 8).

F. Future Shoreline Management

Although none are known or anticipated at this time, it is possible that in the future there may be a regional shoreline management project designed to address shoreline armoring issues in a more comprehensive regional manner. It is unknown what form such a planning initiative may take, or whether it will happen at all for this portion of the shoreline. This approval is conditioned for the Applicant to acknowledge that such future planning initiatives may involve this property (see special condition 7(f)).

3. Hazards Conclusion

As discussed above, the facts of this particular case show that the proposed rip-rap revetment is not required to protect an existing structure in danger from erosion and that a less environmentally damaging feasible alternative is available. As conditioned, the alternative seawall project will be designed to minimize (and to the extent feasible eliminate) sand supply impacts, and includes mitigation to offset impacts that are unavoidable in this regard. Conditions have been applied for monitoring, long-term maintenance, prohibition on future seaward encroachment, and assumption of risk. As conditioned, the proposed project can be found consistent with the LCP hazard polices as cited in this finding.

B. Public Access and Recreation

1. LCP and Coastal Act Policies

The project is located between the first public road and the sea. As such, the project must be consistent not only with the certified LCP but also the access and recreation policies of the Coastal Act.

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

> ***30210.*** *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*
>
> ***30211.*** *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*
>
> ***30213.*** *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. …*
>
> ***30221.*** *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial*

recreational activities that could be accommodated on the property is already adequately provided for in the area.

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

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

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

The LCP policies previously cited also require the protection of public access. Policy 4 requires that shoreline structures not preclude public access, and if approved, areas seaward of the protective device must be dedicated for lateral public access. In addition, Policy 5 and implementing ordinance Section 23.05.090 require shoreline structures to mitigate or eliminate effects on local shoreline sand movement and supply. In this sense, sand supply effects relate to the way in which the project impacts creation and maintenance of beach sand, ultimately translating into potential impacts to beach access and recreation.

In sum, these overlapping Coastal Act and LCP policies clearly protect the beach (and access to and along it) and offshore waters for public access and recreation purposes, particularly free and low cost access.

2. Beach Access Impacts

Loss of Beach Access Area and Lateral Access Opportunities

The beach area fronting the project site is a much-used mostly cobbly beach backed by coastal bluffs. Based on the Commission's 1980 approval of an addition to the existing residence at this site, this beach area fronting the bluff is also subject to a public access easement (see Exhibit I). A rocky promontory is located upcoast of the property line. Past this point there are numerous pocket beaches and some further rocky areas, which can be laterally accessed, particularly at lower tides. In general, most beach goers frequent the beaches in front and downcoast of the property towards the Cayucos Pier, while the rockier areas and pocket beaches upcoast are primarily used by visitors looking for the privacy of the pocket beaches, or those interested in exploring the rocky intertidal areas present there. This entire stretch of coast, including the cobbly beach area in front of the property, is extensively used by the public. In short, the beach area and lateral public access route that would be impacted by the proposed revetment is a significant public access resource much used by local residents and visitors alike.

The effect of covering a portion of this beach area with the proposed revetment would be to remove a portion of the beach from use. As previously discussed, 230 square feet of useable beach has been covered by rock, resulting in direct and indirect losses of usable beach space. At higher tides, the impact on public use of the beach due to this revetment encroachment has been exacerbated given that tidal influence foreshortens the beach at these times. Another effect has been to further limit the public's

ability to gain access both up and down coast laterally along the beach being covered, particularly at higher tides. Furthermore, the rocks that make up rip-rap revetments can tend to migrate onto the beach and present a public access and public safety impediment. The Commission's experience has shown this rock migration to be the norm rather than the exception with rock revetments.

These adverse public access impacts are inconsistent with the LCP and Coastal Act Sections 30210, 30211, and 30240 which protect this recreational area and the public's right of access thereto. In addition, as discussed in the findings above, the area where the proposed revetment is located is a recorded and accepted public access easement area specifically required by the Commission previously. Per the terms of the easement, the revetment would not be allowed in the easement area (see Exhibit I).

Furthermore, as noted above in the discussion of sand supply impacts, in addition to the direct loss of useable recreational beach area, the introduction of the proposed revetment has a number of effects on the dynamic shoreline system and the public's beach use interests. First, the revetment leads to a progressive loss of sand as shore material is not available to nourish the sand supply system. Second, and particularly in combination with the loss of sand generating materials, the proposed revetment fixes the back beach location. The effect on public use is that the useable beach space narrows; eventually this beach area between the revetment and the water would be expected to disappear. Third, changes in the shoreline profile, particularly changes in the slope of the profile that result from a reduced beach width, alter the useable beach area restricted for public access. A beach that rests either temporarily or permanently at a steeper angle than under normal conditions will have less horizontal distance available for the public to use. This reduces the actual area in which the public can pass on property restricted for public access. Fourth, the proposed revetment cumulatively affects public access by causing accelerated and increased erosion on the adjacent beaches. This effect may not become clear until such devices are constructed individually along a shoreline. Fifth, since the proposed revetment is not sited so far landward that it would only be acted upon during severe storm events, beach scour, particularly during the winter season, could be accelerated because there is less beach area to dissipate the wave's energy. This can act to exacerbate the narrowing of the useable beach space available for public access.

Public Trust Issues

In addition to publicly owned recreational beach parks, the public has ownership and use rights in the lands of the State seaward of the mean high tide line as it exists from time to time (public trust lands) and may also have rights landward of the mean high tide line through historic public use (public prescriptive rights). As mentioned above, in this case the beach area is also subject to a public access easement (see Exhibit I for the full text of these recorded documents).

By virtue of its admission into the Union, California became the owner of all tidelands and all lands lying beneath inland navigable waters. These lands are held in the State's sovereign capacity and are subject to the common law public trust. The public trust doctrine restricts uses of sovereign lands to public trust purposes, such as navigation, fisheries, commerce, public access, water-oriented recreation, open space and environmental protection. The public trust doctrine also severely limits the ability of the State to alienate these sovereign lands into private ownership and use free of the public trust. Consequently, the Commission must avoid decisions that improperly compromise public ownership and use of sovereign tidelands.

Where development is proposed that may impair public use and ownership of tidelands, the Commission must consider where the development will be located in relation to tidelands. The legal boundary between public tidelands and private uplands is known as the ordinary high water mark (Civil Code, Section 830). In California, where the shoreline has not been affected by fill or artificial accretion, the ordinary high water mark of tidelands is determined by locating the existing "mean high tide line". The mean high tide line is the intersection of the elevation of mean high tide with the shore profile. Where the shore is composed of a sandy beach whose profile changes as a result of wave and tidal action, the location at which the elevation of mean high tide line intersects the shore is subject to change. The result is that the mean high tide line (and therefore the boundary) is an "ambulatory" or moving line that moves seaward through the process known as accretion and landward through the process known as erosion.

Consequently, the position of the mean high tide line fluctuates seasonally as high wave energy (usually but not necessarily) in the winter months causes the mean high tide line to move landward through erosion, and as milder wave conditions (generally associated with the summer) cause the mean high tide line to move seaward through accretion. In addition to ordinary seasonal changes, the location of the mean high tide line is affected by long term changes such as sea level rise and diminution of sand supply.

In order to protect public tidelands when beachfront development is proposed, the Commission must consider (1) whether the development or some portion of it will encroach on public tidelands (i.e., will the development be located below the mean high tide line as it may exist at some point throughout the year); and (2) if not located on tidelands, whether the development will indirectly affect tidelands by causing physical impacts to tidelands.

In order to minimize approving development that will encroach on public tidelands during any time of the year, the Commission, usually relying on information supplied by the State Lands Commission, will look to whether the project is located landward of the most landward known location of the mean high tide line. In this case, the Applicant's site plan shows much of the proposed revetment landward of the mean high tide. However, this claim has not been verified by the State Lands Commission. Elevations submitted by the Applicant's engineer show portions of the rock and keyway extending below the elevation of the mean high tide. Given the ambulatory character of the mean high tide line, it may be the case that the proposed revetment lies partially (or totally) below mean high tide.

In either event, even structures located above the mean high tide line may have an impact on shoreline processes – and ultimately to the extent and availability of tidelands. That is why the Commission also must consider whether a project will have indirect impacts on public ownership and public use of shorelands. In this case, as discussed earlier in these findings, there is substantial evidence that this project would result in some such impacts on tidelands because the proposed revetment is located in an area that is subject to wave attack and wave energy. This wave interaction with the revetment would contribute to erosion and steepening of the shore profile. The proposed revetment would fix the back beach location, retain potential beach materials, cover beach area, contribute to beach scour, potentially alter the longshore transport of materials, and contribute to erosion and steepening of the shore profile to the detriment of the availability of tidelands.

In addition to a development proposal's impact on tidelands and on public rights protected by the common law public trust doctrine, the Commission must consider whether the project will affect a public right to use beachfront property, independent of who owns the underlying land on which the public use takes place. Generally, there are three additional types of public uses identified as: (1) the public's recreational rights in navigable waters guaranteed to the public under the California Constitution and state common law; (2) any rights that the public might have acquired under the doctrine of implied dedication based on continuous public use over a five-year period; and (3) any additional rights that the public might have acquired through public purchase or offers to dedicate.

These use rights are implicated as the public walks the wet or dry beach. This area of use, in turn, moves across the face of the beach as the beach changes in depth on a daily basis. The free movement of sand on the beach is an integral part of this process, and it is here that the effects of structures are of concern. In this case, the public has also been granted an easement for beach access seaward of the toe of the bluff as part of the Commission's approval of an addition to the residence in 1980 (again, see Exhibit I). The Commission must protect these public rights by assuring that any proposed shoreline development does not interfere with, or will only minimally interfere with, those rights. In the case of the proposed project, the potential for the permanent loss of sandy beach, and a corresponding permanent loss of public access, does exist as a result of the proposed revetment.

As described, the revetment does negatively impact public beach access and recreation. The proposed revetment results in the direct loss of approximately 230 square feet of recreational beach area; limits the public's ability to gain access both up and down coast laterally along the beach being covered, particularly at higher tides; will eventually result in the migration of rock(s) seaward on the beach and into the intertidal zone where they will become a public access and public safety impediment; will eventually result in a loss of useable beach area by fixing the back beach location, retaining potential beach materials, contributing to beach scour, potentially alter the longshore transport of materials, and contributing to erosion and steepening of the shore profile, all to the detriment and availability of tidelands and the public trust. These impacts are inconsistent with the Coastal Act and LCP sections cited above, and they have been occurring for more than ten years at this site.

In addition, as described, a portion of the project may be below mean high tide, and thus subject to State Lands Commission and Monterey Bay National Marine Sanctuary requirements. This approval is conditioned for the review and approval of these agencies (see special condition 10).

No Seaward Encroachment

As discussed, the Coastal Act, LCP Policy 4, and CZLUO Section 23.05.090c(2) all require that shoreline structures not preclude public access. The proposed rip-rap revetment fails to comply with these standards inasmuch as it occupies recreational sandy beach/cobbly intertidal areas and increases the amount of armoring within the beach area public viewshed. Therefore, to protect the beach and easement area seaward of the toe of bluff, and in order to find this project consistent with the LCP requiring that development not interfere with public access, the Commission finds that no seaward encroachment/impediment to access beyond the immediate toe of bluff area is allowed (see special

condition 7(a)).

Construction Issues

The project did, when it was installed, and will when the approved project is constructed: require the movement of large equipment, workers, materials, and supplies through the public beach and public beach access point off Cayucos State Beach to gain access to the revetment; include large equipment operations on the recreational beach area fronting the site; result in the loss of recreational beach area to a construction zone (at the immediate project area); potentially encroach on State Lands and Sanctuary waters; and generally intrude and negatively impact the aesthetics, ambiance, serenity, and safety of the recreational beach experience. These beach recreational use impacts can be contained through construction parameters that limit the area of construction, limit the times when work can take place (to avoid both weekends and peak summer use months when recreational use is highest), clearly fence off the minimum construction area necessary, keep equipment out of coastal waters, require off-beach equipment and material storage during non-construction times, and clearly delineate and avoid to the maximum extent feasible beach use areas. A construction plan is required for this purpose (see special condition 2). In addition, to provide maximum information to the beach-going public during all construction, the Applicant must maintain copies of the CDP and approved plans available for public review at the construction site, as well as provide a construction coordinator whose contact information is posted at the site to respond to any problems and/or inquiries that might arise (see special condition 3).

Although the required construction conditions can minimize the impacts of this project on beach goers, the conditions cannot completely compensate for the unavoidable degradation of the usual beach recreational experience available at this location, including the overall diminution of aesthetics and ambiance, due to the proposed project. To offset these impacts to the recreational beach, mitigation is necessary.

3. Public Access and Recreation Conclusion

The preceding discussion establishes distinct and identifiable impacts due to the Applicant's proposed revetment: (1) the direct loss of 230 square feet of recreational beach; (2) increased difficulty for the public to gain access both up and down coast laterally along the pocket beach being covered, particularly at higher tides; (3) a loss of useable beach area by fixing the back beach location, retaining potential beach materials, contributing to beach scour, potentially alter the longshore transport of materials, and contributing to erosion and steepening of the shore profile, all to the detriment and availability of tidelands, shorelands and the public trust; and (4) temporary construction impacts on recreational beach use. Furthermore, the revetment has been shown to be inconsistent with the underlying public access easement. Even if the proposed revetment had been shown to be necessary and consistent with the Coastal Act and the LCP for allowing shoreline structures, the Commission finds that the proposed revetment is inconsistent with the access and recreation policies of the LCP and Coastal Act Sections 30210, 30211, 30220, and 30240.

Finally, from an access and recreation impact perspective, and based upon information available today, the proposed revetment would result in more adverse impacts than would a semi-vertical, sloped and

contoured concrete wall in this instance. In past permit actions, the Commission has required that new shoreline protective devices be located as far landward as possible in order to reduce adverse impacts to sand supply and public access resulting from the development. A concrete wall of this type that mimicked the natural slope would occupy less beach space than would the proposed revetment and would be located further landward. As such, the sloped concrete wall would have lesser impacts in terms of beach coverage, lateral access, beach goer safety, and the interrelated sand supply impacts discussed above. Furthermore, a sloped concrete wall could be shaped, colored, and textured to approximate the natural bluff contours and would be less visually intrusive (see also visual findings that follow).

Therefore, in order to protect public recreational access as required by the LCP and Coastal Act, including to minimize unavoidable access impacts and to mitigate for them, this approval is conditioned for a revised project that replaces the revetment with a sloped concrete seawall project, that includes significant drainage and landscaping improvements, and that includes an in-lieu fee of $53,875 that will be applied to improve beach recreational access in the Cayucos State Beach area (see special conditions 1, 2, 3, 4, 7, 9, and 11). All of these requirements are necessary to offset the significant public access and recreation impacts discussed in this finding above. As conditioned, the project can be found consistent with the Coastal Act and LCP public access and recreation policies cited in this finding.

C. Visual Resources

1. Applicable Policies

The LCP protects the scenic and visual qualities of the County's coastal zone, including specifically in relation to shoreline armoring structures. LCP Hazard Policy 4 states, in applicable part:

> *Shoreline structures … shall be sited to minimize the visual impacts….*

This requirement is mirrored by CZLUO Section 23.05.090 which states, in applicable part:

> ***CZLUO Section 23.05.090c(3) - Required findings**. In order to approve a land use permit for a shoreline structure, the Planning Director or other applicable review body shall first find that the structure is designed and sited to be visually compatible with adjacent structures and natural features to the maximum extent feasible; and Sections 30251 and 30240 of the Coastal Act also protect the scenic and visual qualities of the public viewshed.*

2. Analysis

Because of its geographic setting near Cayucos State Beach and the Cayucos Pier, the project area is located in a significant public viewshed. As previously detailed, the project site backs a popular beach recreation area. These areas are important coastal access destinations for residents and visitors to the area alike. Although some of the back beach bluffs have been degraded visually by the placement of revetments, it remains a valuable view area for which the LCP and Coastal Act require protection.

The proposed project has for over ten years and would continue to adversely affect the overall public viewshed and aesthetic by introducing large rocks into the back beach area. While the Applicant has attempted to mitigate for some of the visual impact by using darker colored rocks in an attempt to achieve visual consistency with adjacent bluff formations, photographic evidence of the completed

revetment shows an imposing and unnatural (compared to the natural bluff landforms in this area) rock boulder facade covering significant back beach and natural bluff area (see exhibit C). The pile of rock is prominently visible in public views from vantage points on the beach and pier, detracting from and degrading these views. Natural bluff landforms in the area include an actively eroding coastal bluff, bedrock benches, rocky intertidal zone, cobbly and sandy beach, and small sea caves. Although some downcoast properties include established revetments, most of this area, particularly to the north, remains free of shoreline protective structures, and the subject revetment does not maintain visual compatibility in that regard.

In this case, alternative projects are available that would reduce this visual impact. Specifically, a colored and contoured vertically sloped seawall can approximate the natural bluff landform as much as possible with an armoring project, and complementary native bluff landscaping can be used atop the bluff and cascading over the seawall to soften the impact even further. This approval is conditioned accordingly (see special conditions 1 and 7).

3. Visual Resource Conclusion

As conditioned, the project is consistent with LCP Policy 4 and CZLUO section 23.05.090c(3) regarding visual and scenic resources.

D. California Environmental Quality Act (CEQA)

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

The County, acting as lead agency under CEQA, adopted a Negative Declaration under CEQA on March 24, 2000. The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. The Commission has identified additional significant adverse environmental effects beyond that recognized by the County's adopted CEQA document. This staff report has discussed the relevant coastal resource issues with the proposal, including the significant adverse environmental effects expected due to the project, and has recommended appropriate suggested modifications to avoid and/or lessen any potential for adverse impacts to said resources. All public comments received to date have been addressed in the findings above. All above Coastal Act findings are incorporated herein in their entirety by reference.

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

7. Coastal Development Permit Conditions of Approval

A. Standard Conditions

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the Permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

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

B. Special Conditions

1. **Final Plans.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AND WITHIN SIX MONTHS OF APPROVAL OF THIS PERMIT (I.E., BY JANUARY 9, 2010), the Permittee shall submit two copies of Final Plans to the Executive Director for review and approval. The Final Plans (other than the landscape screening component – see below) shall be prepared and stamped by a licensed civil engineer with experience in coastal structures and processes and shall include, at a minimum, site plans, cross sections, and supporting information (including all assumptions, methodologies, tie-back load calculations, etc. underlying the project design) that clearly show the following:

   (a) Sloped Concrete Seawall Detail. The Plans shall provide for replacement of the revetment by a sloped-vertical (i.e., constructed at an angle generally approximating the bluff slope) concrete tie-back seawall. The seawall shall be constructed of reinforced concrete surfaced in such a way as to mimic the natural bluff landform in slope, integral mottled color, and undulation; shall be the minimum width and height necessary to provide the required slope buttress; shall be embedded at the toe of the slope (including any embedded scour apron or equivalent) so as to avoid any undercutting or scouring of the toe of the slope; and shall include sufficient structural tiebacks into the bluff to ensure its long-term stability and effectiveness.

   (b) Drainage Detail. The Plans shall provide for an engineered drainage system (which may include, but not be limited to curtain drains, vertical drainage wells, sump pumps (or equivalent), swales, ditches, drainage in the sloped vertical wall, or some combination of these devices)

sufficient to intercept and control groundwater, subsurface drainage and surface runoff (comparable to a 100-year storm event), such that water will not flow over the blufftop edge, or collect or pool near the sloped vertical wall to such a degree that it would cause structural stability problems to the wall. The drainage system shall be designed to minimize the need for and size of the sloped-vertical wall to the maximum degree feasible. All drainage, with the exception of weep holes in the wall itself necessary for its proper function, shall not be directed seaward of the blufftop edge, but rather shall be directed inland to appropriate collection areas (whether for use in on-site irrigation or directed to street collection systems) if it is feasible. If it is not feasible, then such drainage shall be directed as inconspicuously as possible into a natural drainage swale in a manner that avoids exacerbating erosion.

(c) Concrete Surfacing. All exposed concrete surfaces shall be faced with a colored, sculpted concrete surface that mimics natural bluff landforms in the vicinity in terms of integral mottled color, texture, and undulation. Any protruding concrete elements (e.g., corners, edges, etc.) shall be rounded to evoke natural bluff undulations. All drainage within the sculpted concrete and/or extending seaward (see also Drainage Detail above) shall be camouflaged (e.g., randomly spaced, hidden with overhanging or otherwise protruding sculpted concrete, etc.) so as to be hidden from view and/or inconspicuous as seen from the public viewing areas. The Plans shall include documentation describing the concrete surfacing techniques to be applied, including identifying application contractors and samples of their work, and clear visual simulations of the expected completed appearance of the seawall.

(d) Landscape Screening. The Plans shall provide for the removal of all non-native invasive plants (e.g., iceplant) currently present in the blufftop area seaward of the residence, and shall provide for the planting of native species (native to the Cayucos bluff area) in the area between the top of the approved seawall and a line roughly 5 feet inland of the blufftop edge in a manner designed to provide for a cascading screen of native vegetation to screen the upper portion of the seawall from view from the beach below. The Plans shall clearly identify in site plan view the type, size, extent and location of all native plant materials to be used. The Plans shall also provide for any irrigation necessary to ensure that the landscape screening is successful. All initial plant removal and planting shall be completed within one month of completion of seawall construction. The Plans shall require regular monitoring and remedial action (such as replanting as necessary) to ensure success of the vegetative screen. The landscape screening component of the Plans shall be prepared by a landscape professional with experience in coastal bluff vegetation.

(e) Revetment Removal Detail. The Plans shall provide for removal of all of the rock revetment, and restoration of that portion of the thus exposed beach and bluff area (previously underlying the revetment) that is not otherwise to be covered by the approved sloped-vertical seawall. All such rock removed shall be appropriately disposed of and all rock disposal locations shall be noted. Any such rock disposal in the coastal zone may require a separate coastal development permit.

The Permittee shall undertake development in accordance with the approved Final Plans, which shall be completed within two years of the approval of this permit (i.e., by July 9, 2011). Failure to submit

the Final Plans within six months of approval of this permit and/or failure to complete the development identified in the approved Final Plans by July 9, 2011 shall constitute a knowing and intentional violation and shall be subject to the provisions of Chapter 9 of the Coastal Act.

2. **Construction Plan.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AND WITHIN SIX MONTHS OF APPROVAL OF THIS PERMIT (I.E., BY JANUARY 9, 2010), the Permittee shall submit two copies of a Construction Plan to the Executive Director for review and approval. The Construction Plan shall identify the specific location of all construction areas, all staging areas, all storage areas, all construction access corridors (to the construction sites and staging areas), and all public pedestrian access and recreational use areas in site plan view. All such areas within which construction activities and/or staging are to take place shall be limited to the maximum extent feasible in order to minimize construction encroachment on the beach and to have the least impact on public access. The Plan shall specify all construction methods to be used, including all methods to be used to keep the construction areas separated from beach access and recreational use areas (including using the blufftop space available on the Permittee's property for staging, storage, and construction activities to the maximum extent feasible) and shall include a final construction schedule. All erosion control/water quality best management practices to be implemented during construction and their location shall be noted. Silt fences, or equivalent apparatus, shall be installed at the perimeter of the construction site to prevent construction-related runoff and/or sediment from entering into the Pacific Ocean. The Construction Plan shall, at a minimum, include the following construction requirements specified via written notes on the Plan. Minor adjustments to the following construction requirements may be allowed by the Executive Director if such adjustments: (1) are deemed necessary due to extenuating circumstances; and (2) will not adversely impact coastal resources.

   (a) All work shall take place during daylight hours. Lighting of the beach area is prohibited.

   (b) Construction work or equipment operations shall not be conducted seaward of the mean high water line unless tidal waters have receded from the authorized work areas.

   (c) Grading of intertidal areas is prohibited with the exception of removal of existing revetment rock per special condition 1. Any such existing rock retrieved from intertidal areas shall be recovered by excavation equipment positioned landward of the waterline (i.e., excavator equipment with mechanical extension arms, swing arm crane, etc.).

   (d) Any construction materials and equipment that cannot be delivered to the site from the blufftop above, shall be delivered to the beach area by rubber-tired construction vehicles. When transiting on the beach, all such vehicles shall remain as high on the upper beach as possible and avoid contact with ocean waters and intertidal areas.

   (e) All construction materials and equipment placed on the beach during daylight construction hours shall be stored beyond the reach of tidal waters. All construction materials and equipment shall be removed in their entirety from the beach area by sunset each day that work occurs. The only exceptions shall be for: (1) erosion and sediment controls (e.g., a silt fence at the base of the construction area) as necessary to contain rock and/or sediments in the construction area, where such controls are placed as close to the toe of the revetment/seawall as possible, and are

minimized in their extent; and (2) storage of larger materials (i.e., steel I-beams, large forms, etc.) beyond the reach of tidal waters for which moving the materials each day would be extremely difficult. If larger materials are to be left on the beach area overnight, the Construction Plan shall clearly specify what types of materials are to be so stored, the difficulty associated with moving them each day, the methods to be taken to ensure they are completely encased (i.e., not in contact with beach sands and completely covered), and the contingency plan for moving said materials in the event of tidal/wave surge reaching them.

(f) Construction (including but not limited to construction activities, and materials and/or equipment storage) is prohibited outside of the defined construction, staging, and storage areas.

(g) No work shall occur on the beach during the summer peak months (start of Memorial Day weekend to Labor Day).

(h) Equipment washing, refueling, and/or servicing shall not take place on the beach.

(i) The construction site shall maintain good construction site housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain (including covering exposed piles of soil and wastes); dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the beach).

(j) All erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each work day.

(k) All beach areas and all shoreline access points impacted by construction activities shall be restored to their pre-construction condition or better within three days of completion of construction. Any beach sand in the area that is impacted by construction shall be filtered as necessary to remove all construction debris.

(l) All contractors shall insure that work crews are carefully briefed on the importance of observing the construction precautions given the sensitive work environment. Construction contracts shall contain appropriate penalty provisions sufficient to offset the cost of retrieval/clean up of foreign materials not properly contained.

(m) The Permittee shall notify planning staff of the Coastal Commission's Central Coast District Office at least 3 working days in advance of commencement of construction, and immediately upon completion of construction and required beach-area restoration activities. If planning staff should identify additional reasonable measures necessary to restore the beach and beach access points, such measures shall be implemented immediately.

The Permittee shall undertake construction in accordance with the approved Construction Plan.

3. Construction Site Documents & Construction Coordinator. DURING ALL CONSTRUCTION:

(a) **Construction Site Documents.** Copies of the signed coastal development permit and the approved Construction Plan shall be maintained in a conspicuous location at the construction job site at all times, and such copies shall be available for public review on request. All persons

involved with the construction shall be briefed on the content and meaning of the coastal development permit and the approved Construction Plan, and the public review requirements applicable to them, prior to commencement of construction.

(b) **Construction Coordinator.** A construction coordinator shall be designated to be contacted during construction should questions arise regarding the construction (in case of both regular inquiries and emergencies), and their contact information (i.e., address, phone numbers, etc.) including, at a minimum, a telephone number that will be made available 24 hours a day for the duration of construction, shall be conspicuously posted at the job site where such contact information is readily visible from public viewing areas, along with indication that the construction coordinator should be contacted in the case of questions regarding the construction (in case of both regular inquiries and emergencies). The construction coordinator shall record the name, phone number, and nature of all complaints received regarding the construction, and shall investigate complaints and take remedial action, if necessary, within 24 hours of receipt of the complaint or inquiry.

4. **Public Access/Sand Supply Mitigation.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AND WITHIN SIX MONTHS OF APPROVAL OF THIS PERMIT (I.E., BY JANUARY 9, 2010), the Permittee shall submit to the Executive Director evidence that a public access/sand supply mitigation fee of $53,875 has been deposited into an interest-bearing account to be established and managed by State Parks or another appropriate entity as approved by the Executive Director. The sole purpose the fee/account shall be for public beach recreational access improvements at Cayucos State Beach. The entire fee and any accrued interest shall be used for the above-stated purpose, in consultation with the Executive Director, within ten years of the fee being deposited into the account. Any portion of the fee that remains after ten years shall be donated to one or more of the State Parks units located in the vicinity of Cayucos State Beach, or other organization acceptable to the Executive Director, for the purpose of public beach recreational access improvements. PRIOR TO EXPENDITURE OF ANY FUNDS CONTAINED IN THIS ACCOUNT, the Executive Director must review and approve the proposed use of the funds as being consistent with the intent and purpose of this condition.

5. **As-Built Plans.** WITHIN TWO (2) MONTHS OF COMPLETION OF CONSTRUCTION, the Permittee shall submit two copies of As-Built Plans showing all development completed pursuant to this coastal development permit; all property lines; and all residential development inland of the seawall structure. The As-Built Plans shall be substantially consistent with the approved final plans (see special condition 1), including providing for all of the same requirements specified there, and shall account for all of the parameters of special condition 6 (Monitoring), 7 (Shoreline Development Stipulations) and 8 (Future Maintenance). The As-Built Plans shall include a graphic scale and all elevation(s) shall be described in relation to National Geodetic Vertical Datum (NGVD). The As-Built Plans shall include color photographs (in hard copy and jpg format) that clearly show the as-built project, and that are accompanied by a site plan that notes the location of each photographic viewpoint and the date and time of each photograph. At a minimum, the photographs shall be from upcoast, seaward, and downcoast viewpoints, and from a sufficient number of beach viewpoints as to provide complete photographic coverage of the seawall and

residence at a scale that allows comparisons to be made with the naked eye between photographs taken in different years and from the same vantage points. The As-Built Plans shall be submitted with certification by a licensed civil engineer with experience in coastal structures and processes, acceptable to the Executive Director, verifying that the seawall has been constructed in conformance with the approved final plans described by special condition 1 above.

6. **Monitoring.** The Permittee shall ensure that the condition and performance of the as-built project is regularly monitored by a licensed civil engineer with experience in coastal structures and processes. Such monitoring evaluation shall at a minimum address whether any significant weathering or damage has occurred that would adversely impact project performance, including the effectiveness of the drainage system and the camouflaging treatment applied to the sloped-vertical wall (i.e., the sculpted concrete and screening vegetation). Monitoring reports prepared by a licensed civil engineer with experience in coastal structures and processes, and covering the above-described evaluations, shall be submitted to the Executive Director for review and approval at five year intervals by May 1st of each fifth year (with the first report due May 1, 2015, and subsequent reports due May 1, 2020, May 1, 2025, and so on) for as long as the approved project exists at this location. The reports shall identify any recommended actions necessary to maintain the approved project in a structurally sound manner and its approved state, and shall include photographs taken from each of the same vantage points as required in the as-built plans (see special condition 5) with the date and time of the photographs and the location of each photographic viewpoint noted on a site plan.

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

   (a) No Further Seaward Encroachment. Any future response to coastal hazards (including but not limited to coastal hazards associated with shoreline erosion, subterranean water "piping" failures, landslides, wave attack, etc.) requiring the placement of any type of shoreline structure, including, but not limited to, modifications to the as-built seawall, shall be constructed inland (i.e., toward the blufftop) of the location of the seawall. As-Built Plans have been approved pursuant to coastal development permit A-3-SLO-01-040 that define the location of the seawall.

   (b) Screening Vegetation. Screening vegetation has been approved pursuant to coastal development permit A-3-SLO-01-040 that provides for the removal of invasive plants and the planting with non-invasive native bluff plants in the bluff area above the seawall and extending inland 5 feet past the blufftop edge. The full linear extent of the upper bluff area above the seawall shall be completely covered by native vegetation so that exposed soils are not visible. For that upper bluff area located directly above the seawall, the upper 3 vertical feet of the seawall shall be completely screened from view (as seen from the beach) by a cascading screen of native vegetation. To allow for initial growth, the required screening shall be initially achieved within two years of the construction of the seawall, and shall thereafter be maintained for the life of the seawall. Screening vegetation has been approved pursuant to coastal development permit A-3-SLO-01-040 that specifies the allowed native planting palette and the required vegetation maintenance parameters. All native plantings shall be maintained in good growing conditions, including the use of appropriate irrigation and drainage apparatus, and shall be replaced as

necessary to maintain the approved screening vegetation.

(c) Maintenance. It is the Permittee's responsibility to maintain the seawall, and all irrigation, drainage, and vegetation approved pursuant to coastal development permit A-3-SLO-01-040 in a structurally sound manner and its approved state. As-Built Plans have been approved pursuant to coastal development permit A-3-SLO-01-040 that define the parameters of the approved project. Future maintenance as specified in special condition 8 is authorized pursuant to the parameters of coastal development permit A-3-SLO-01-040, but this does not obviate the need to obtain permits from other agencies for any future maintenance and/or repair episodes. Special condition 8 (Future Maintenance) is incorporated here in its entirety by reference.

(d) Debris Removal. The Permittee shall immediately remove all materials and/or debris that may fall from the blufftop area inland of the seawall onto the beach below.

(e) Assumption of Risk, Waiver of Liability and Indemnity Agreement. The Permittee acknowledges and agrees, on behalf of itself and all successors and assigns: (i) that the site is subject to hazards from episodic and long-term bluff retreat and coastal erosion, subsurface erosion (water "piping"), wave and storm events, bluff and other geologic instability, and the interaction of same; (ii) to assume the risks to the Permittee and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards; and (v) that any adverse effects to property caused by the permitted project shall be fully the responsibility of the landowner.

(f) Future Shoreline Planning. The Permittee acknowledges, on behalf of itself and all successors and assigns, that there may be future shoreline armoring planning efforts that involve the seawall approved pursuant to coastal development permit A-3-SLO-01-040. Such planning efforts may involve consideration of a shoreline armoring management entity meant to cover the larger shoreline that includes the shoreline structure here, and may involve consideration of potential modifications and/or programs designed to reduce public viewshed and beach access impacts due to shoreline armoring. Acknowledgement in no way binds the Permittee (and all successors and assigns) to any particular outcome of such planning efforts, and in no way limits the ability of Permittee (and all successors and assigns) to express his viewpoint during the course of such planning efforts.

8. Future Maintenance. Coastal development permit A-3-SLO-01-040 authorizes future maintenance as described in this special condition. The Permittee acknowledges and agrees, on behalf of itself and all successors and assigns that: (a) it is the Permittee's responsibility to maintain the as-built seawall, the vegetative screening, and all irrigation and drainage structures in a structurally sound manner and their approved state; (b) remove all debris that may fall from the blufftop area onto the

beach below. Any such development, or any other maintenance development associated with the as-built seawall, the vegetative screening, and related irrigation and drainage structures, shall be subject to the following:

(a) Maintenance. "Maintenance," as it is understood in this condition, means development that would otherwise require a coastal development permit whose purpose is: (1) to repair, reface, and/or otherwise maintain the approved seawall structure in its approved configuration (as shown on the approved As-Built Plans); (2) to reestablish the permitted bluff drainage, vegetation, and/or irrigation elements of the approved Final Plans.

(b) Maintenance Parameters. Maintenance shall only be allowed subject to the parameters of the approved Construction Plan required by special condition 2. Any proposed modifications to the approved construction plan and/or beach restoration requirements associated with any maintenance event shall be reported to planning staff of the Coastal Commission's Central Coast District Office with the maintenance notification (described below), and such changes shall require a coastal development permit amendment unless the Executive Director deems the proposed modifications to be minor in nature (i.e., the modifications would not result in additional coastal resource impacts).

(c) Other Agency Approvals. The Permittee acknowledges that these maintenance stipulations do not obviate the need to obtain permits from other agencies for any future maintenance and/or repair episodes.

(d) Maintenance Notification. At least 2 weeks prior to commencing any maintenance event, the Permittee shall notify, in writing, planning staff of the Coastal Commission's Central Coast District Office. The notification shall include a detailed description of the maintenance event proposed, and shall include any plans, engineering and/or geology reports, proposed changes to the maintenance parameters, other agency authorizations, and other supporting documentation describing the maintenance event. The maintenance event shall not commence until the Permittee has been informed by planning staff of the Coastal Commission's Central Coast District Office that the maintenance event complies with this coastal development permit. If the Permittee has not received a response within 30 days of receipt of the notification by the Coastal Commission's Central Coast District Office, the maintenance event shall be authorized as if planning staff affirmatively indicated that the event complies with this coastal development permit. The notification shall clearly indicate that the maintenance event is proposed pursuant to this coastal development permit, and that the lack of a response to the notification within 30 days of its receipt constitutes approval of it as specified in the permit.

(e) Maintenance Coordination. Maintenance events shall, to the degree feasible, be coordinated with other maintenance events proposed in the immediate vicinity with the goal being to limit coastal resource impacts, including the length of time that construction occurs in and around the beach area and beach access points at Cayucos State Beach. As such, the Permittee shall make reasonable efforts to coordinate the Permittee's maintenance events with other events (such as those of the California Department of Parks and Recreation), including adjusting maintenance event scheduling as directed by planning staff of the Coastal Commission's Central Coast

District Office.

(f) Non-compliance Proviso. If the Permittee is not in compliance with the conditions of this permit at the time that a maintenance event is proposed, then the maintenance event that might otherwise be allowed by the terms of this future maintenance condition shall not be allowed by this condition.

(g) Emergency. Nothing in this condition shall serve to waive any Permittee rights that may exist in cases of emergency pursuant to Coastal Act Section 30611, Coastal Act Section 30624, and Subchapter 4 of Chapter 5 of Title 14, Division 5.5, of the California Code of Regulations (Permits for Approval of Emergency Work).

(h) Duration of Covered Maintenance. Future maintenance under this coastal development permit is allowed subject to the above terms for ten (10) years from the date of approval (i.e., until July 9, 2019). Maintenance can be carried out beyond the 10-year period if the Executive Director extends the maintenance term in writing.

9. **Public Rights.** The Coastal Commission's approval of this permit shall not constitute a waiver of any public rights which may exist on the property. The Permittee shall not use this permit as evidence of a waiver of any public rights which may exist on the property.

10. **Other Agency Review.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AND WITHIN SIX MONTHS OF APPROVAL OF THIS PERMIT (I.E., BY JANUARY 9, 2010), the Permittee shall submit to the Executive Director written evidence that all necessary permits, permissions, approvals, and/or authorizations for the project as approved by this coastal development permit have been granted by the California State Lands Commission and San Luis Obispo County. Any changes to the approved project required by these entities/agencies shall be reported to the Executive Director. No changes to the approved project shall occur without a Commission amendment to this coastal development permit unless the Executive Director determines that no amendment is necessary.

11. **Deed Restriction.** PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT AND WITHIN SIX MONTHS OF APPROVAL OF THIS PERMIT (I.E., BY JANUARY 9, 2010), the Permittee shall submit to the Executive Director for review and approval documentation demonstrating that the Permittee has executed and recorded against the parcel(s) governed by this permit a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, the California Coastal Commission has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property; and (2) imposing the special conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction is in addition to, and not a substitute for, the existing lateral access easement on the property. The deed restriction shall include a legal description and site plan of the entire parcel governed by this permit. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the terms and conditions of this permit shall continue to restrict the use and enjoyment of the subject property so long as either this permit or the development it authorizes, or any part, modification, or

amendment thereof, remains in existence on or with respect to the subject property.

CALIFORNIA COASTLINE CONSERVATION COMMISSION
SOUTH CENTRAL COAST REGION

PERMIT 52-1 BRETT

Pursuant to Public Resources Code Section 27400 and following, and provisions of the California Administrative Code enacted pursuant thereto, a permit is hereby issued to perform the development described in the above-cited Permit Application.

This Permit is subject to the terms and conditions of the Commission resolution approving this project, set forth on the back of this Permit Form and incorporated herein by reference, and to the following terms and conditions: Before any construction can begin an adequate drainage plan must be presented to staff for their approval. This plan shall use as a guideline Section A-2 of the Bluff Guidelines; also Section A-4 shall be complied with.

The project shall be commenced and completed by the following dates:

(If none are stated, then at option of Permittee.)

Failure of Permittee to conform to the provisions of this Permit shall subject him to the penalties provided by Public Resources Code Sections 27500 and 27501.

This Permit is not intended to, nor shall it be interpreted to have any effect on rights and obligations under private contracts or agreement, nor is it intended to take the place of any permit to be issued by any other public body.

This Permit is assignable upon assumption of the Permittee's obligations by the Assignee.

The Permittee shall file a notice of completion of the activities a authorized hereby with the Executive Director of the Regional Commission

This Permit shall not be valid until the following requirements have been met:

1) A copy of the Permit Form must be signed by all Permittees in the space provided below and returned to the Commission.

2) The complete Permit fee of $ 50.00 must be submitted to the Commission. You have previously submitted $ 50.00 . PLEASE ENCLOSE THE REMAINDER ($ -0-) WITH YOUR SIGNED COPY OF THE PERMIT FORM.

F. C. Buchter

F. C. Buchter
Executive Director

I/We acknowledge that I/we have received a copy of this Permit, have read it and understand its contents.

CCC Exhibit G
(page 1 of 3 pages)

CALIFORNIA COASTLINE CONSERVATION COMMISSION
SOUTH CENTRAL COAST REGION

CONSENT CALENDAR RESOLUTIONS

1. Projects Approved: Consent Calendar, as set forth in the published Agenda of the meeting of June 26, 1975 with the exception of the Items 56-32.

2. The Regional Commission finds that the projects proposed will not have any substantial adverse environmental or ecological effect and are consistent with the findings set forth in Public Resources Code Section 27001 and with the objectives set forth in Public Resources Code Section 27302.

3. The findings of Paragraph 2 are based upon each application, the Staff summary and report thereon, and any relevant statements made at the aforesaid meeting, all of which are available in the Commission files and are incorporated herein by reference.

4. Projects approved hereby shall be subject to such terms and conditions as are set forward in the Staff summary and as were adopted by the Commission at the aforesaid meeting. Such terms and conditions shall be expressly set forth in each permit issued pursuant hereto.

Approved and adopted June 26. 19 75.
by the following vote;

AYES: Commissioners Schwartz, Willeford, Fletcher, Kallman, Newdoll, Blake, Wullbrandt and Chairman Wright.

NOES: None.

ABSTAIN: None.

ABSENT: Commissioners Laufer, Terry, Ghitterman and Bennett.

CCC Exhibit G
(page 2 of 3 pages)

52-1 HAROLD BRETT, 640 Chaparral Rd., Sierra Madre, CA. 91024.
LOCATION: Lucern Rd., Cayucos, County of San Luis Obispo.
PROJECT: Single family, 2 story, bluff front residence.

A great deal of correspondence has been transmitted in regard to this application, dating back to November 8, 1974. The application was filed February 24, 1975 but was not complete until early this month.

The rear setback will be 25 ft. from the nearest section of the bluff front top. From the top to the toe of the bluff the horizontal distance is 15-20 ft. with the bluff height being about 25 feet. The lot has been examined by Central Coast Laboratories (April 1, 1975). The report summarized by John Wiese concludes the lot has "an adequate foundation for residential construction" and "a total sea cliff retreat of 10 feet would be expected in 50 years." In addition the foundation plan has been certified by Robert Williams for a .75:1 slope design utilizing standard UBC requirements with a 24" minimum footing depth.

This project will result in adverse but not substantial visual impact on the coastal zone. Located on the northern edge of Cayucos this 27 foot house will dominate the bluff front view. On the westerly lot line the side yard setback is only 5 feet (County minimum) with an additional 3 ft. of roof overhang. The first home to the west is 6 lots away with the Borradori garage being approximately 3 lots to the east. This large box-like structure, seen from such points as the pier and State beach in Cayucos, illustrates the current visual impact which has resulted from such a large structure.

The adjacent lot to the west (No. 3) is owned by Mr. Brett. He plans to sell this lot due to excessive tax burdens. The applicant intends to add a carport after the home is completed. This will require a County variance if Cal Trans does not abandon the 25 feet right-of-way along Lucern Road, which was the original highway right-of-way.

CONDITION: Before any construction can begin an adequate drainag plan must be presented to staff for their approval. This plan shall use as a guideline Section A-2 of the Bluff Guidelines; also Section A-4 shall be complied with.

CCC Exhibit G
(page 3 of 3 pages)

STATE OF CALIFORNIA — EDMUND G. BROWN JR., *Governor*

California Coastal Commission
SOUTH CENTRAL COAST REGIONAL COMMISSION
7[illegible] ATE STREET
BALBOA BUILDING, SUITE 612
SANTA BARBARA, CA 93101

COASTAL DEVELOPMENT PERMIT

2 absent

On March 7, 1980, by a vote of 9 to 1, the California Coastal Commission granted to HAROLD BRETT

Permit # 411-17, subject to the conditions set forth below, for development consisting of a 320 sq. ft. one-story addition on a bluff top lot to an existing two-story single family residence and garage; addition is between the existing residence and the bluff top.

more specifically described in the application file in the Commission offices.

The development is within the coastal zone in San Luis Obispo County at 3 Lucerne Road (Locarno Tract), Cayucos.

After public hearing held on March 7, 1980, the Commission found that, as conditioned, the proposed development is in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976; will not prejudice the ability of the local government having jurisdiction over the area to prepare a local coastal program that is in conformity with the provisions of Chapter 3 of the California Coastal Act of 1976; if between the sea and the public road nearest the sea, is in conformity with the public access and public recreation policies of Chapter 3 of the California Coastal Act of 1976; and either (1) will not have any significant adverse impact on the environment, or (2) there are no feasible alternatives or feasible mitigation measures available that would substantially lessen any significant adverse impact that the development as approved may have on the environment.

Issued on behalf of the South Central Coast Regional Coastal Commission on March 7, 1980,

Carl C. Hetrick
Executive Director

qc 7-17-80

The undersigned permittee acknowledges receipt of the California Coastal Commission Permit # 411-17, and fully understands its contents, including all conditions imposed. (Please return one signed copy to the South Central Coastal Commission as soon as possible; upon receipt of same, the permit card will be mailed to you to post on project property.

7-14-80
DATE

Harold G Brett
PERMITTEE

CCC Exhibit H
(page 1 of 3 page

Permit # 411-17, is subject to the following conditions:

I. STANDARD CONDITIONS

1. Assignment of Permit This permit may not be assigned to another person except as provided in Cal. Admin. Code, Title 14, Section 13170.

2. Notice of Receipt and Acknowledgement Construction authorized by this permit shall not commence until a copy of this permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of its contents, is returned to the Commission.

3. Expiration If construction has not commenced, this permit will expire two (2) years from the date on which the Commission voted on the application. Application for extension of this permit must be made prior to the expiration date.

4. Construction All construction must occur in accord with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviations from the approved plans must be reviewed by the Commission pursuant to Cal. Admin. Code, Title 14, Sections 13164 - 13168.

II. SPECIAL CONDITIONS

SEE ATTACHED SHEET

The complete Permit Fee of $ _____ must be submitted to the Commission. You have previously submitted $ _____. PLEASE ENCLOSE THE REMAINDER ($_____) WITH YOUR SIGNED COPY OF THE PERMIT FORM.

Carl C. Hetrick

CARL. C. HETRICK
Executive Director

CCC Exhibit H
(page 2 of 3 pages)

This permit is subject to the following conditions:

1. Prior to the issuance of a coastal development permit, the applicant shall record an irrevocable offer to dedicate to a public agency or to a private association approved by the Regional Commission an easement for public access and recreational use running from the mean high tide line to the toe of the bluff. Such easement shall be free of prior liens or encumbrances except tax liens. The offer shall be made in a manner and form approved in writing by the Executive Director. The offer shall be irrevocable for a period of 21 years, running from the date of recordation and shall run with the land in favor of the people of the State of California, binding successors and assigns of the applicant of landowner.

2. The applicant shall, by accepting the terms and conditions of the permit, agree that the issuance of this permit and completion of the authorized development shall not prejudice any subsequent assertion of a public right e.g. prescriptive rights, public trust, etc.

3. Prior to the issuance of a coastal development permit, the applicant shall submit to the Executive Director a deed restriction for recording free of prior liens except for tax liens, that binds the applicant and any successor in interest. The form and content of the deed restriction shall be subject to the review and approval of the Executive Director. The deed restriction shall provide (a) that the applicants understand that the site is subject to extraordinary hazards from waves during storms and from erosion and the applicants assume the liability from those hazards; (b) the applicants unconditionally waive any claim of liability on the part of the Commission or any other regulatory agency for any damage from such hazards; and (c) the applicants understand that construction in the face of these known hazards may make them ineligible for public disaster funds or loans for repair, replacement, or rehabilitation of the property in the event of storms & landslides. Further, the deed restriction shall provide:

   d. Acknowledgement that: any addition to the permitted structure or the construction of a non-attached structure (e.g. stairway) which is located between the residence and the top of the bluff, shall require a valid Coastal Development Permit. This does not exempt this project from other requirements regarding additions to the structure which require a Coastal Development Permit as set forth in the California Coastal Administrative Code.

SAN LUIS OBISPO COUNTY PARKS

MEMO

TO: Jonathan Bishop (831-427-4877) (18 pages w/ cover)

FROM: Jan Di Leo

DATE: May 17, 2004

RE: 463 Lucerne, Cayucos

Attached are the various documents I have in my file for 463 Lucerne. The certificate of acceptance is in there as well. Let me know if you need more. I can be reached via email (jdileo@co.slo.ca.us) or by phone (805-781-4089). THANKS!

CCC Exhibit I
(page 1 of 17 pages)

1087 Santa Rosa Street, San Luis Obispo, CA 93408 Tel: (805) 781-5200 Fax: 781-1102
Web: www.slocountyparks.com

Return Original To and
Recording Requested By:
State of California
California Coastal Commission
631 Howard Street, 4th Floor
San Francisco, California 94105

DOC. NO. 25130
OFFICIAL RECORDS
SAN LUIS OBISPO CO., CAL
JUN 18 1980
WILLIAM E. ZIMARIK
COUNTY RECORDER
TIME 4:55 PM

IRREVOCABLE OFFER TO DEDICATE

I. WHEREAS, (1) HAROLD G. BRETT LAVON M. BRETT is/are the record owner(s), hereinafter referred to as "owner(s)", of the real property located at (2) 3 LUCERNE RD CAYUCOS SAN LUIS OBISPO COUNTY California, and legally described as particularly set forth in attached (3) Exhibit A hereby incorporated by reference and hereinafter referred to as the "subject property"; and

II. WHEREAS, the California Coastal Commission, (3a) SOUTH CENTRAL Coast Regional Commission, hereinafter referred to as "the Commission", is acting on behalf of the People of the State of California; and

III. WHEREAS, the People of the State of California have a legal interest in the lands seaward of the mean high tide line; and

IV. WHEREAS, pursuant to the California Coastal Act of 1976, the owner(s) applied to the Commission for a coastal development permit for (4) A ROOM ADDITION on the subject property; and

V. WHEREAS, a coastal development permit no. (5) 411-17 was granted on (6) MARCH 18, 1980 by the Commission in accordance with the provisions of the Staff Recommendation and Findings attached

in (7) Exhibit B hereby incorporated by reference and subject to the following condition(s): (8)

1. Prior to the issuance of a coastal development permit, the applicant shall record an irrevocable offer to dedicate to a public agency or to a private association approved by the Regional Commission an easement for public access and recreational use running from the mean high tide line to the toe of the bluff. Such easement shall be free of prior liens or encumbrances except tax liens. The offer shall be made in a manner and form approved in writing by the Executive Director. The offer shall be irrevocable for a period of 21 years, running from the date of recordation and shall run with the land in favor of the people of the State of California, binding successors and assigns of the applicant of landowner.

VI. WHEREAS, the subject property is a parcel located between the first public road and the shoreline; and

VII. WHEREAS, under the policies of Sections 30210 through 31212 of the California Coastal Act of 1976, public access to the shoreline and along the coast is to be maximized, and in all new development projects located between the first public road and the shoreline be provided; and

VIII. WHEREAS, the Commission found that but for the imposition of the above conditions the proposed development could not be found consistent with the public access policies of Section 30210 through 30212 of the California Coastal Act of 1976 and that in the absence of such conditions a permit could not therefore have been granted.

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CCC Exhibit I
(page 3 of 17 pages)

NOW THEREFORE, in consideration of the granting of permit no.(9) 4-1-17 to the owner(s) by the Commission, the owner(s) hereby irrevocably offer(s) to dedicate to the (10) PUBLIC AGENCY or any public agency of the State of California, or private association acceptable to the Executive Director of the California Coastal Commission, an easemen (11) FOR PUBLIC ACCESS AND PASSIVE RECREATION located on the subject property (12) MEAN HIGH TIDE LINE TO TOE OF THE BLUFF as specifically described by attached Exhibit C (13) which is hereby incorporated by reference.

This offer of dedication shall be irrevocable for a period of twenty-one (21) years, measured forward from the date of recordation and shall be binding upon the owner(s), and their heirs, assigns or successors in interest to the subject property described above. The People of the State of California shall accept this offer through the local government in whose jurisdiction the subject property lies, or through a public agency or a private association acceptable to the Executive Director of the Commission or its successor in interest.

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CCC Exhibit I
(page 4 of 17 pages)

Acceptance of the offer is subject to a covenant which runs with the land, providing that the first offeree to accept the easement may not abandon it but must instead offer the easement to other public agencies or private associations acceptable to the Executive Director of the Commission for the duration of the term of the original offer to dedicate. The grant of easement once made shall run with the land and shall be binding on the parties, their heirs and assigns.

Executed on this 30 day of May, 19 80, in the City of Cayucos, County of San Luis Obispo.

Dated: 5-30-80

Signed LaVon M. Brett
(Owner)

Harold G. Brett
(Owner)

STATE OF CALIFORNIA

COUNTY OF San Luis Obispo

On May 30, 1980, before the undersigned, a Notary Public in and for said State, personally appeared Harold G. Brett and LaVon M. Brett, whose names are subscribed to the within instrument, and acknowledge that they executed the same.

OFFICIAL SEAL
NORMA L. SHAEFFER
NOTARY PUBLIC - CALIFORNIA
SAN LUIS OBISPO COUNTY
My comm. expires NOV 27, 1981

Norma L. Shaeffer
Notary Public in and for said County and State

Norma L. Shaeffer

107 Ocean Avenue, Cayucos, CA 93430

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CCC Exhibit I
(page 5 of 17 pages)

COURT PAPER
STATE OF CALIFORNIA
STD. 113 (REV. 8-72)

DSP

This is to certify that the offer of dedication set forth above dated May 30, 1980, and signed by Lavona and Harold Brett, owner(s), is hereby acknowledged by the undersigned officer on behalf of the California Coastal Commission pursuant to authority conferred by the California Coastal Commission when it granted Coastal Development Permit No. 411-17 on March 18, 1980 and the California Coastal Commission consents to recordation thereof by its duty authorized officer.

Dated: June 16, 1980

Linda L Breeden
Staff Counsel
California Coastal Commission

STATE OF CALIFORNIA

COUNTY OF SAN FRANCISCO

On 16 June 1980, before the undersigned, a Notary Public in and for said State, personally appeared Linda L Breeden known to me to be the person who executed the within instrument on behalf of said California Coastal Commission

Witness my hand and official seal.

GARY LAWRENCE HOLLOWAY
NOTARY PUBLIC-CALIFORNIA
CITY & COUNTY OF
SAN FRANCISCO
My Commission Expires October 26, 1981

Gary Lawrence Holloway
Notary Public in and for said County and State

CCC Exhibit I
(page 6 of 17 pages)

MAY-17-2004 10:15

FIRST AMERICAN TITLE INSURANCE COMPANY
Order No.
Escrow No. SLO 786827 KS
Loan No.

EXHIBIT "A"

04779 5F 000003.00
04779 5F 000030.25
04779 5F 000033.25FA

DOC. NO. 10658
OFFICIAL RECORDS
SAN LUIS OBISPO CO., CALIF.
WILLIAM E. ZIMARIK,
COUNTY RECORDER
APR 5 1973
TIME 8:00 A.M.

WHEN RECORDED MAIL TO:

Mr. and Mrs. Harold G. Brett
640 Chaparral Road
Sierra Madre, Calif. 91024

SPACE ABOVE THIS LINE FOR RECORDER'S USE

MAIL TAX STATEMENTS TO:

Same address as above:

DOCUMENTARY TRANSFER TAX $ 30.25
XXX Computed on the consideration or value of property conveyed; OR
..... Computed on the consideration or value less liens or encumbrances remaining at time of sale.

Signature of Declarant or Agent determining tax — Firm Name
For: First American Title Ins. Co.

Unincorporated

GRANT DEED

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

REED A. QUESNELL and MARION E. QUESNELL, husband and wife

hereby GRANT(S) to

HAROLD G. BRETT and LaVON M. BRETT, husband and wife as Joint Tenants

the real property in the ~~XXXXX~~
County of SAN LUIS OBISPO, State of California, described as

Lot 2 of the LOCARNO TRACT in the County of San Luis Obispo, State of California, according to map recorded July 30, 1925 in Book 3, page 60 of Maps in the office of the County Recorder of said County.

CCC Exhibit H
(page 7 of 17 pages)

Dated MARCH 8 1973

3. Prior to the issuance of a coastal development permit, the applicant shall submit to the Executive Director a deed restriction for recording free of prior liens except for tax liens, that binds the applicant and any successor in interest. The form and content of the deed restriction shall be subject to the review and approval of the Executive Director. The deed restriction shall provide (a) that the applicants understand that the site is subject to extraordinary hazards from waves during storms and from erosion and the applicants assume the liability from those hazards; (b) the applicants unconditionally waive any claim of liability on the part of the Commission or any other regulatory agency for any damage from such hazards; and (c) the applicants understand that construction in the face of these known hazards may make them ineligible for public disaster funds or loans for repair, replacement, or rehabilitation of the property in the event of storms & landslides. Further, the deed restriction shall provide:

   d. Acknowledgement that: any addition to the permitted structure or the construction of a non-attached structure (e.g. stairway) which is located between the residence and the top of the bluff, shall require a valid Coastal Development Permit. This does not exempt this project from other requirements regarding additions to the structure which require a Coastal Development Permit as set forth in the California Coastal Administrative Code.

III. FINDINGS AND DECLARATIONS:

The Commission finds and declares as follows:

1. Project Description

The project is for the construction of a one-story 320 square foot addition on a bluff top lot to an existing two story residence in the Locarno Tract of Cayucos. (See Exhibit 1) The proposed addition will be located between the existing residence and the top of the bluff, but would preserve the 25 foot setback recommended by the original geology report dated April 1, 1975 and the addendum dated January 29, 1980. (See Exhibit 2) Design of the proposed addition is the same as that of the existing structures. The present drainage system is adequate to accommodate the proposed addition.

2. Surrounding Area

The neighborhood where this project is located is comprised predominantly of low-scale single family residences and is almost entirely developed. There is one multi-family residential development two lots to the east, but there are single family dwellings on either side of the existing single family residence.

STATE OF CALIFORNIA — EDMUND G. BROWN JR., G.
California Coastal Commission
SOUTH CENTRAL COAST REGIONAL COMMISSION
735 STATE STREET
SANTA BARBARA, SUITE 417
SANTA BARBARA, CA 93101

March 18, 1980

TO: Regional Commission

FROM: Carl C. Hetrick, Executive Director

RE: REVISED FINDINGS OF FACT ON APPLICATION NO. 411-17, BRETT

At the meeting of March 7, 1980, the Commission approved APPLICATION NO. 411-17, submitted by Harold Brett. Since the staff recommendation had been for approval with conditions, one of which was deleted by the Commission, it is necessary to extract from the content of the hearing those factors which appeared to lead the Commission to its deletion of the condition and to submit to the Commission in writing revised findings of fact for adoption.

The Staff recommends that the Commission adopt the following resolution:

I. APPROVAL WITH CONDITIONS

The Commission hereby approves a permit for the proposed development, subject to the conditions below, on the grounds that, as conditioned, the proposed development is in conformity with the provisions of Chapter 3 of the Coastal Act of 1976, (with the public access and public recreation policies of Chapter 3 of the Coastal Act), will not prejudice the ability of the local government having jurisdiction over the area to prepare a local program that is in conformity with the provisions of Chapter 3 of the Coastal Act, and will have no significant adverse environmental impacts.

II. CONDITIONS

This permit is subject to the following conditions:

1. Prior to the issuance of a coastal development permit, the applicant shall record an irrevocable offer to dedicate to a public agency or to a private association approved by the Regional Commission an easement for public access and recreational use running from the mean high tide line to the toe of the bluff. Such easement shall be free of prior liens or encumbrances except tax liens. The offer shall be made in a manner and form approved in writing by the Executive Director. The offer shall be irrevocable for a period of 21 years, running from the date of recordation and shall run with the land in favor of the people of the State of California, binding successors and assigns of the applicant or landowner.

2. The applicant shall, by accepting the terms and conditions of the permit, agree that the issuance of this permit and completion of the authorized development shall not prejudice any subsequent assertion of a public right e.g. prescriptive rights, public trust, etc.

JOHN H. WIESE, PH.D.
CONSULTING GEOLOGIST
6398 LOS OSOS VALLEY ROAD 18-C
LOS OSOS, CALIFORNIA 93402
(805) 528-3248

January 29, 1980

South Central Regional Coastal Commission
Balboa Bldg., Suite 612
735 State St.
Santa Barbara, Calif. 93101

Re: Construction of addition to Harold Brett residence, Lot 2, Locarno Tract (3 Lucerne Road), Cayucos, Calif.

This letter is in response to the letter of 24 January 1980 from Carla D. Frink to Harold Brett, requesting an updated addendum to my 1975 geologic report on the subject lot, prior to her making a recommendation regarding addition of a sunroom to the seaward side of an existing seafront residence.

I reexamined the property and adjoining lots on January 28, 1980, including the seacliff and intertidal area, during a time of a minus tide. Mr. Brett was present, and discussed the location, size and design of the proposed addition with me. His proposal is to add a one-story sunroom, measuring 16 x 28' to the front of the existing building, at the same grade, on an area now occupied by lawn and shrubbery.

The geologic relationships described in my report of March 1975 have not changed. Four minor changes of surface conditions were noted. These are, 1)A small rockfall of about 1 cu. yd. of sandstone has dropped from a previous overhang along the fault zone in the seacliff on Lot 3, some 15' beyond the subject Lot 2 and of no significance to the stability of Lot 2; 2)On Lot 1, loose fill piled on the seacliff face during construction of the residence there has sloughed to the beach, as expected, but this does not relate to the stability of Lot 2; 3) Storms over the past 5 years have removed the loose rubble at the base of the sea cliff at Lot 2, exposing a highly erosion-resistant platform of bedrock in the beach area there, increasing confidence in the stability of the seacliff at Lot 2; and 4) The planting of low shrubs on the cliff rim at Lot 2 has greatly retarded runoff erosion over this rim as well as restricting indiscriminate access to the beach over the cliff rim. As a result, rim retreat has been greatly reduced, and I now believe earlier rounding of the cliff rim, noted in the report 5 years ago, had been largely the result of uncontrolled runoff and foot traffic, not by normal sea wave erosion. Earlier rim retreat was estimated at a maximum of 2.4 inches per year. In view of the experience of the past 5 years I would certainly not increase this estimate, and would decrease it to a rate of 1" per year or so as a maximum.

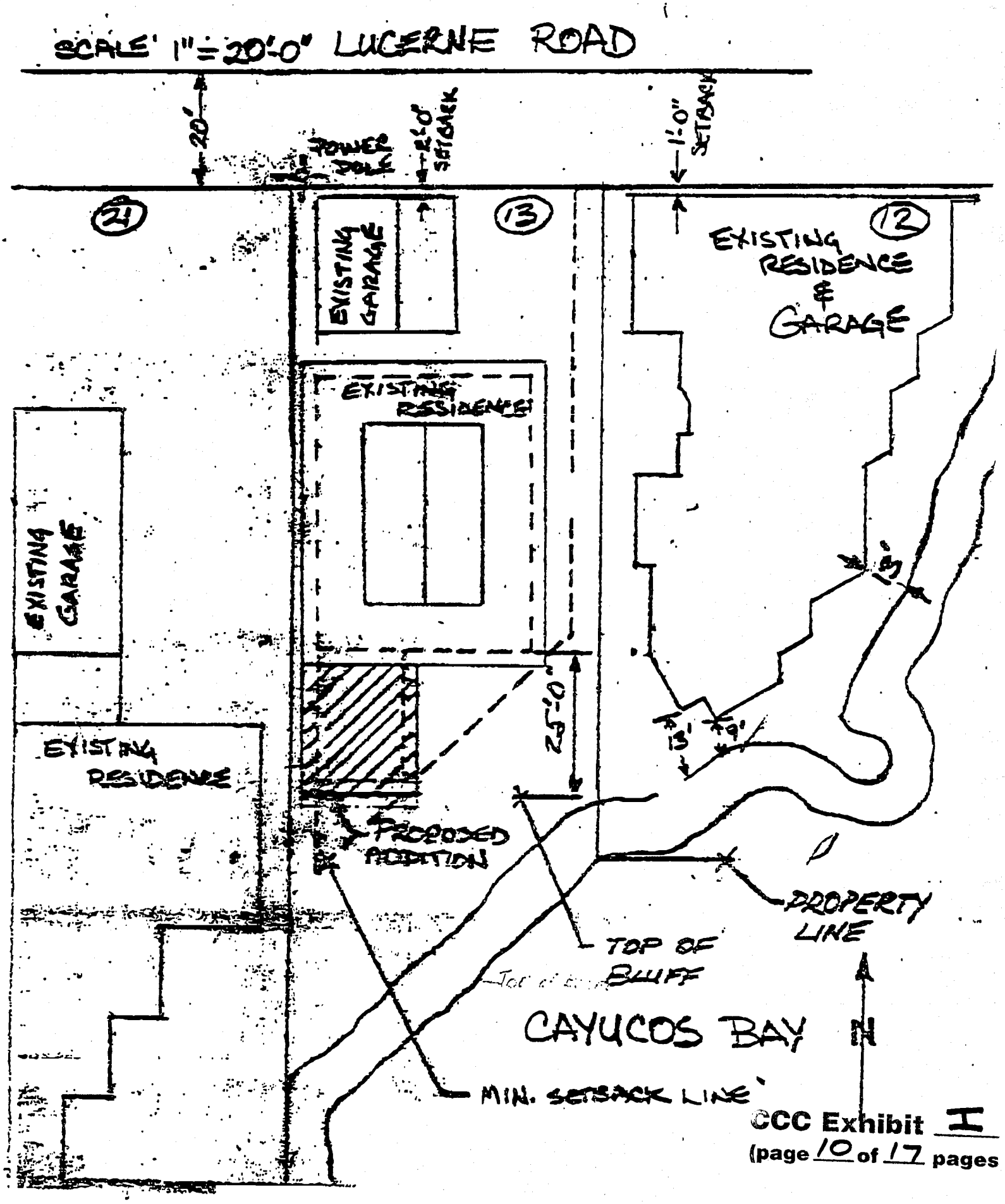
The proposed building will still have 25 to 50 feet of near-level terrace deposit between it and the seacliff rim. Foundation conditions are good, the same as beneath the existing residence. There will be no adverse geologic affect on the seacliff fronting Lot 2, on any part of the adjoining properties, or on any subsurface water conditions. The small water seepage, noted 5 years ago in the seacliff face, has since disappeared, probably because of surface runoff control measures taken since construction.

In summary, geologic conditions are at least as good and probably better than noted in the previous report, based on today's rock exposures and on the frequent inspections of the site made by the writer over the past 5 years. These geologic conditions are favorable for the construction of the proposed building addition. The addition will not be endangered by seacliff retreat during its economic life span, and probably for much longer than 100 years, under presently obtaining and expectable conditions. There will be no additional hazards created by the construction, either to the site itself or to adjoining lands.

Respectfully,

John H. Wiese
CEG Calif. #279

Exhibit 3

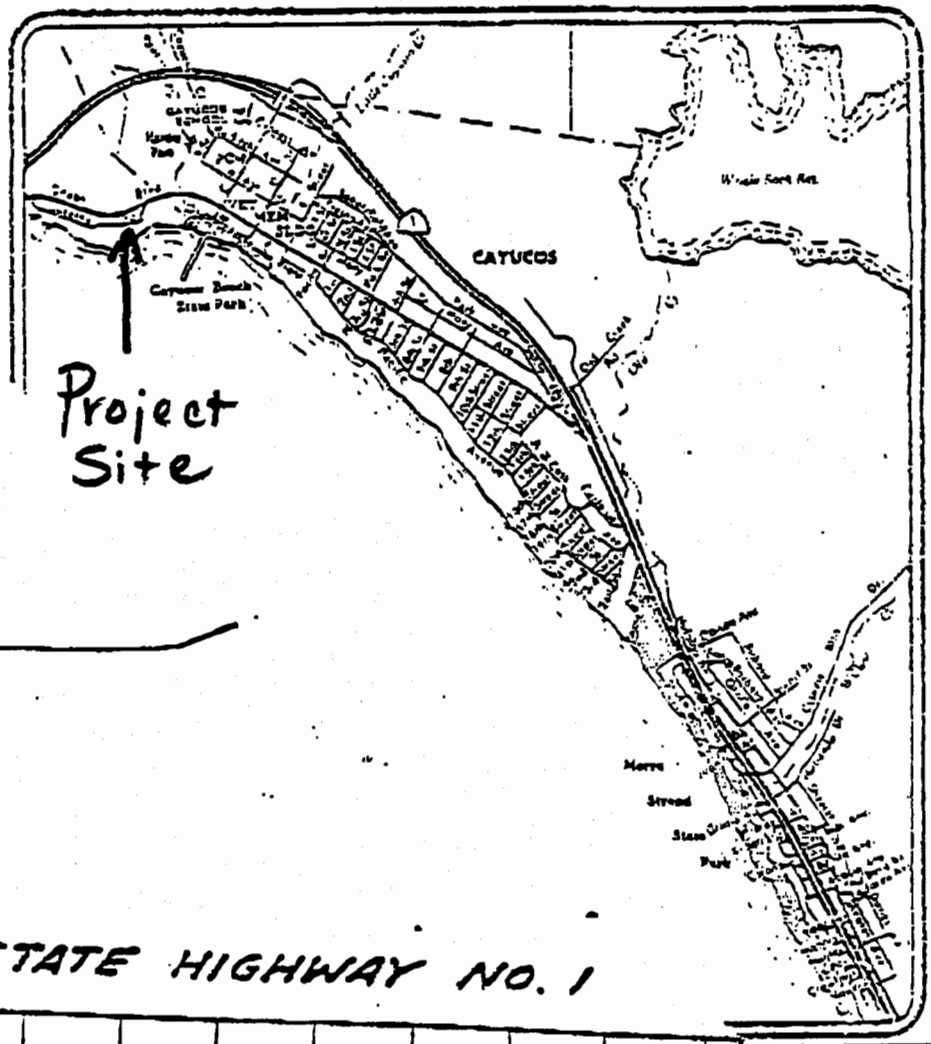


CCC Exhibit H
(page 10 of 17 pages

RECORDERS MEMO:
POOR REPRODUCTION DUE TO
QUALITY OF ORIGINAL DOCUMENT.

Exhibit 2
2247 PAGE 576

64-28



3K46
20

1" = 100'

SIONS SEE
FT

CALIF. STATE HIGHWAY NO. 1

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12
1
3K46
18

HIGH WATER LINE AS SHOWN ON THE RECORDED MAP OF THE LOCARNO TRACT

AYUCOS BAY

Project Site

CCC Exhibit I
(page 11 of 17 pages)

RECORDERS MEMO:
POOR REPRODUCTION DUE TO
QUALITY OF ORIGINAL DOCUMENT.

END OF DOCUMENT

Exhibit 1
2247 pg 577

SAFECO

SUPPLEMENTAL REPORT

SAFECO TITLE INSURANCE COMPANY

San Luis Obispo
(Office)

Harold G. Brett
175 North Ocean Avenue
Cayucos, CA. 93430

Attention:

Your No.
Our No. 122665

Gentlemen:

Supplementing our original report dated May 16, 1980, we wish to report the following matters:

Dated as of June 24 19 80 at 7:30 A.M. Margaret L. Cisco
Margaret L. Cisco
Title Officer

Please add the following to said report:

5. An Irrevocable and Perpetual Offer to Dedicate an easement for public access and passive recreation, executed by Harold G. Brett and LaVon M. Brett, affecting a portion of the herein described property, recorded June 18, 1980 in Book 2247 at page 568 of Official Records, and any other private easement of ingress and egress and other purposes, affecting said portion of the herein described property, as provided in said offer to Dedicate.

CCC Exhibit I
(page 12 of 17 pages)

SAFECO

SAFECO TITLE INSURANCE COMPANY
1043 MARSH STREET, P.O. BOX 1145, SAN LUIS OBISPO, CALIFORNIA 93406
(805) 543-8211

PRELIMINARY REPORT

- Harold G. Brett
- 175 North Ocean Avenue
- Cayucos, CA 93430

Attention:

Your No.
Our No. 122665

Dated as of May 16, 1980 at 7:30 A.M.

In response to the above referenced application for a policy of title insurance,

SAFECO TITLE INSURANCE COMPANY

hereby reports that it is prepared to issue, as of the date hereof, a California Land Title Association Standard Coverage Form Policy of Title Insurance describing the land and the estate or interest therein hereinafter set forth in Schedule A, insuring against loss which may be sustained by reason of any defect, lien or encumbrance not shown or referred to as an Exception in Schedule B or not excluded from coverage pursuant to the printed Schedules, Conditions and Stipulations of said policy form.

This report (and any supplements or amendments thereto) is issued solely for the purpose of facilitating the issuance of a policy of title insurance and no liability is assumed hereby. If it is desired that liability be assumed prior to the issuance of a policy of title insurance, a Binder or Commitment should be requested.

Margaret L. Cisco
Title Officer

CCC Exhibit I
(page 13 of 17 pages)

SCHEDULE A

The estate or interest in the land described or referred to in this schedule covered by this report is:

A Fee

Title to said estate or interest at the date hereof is vested in:

**HAROLD G. BRETT AND LaVON M. BRETT,
husband and wife, as Joint Tenants**

The land referred to in this report is situated in the State of California, County of **San Luis Obispo** and is described as follows:

Lot 2 of the LOCARNO TRACT, in the County of San Luis Obispo, State of California, according to map recorded July 30, 1925 in Book 3, at Page 60 of Maps.

**CCC Exhibit I
(page 14 of 17 pages)**

SCHEDULE B

At the date hereof Exceptions to coverage in addition to the printed exceptions and exclusions contained in said policy form would be as follows:

1. General and special taxes for the fiscal year 1980-81, now a lien, but not yet due and payable.

2. The lien for general and special taxes for the fiscal year 1979-80 securing;

Additional amounts that may hereafter be assessed within the guidelines defined in Chapters 49 and 242 of the State of California Statutes of 1979.

3. A special assessment for the project hereafter stated, amounts thereunder being collected with the County taxes;
Project : Cayucos Assessment District No. 1

4. Any adverse claim based upon the assertion that some portion of said land is tide or submerged lands, or has been created by artificial means or has accreted to such portions so created.

NOTE: General and special taxes for the fiscal year 1979-80 for proration purposes;

First Installment	:	$544.28 paid
Second Installment	:	$544.28 paid
Parcel Number	:	64-281-13
Code Area	:	063-004
Exemption	:	$1,750.00
Tax Bill Number	:	063283

5/27/80
lcf

CCC Exhibit I
(page 15 of 17 pages)

RECORDING REQUESTED BY AND RETURN TO:
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219
Attention: Legal Division

Doc No: 1997-072256

Official Records
San Luis Obispo Co.
Julie L. Rodewald
Recorder
Dec 23, 1997
Time: 08:45
[2]

Rpt No: 0009 1690

NF -1	0.00
TOTAL	0.00

CERTIFICATE OF ACCEPTANCE

This is to certify that San Luis Obispo County hereby accepts the Offer to Dedicate executed by Harold G. Brett + LaVon M. Brett on May 30, 1980, and recorded on June 18, 1980 as Instrument No. 25130 in the Official Records of the Office of the Recorder of San Luis Obispo County.

DATED: December 18, 1996

BY: DPLeib
Duane P. Leib, Director, Gen. Services
FOR: County of San Luis Obispo

STATE OF CALIFORNIA
COUNTY OF San Luis Obispo

On December 18, 1996, before me, Caryn Stumpenhaus, a Notary Public, personally appeared Duane P. Leib, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature Caryn M. Stumpenhaus

Caryn M. Stumpenhaus
Comm. #1060620
NOTARY PUBLIC CALIFORNIA
SAN LUIS OBISPO COUNTY
Comm. Exp. May 31, 1999

CCC Exhibit I
(page 16 of 17 pages)

463 Lucerne
Cayucos

ACKNOWLEDGEMENT BY CALIFORNIA COASTAL COMMISSION

This is to certify that San Luis Obispo County is a public agency/private association acceptable to the Executive Director of the California Coastal Commission to be Grantee under the Offer to Dedicate executed by Harold G. Brett & Avon M. Jameson on May 30, 1980, and recorded on June 18, 1980, in the office of the Recorder of San Luis Obispo County as Instrument No. 25130.

DATED: November 14, 1997

CALIFORNIA COASTAL COMMISSION

John Bowers

John Bowers, Staff Counsel

STATE OF CALIFORNIA

COUNTY OF SAN FRANCISCO

On 11/14/97, before me, Deborah L. Bove, a Notary Public, personally appeared John Bowers, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature Deborah L. Bove

DEBORAH L. BOVE
COMM. # 1074507
NOTARY PUBLIC-CALIFORNIA
SAN FRANCISCO COUNTY
My Comm. Expires Oct 4, 1999

2157L

CCC Exhibit I
(page 17 of 17 pages)

END OF DOCUMENT

STATE OF CALIFORNIA—THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2 219
VOICE AND TDD (415) 904-5 200
FAX (4 15) 904-5 400

14 June 2004

GEOTECHNICAL REVIEW MEMORANDUM

To: Jonathan Bishop, Coastal Program Analyst
From: Mark Johnsson, Staff Geologist
Re: Appeal A-3-SLO-01-046 (Brett)

In regard to the above-referenced appeal, I have reviewed the following documents:

1) GeoSolutions Inc 2002, "Alternative analysis for rock revetment, 463 Lucerne Road, Cayucos Area, San Luis Obispo, California", 4 p. letter report dated 15 April 2002 and signed by J. M. D. Kammer (CEG 2118 CHG 502).

2) Belsher and Becker, 2001, "Appeal A-3-SLO-01-046 (Brett Revetment, 463 Lucerne Rd., Cayucos)", 3 p. letter to Steve Monowitz dated 27 November 2001 and signed by J. W. Belsher.

3) Belsher and Becker, 2001, "Appeal A-3-SLO-01-046 (Brett Revetment, 463 Lucerne Rd., Cayucos)", 3 p. letter to Steve Monowitz dated 12 November 2001 and signed by J. W. Belsher.

4) Westland Engineering Company 2001, "Rock revetment on Brett property", 2 p. letter to John Belsher dated 31 October 2001 and signed by T. K. Orton (PE 21807).

5) GeoSolutions Inc 2001, "Review of coastal bluff geologic conditions, 463 Lucerne Road, Cayucos Area, San Luis Obispo, California", 3 p. letter report dated 5 September 2001 and signed by J. M. D. Kammer (CEG 2118 CHG 502).

6) Westland Engineering Company 2001, "Brett Minor use permit D980047P", 1 p. letter to Martha Neder dated 19 January 2001 and signed by T. K. Orton (PE 21807).

7) GeoSolutions Inc 1998, "Compliance report of final construction, rock revetment structure, 463 Lucerne Road, Cayucos area, San Luis Obispo County, California", 3 p. geologic report dated 1 December 1998 and signed by J. M. D. Kammer (CHG 502) and R. A. Pfost (CEG 1281).

8) Westland Engineering Company 1998, "Emergency permit for Brett property", 1 p. letter to Lauren LaJoie dated 13 October 1998 and signed by T. K. Orton (PE 21807).

9) GeoSolutions Inc 1998, "Geologic assessment of bluff erosion and sea cliff retreat, 463 Lucerne Road, Cayucos area of San Luis Obispo County, California", 14 p. geologic report dated 16 July 1998 and signed by J. M. D. Kammer (CHG 502) and R. A. Pfost (CEG 1281).

10) John H. Wiese, 1980, "Construction of addition to Harold Brett residence, Lot 2, Locarno Tract (3 Lucerne Road), Cayucos, California", 2 p. letter to South Central Regional Coastal Commission dated 29 January 1980 and signed by J. H. Wiese (CEG 279).

11) Central Coast Laboratories 1975, "Examination of geologic conditions, residential site near Seacliff, Lot 2, Locarbo Tract, Cayucos, San Luis Obispo, California", 4 p. geologic report dated 1 April 1975 and signed by J. H. Wiese (CEG 279).

In addition, I have discussed the site geology with the project geotechnical consultant, Mr. Michael Kammer, on several occasions. I visited the site in December, 2001.

CCC Exhibit J
(page 1 of 4 pages)

References (10) and (11) represent preliminary analyses of geologic conditions at the site, in preparation for consideration of construction at the site. The reports both conclude that the site is suitable for development. From survey data recorded on the site map, it is concluded that the sea cliff at the corners of the lot retreated approximately ten feet in the period 1925 to 1975 (or approximately 2.4 inches per year), but that there was essentially no retreat at the center of the lot. Although a large amount of seepage (described as a "spring") was observed in 1975 (reference 11), this was not present in 1980, and no mitigation measures for ground water seepage were suggested. Reference (10) concludes that the proposed addition to the structure would "not be endangered by seacliff retreat during its economic life span, and probably for much longer than 100 years, under presently obtaining and expectable conditions."

Nevertheless, reference (9), prepared in 1998, concluded that a coastal protection structure was necessary to protect the residence from bluff erosion. No information is provided in this report concerning the distance from the bluff edge of the structure to be protected, but reference (8) indicates that the structure is 20.4 feet from the bluff edge. Aerial photographs were used to estimate bluff retreat between 1952 and 1992 at a site approximately 100 feet west of the subject site. Due to lack of reference features, only a 1978 and 1992 photograph could be used to estimate retreat rates, which for that interval apparently averaged approximately 6 inches per year. It should be noted that such a time interval of only 14 years does not provide sufficient length of record to unambiguously assess long-term bluff retreat rates, but these results are roughly consistent with the results obtained from survey data in reference (9). No period of especially rapid bluff retreat was noted in reference (9) other than a "recent" block fall of approximately 10 cubic yards.

Reference (9) also makes mention of a sea cave on the subject property, near the property line with the upcoast property. Although no data are available concerning the growth rate of this sea cave, the report concludes that it represents a hazard to both the subject property and the upcoast property.

Reference (9), like reference (11), provides abundant evidence that ground water processes are active at the site. The spring noted in reference (11) was again flowing in 1998, emerging from the contact between the marine terrace deposits and the underlying Franciscan Formation sandstone bedrock at the site. The ensuing saturated conditions are cited as a significant contributor to bluff weakness and erosion. Further, surface drainage at the site generally flows over the bluff edge, exacerbating erosion. Roof gutters are described as present only some of the roofs at the site, and downspouts are only partly connected to a subsurface piping system. Accordingly, reference (9) indicates that there is much that could be done to improve site stability by controlling surface and subsurface drainage. Nevertheless, the report recommends that a rip-rap revetment be constructed to control erosion and growth of the sea cave, and makes no recommendations in its section "3.0 Conclusions and Recommendations" concerning controls on surface drainage or ground water.

A sinkhole apparently opened on the property sometime between July and 13 October 1998. Reference (8), submitted in support of an emergency permit for the previously proposed revetment, contains a figure showing an undermined area near the bluff edge, and apparently

within 15 feet of the house on the property. The revetment was constructed in November 1998, as reported in reference (7). At or near this time, the undermined area and any emergent sinkhole were apparently filled, but the manner and method of filling is not elucidated in any of the reports I reviewed, nor was it known to Mr. John Kammer when I discussed the matter with him earlier this month.

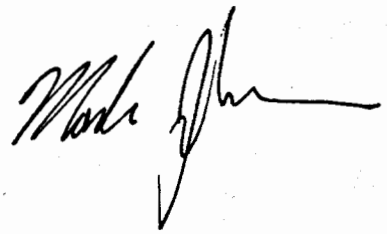
In my opinion, the undermining of the marine terrace sands and their collapse in a sinkhole could have been predicted from the drainage issues cited in the previous geologic reports. This failure appears to represent a classic "piping failure" in which groundwater emerging on the bluff face carries subsurface materials to the bluff face, resulting in the creation of a void inland of the bluff face. Mitigation measures that could reduce the likelihood of such piping failure revolve primarily around control of ground water, and include the installation of hydraugers, vertical pumping wells, clay caps, or other impermeable surfaces to limit infiltration. In my opinion, a revetment, itself a porous structure, would offer very little protection from piping failures of this type.

Several reports were prepared at the request of Commission staff to answer specific questions. Reference (6) reports on the location of the southerly property line. The report indicates that the "State owns from the mean lower-low water mark outward from shore for 3 miles..." The report then goes on to indicate that mean lower-low water at Port San Luis lies at –0.20 feet NAVD88, and that the State owns land from the –0.20 feet and seaward. In fact, State sovereign lands extends three miles seaward of the mean high tide line (e.g., Public Resource Code Section 3061). Reference (5) documents the extent of threat to the house at the site, and makes calculations concerning the amount of sand generation at the site. The latter is estimated at approximately three cubic yards per year, and I concur that this is a reasonable estimate based on the data provided. Reference (5) indicates that the sink hole that opened in late 1998 represented erosion occurring at a substantially faster rate than the measured 6-inch per year bluff retreat rate, and that this event could jeopardize the foundation of the house. I concur that a sinkhole and/or piping failure in the vicinity of the house foundation could threaten the structure, but I disagree that a revetment is an appropriate mitigation measure. If the foundation was threatened by piping, then filling of the void by compacted fill, grout, or concrete, perhaps in conjunction with underpinning of the foundation, would be the appropriate mitigation response. The rock revetment neither provides foundation support nor addresses the ground water issues associated with piping failures. Reference (4) further clarified the degree of threat that the house was under. Citing the County's Policy Discussion for Seawalls, a structure could be considered threatened and an owner could request a permit to protect the structure if the bluff had retreated to within 15 feet of the structure. Reference (4) goes on to cite the UBC concerning slope setbacks for footings. Both the County's Policy Discussion for Seawalls and the UBC provisions are meant to refer to foundation setbacks from slopes, however, not from ongoing piping failures, and so are not especially useful in evaluating the degree of threat experienced by the structure. In any case, it is my opinion that even if the foundation elements of the house were threatened by the piping/sinkhole failures, the rock revetment is not an appropriate mitigation strategy. Finally, reference (1) was prepared to provide an alternatives analysis for mitigation measures to address the stability issues at the site. No mention of drainage improvements, which in my opinion are the most important means to address piping failures, are discussed.

In my opinion it is possible, although not conclusively demonstrated, that ongoing piping failures and sinkhole collapse could have threatened the principal structure at 463 Lucerne Road in 1998. It is not clear how the sinkhole and piping failure was addressed, but it is likely that if mitigation measures did not include control of groundwater, that they will be of limited effectiveness in the long term. The revetment that was constructed at the site will not, in my opinion, have a significant effect on ongoing piping failures. It will help mitigate slumping and erosion associated with wave attack, but there is nothing in the record to indicate that this type of erosion ever has placed the house in imminent threat.

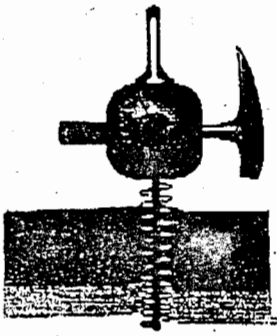
I hope that this review is helpful, please do not hesitate to contact me if you have any further questions.

Sincerely,



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

CCC Exhibit 5
(page 4 of 4 pages



Att: Grace
From John Kemmer

GeoSolutions, LLC
220 High Street
(805) 543-8539 FAX 543-8711

December 1, 1998
Project SL00345-2

Mr. Harold Brett
463 Lucerne Road
Cayucos, California 93430

Subject: Compliance Report of Final Construction
Rock Revetment Structure
463 Lucerne Road, Cayucos Area
San Luis Obispo County, California

Reference:
1. Geologic Assessment of Bluff Erosion and Sea Cliff Retreat, 463 Lucerne Road, Cayucos Area, San Luis Obispo, California. Report by GeoSolutions, LLC, dated June 26, 1998.
2. Rock Slope Protection Plan, 463 Lucerne Road, Cayucos, San Luis Obispo County, California. Grading Plan prepared by Westland Engineering Company, plans dated August 17, 1998.

Dear Mr. Brett:

INTRODUCTION

As required, we are providing this letter as confirmation that a rock revetment structure was constructed at 463 Lucerne Road, Cayucos Area of San Luis Obispo, California. Construction of the revetment was performed in compliance with the requirements of the referenced Geologic Assessment for bluff protection.

SCOPE OF WORK PERFORMED

Professional construction monitoring was performed by GeoSolutions, LLC during the construction period from November 11, 1998 through November 20, 1998. Construction was performed by G. F. Garcia and Sons, Inc., general engineering contractors of Morro Bay, California. Services provided by GeoSolutions, LLC included client and contractor consultation and observation of the following: debris removal; preparation of original slope; keyway excavation; installation of geotextile fabric, installation of rip rap; and installation of drain pipes. Revetment construction was performed in a manner consistent with the method discussed with the owner and contractor. The following conditions were verified:

December 1, 1998 Project SL00345-2

1. Starting along the western side, the existing slope was grubbed of plant material. Top of slope vegetation was allowed to remain. Beach sand and stone were removed and stockpiled for later use. Loose soil from the exposed bluff face was removed and stockpiled. One bench was cut on the slope approximately ten feet above the beach for revetment stabilization.

2. Excavation of a keyway approximately five feet below grade across the toe of the bluff was completed. This keyway was approximately 3-feet into bedrock and was approximately six feet wide.

3. Alignment of the front of the revetment was established along a line established by the contractor.

4. Geotextile filter fabric was placed down the bluff face and continued into the keyway to add stability to the entire structure.

5. Two-ton stone was staged off-site, brought to the Site by a rubber tire loader, and individually placed by a trackhoe. An initial course of stone was placed within the keyway and adjusted to allow minimal future settling.

6. Twelve-inch diameter drainpipe was connected to existing subsurface drain-conduit that extended from the top of slope. The new drainpipe was positioned to exit at the face of the rock structure.

7. Revetment construction with 2-ton class stone continued to approximately two-thirds up the face of the slope. One-ton and half-ton rock was placed on the upper third of the bluff. Smaller, 50 to 100 pound rock was placed onto the face of the revetment, filling in voids between larger stone.

8. At the approximate elevation of 28 feet, the rip rap was terminated. The revetment slope extends up at an approximate 1.5:1 (horizontal to vertical) slope.

9. A surface drain is planned to be installed along the top of the bluff to intercept surface drainage. Drainage water will be transferred to recessed drain-boxes that ultimately drain to the face of the revetment.

10. The beach area was returned to pre-construction conditions.

December 1, 1998 Project SL00345-2

RECOMMENDATIONS

The following recommendations are suggested to provide additional long-term stability to the revetment structure and Site.

- Rain gutters should be installed on all roof-lines and downspouts should connect to the existing subsurface drain that diverts water to the face of the revetment. In a similar manner, runoff collected from hardscape and vegetated areas should be collected in drains and plumbed into the main subsurface drain. All drains should be properly maintained to assure proper function.

- Animal burrows can serve to collect normal sheet flow on slopes, causing rapid destructive erosion and should therefore, be controlled or eliminated.

- All future modifications to the slopes should be made under the direction or approval of the engineering geologist or general civil engineer.

- Particular care should be made by the owner to maintain the revetment. Damage from natural or man-made causes should be repaired.

SUMMARY

Construction operations observed by the representative of GeoSolutions, LLC was during the month of November, 1998. The conclusions and recommendations contained herein regarding construction compliance have been based upon our observations. It is our opinion that the work performed has been completed in accordance with the recommendations of the referenced Geologic Assessment and Coastal Bluff Study, as well as the requirements of regulating agencies. This letter should be considered subject to review by the controlling authorities.

Thank you for the opportunity to have been of service. If there should be any questions regarding this report, please contact us at 805-543-8539.

Sincerely,

GEOSOLUTIONS LLC

REGISTERED GEOLOGIST JOHN KAMMER No. 502 CERTIFIED HYDROGEOLOGIST STATE OF CALIFORNIA

John M.D. Kammer
Project Hydrogeologist

Reviewed:

REGISTERED GEOLOGIST RICHARD A. PFOST No. CEG 1281 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

Richard A. Pfost
Senior Engineering Geologist

Cc: Mr. Terry Orton, Westland Engineers, 75 Zaca lane, Suite 100, San Luis Obispo, CA, 93401.

Mr. Alec Garcia, G.F. Garcia and Sons, Inc., 1710 Toro Creek Road, Morro Bay, CA 93442.

CCC Exhibit K
(page 3 of 49 pages)

BELSHER & BECKER

JOHN W. BELSHER
HOWARD MARK BECKER
STEVEN P. ROBERTS

ATTORNEYS AT LAW
412 MARSH STREET
SAN LUIS OBISPO, CALIFORNIA 93401

TELEPHONE (805) 542-9900
FAX (805) 542-9949
E-MAIL slolaw@belsherandbecker.com

November 12, 2001

VIA FAX & U.S. MAIL
831-427-4877

California Coastal Commission
Attn: Steve Monowitz
725 Front St., Suite 300
Santa Cruz, CA 905060

RE: Appeal A-3-SLO-01-046 (Brett Revetment, 463 Lucerne Rd., Cayucos)

Dear Mr. Monowitz:

This letter responds to your inquiries of May 18, 2001 concerning issues raised in the appeal referenced above. At the present time, we are hopeful that we can meet with Coastal Staff and resolve its informational needs in time to prepare a Staff Report for the October Coastal Commission hearing. However, should the Staff need more time, we are agreeable to a continuance for another month in order to give adequate time for preparation for the necessary report and recommendation.

With respect to the specific comments raised in your letter, we offer the follow:

1. Need for the Project.

Enclosed herewith are statements by Civil Engineer, Terry Orton of Westland Engineering and Certified Engineering Geologist, John Kammer of GeoSolutions, Inc. Both these statements provide further detail into the need for the rock revetment construction at the referenced site. Of critical note is the observance by both Westland Engineering and GeoSolutions, in the presence of the property owner, of a sink hole (or fissure), which appeared between the top of the bluff and the house (less than 15 feet from the Brett dwelling). Both observed measurements indicating this sink hole was several feet deep and had arisen as an episodic event. The concern was so great that survey crews were not allowed to operate within the area until the revetment had been constructed pursuant to the County's emergency permit. As indicated in the engineer's comments, the Uniform Building Code and County policy both indicate the dangers of such slope failures this near to a structure. County policy provides that a setback of less than 15 feet gives rise to a presumption of danger to structures. The UBC likewise precludes location of structures so near to a sink hole.

Several geologic reports have noted the occurrences of springs and seepage into the face of the bluff. The geologist indicates the best explanation for the sudden appearance of the sink hole in the backyard is the result of springs seeping under the backyard area out to the face of the bluff. As explained in geologic reports in the record, this creates a significant problem for the backyard integrity and, ultimately, the structure.

The sea cave referred to in geological reports is not of significance to this project, as it is located on property to the west. The information about the cave previously provided in geologic studies was simply to provide background for the geology of the area. There is no physical link between the "sink hole" and "the sea cave". The approximate location of this sink hole is plotted in the full-scale plan, enclosed herein.

2. Relationship of Project Mean High Tide and State Lands.

The rock revetment was constructed entirely above the mean high tide line. Surveyors were present before the construction project. The statement of Terry Orton, enclosed herein, details the confirmation by his engineering company, Westland Engineering, that the rock revetment was constructed above the mean high tide line. The enclosed Site Plan further depicts the elevation of the revetment, as surveyed and designed by Westland Engineering.

3. Impacts on Public Access.

There is no "beach" with a traveled way for the public as this site is extremely rocky and the water runs to the base of the cliff during normal conditions. As the revetment was constructed into the hillside and above the mean high tide line, above any theoretical traveled way, there was and is no impact on lateral public access. Staff's request for a "sand supply" study is responded to in the statement of John Kammer, a Certified Engineering Geologist. The amount of sand supply which would otherwise be generated by this cliff absent the present rock revetment is negligible–on the order of three (3) cubic yards per year.

4. Project Alternatives.

Alternatives are not available to the construction of the rock revetment.

There is no ability to move the existing dwelling. The structure is already sited as far away from the bluff as possible, and, in fact, the property owner was granted a variance into the front yard setback by action of the Coastal Commission and the County in September, 1976. Moreover, the house is of a concrete slab construction, with utilities and conduit running through the concrete slab. Therefore, it would be an engineering nightmare (or, perhaps near impossibility) to replace conduit and plumbing eliminated by the demolition of portions of the property in order to accommodate the necessary setback from the area of the sink hole. Accordingly, the "alternatives" suggested hypothetically by staff of relocation of the structure and filling of the sea cave are not available. Only the rock revetment could protect against the continuing hydrologic influences of the spring in the backyard area, which was threatening the existing structure and leading to a potentially catastrophic and life-threatening event.

As a final note, great care was taken by the owners to construct the revetment with local rock, following the natural topography of the cliff face. Rock was individually hand-placed into the face of the cliff under direction of a geologist. As a result, every attempt was made to make the revetment aesthetically compatible with its rocky surroundings.

Please contact me to discuss the foregoing and the possibility of a coordinated site visit.

Sincerely,

John W. Belsher

JWB/ab

Encls

cc: client (w/out encls)
Terry Orton (via fax)
John Kammer (via fax)

CCC Exhibit K
(page 6 of 49 pages)

WESTLAND
ENGINEERING COMPANY
CONSULTING CIVIL ENGINEERING & SURVEYING

75 ZACA LANE, SUITE 100 • SAN LUIS OBISPO, CA 93401
TELEPHONE: (805) 541-2394 • FAX: (805) 541-2439

Mr. John Belsher
Belsher & Becker
Attorneys at Law
412 Marsh Street
San Luis Obispo, California 93401

October 31, 2001

RE: ROCK REVETMENT ON BRETT PROPERTY

Dear Mr. Belsher:

The following is information regarding our preparation and processing of the plans for the above project. In the early part of 1998 Richard Pfost of GeoSolutions, Inc. and I went to the site at the request of Mr. Harold Brett to observe a failure in the soil in his back yard. While at the residence, we went into the back yard with Mr. Brett to observe the failures. we observed one failure which was a surface failure in the southwesterly portion of the site. At another area of the site and much closer to the residence, Mr. Brett showed us a failure where a sink hole (see the attached sketch) was formed. Mr. Brett took a 2 inch by 4 inch stud and pushed it several feet down into a hole in the yard. He indicated that he had partially stepped into this hole and warned us to stay away from this hole since he felt it was a hazard.

In order to determine if this project was eligible for a permit I reviewed the guidelines from the codes. At this time the County was working under a set of guidelines that had been established in a staff report on a Policy Discussion for Seawalls and presented to the Planning Commission. The Policy established criteria whereby a permit could be granted for protection of a structure adjacent to a bluff. The Policy indicated that if the bluff was within 15 feet of the structure and the request is supported by a Geologist Report, the structure could be considered threatened and the owner can request a permit to protect the structure.

The UBC in section 1806.5.3 indicates that the footing *shall be founded in firm material with an embedment and setback from the slope surface sufficient to provide vertical and lateral support for the footing without detrimental settlement.* This was a concern since we did not know the extent of the undermining of the site.

The sink hole appeared to be less than fifteen feet away from the structure. GeoSolutions, Inc. had a Geologist review the information and he felt we should go forward with both an

emergency permit and a regular permit. Since Mr. Brett did not want our survey crew near the sink hole, due to his concerns for safety, I estimated the approximate location of the sink hole and attached the sketch to a letter that we prepared and sent to the County on October 13, 1998 (see attached letter).

When we performed the field work for the site we tied into the National Geodetic Survey Bench Mark that was near the site. This Bench Mark was shown on the Grading Plan for the site. This Bench Mark was used to determine the location of the Mean High Tide Line. This line is shown on the Grading Plan. We then designed the revetment with the assistance of the Engineering Geologist to be constructed within the lot above the Mean High Tide.

Sincerely yours,

Terence K. Orton
PE 21,807 (Expires 9-30-01)

encl. Sketch showing sink hole that was attached to October 13, 1998 letter to the County.

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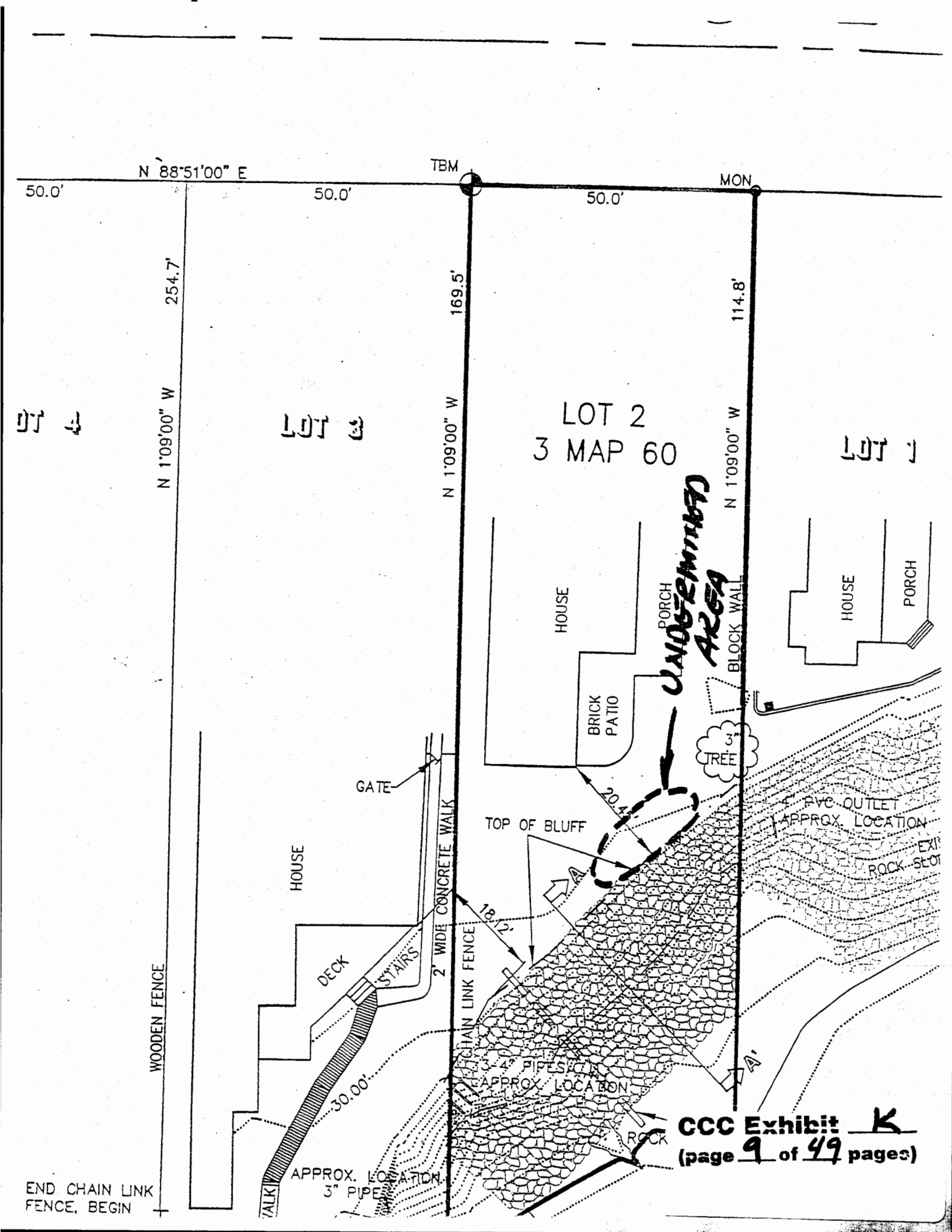
(page 8 of 49 pages)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LOT 1
HOUSE
PORCH
BLOCK WALL
HOUSE
PORCH
BRICK PATIO
UNDISTURBED AREA
3" TREE
GATE
20.4'
TOP OF BLUFF
4" PVC OUTLET APPROX. LOCATION
ROCK SLOPE
HOUSE
2' WIDE CONCRETE WALK
18.1'
A
DECK
STAIRS
WOODEN FENCE
CHAIN LINK FENCE
3-4" PIPES IN APPROX. LOCATION
A'
30.00'
ROCK
APPROX. LOCATION 3" PIPE
END CHAIN LINK FENCE, BEGIN
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WESTLAND
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October 13, 1998

Ms. Lauren LaJoie
County Planning Department

RE: EMERGENCY PERMIT FOR BRETT PROPERTY

Dear Ms. LaJoie:

I wanted to mention again to you that the property in question has a problem that can not be quantified. Mr. Brett went into his yard, near the location I have circled on the map, and nearly fell into an hole. Mr. Brett used a long pole and stuck it into the earth, he indicated the pole went down very deep. This area is undermined and could not be accurately identified by our survey crew.

You can understand that Mr. Brett is very concerned that the yard could give way. Please take this into advisement when considering the emergency permit.

Sincerely yours,

Terence K. Orton

encl.

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GeoSolutions, INC.

220 High Street, San Luis Obispo, CA 93401
(805) 543-8539, 543-2171 fax
info@GeoSolutions.net

September 5, 2001
Project SL00345-3

Mrs. Harold Brett
463 Lucerne Road
Cayucos, California 93430

Subject: Review of Coastal Bluff Geologic Conditions
463 Lucerne Road, Cayucos Area
San Luis Obispo County, California

Dear Mrs. Brett:

INTRODUCTION

As requested, GeoSolutions, Inc. has reviewed a May 18, 2001 letter submitted by the California Coastal Commission regarding Appeal A-3-SLO-01-046, the Brett rock revetment located at 463 Lucerne Road, Cayucos area of San Luis Obispo County, California. A rock revetment has been constructed at the property and it is our understanding that the Coastal Commission has requested additional information regarding geologic conditions at the Site. Specifically, the Coastal Commission has requested discussion regarding the following: 1) sand generation from the Site; and 2) risk assessment of the existing house prior to construction of the rock revetment.

SAND GENERATION

Sand generation from the Site is primarily from erosion of Marine Terrace Deposits comprising the upper four to five feet of the bluff. This material is composed of gravel, sand, silt, and clay. Bedrock is comprised of greenstone, gabbro, and greywacke sandstone. Since the bedrock erodes mainly by block fall, immediate sand generation from the bedrock is not realized. Additionally, these types of rocks primarily weather to clay components rather than weathering directly to sand.

A sample of Terrace Deposit was collected from the Site bluff and a sieve analysis was conducted according to test method ASTM C136-96a to verify sand content. The laboratory analysis data sheet is provided at the end of the report. Approximately 60 percent of the material is sand while approximately 40 percent of the material is clay and silt. Sand generation at the site can be calculated utilizing the assumptions of bluff erosion rates of 6 inches per year, thickness of Terrace Deposits (average of 4.5 feet), density of soil (approximately 90 percent), and length of bluff (approximately 65 feet).

(Bluff length) x (height of terrace deposits) x (density of soil) x (yearly bluff loss) x (percent sand) =
(65 feet) x (4.5 feet) x (90 percent) x (0.5 feet) x (60%) = 78.6 cubic feet

It appears that approximately 79 cubic feet (3 cubic yards) of sand are potentially generated at the site per year based upon a retreat rate of 6 inches per year.

THREAT TO EXISTING STRUCTURE

As stated in the July 16, 1998 Geologic Assessment of Bluff Erosion and Sea Cliff Retreat (hereby termed "1998 Bluff Study") a bluff retreat rate of 6-inches per year has been established for the property. This rate was obtained by evaluating retreat rates from air-photo evaluation and is an average rate for the bluff.

A report prepared by Central Coast Laboratories, 1975, details the geologic conditions at the site at that time. The report states "there are no sea caves present, nor sag area on the terrace which might suggest collapse of the underlying rocks behind the cliff edge, nor any sea stacks rising through the terrace." Several years later, An October 13, 1998 letter from Westland Engineering Company states "Mr. Brett went into his yard, near the location I have circled on the map, and nearly fell into an (sic) hole." On October 20, 1998, GeoSolutions, Inc. issued a letter stating "site conditions associated with the sea cave and rear yard "sink hole" demonstrate the extent of bluff erosion. The undermined area identified in the referenced letter could widen dramatically this coming winter, threatening the loss of support to the foundation. It is imperative that the bluff be re-supported and protected as recommended in the referenced Geologic Assessment at the earliest possible date." From the history of these statements, an immediate concern arose regarding the opening of a sink-hole that was not apparent during earlier geologic assessments of the property (in 1975) or during conduct of the 1998 Bluff Study. An emergency permit application was filed based upon the massive undermining of the bluff at the sink-hole. Erosion associated with the sink-hole was occurring at a substantially faster rate than the measured 6-inch erosion rate and it was our opinion that this event could jeopardize the foundation of the house.

It is our professional opinion that the creation of the sink-hole is a direct result of weakness of the immediate geological conditions in the central portion of the site bluff and that the spring within this bluff exacerbates the instability of this area of the bluff. The risk to the structure appeared immediate due to the accelerated denudation occurring within the central portion (sink-hole area) of the bluff. It appears that there is a hydraulic link between development of the sink-hole and groundwater discharge within the face of the cliff. The immediacy (emergency permit) for rock revetment construction was predicated on the development of the sink-hole at the property and the threat this sink-hole could have on the foundation of the house.

If there should be any questions regarding this report, please contact us at 805-543-8539.

Sincerely,
GEOSOLUTIONS, Inc.

REGISTERED GEOLOGIST JOHN M.D. KAMMER NO. 2118 CERTIFIED ENGINEERING GEOLOGIST

John M.D. Kammer, C.E.G. #2118, C.H.G. #502
Project Engineering Geologist

Cc: Terry Orton and John Belsher

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(page 12 of 49 pages)

REFERENCES

GeoSolutions, Inc., October 20, 1998, Emergency Permit for Bluff Support, 1 page letter.

Geologic Assessment of Bluff Erosion and Sea Cliff Retreat, 463 Lucerne Road, Cayucos Area, San Luis Obispo, California. Report by GeoSolutions, LLC, dated June 26, 1998.

Rock Slope Protection Plan, 463 Lucerne Road, Cayucos, San Luis Obispo County, California. Grading Plan prepared by Westland Engineering Company, plans dated August 17, 1998.

Examination of Geologic Conditions, Residential Site Near Seacliff, Lot 2, Locarno Tract, Cayucos, San Luis Obispo County, California, report by Central Coast Laboratories, April 1, 1975, signed by Mr. John Wiese, CEG.

Westland Engineering Company, October 13, 1998, Emergency Permit for Brett Property, to Ms. LaJoie, San Luis Obispo County Planning Department, regarding Brett property, signed by Mr. Terence Orton.

98.018
Brett Harold

GeoSolutions, INC.

220 High Street, San Luis Obispo, CA 93401
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info@GeoSolutions.net

April 15, 2002
Project SL00345-3

Mrs. Harold Brett
463 Lucerne Road
Cayucos, California 93430

Subject: Alternative Analysis for Rock Revetment
463 Lucerne Road, Cayucos Area
San Luis Obispo County, California

Dear Mrs. Brett:

1.0 INTRODUCTION

As requested, GeoSolutions, Inc. has completed this Alternative Analysis for the existing rock revetment structure located at 463 Lucerne Road, Cayucos area of San Luis Obispo County, California. The California Coastal Commission has requested this analysis to understand alternatives available to Site stabilization in lieu of the rock revetment.

It is the opinion of GeoSolutions, Inc. that there was an immediate threat to the existing residence due to site conditions associated with a sink hole that opened within the rear yard (that area between the bluff and the residence). It was determined that the undermined area could widen dramatically in the coming winter, threatening the loss of support to the foundation of the residence. GeoSolutions, Inc. made a recommendation to re-support and protect the bluff at the earliest possible date. An emergency permit application was filed based upon the massive undermining of the bluff at the sink-hole. Erosion associated with the sink-hole was occurring at a substantially faster rate than the measured 6-inch erosion rate at the bluff and it was our opinion that this event could jeopardize the foundation of the house. As required by the Coastal Element to the General Plan for the County of San Luis Obispo, alternatives to a rock revetment structure were considered at the time, but the revetment was considered the option that provided the most reasonable protection to the structure. Most reasonable was considered to be the least evasive, both asthetically and phyisically. Timeliness was a priority for this project; risk to the structure appeared immediate due to the accelerated cavitation occurring within the central portion (sink-hole area) of the bluff.

2.0 ALTERNATIVE ANALYSIS

Several alternatives to a rock revetment structure were considered for the Site prior to obtaining a permit to build a rock revetment structure. These alternatives are presented below.

2.1 NO ACTION

Based upon our nearly 25 years of experience providing geological investigations along the coastal bluff, the first consideration for any coastal site is "no action". Due to the constraints of the Coastal Act, loss of property is insufficient for action. This is explained to all clients prior to discussion and consideration of sites. Existing structures must be threatened for there to be consideration of support or protection. Verification of direct threat to the residence was confirmed, requiring action to protect. The "no action" alternative was considered but was not viable for this property.

2.2 CONCRETE FILLING OF VOID

A marginal engineering alternative would have been to fill the sink-hole with concrete. This would provide a temporary solution to an on-going, long-term stability issue of the foundation at the house. It is our professional opinion that the creation of the sink-hole is a direct result of structural or petrologic weakness of the immediate geological conditions in the central portion of the site bluff and that the local spring exacerbates the instability. It appears that there is a hydraulic link between development of the sink-hole and groundwater discharge within the face of the cliff. Filling of the sink-hole with concrete would not address groundwater discharge at the bluff face and, ultimately, would not address stability at the bluff. Concrete filling would uncontrollably divert groundwater to an alternate area and face of bluff. The result of this permeability "dam" would be to concentrate the ground water beneath the house or neighbor's house. This option was considered as an alternative but was associated with professional liability issues that could not be overcome (mainly, filling of the void could have been considered negligence by not providing adequate residence protection from the larger subsurface and bluff condition).

2.3 CAST-IN-PLACE CONCRETE WALL

The decision not to construct a cast-in-place concrete wall at the coastal bluff was at the lead of San Luis Obispo County planners. This option was not a viable alternative due to resistance from County planners as to the artificial appearance with this type of structure. Enforcement of County policy dictated that this alternative was not to be considered. In addition, it was the engineers and geologist opinion that local rock would create a natural appearance and blend with the coastal geology and neighboring revetment structure versus a concrete structure.

2.4 BUTTRESS FILL

A buttress fill at the bluff would temporarily act to stabilize the slope but would not allow water to drain through as well as a rock revetment. Additionally, engineered fill associated with a buttress could not withstand repeated wave action and would create accelerated sediment loading to the immediate oceanic environment, possibly disturbing aquatic life. The in-place rock revetment acts as a buttress fill but allows water within the bluff to freely move through the wall. Additional sediment loading associated with the rock of the revetment is not a concern with the revetment.

2.5 SURFACE RETAINING STRUCTURE

A surface retaining structure such as a railroad-tie wall or concrete block wall would provide only a temporary solution to a larger problem in the bluff. The surface retaining structure would not offer support of that area associated with the spring in the central portion of the bluff and could later be undermined by the spring. A surface retaining structure is considered a "landscaping improvement" and not an adequate, long-term engineered solution to the coastal bluff weakness. The land use requirement is to provide a design that would be stable for 75 years. Landscape improvements do not comply with this requirement.

2.6 RESIDENCE SUPPORT

Subsurface support of the residence was considered during initial review of Site due to the proximity of the sinkhole to the foundation. Geotechnical solutions such as underpinning, pressure grouting, or caissons, to stabilize the residence were investigated. However, there would be professional negligence to exclude bluff stabilization with residence stabilization. We would be remiss to only suggest residence stabilization to an obvious problem occurring at the bluff.

2.7 RESIDENCE RELOCATION

While not necessarily a geotechnical issue, relocation of the house was considered and rejected. The structure is already encroaching, by variance, into the front yard setback and against a roadway embankment. Since the house is on a slab foundation, it would be impractical to move.

3.0 CONCLUSIONS

Possible solutions in lieu of a rock revetment structure were considered for an emergency permit to construct a rock revetment at the Site. The instability was recognized in the face of the bluff but the development of the sink-hole prompted the emergency permit process. Unconventional filling of the void would create new problems, posing a new threat to structures. This unacceptable alternative is not permitted by Coastal Commission requirements as enforced by the County of San Luis Obispo.

As professionals, we must consider the liability associated with each corrective alternative recommended for mitigation. It was our goal to consider all options but to recommend for design that option that reduces the potential for structural damage (to the house), in a cost effective manner, and conform to the general guidelines of the California Coastal Commission and County of San Luis Obispo. It is our opinion that the rock revetment structure offered the most effective manner to protect and support at the residence while maintaining asthetic appearance similar to the surrounding coastline within a cost effective framework.

If there should be any questions regarding this report, please contact us at 805-543-8539.

Sincerely,
GEOSOLUTIONS, Inc.

John M.D. Kammer
Certified Engineering Geologist #2118
Certified Hydrogeolgist #502
Registered Geologist #6295

Cc: Terry Orton, Westland Engineering
John Belsher, Belsher & Becker

\\Betty\geosolutions\Geology\Geology & Hydrology\Sea cliff erosion\SL00345 Brett seawall Cayucos\SL345-3 geo review\Coastal Commission review 4-15-02 let.doc

REFERENCES

GeoSolutions, Inc., October 20, 1998, Emergency Permit for Bluff Support, 1 page letter.

Geologic Assessment of Bluff Erosion and Sea Cliff Retreat, 463 Lucerne Road, Cayucos Area, San Luis Obispo, California. Report by GeoSolutions, LLC, dated June 26, 1998.

Rock Slope Protection Plan, 463 Lucerne Road, Cayucos, San Luis Obispo County, California. Grading Plan prepared by Westland Engineering Company, plans dated August 17, 1998.

Examination of Geologic Conditions, Residential Site Near Seacliff, Lot 2, Locarno Tract, Cayucos, San Luis Obispo County, California, report by Central Coast Laboratories, April 1, 1975, signed by Mr. John Wiese, CEG.

Westland Engineering Company, October 13, 1998, Emergency Permit for Brett Property, to Ms. LaJoie, San Luis Obispo County Planning Department, regarding Brett property, signed by Mr. Terence Orton.

GeoSolutions, Inc., September 5, 2001, Review of Coastal Bluff Geologic Conditions, 463 Lucerne Road, Cayucos Area, San Luis Obispo County, California.

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(page 17 of 49 pages)

April 19, 2005
E0145

Mr. and Mrs. George Brett
463 Lucerne Road
Cayucos, California

SUBJECT: **Geotechnical Analysis – Stone Revetment**
RE: 463 Lucerne Road
Cayucos, California

REFERENCE: GeoSolutions, Inc., Boring Logs, Laboratory Test Results, and Site Geologic Map and Cross Section of 463 Lucerne Road, Cayucos, California.

Dear Mr. and Mrs. Brett:

This letter report presents the results of our geotechnical analysis of the stone revetment installed at the back of the residence of 463 Lucerne Road, in Cayucos, California. We understand that a large portion of the coastal bluff behind your residence failed into the ocean and that the revetment was constructed on an emergency basis to provide buttress support to protect the residence from additional bluff failure into the Pacific Ocean. In the following letter report, we describe the project, our purpose and scope of work, results of our slope stability analysis, conclusions and recommendations regarding slope stability, and the limitations of our services.

PROJECT DESCRIPTION

During intense winter storms of February 1998, a significant section of the backyard at 463 Lucerne Road lost stability and slipped into the Pacific Ocean. In an attempt to provide an emergency buttress and reduce the risk associated with the potential for additional sections of the backyard and residence from slipping into the ocean, a stone revetment was constructed at the back of the residence. The revetment consists of a stack of large, resistant rocks beginning at the wave-cut terrace below the backyard and continuing up to the level of the residence. The height of the revetment is approximately 31 feet and the face is sloped at approximately 1.5:1 (H:V).

GeoSolutions, Inc. (GeoSolutions) performed the subsurface investigation, laboratory testing, engineering geologic mapping and preparation of the engineering geologic cross section and Westland Engineering, Inc. performed the topographic surveying at the site. Our analysis and conclusions are based on the assumption that

the engineering mapping and engineering geologic cross section, borings, and laboratory testing by GeolSolutions are accurate and represent the site conditions.

PURPOSE AND SCOPE OF WORK

The purpose of our geotechnical analysis was to: 1) conduct a slope stability analysis of the failed bluff conditions to formulate conclusions regarding the necessity of the emergency revetment; and 2) conduct additional slope stability to assess the effectiveness of the revetment in buttressing the slope.

The specific scope of work performed for our investigation included the following tasks:

1) Site reconnaissance;
2) Review of geologic information and laboratory test results;
3) Slope stability analyses and geotechnical engineering analysis; and
4) Preparation of this summary letter report.

SLOPE STABILITY ANALYSIS

Computer Program

We used the computer program UTEXAS3 (by Shinoak Software of Austin, Texas) to perform the slope stability analysis. In all of the analyses performed, we utilized the Spencer's method of analysis as modified by Dr. Stephen Wright (1975). The Spencer's method program option was selected to determine the Factor of Safety (FS) of a slope using both circular and noncircular failure surfaces. The sliding mass is divided into slices, and all interslice side forces are parallel to each other. Spencer's method satisfies equilibrium conditions for overall moment, individual slice moment, and vertical and horizontal forces. The noncircular surfaces to be analyzed are determined by the program using a method similar to that developed by Duncan and Celestino (1981). In this procedure, the shear surface is systematically moved from an initial starting position, which is selected by the investigator, until a minimum Factor of Safety (FS) is calculated. The circular failure surfaces to be analyzed were initially selected in an attempt to evaluate results from the noncircular surfaces, and then iterations were conducted until the most critical circular failure surface was determined.

The FS is essentially equal to the resisting forces divided by the driving forces. Failure theoretically occurs when the FS equals unity, and the standard of practice for a stable slope (under static conditions) is considered to be a FS equal to or greater than

1.5. Under seismic conditions (using a pseudo static coefficient equal to 0.15) a slope is generally considered stable with a FS equal to or greater than 1.1.

Soil Parameters

Terrace Deposits – For the shear strength of the Terrace Deposits material we used GeoSolutions, Inc. laboratory test results from direct shear tests on an "undisturbed" sample from the small-diameter borings at a depth of 2.0 feet. These tests resulted in shear strength parameters of C′ = 979 pounds-per-square-foot (psf), Phi = 9.5 degrees, which we used for our analysis.

Franciscan Complex Graywacke Bedrock – For the shear strength of the Graywacke bedrock material we used laboratory test results from direct shear tests on an "undisturbed" sample from the small-diameter borings at a depth of 14.0 feet. These tests resulted in shear strength parameters of C′ = 144 psf, Phi = 34 degrees, which we also used for our analysis.

Stone Revetment – For the shear strength of the Revetment material, we assumed conservative shear strength parameters of C′ = 0, Phi = 60 degrees, which we used for our analysis.

Unit Weight – Unit weights were based on numerical averages of laboratory test data, and when no data was available, we used engineering judgment. We used the following values: 1) 133 pcf for Terrace Deposit material; 2) 134 pcf for Graywacke bedrock material; and 3) 125 pcf for the Stone Revetment.

Material Strength Parameters Used in Analysis

Material Type	Moist Unit Weight (pcf)	Effective Friction Angle (degrees)	Effective Cohesion (psf)
Terrace Deposit	133	9.5	979
Graywacke Bedrock	134	34	144
Stone Revetment	125	60	0

Method of Analysis – Loading Conditions

Slope stability analysis was performed on the GeoSolutions engineering geologic cross section that extends across the property. The geologic contacts and phreatic surface utilized in the slope stability program were based on the Geosolutions

engineering geologic cross section. The topography used was also based on the Geosolutions engineering geologic cross section.

The results of slope stability analysis are presented in the following table:

Slope Stability Results

Condition	Distance from Slope Face Failure Plane Daylights	Factor of Safety
Without Revetment - NonCicular	64 feet	1.5
	56 feet	1.1 w/ Seis. Coef 0.15
	40 feet	1.0
Without Revetment - Circular	64 feet	1.62
	64 feet	1.1 w/ Seis. Coef 0.15
	40 feet	1.1
With Revetment - Circular	55 feet	2.0
	25 feet	1.5
	25 feet	1.1 w/ Seis. Coef 0.15

Based on the above described parameters and our analysis, it appears that the stone revetment buttress results in reducing the upslope projection of hypothetical unstable slope conditions (FS<1.5 static and FS<1.1 w/ Seismic Coefficient = 0.15) by approximately 40 feet. This is calculated by comparing the limit of the stable slope condition based on the daylight location of a hypothetical failure surface without the buttress (64 feet away from the slope face) to the limit of a stable slope condition based on the same criteria with the buttress (~25 feet away from the slope face).

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

Based on our analysis it appears that the revetment provides necessary buttressing support for protection of the residence and substantially reduces the potentially for an additional landslide/bluff failure which would potentially adversely impact the residence.

We recommend that the California Coastal Commission approve the final Coastal Development Permit for the buttress.

In order to reduce the potential for surface water infiltration and improve the stability of the slope, we recommend that surface water around the residence be collected and discharged into the municipal storm drain system if possible. We also

recommend that the resident install an array of survey monuments which can be easily monitored on a regular basis in order to detect potential slope instability before it manifests as full-scale failure. In the event that movements/distress (cracking and/or separations of concrete flatwork) are observed, the homeowners should immediately notify GeoSolutions or CSA so that supplemental precautions can be implemented.

LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted geotechnical engineering principles and practices. No warranty, expressed or implied, or merchantability of fitness, is made or intended in connection with our work, by the proposal for consulting or other services, or by the furnishing of oral or written reports or findings.

This report and analysis are based on the assumption that the GeoSolutions engineering geologic mapping, engineering geologic cross section, subsurface exploration and laboratory test results are accurate and represent site conditions. CSA assumes no responsibility for the accuracy of this portion of the work.

We trust that this provides you with the information that you need at this time. If you have any questions, or need additional information, please call.

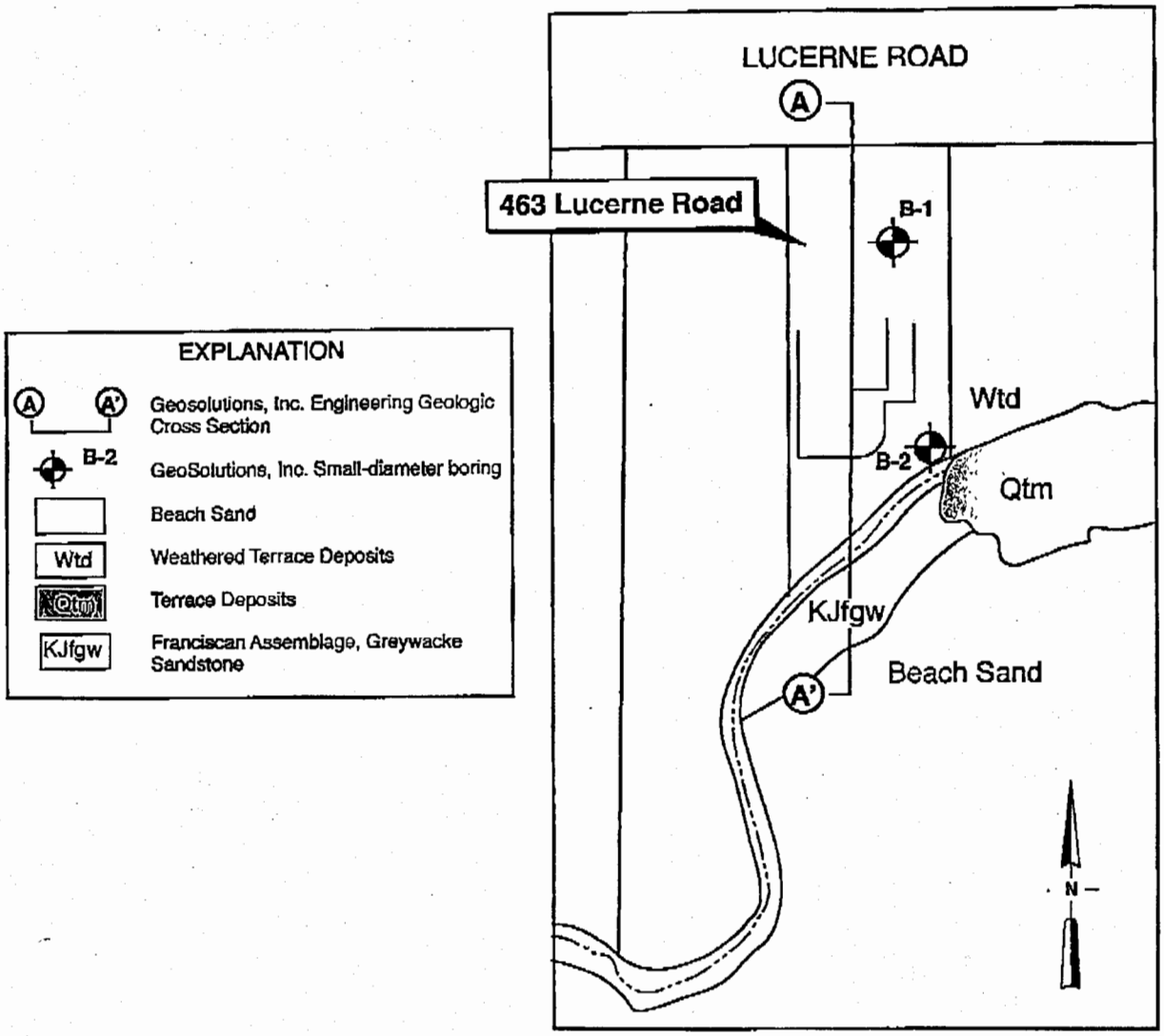
Respectfully submitted,
COTTON, SHIRES AND ASSOCIATES, INC.

David T. Schrier
Senior Geotechnical Engineer
GE 2334

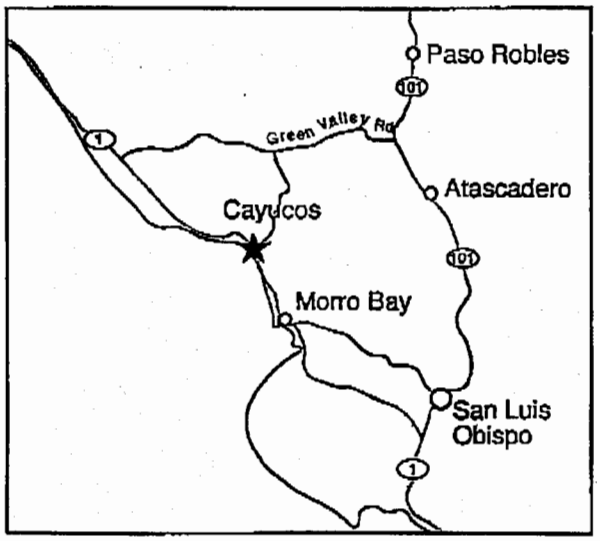
Patrick O. Shires
Principal Geotechnical Engineer
GE 770

POS:DTS

Attachment: Figures 1 through 5



SITE PLAN



VICINITY MAP

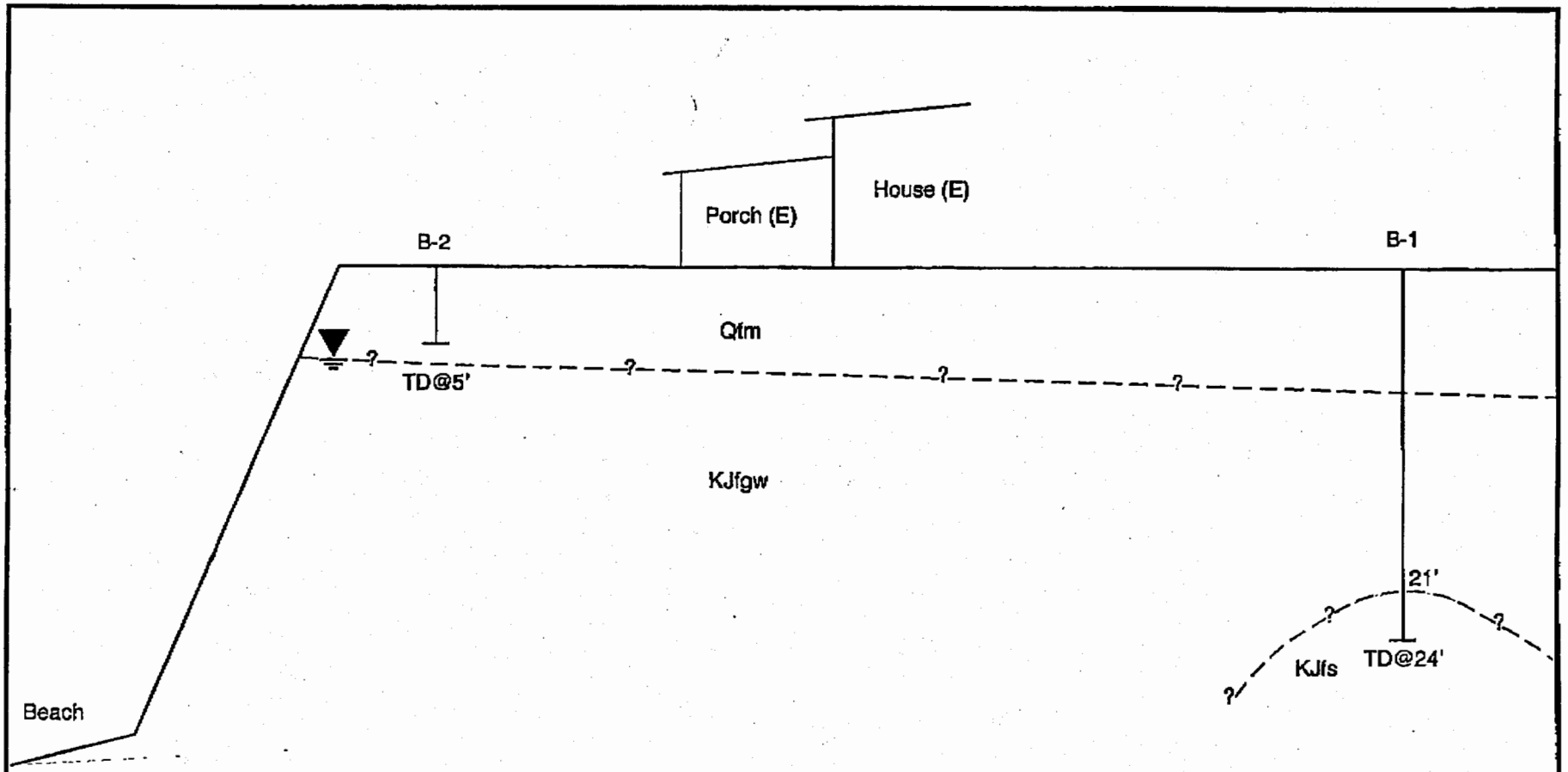
COTTON, SHIRES & ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

SITE PLAN, VICINITY MAP AND BORING LOCATION MAP

463 LUCERNE ROAD, CAYUCOS, CALIFORNIA

GEO/ENG. BY	SCALE	PROJECT NO.
DTS	NTS	E0145
APPROVED BY	DATE	FIGURE NO.
POS	APRIL 2005	1

CCC Exhibit K
(page 23 of 49 pages)



EXPLANATION

MAP SYMBOLS

- Ground water elevation identified by GeoSolutions, Inc.
- Geologic contact, dashed where approximate, queried where unknown
- B-1 / TD@24' — Location of GeoSolutions, Inc. small-diameter exploratory boring

EARTH MATERIALS

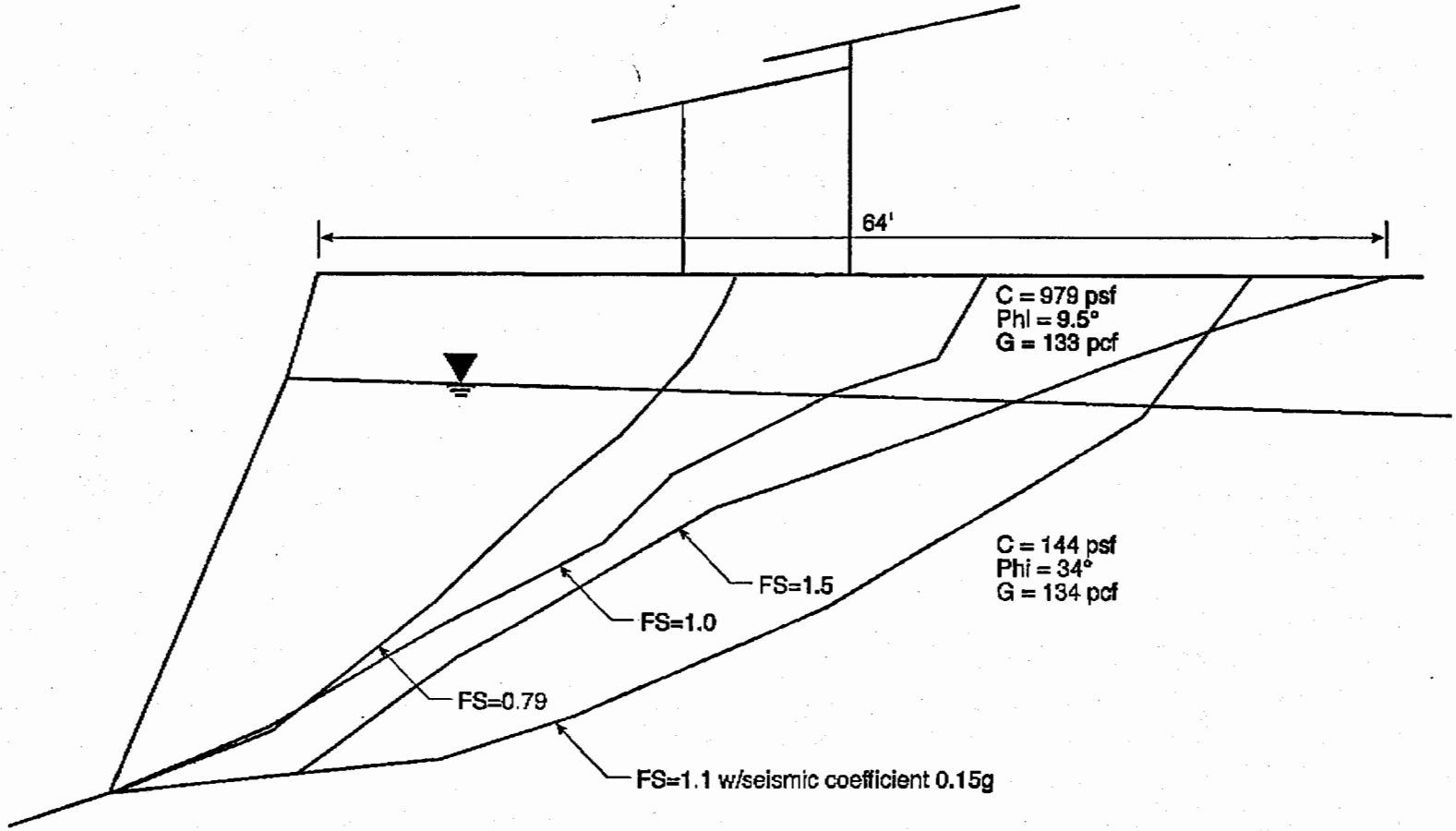
Qfm	Terrace deposit material
KJfgw	Franciscan complex greywacke
KJfs	Franciscan complex serpentinite

COTTON, SHIRES & ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

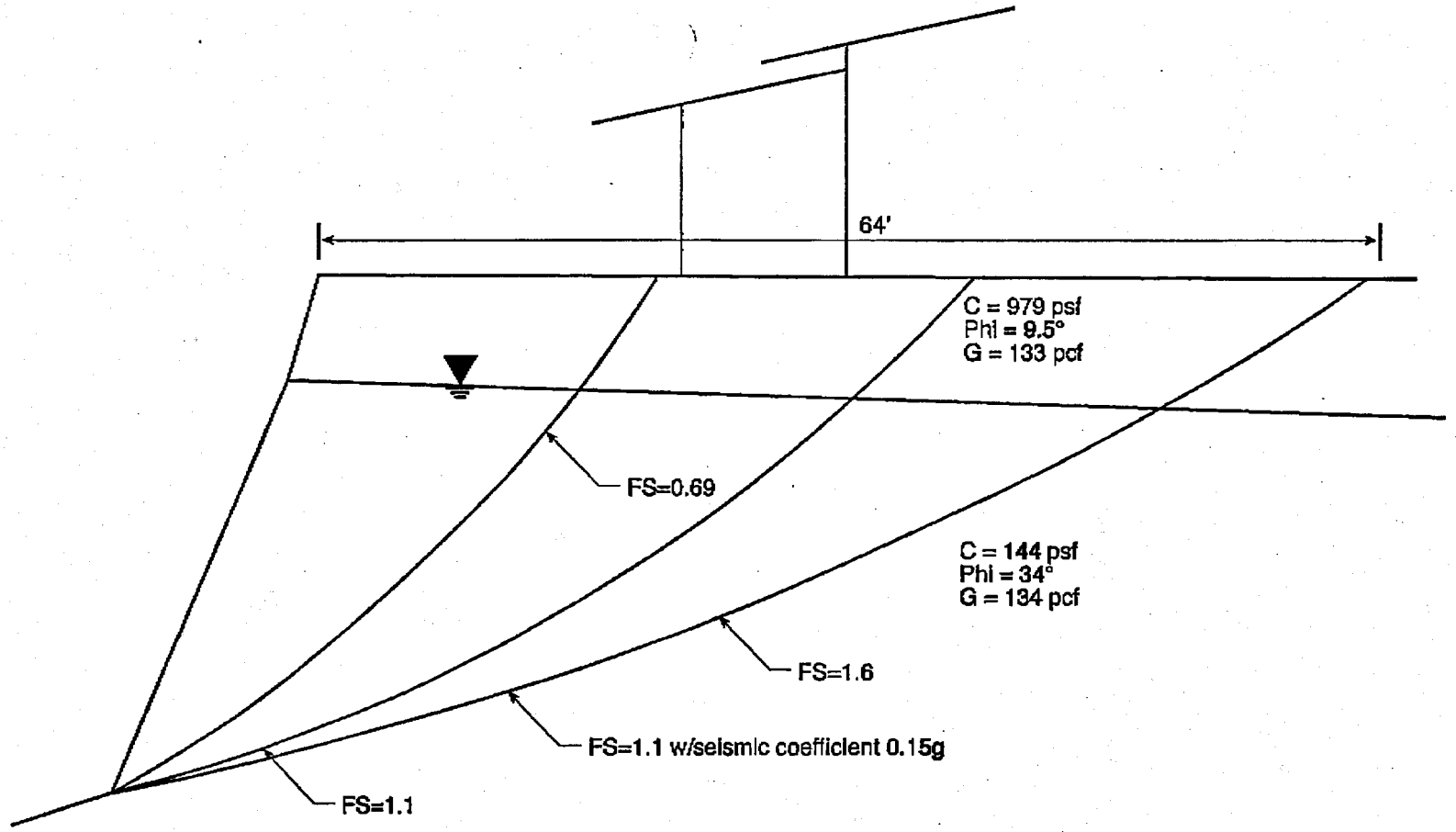
GEOSOLUTIONS ENGINEERING
GEOLOGIC CROSS SECTION

463 LUCERNE ROAD, CAYUCOS, CALIFORNIA

GEO/ENG. BY	SCALE	PROJECT NO.
DTS	1"=10'	E0145
APPROVED BY	DATE	FIGURE NO.
POS	APRIL 2005	2



COTTON, SHIRES & ASSOCIATES, INC. CONSULTING ENGINEERS AND GEOLOGISTS		
NON-CIRCULAR SLOPE STABILITY SECTION - WITHOUT REVETMENT 463 LUCERNE ROAD, CAYUCOS, CALIFORNIA		
GEO/ENG. BY DTS	SCALE 1"=10'	PROJECT NO. E0145
APPROVED BY POS	DATE APRIL 2005	FIGURE NO. 3

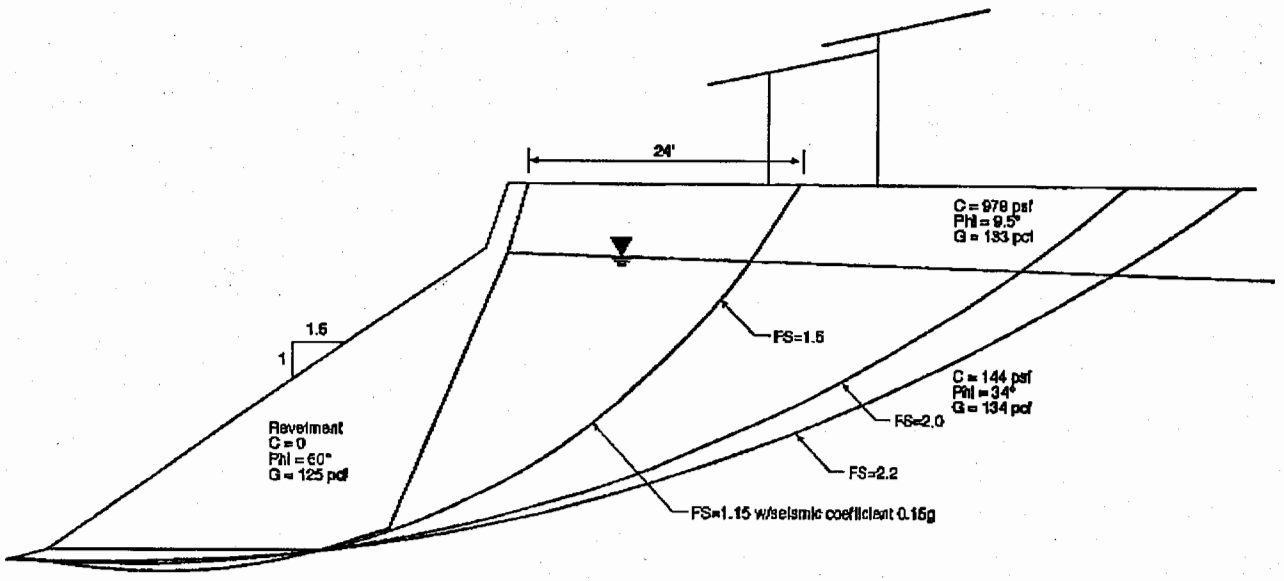


COTTON, SHIRES & ASSOCIATES, INC.
CONSULTING ENGINEERS AND GEOLOGISTS

CIRCULAR SLOPE STABILITY SECTION - WITHOUT REVETMENT

463 LUCERNE ROAD, CAYUCOS, CALIFORNIA

GEO/ENG. BY	SCALE	PROJECT NO.
DTS	1"=10'	E0145
APPROVED BY	DATE	FIGURE NO.
POS	APRIL 2005	4



COTTON, SHIRES & ASSOCIATES, INC. CONSULTING ENGINEERS AND GEOLOGISTS		
CIRCULAR SLOPE STABILITY SECTION - WITH REVETMENT 468 LUCERNE ROAD, CAYUCOS, CALIFORNIA		
DESIGNED BY DTB	SCALE 1"=10'	PROJECT NO. B0145
APPROVED BY POS	DATE APRIL 2005	FIGURE NO. 5

CCC Exhibit K
(page 27 of 49 pages)

BELSHER & BECKER

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March 6, 2008

VIA ON TRAC OVERNIGHT MAIL & FAX
831-427-4877

Jonathan Bishop
California Coastal Commission
Central Coast District Office
725 Front St., Suite 300
Santa Cruz, CA 95060

RE: Brett

Dear Jonathan:

Enclosed is the second alternatives analysis, completed by Westland Engineering. You should also have the following analysis previously requested by Coastal Staff:

1. Alternatives analysis by GeoSolutions, dated April1 5, 2002;
2. Sand loss analysis by GeoSolutions, dated April 15, 2002;
3. Gotechnical Analysis for stone revetment by Cotton Shires, dated April 19, 2005;
4. Overview of Emergency Permit Issuance by Westland Engineering, dated October 31, 2001;
5. Review of Coastal Bluff Geologic Conditions (Bluff Retreat) by GeoSolutions, dated September 5, 2001 [referencing five Geologic reports and plans]; and
6. Letters from this office dated November 12, 2001.

I will be providing cross-sections and a topographic survey relating to the toe of bluff as soon as I get them from Westland Engineering, together with the remaining responses to your letter of August 10, 2006.

Sincerely,

BELSHER & BECKER

John W. Belsher

JWB/ab

cc: George Brett

P:\John's Files\Brett, George\Coastal Commission - Bishop 03 05 08.wpd

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WESTLAND ENGINEERING, INC.
CIVIL ENGINEERING
LAND SURVEYING
LAND PLANNING
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info@westlandengr.com • TELEPHONE: (805) 541-2394 • FAX: (805) 541-2439

Alternative Analysis for the slope stabilization at 463 Lucerne Road, Cayucos, California

December 14, 2007

This report is intended to review alternative methods that could be used to stabilize the slope adjacent to the structure located at 463 Lucerne Road in Cayucos , California. I am a Registered Civil Engineer practicing in the field as a General Civil Engineer. Our office normally prepares bluff stabilization plans based upon the recommendation of Soils Engineers and Engineering Geologists.

I was contacted regarding this slope failure in the yard adjacent to the structure which occurred in early 1998. I went to the site with Mr. Richard Pfost of GeoSolutions, Inc. to observe the damage from the storms. There were two items of concern. First, the slope had failed at the South West corner of the property. This failure was not an immediate threat to the house. The second item was a sink hole in the earth much closer to the house. This hole was pointed out by the owner, who took an 8 foot long 2 by 4 and stuck it into the hole without hitting bottom.

We went to the County to meet with staff to go over alternatives for the site. We were told that the County was working with the Coastal Commission on a policy for failures to slopes in Cayucos and Cambria. We went over some alternatives with staff and received their feedback (based upon the above mentioned policy discussions).

The following alternatives include those discussed with staff and additional measures suggested after this time. I have received input from Cotton, Shires & Associates as well as GeoSolutions, Inc.

Review of Alternatives

Subsurface Drainage Measures Only – These measures would involve installation of horizontal drains from the base of the bluff up under the lot. Construction of the drains would require working from the bottom of the bluff, which would include its own challenges to put the rigs in place. With the bluff in the condition it was in circa 1998, the outlet to these drains (if intended to flow by gravity) would likely be destroyed within a short period of time due to slope instability. While they are beneficial in reducing water pressures which are adverse to slope stability, they would only address one aspect of slope instability and would likely be destroyed by the combined other negative factors of slope instability such as weak geologic materials, steep slopes, seismic shaking, etc.

There may also be other problems associated with draining these geologic materials that might require many drains to be successful. Because of the variability of materials in the Franciscan Complex we would not know if we had collected the subsurface drainage that was specifically contributing to the adverse conditions.

Another concern is that the extent of the sink hole is not known and safety may be an issue both during and after construction. These drains would need to be maintained over time and it wouldn't be safe to do so unless they were installed in combination with a stabilization measure such as a wall or revetment.

The subsurface drains would have no area footprint on the beach.

This system would generate a smaller amount of sand from the erosion if the drains are working since there would not be as much loss of land. Upon failure of the drains, the generation of sand would return to normal.

Micropiles – Micropiles could be used to underpin the residential structure and the bluff allowed to continue to fail over time. However, micropiles do not have sufficient lateral load carrying capacity to resist earth slump or slope instability failures and would therefore likely be compromised in the event of the headward migration of the bluff instability, particularly under seismic loading. Again, Micropiles do not address the sink hole or extent of underground problems and may still leave a safety hazard in place. If excavations are made to determine the extent of the measures needed to stabilize the sink hole this would weaken the bank and would not stabilize it later.

The Micropiles would have no area footprint on the beach.

The anticipated life would be as low as 5 years with a high of 20 years, depending upon the geologic conditions at each pile location.

The long-term shore line retreat rate would remain the same as predicted in the Geology Assessment by GeoSolutions, Inc. (6 inch per year).

This system would generate the same amount of sand from the erosion.

Drilled Caissons – Drilled caissons (reinforced concrete underpins) would provide lateral load carrying capacity, but would simply delay the inevitable, the bluff retreat would eventually expose the ugly face of the caissons and eventually a seawall would have to be built to retain the sand and weak rock from eroding out between the caissons. Underpinning in this manner would probably not be structurally compatible with the existing slab-on-grade foundation system so the entire foundation would have to be replaced to be compatible and to function satisfactorily under seismic loading conditions. Drilled Caissons also does not address the safety issues from the sink hole.

The drilled caissons would have no area footprint on the beach.

The anticipated life would equal the life of the structure.

The long-term shore line retreat rate would remain the same as predicted in the Geology Assessment by GeoSolutions. Inc. (6 inch per year).

This system would generate the same amount of sand from the erosion.

Vertical Retaining Wall with Tiebacks – Because of the height of the bluff face here and weak materials involved, any vertical wall would likely require the use of tieback anchors to achieve adequate stability (the face is too high to be supported by a cantilever wall alone or vertical gravity wall alone without anchors). Such a wall would be very expensive (on the order of a million dollars) and have significant

visual impacts. It could be designed and built to achieve project objectives of slope stability and less beach access footprint though. However, in this area of the coast, there are very few vertical seawalls and more liberal use of stone revetments. County Staff, in their review felt that this would not be acceptable due to both the visual impacts and the fact that no other wall exist adjacent to the site. Consequently, the revetment would blend much more with the surroundings than the vertical wall.

Tie backs are an unknown item until they are drilled, particularly in the Franciscan Complex due to the differing strength of the material and the potential of encountering voids. Conventional construction practice would not use tiebacks for this area, specifically with the known void (sinkhole) condition.

The area footprint on the beach is estimated to be approximately 860 square feet based on a footing width of 15 feet.

The anticipated life with yearly maintenance would be 50 years (with no maintenance the span could be as low as 10 year, depending on wave and storm activity).

The long-term shore line retreat rate would reduce to a negligible amount per year if the wall is maintained.

This system would not generate any sand from erosion.

Soil Nails and Shotcrete Facing – Soil nails could be drilled in the bluff and then the face tied into the nails with shotcrete facing. The cost of this alternative would rival that of the vertical retaining wall with tiebacks and it would be a dangerous proposition to install without laying the slope back first. Soil nails would need to be installed at approximate intervals of 5 feet on centers both ways and shotcrete would have to be keyed into bedrock at the base sufficient depth to avoid scour. The shotcrete thickness and reinforcing would have to be designed to resist repeated wave impact. Maintenance would be high. The aesthetics would be problematic in matching the existing rock slopes and stone revetments already in place.

Conventional construction practice would not use soil nails for this area for the same reason tie backs are not favored.

The area footprint on the beach is estimated to be approximately 290 square feet based on a footing width of 5 feet.

The anticipated life with maintenance would be 25 to 50 years.

The long-term shore line retreat rate would possibly reduce to a negligible amount per year with maintenance.

This system would generate approximately 5% of sand from the erosion.

Gravity Wall – A stone revetment is essentially a type of gravity wall. Other types include gabion walls (impractical for beach environments), massive concrete walls, etc. The Stone Revetment Wall (Preferred Project Alternative) is a gravity wall that can be used to address high bluff slopes such as this one. Aesthetically, it blends well with the existing upcoast and downcoast features. Stones placed in the beach access area can be removed if they are outboard of the revetment keyway (which is necessary to maintain long term stability). The revetment will require monitoring and maintenance over time. Stones that become dislodged will need to be replaced and the beach access area will need to be cleaned of stones

periodically, especially following intense storm and/or wave events.

This system would generate approximately 5% of sand from the erosion.

Based on a comparison of the original topographic survey and the as constructed topographic map, the area footprint on the beach is calculated to be approximately 230 square feet.

The anticipated life with maintenance would be 75 to 100 years.

The long-term shore line retreat rate would possibly reduce to 1 inch per year.

This system would generate approximately 30% of sand from the erosion. Granite will break down to sand not clay, which will actually generate more sand than some of the clayey geologic units in the area.

Terence K. Orton
PE 21,807 (Expires 9-30-09)

Attachments GeoSolutions Alternative Analysis dated April 15, 2002

BELSHER & BECKER

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E-MAIL slolaw@belsherandbecker.com

March 17, 2008

VIA OVERNIGHT MAIL & FAX
831-427-4877

California Coastal Commission
Central Coast District Office
725 Front St., Suite 300
Santa Cruz, CA 95060

RE: LaVon Brett revetment; Appeal A-3-SLO-01-040

Dear Coastal Commissioners:

The Emergency

In 1998, the Bretts found a large sink-hole in their bluff-top backyard. Civil Engineer Terry Orton and geologist Richard Pfost observed Mr. Brett (now deceased) drop a long 2x4 down the hole, indicating a serious failure in the bluff-top integrity less than fifteen feet from the Brett's home. See Orton letter of October 31, 2001. County staff visited the site and confirmed the dangerous condition.

Photos dated February of 1998 show large chunks of the top of the bluff washed away near the sink hole. Additional photos show cracks in the block fence shared with the neighbor to the east, evidencing sloughing of the bluff toward the ocean.

The Emergency Permit

In response to this dangerous condition, the Bretts applied for an emergency permit through the County of San Luis Obispo. The Bretts submitted an application to the County, based upon:

A. Geologic Assessment and letter of support for revetment (by Geosolutions)

B. Rock Slope Protection Plan and Grading Plan (by Westland Engineering)

According to Geosolutions, alternatives were considered and the placement of native rock into the bluff chosen as the least invasive, "both asthetically and physically."

The emergency permit was granted and the revetment constructed, at a cost of $65,000, including permits and engineering/geology reports. A minor use permit/coastal development permit was then obtained.

The Coastal Development Permit Appeal

The coastal development permit was appealed by the Coastal Commission, seeking further analysis of alternatives and justification of the emergency.

Addtional Geotechnical Support for Permits

In response to discussions with Coastal staff following receipt of the appeal, the Bretts then had prepared and submitted to Coastal staff, among other items:

C. Review of Coastal Bluff Geologic Conditions (by Geosolutions), dated September 5, 2001, including loss of sand generation report (negligible) and threat to existing structure **(citing an "immediate concern" which "could jeopardize the foundation of the house")**

D. An Alternatives Analysis (by Geosolutions), dated April 15, 2002."**The rock revetment offered the most effective manner to protect and support at the residence while maintaining asthetic appearance similar to the surrounding coastline within a cost effective framework."**

E. Letter from Westland Engineering's Terry Orton describing sink hole discovery, dated October 31, 2001.

Following additional staff consultation with newly hired Coastal Commission geologist Mark Johnson, the following additional studies and documents were prepared and submitted to Coastal staff:

F. Core sampling of the bluff providing additional soils analysis for geotechnical evaluation (by Geosolutions), dated Nov. 16, 2004.

G. Geotechnical analysis and peer review of geologic reports (by Cotton Shires), dated April 19, 2005, recommending Coastal approval and concluding **"the revetment provides necessary buttressing support for protection of the residence and substantially reduces the potentiality for an additional landslide/bluff failure which would potentially adversely impact the residence."**

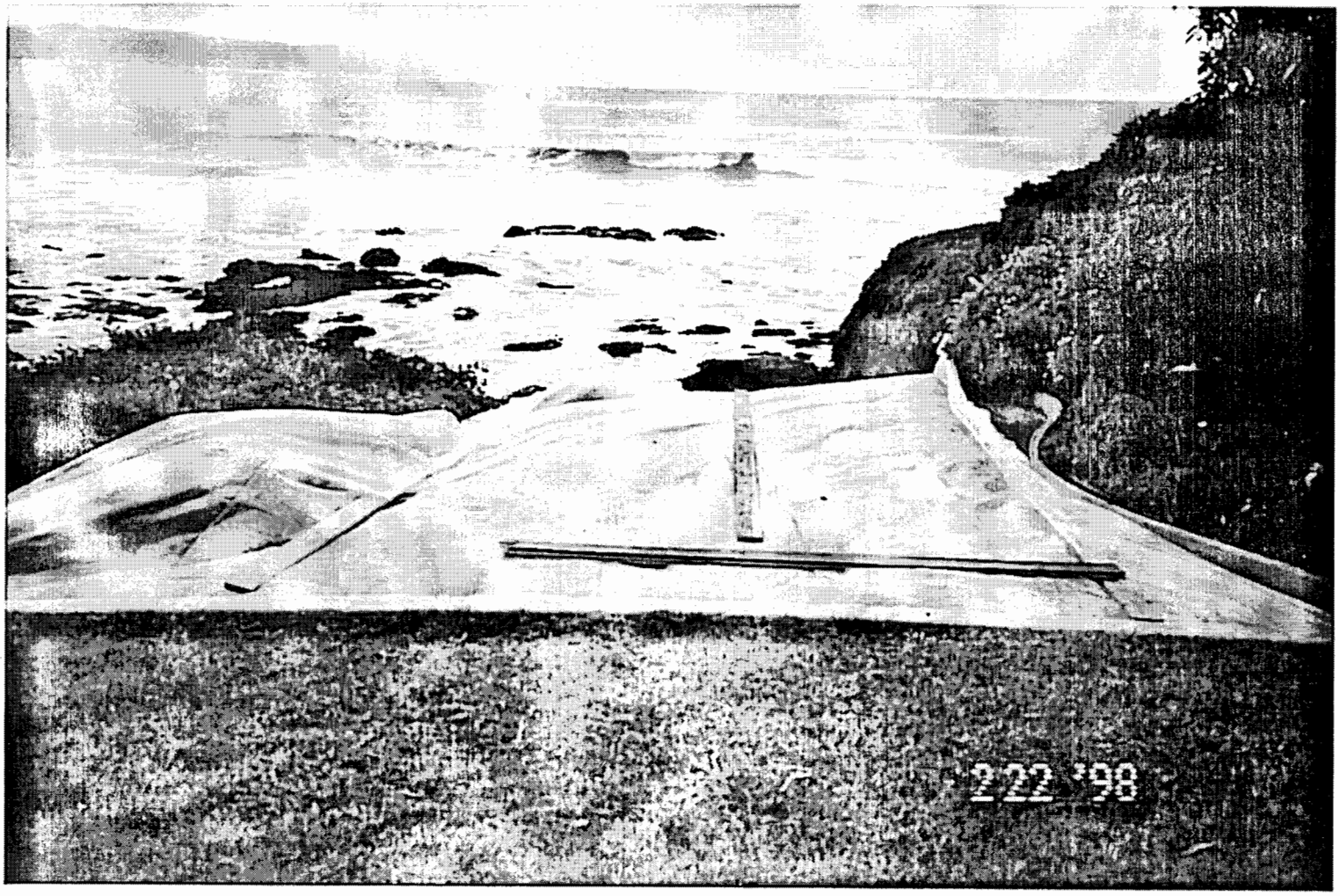
I. Second Alternatives Analysis (by Westland Engineering), dated December 14, 2007.

J. Cross-sections of bluff and revetment (by Westland Engineering), dated March 17, 2008 and public access analysis (by Belsher & Becker), dated March 17, 2008.

Possible Impact on Public Access

Coastal staff also requested analysis of impacts on public access along the base of the bluff, particularly in light of a lateral access "to the toe of the bluff" granted by the Bretts in 1980 and accepted by the County of SLO in 1996, recorded by the Coastal Commission in 1997. The revetment was installed by digging in revetment keystones at the "toe" or base of the bluff, according to the geologist who supervised the construction of the revetment. Since "toe of the bluff" is not a defined term, the topographic analysis submitted concurrently under separate cover is unclear as to whether the current revetment actually encroaches into the public access easement. Comparing historical photos of the "toe of the bluff" to the present day, there does not appear to be any encroachment into the public easement. Of course, the public can, and does, use the revetment as a means of escape from high tides and wave action. This is without objection from the property owner.

In sum, Mrs. Brett and her geologists and engineers have made even [illegible] address each issue raised on this appeal. The analyses show the revetment was and



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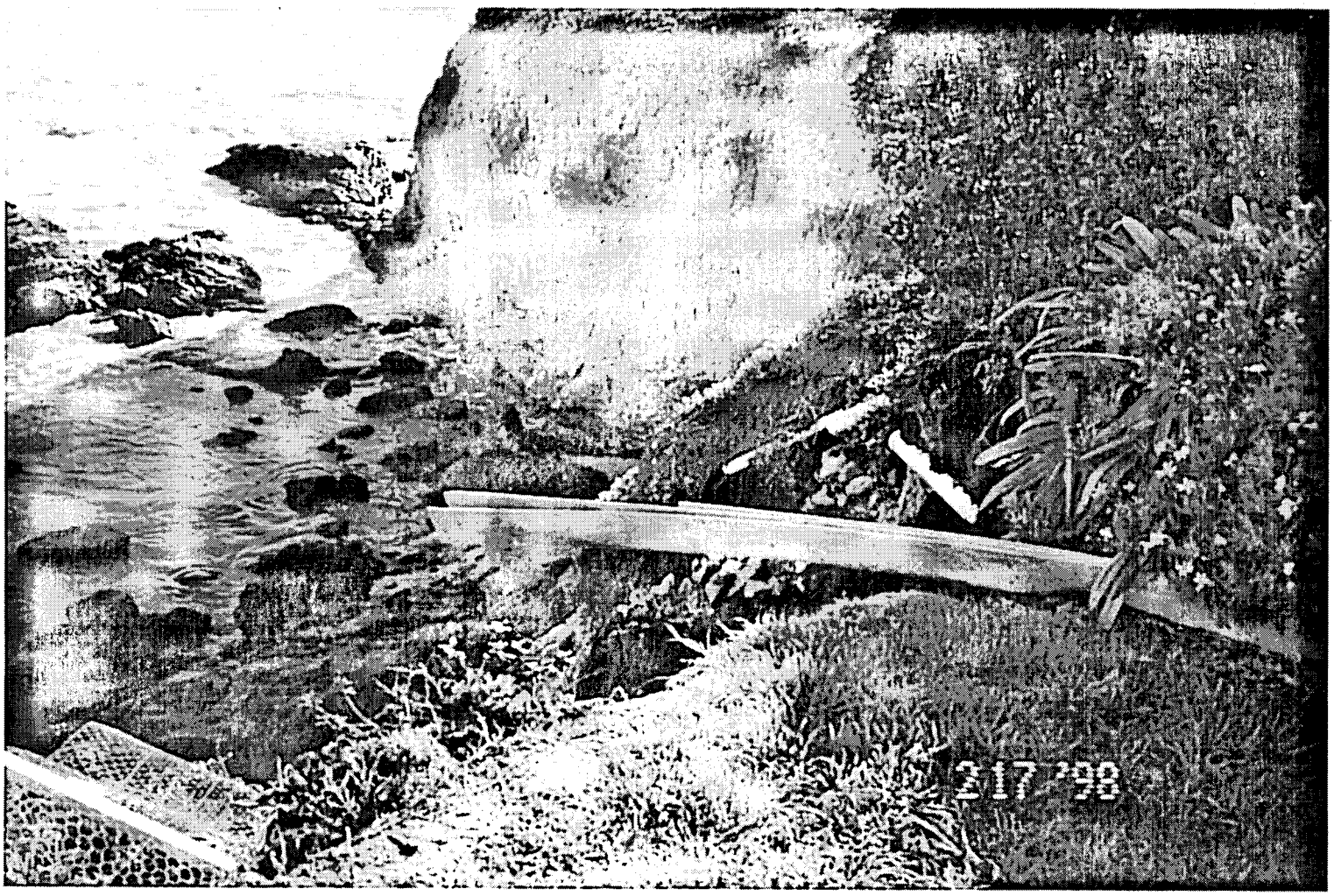
(page 36 of 49 pages)



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BELSHER & BECKER

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March 18, 2008

VIA E MAIL & FAX
831-427-4877

Jonathan Bishop
California Coastal Commission
Central Coast District Office
725 Front St., Suite 300
Santa Cruz, CA 95060

RE: LaVon Brett Revetment; Appeal A-3-SLO-01-040

Dear Jonathan:

Enclosed is the topographic survey and cross sections, completed by Westland Engineering. Also enclosed are statements from owner, LaVon Brett and geologist, John Kammer relating to installation of the rock revetment. Finally, you will find before and after photos showing that the revetment was placed at the toe of the bluff, at the location of or upland from large boulders and rocks which previously (and in some cases still) occupied the area at the "toe of the bluff". I do not believe there is conclusive evidence of any encroachment into the public easement. Even if there is, the encroachment is deminimis. In fact, during high tides the revetment provides an avenue of escape for the public trapped by wave action or high water.

The toe of the bluff is not a precise term. A statement from the geologist who oversaw installation of the revetment confirms the keystone revetment rocks were dug into the cliff at the toe of the bluff. Photos show the revetment to be in the same location or upland from the numerous boulders and large rocks which formerly occupied the area at the toe of the bluff. Based on these bits of evidence the following can be deduced:

(i) The placement of buried keystones at the toe of the bluff was and is necessary. The dedication is "for public access and passive recreation" from the "mean high tide line to toe of the bluff." The first row of rocks was buried along the toe of the bluff, as there was no other way to construct the revetment. All the rocks are touching each other and integrally linked. The placement of this first row of rocks was therefore necessary to construction of the revetment. The County owns the easement and did not object.

(ii) Public access is not hindered by the keystone rocks and, in fact, is enhanced. During periods of low tide, there is ample area of access along the sandy beach for the public to use. During high tides at this location the "beach" is most always underwater, particularly owing to constant and intense wave action. Photos taken before installation of the revetment show many large boulders and rock outcroppings at the "toe of the bluff" where the rock revetment now begins. These rocks historically prevented and interfered with public "access" along the "beach", such as it was. The revetment now offers a consistent path of travel for beachgoers who need to get up out of the wave action during high tides. According to the property owner, beachgoers occasionally use the revetment as a means of escape from tides and wave action at this location.

(i) The "toe of the bluff" is difficult to determine and has changed over time. Geologic reports show a bluff retreat rate of 6" per year. The bluff face therefore certainly moved inland from the time of the offer of dedication to the date of the placement of the keystones at the toe of the then-current bluff. As a result, even if the keystones are considered to encroach upon the public access, the public has no less access along the beach than it did in 1980, when the offer of dedication was made.

Based on the foregoing, the rock revetment does not appear to encroach upon or adversely affect rights of public access offered by the Bretts in 1980 and accepted by the County in 1996.

I trust you now have all the information you have been seeking to help resolve this appeal. Please let me know if that is not the case.

Sincerely,

BELSHER & BECKER

John W. Belsher

JWB/ab

cc: LaVon Brett
Encls
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CCC Exhibit K
(page 39 of 49 pages)

March 17, 2008

California Coastal Commission
725 Front Street, Suite 300
Santa Cruz, CA 95060

Re: Brett Revetment Appeal No. A-3--SLO-01-040

Dear Coastal Commissioners:

I am Lavon Brett, the owner of 463 Lucerne Road in Cayucos, CA. My late husband and I built our home pursuant to Coastal Permits issued in 1975 and 1980. As a condition to the 1980 permit, we signed an agreement dedicating a public easement along the base of the ocean bluff, without objection on our part.

In 1980 and continuing to today, the public has easy access along the base of the bluff and often travel past this location. However, at high tide the water is almost always covering the sand and partway up the bluff (now a revetment). Therefore, during high tides and before we built the revetment which exists today, there was no place at the toe of the bluff for anyone to walk or otherwise recreate. In fact, the "toe" of the bluff was littered with many large rocks and boulders and impassable to pedestrian traffic, even at low tides. The bluff itself was unstable and not safely climbable.

When we installed the revetment in 1999 in response to the frightening occurrence of a sink hole only a few feet from our house, the County had us use native rock materials so as to blend in with the surroundings. We had the rocks placed above the mean high tide line, under direction of the engineers. The first course of rocks were buried in the sand and dug into the bluff at the toe of the bluff. Presently I do not believe there is any less access along the shoreline than previous to the installation of the revetment.

Today visitors occasionally climb up the revetment when they are trapped by waves or tides. The revetment provides a stable place to stand at high tides where none existed before as well as an escape route. I have never objected to any member of the public using the revetment to travel along the shore.

As the public's access is improved by the revetment and the native stones offer a compatible visual back-drop to the coastline, I hope the Commission will deny the appeal, allow the revetment to remain and keep my home safe.

Sincerely yours,

LaVon Brett

LaVon Brett

CCC Exhibit K
(page 40 of 49 pages)

GeoSolutions, INC.

220 High Street, San Luis Obispo, CA 93401
(805) 543-8539, 543-2171 fax
info@GeoSolutions.net

March 17, 2008
Project No. SL00345-3

John Belsher
BELSHER & BECKER
412 Marsh Street
San Luis Obispo, California 93401

Subject: **Brett Residence**
473 Lucerne Road, Cayucos Area
San Luis Obispo County, California

Dear Mr. Belsher:

Representatives of GeoSolutions, Inc. (at the time the company was GeoSolutions, LLC) observed installation of the rock revetment structure for the property at 473 Lucerne Road in the Cayucos area of San Luis Obispo County, California. Professional construction monitoring was performed during the period from November 11, 1998 through November 20, 1998. Services provided by GeoSolutions, LLC included client and contractor consultation and observation of the following: debris removal, preparation of original slope, keyway excavation, installation of geotextile fabric, installation of rip rap, and installation of drain pipes. One of the parameters observed during construction was excavation of a keyway that was approximately five feet below grade across the toe of the bluff. This keyway was approximately 3-feet deep into bedrock and was approximately 6-feet wide and partially excavated into the bluff face.

Please feel free to contact me at (805) 543-8539, if your require additional assistance.

Sincerely,
GeoSolutions, Inc.

John M.D. Kammer, C.E.G. #2118

PROFESSIONAL GEOLOGIST
JOHN M.D. KAMMER
NO. 2118
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

REFERENCE

December 1, 1998, GeoSolutions, LLC, Project No. SLOO345-2, Compliance Report of Final Construction, Rock Revetment Structure, 463 Lucerne Road, Cayucos Area, San Luis Obispo County, California.

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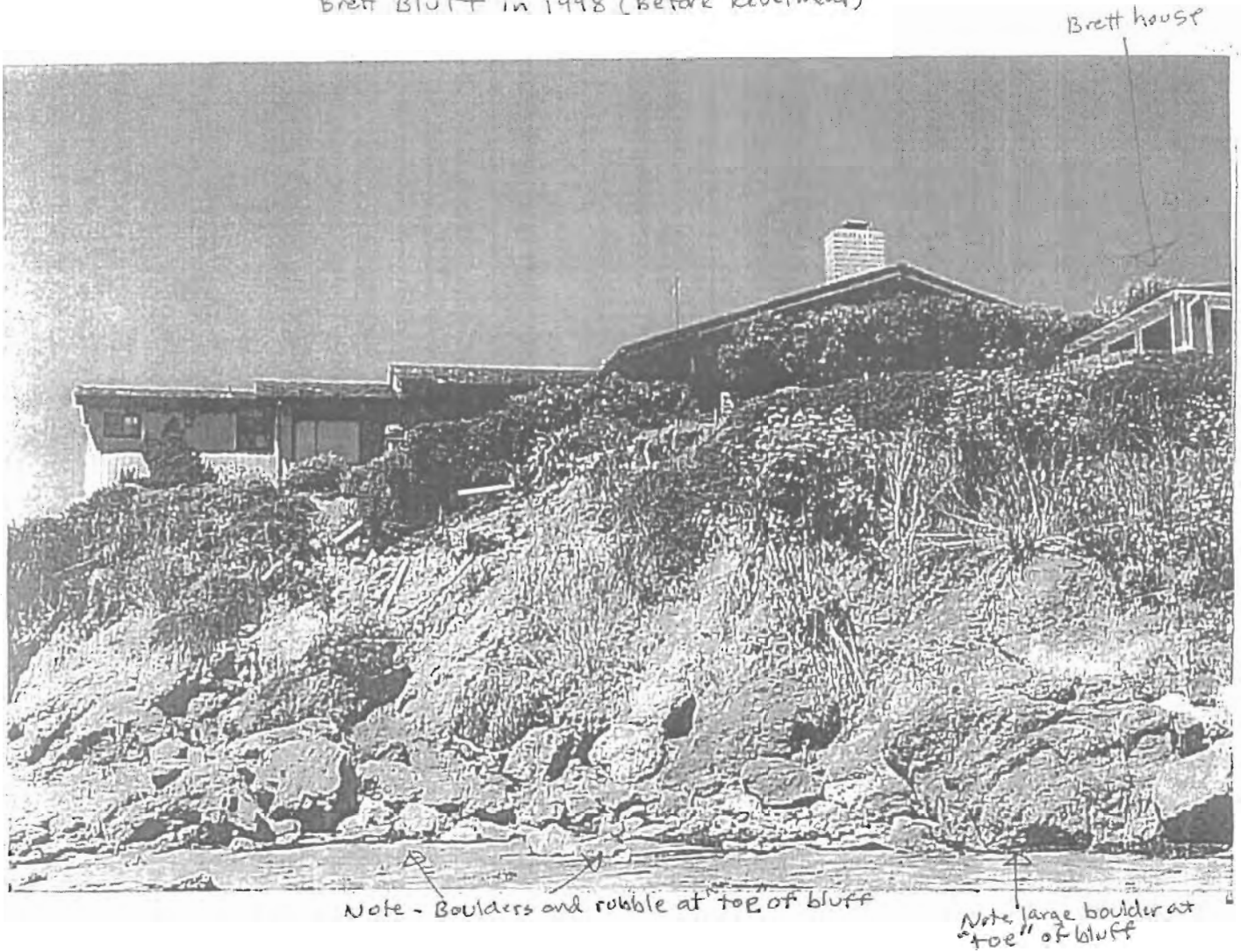
Brett Bluff in 1998 (Before Revetment)



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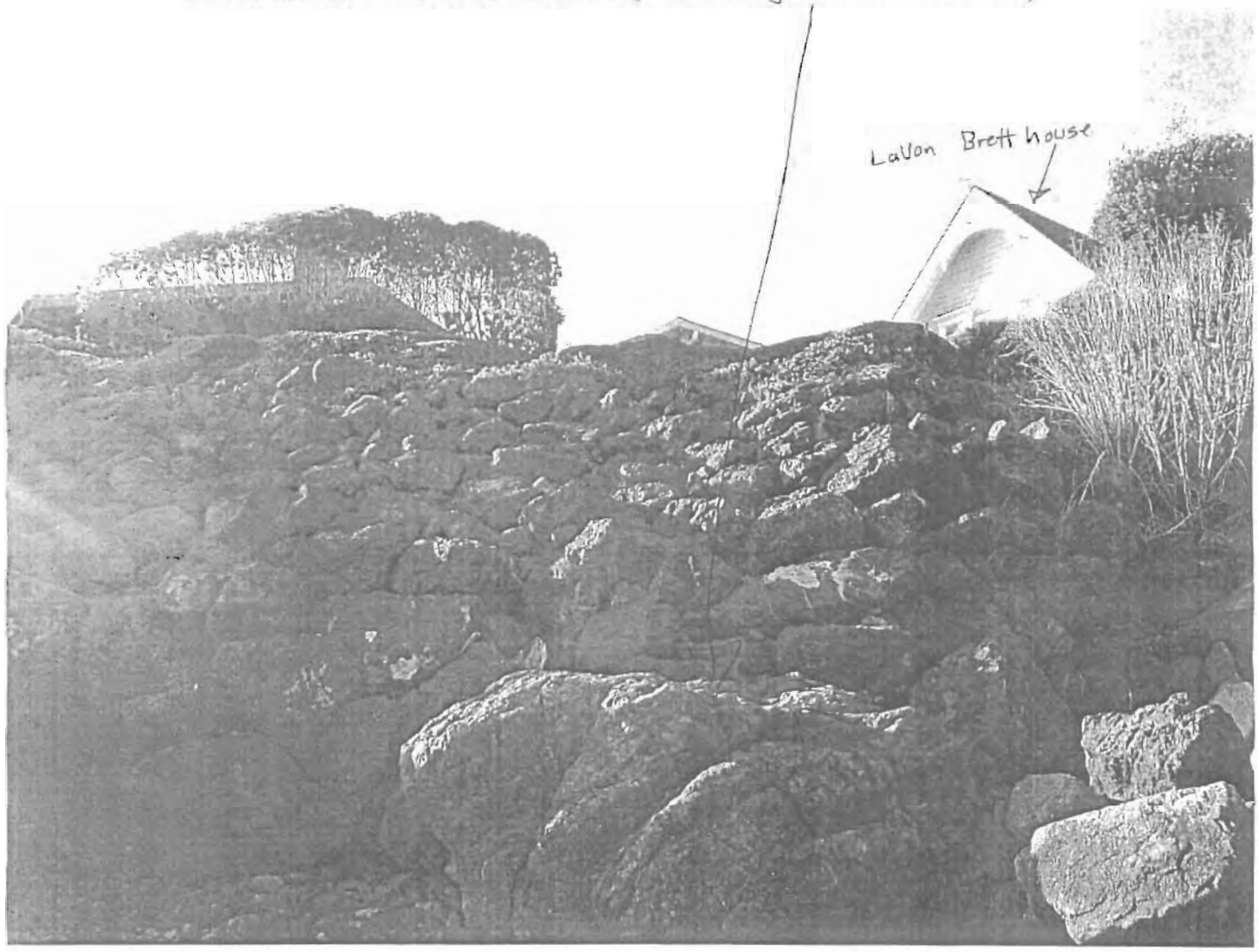
East Side of 2008 Revetment (behind large boulder from 1998)



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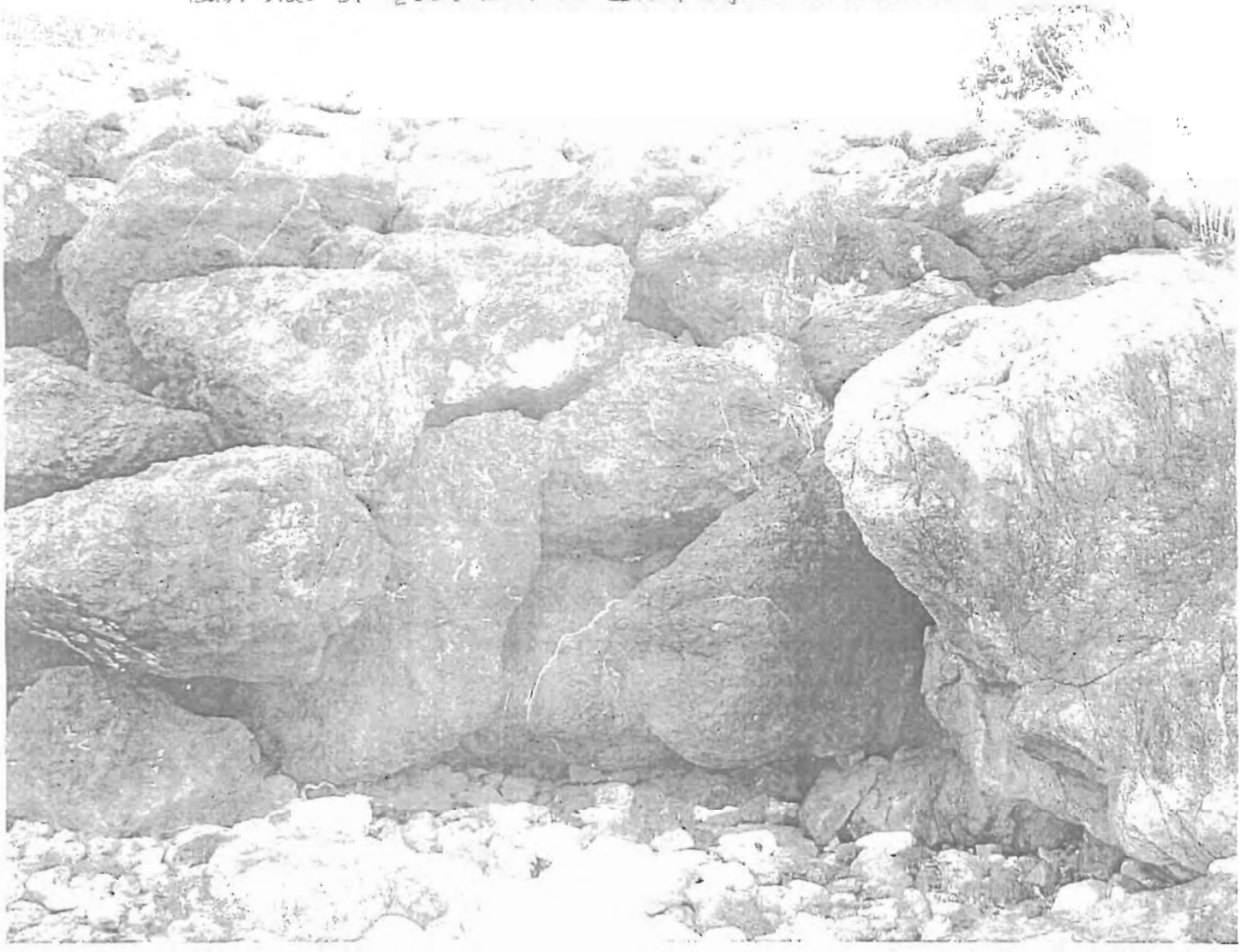
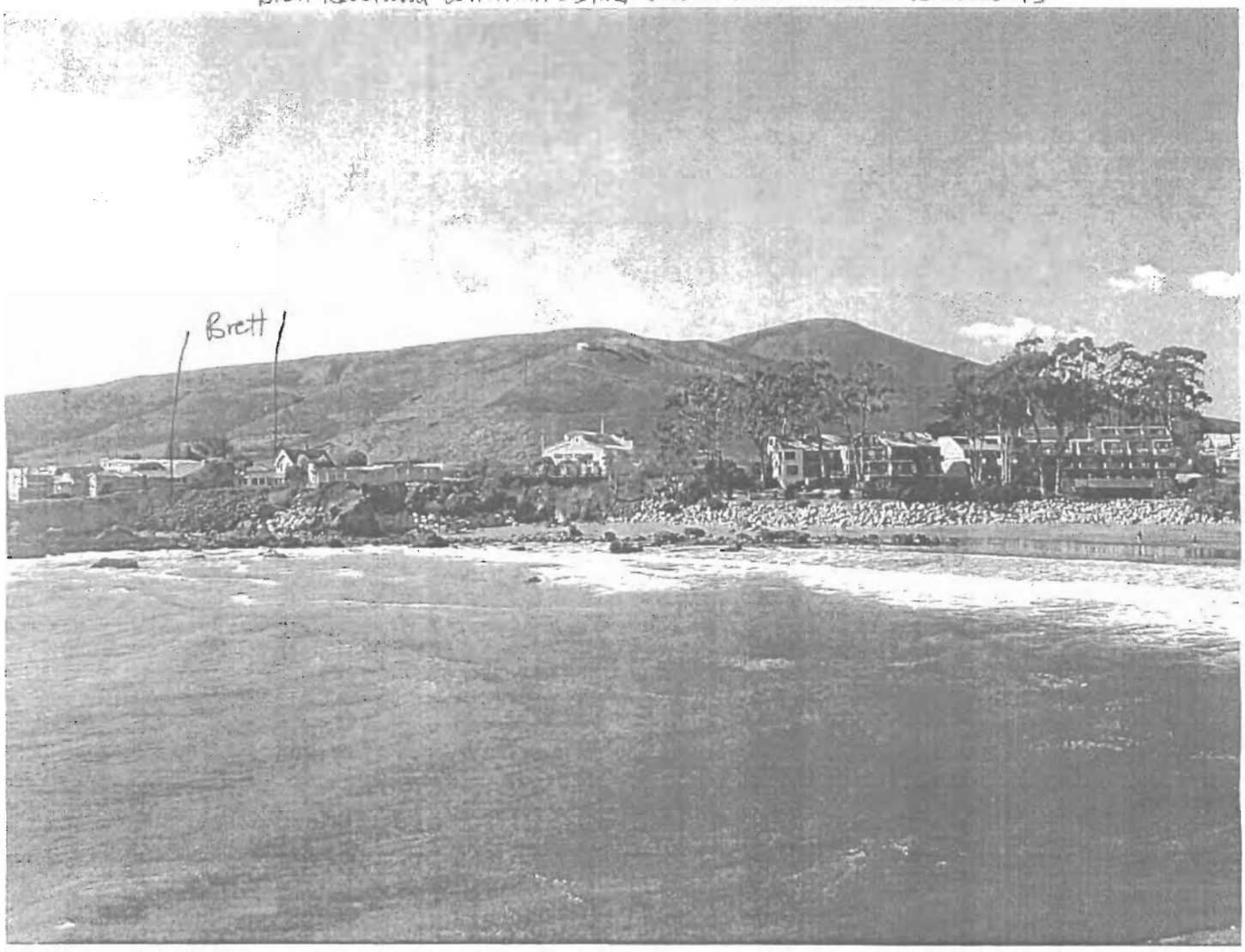
East Side of 2008 Revetment behind large boulder from 1998



WEST SIDE OF 2008 REVETMENT (behind rocks previously at "toe")

Brett Revetment showing Native Stone

Brett Revetment with Native Stone versus other "white" revetments



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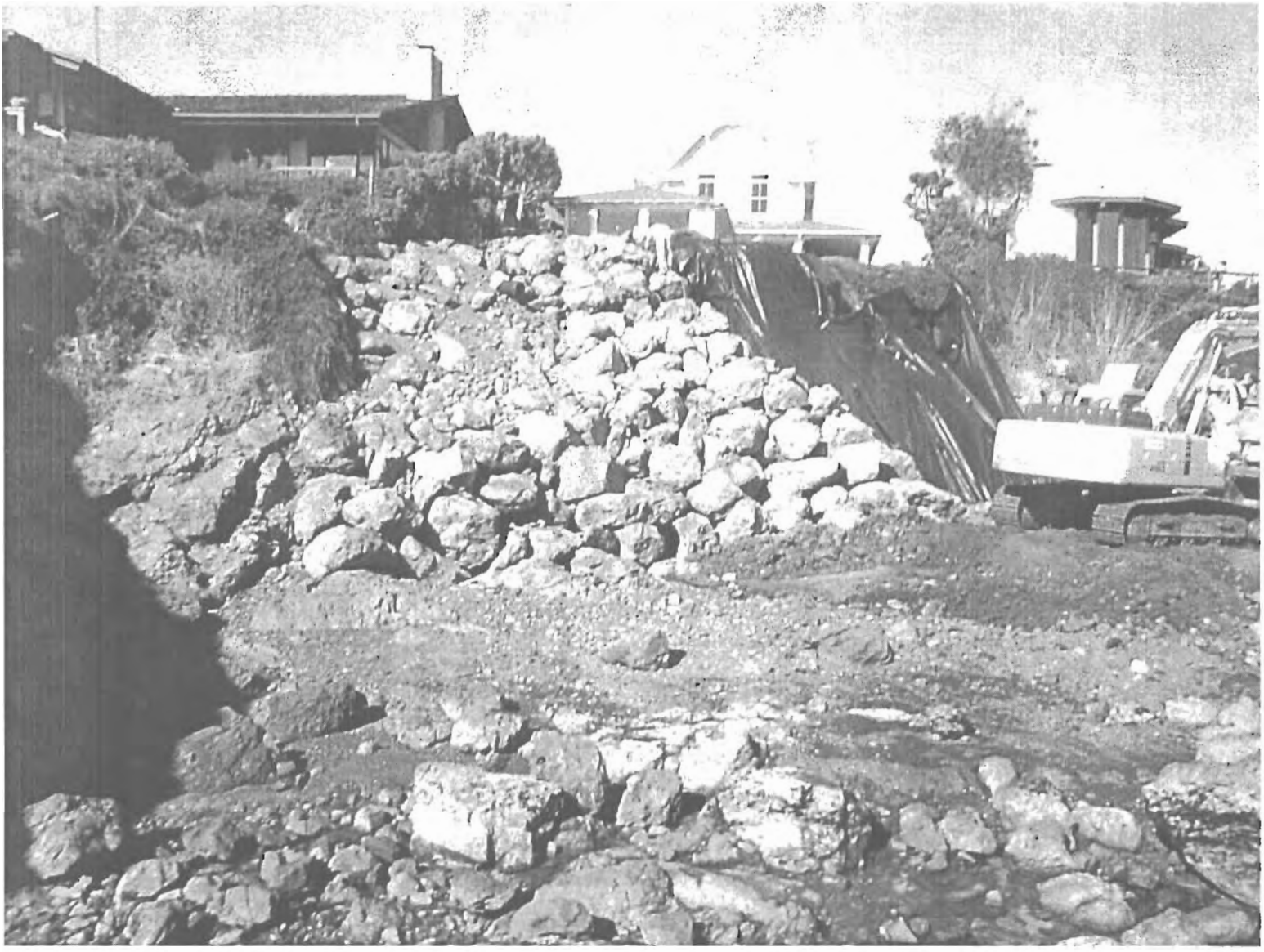

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