

CALIFORNIA COASTAL COMMISSION

SOUTH CENTRAL COAST AREA
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Commission Action:



STAFF REPORT: REGULAR CALENDAR

APPLICATION NO.: 4-97-160

APPLICANT: Edward B. Danson III

AGENT: Jamie Harnish

PROJECT LOCATION: 31504 Pacific Coast Highway, City of Malibu; Los Angeles County

PROJECT DESCRIPTION: Construction of a 55 ft. long, 15 ft. in height, rock revetment and stairway on a site with an existing single family residence, and an offer to dedicate a lateral access easement over the southern portion of the lot as measured 10 ft. seaward from the toe of the proposed rock revetment to the mean high tide line.

LOCAL APPROVALS RECEIVED: City of Malibu Approval in Concept.

SUBSTANTIVE FILE DOCUMENTS: Shown on *Appendix A*

SUMMARY OF STAFF RECOMMENDATION:

Staff recommends approval of the proposed project with four (4) special conditions regarding lateral public access, assumption of risk, signs, and condition compliance. The applicant is requesting "after-the-fact" approval for the construction of a 55 ft. long, 15 ft. in height, rock revetment, stairway and an offer to dedicate a lateral access easement over the southern portion of the lot as measured 10 ft. seaward from the toe of the proposed rock revetment to the mean high tide line .

The project is located on the westernmost end of Broadbeach. The westernmost end of Broadbeach is unique to the area in that it is not a wide beach and does not contain a protective dune system as do other sections of Broadbeach. This section of Broadbeach is characterized as a narrow beach subject to erosion. A 95 ft. long rock

continued

summary continued

revetment, which was previously approved by the Commission under Coastal Development Permit 5-89-901, is located on the two adjacent parcels immediately to the west of the project site. An existing single family residence constructed on a timber pile foundation system is located immediately to the east of the project site. The applicant's coastal engineering consultant has concluded that the proposed rock revetment is necessary to protect the existing residence located on the project site. The proposed revetment will extend seaward approximately 10 ft. beyond the existing deck and will be substantially aligned with the existing 95 ft. long rock revetment, located on the two adjacent parcels upcoast from the project site, to form a single 150 ft. long rock revetment across all three lots.

The project raises issue with the Chapter 3 policies of the Coastal Act requiring that beachfront development minimize erosion which has impacts on beach use due to either temporary or permanent accelerated loss of beach sand. A vertical public accessway is located approximately 1,200 ft. downcoast from the project site. In past permit actions, the Commission has required that all new development on a beach including shoreline protection devices, provide for lateral public access along the beach in order to minimize any adverse impacts public access. In the case of the proposed project, the applicant has proposed to offer a dedication for lateral public access easement along the beach. In past permit actions, the Commission has also required that all new development on a beach, including shoreline protection devices, be located as landward as possible in order to reduce adverse impacts to the sand supply and public access resulting from the development. The Commission notes that the proposed revetment is located as landward as feasible in order to align the revetment with the previously existing revetment located on the two parcels immediately west of the project site. In addition, the alignment and connection of the proposed revetment with the existing revetment will serve to minimize erosion between the two structures.

STAFF RECOMMENDATION:

The staff recommends that the Commission adopt the following resolution:

I. Approval with Conditions.

The Commission hereby grants, subject to the conditions below, a permit for the proposed development on the grounds that the development, as conditioned, will be 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 conforming to the provisions of Chapter 3 of the Coastal Act, is located between the sea and the first public road nearest the shoreline and is conformance with the public access and public recreation policies of Chapter 3 of the Coastal Act, and will not have any significant adverse impacts on the environment within the meaning of the California Environmental Quality Act.

II. 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. **Compliance.** All development must occur in strict compliance with the proposal as set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.
4. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.
5. **Inspections.** The Commission staff shall be allowed to inspect the site and the development during construction, subject to 24-hour advance notice.
6. **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.
7. **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.

III. Special Conditions.

1. **Offer to Dedicate Lateral Public Access**

In accord with the applicant's proposal as part of this project of an offer to dedicate an easement for lateral public access and passive recreational use along the shoreline, the applicant shall be required to complete the following prior to issuance of the permit: the landowner shall execute and record a document, in a form and content acceptable to the Executive Director, irrevocably offering to dedicate to a public agency or private association approved by the Executive Director an easement for lateral public access and passive recreational use along the shoreline. The document shall provide that the offer of dedication shall not be used or construed to allow anyone, prior to acceptance of the offer, to interfere with any rights of public access acquired through use which may exist on the property. Such easement shall be located along the entire width of the property from the mean high tide line landward to 10 ft. seaward of the toe of the rock revetment as illustrated on the site plan prepared by David C. Weiss, Structural Engineer and Associates, dated March 26, 1992, and revised December 30, 1997. The document shall contain the following language:

(a) Privacy Buffer

The area ten (10) feet seaward from the toe of the rock revetment as illustrated on the site plan prepared by David C. Weiss, Structural Engineer and Associates, dated March 26, 1992, and revised December 30, 1997, shall be identified as a privacy buffer. The privacy buffer shall be applicable only if and when it is located landward of the mean high tide line and shall be restricted to pass and repass only, and shall be available only when no other dry beach areas are available for lateral public access. The privacy buffer does not affect public access should the mean high tide line move within the buffer area.

(b) The remaining area shall be available for passive recreational use.

The document shall be recorded free of prior liens which the Executive Director determines may affect the interest being conveyed, and free of any other encumbrances which may affect said interest. The offer shall run with the land in favor of the People of the State of California, binding all successors and assignees, and shall be irrevocable for a period of 21 years, such period running from the date of recording. The recording document shall include legal descriptions of both the applicant's entire parcel(s) and the easement area.

2. Signs

No signs shall be posted on the property subject to this permit (and/or on immediately adjacent properties) which (a) explicitly or implicitly indicate that the portion of the beach on Assessor's Parcel Number 4470-017-036 located seaward of the rock revetment permitted in this application 4-97-160 is private or (b) contain similar messages that attempt to prohibit public use of this portion of the beach. In no instance shall signs be posted which read "Private Beach" or "Private Property." In order to effectuate the above prohibitions, the permittee is required to submit to the Executive Director for review and approval prior to posting the content of any proposed signs.

3. Applicant's Assumption of Risk

Prior to the issuance of the coastal development permit, the applicant as landowner shall execute and record a deed restriction, in a form and content acceptable to the Executive Director, which shall provide: (a) that the applicant understands that the site may be subject to extraordinary hazard from storm waves, erosion or flooding and the applicant assumes the liability from such hazards; and (b) that the applicant unconditionally waives any claim of liability on the part of the Commission and agrees to indemnify and hold harmless the Commission and its advisors relative to the Commission's approval of the project for any damage due to natural hazards. The document shall run with the land, binding all successors and assigns, and shall be recorded free of prior liens which the Executive Director determines may affect the interest being conveyed, and free of any other encumbrances which may affect said interest.

4. Condition Compliance

The requirements specified in the foregoing special conditions that the applicant is required to satisfy as a prerequisite to the issuance of this permit must be fulfilled within 90 days of Commission action. Failure to comply with such additional time as may be granted by the Executive Director for good cause will result in the nullification of this permit approval.

IV. Findings and Declarations.

The Commission hereby finds and declares:

A. Project Description and Background

The applicant is requesting "after-the-fact" approval for the construction of a 55 ft. long rock revetment with stairs constructed without the benefit of a coastal development permit in 1992. In addition, the project includes the proposal to dedicate a new lateral access easement over the southern portion of the lot as measured ten feet seaward of the revetment stringline to the mean high tide line. The subject site has been previously developed with a single family residence and is located on the seaward side of Victoria Point Road near the western end of Broadbeach and immediately east of Lechuza Point.

The project site has been the subject of past Commission action. Coastal Development Permit 4661 was issued in 1975 for the construction of a single family residence subject to one condition requiring lateral access. Coastal Development Permits 81-7941 and 5-87-207 were issued for minor additions to the residence and a deck extension with no special conditions required.

At present, the rock revetment extends continuously across the three properties at 31504, 31506 and 31508 Victoria Point Road. The previous owner of the subject parcel at 31504, in conjunction with the owner of the lots at 31506 and 31508 Victoria Point Road originally submitted coastal permit application 5-88-841 for the construction of a rock revetment across all three lots. This application was subsequently withdrawn by the applicants and was not acted on by the Commission. Although Coastal Development Permit 5-89-901 was later issued for the construction of a rock revetment on the two adjacent parcels located immediately west of the subject site at 31506 and 31508 Victoria Point Road, the portion of the revetment located on the subject site, although constructed at the same time as the revetment on the neighboring lots, was not part of Coastal Development Permit 5-89-901 and, thus, was constructed without the benefit of a coastal development permit. The proposed rock revetment does not extend further seaward than the existing revetment previously approved by the Commission on the two adjacent lots to the west.

B. Shoreline Protective Devices

As stated previously, the project involves the construction of a 55 ft. long rock revetment and stairway. The revetment is primarily located beneath the existing structure and extends seaward 10 ft. beyond the existing deck. The proposed revetment is aligned with the 95 ft. long rock revetment which extends across the two parcels immediately west of the project site to form a single 150 ft. long rock revetment

across all three lots. The seaward extent of the revetment will be approximately 80 feet seaward from the terminus of Victoria Point Road.

As described in the discussion below, there is evidence that any development along this section of Broadbeach will require a shoreline protective device and that such development has the potential to impact the natural shoreline processes. Therefore, it is necessary to review the proposed project for its consistency with Sections 30235 and 30253 of the Coastal Act and with past Commission action.

Section 30235 of the Coastal Act states:

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

Section 30253 of the Coastal Act states:

New development shall:

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

To assist in the determination of whether a project is consistent with sections 30235 and 30253 of the Coastal Act, the Commission has, in past Malibu coastal development permit actions, looked to the certified Malibu/Santa Monica Mountains Land Use Plan (LUP) for guidance. The Malibu LUP has been found to be consistent with the Coastal Act and provides specific standards for development along the Malibu coast. For example, policies 166 and 167 provide, in concert with Coastal Act section 30235, that revetments, seawalls, cliff retaining walls and other shoreline protective devices be permitted only when required to serve coastal-dependent uses, to protect existing structures or new structures which constitute infill development and only when such structures are designed and engineered to eliminate or mitigate the adverse impacts on the shoreline and sand supply. In addition, Policy 153 indicates that development of sites that are exposed to potentially heavy tidal and wave action shall require that development be set back a minimum of 10 ft. landward from the mean high tide line. In this case, the proposed revetment will be located more than 10 ft. landward from the mean high tide line and will serve to protect an existing residence.

Therefore, in order to determine that the proposed project is in compliance with Section 30235 of the Coastal Act, the following sections will analyze the physical characteristics and dynamics of the subject site shoreline to determine whether the use of a shoreline protective device is required to protect the existing structure and whether the proposed project is designed to eliminate or mitigate the adverse impacts of such development.

1. Site Shoreline Characteristics

Broadbeach is a 1.3 mile long section of the coast which is heavily developed with single family homes and is located between Lechuza Point to the west and Zuma County Beach to the east. The project site is located on the westernmost section of Broadbeach immediately downcoast from Lechuza Point. The eastern and central portions of Broadbeach are characterized by low-crested protective sand dunes situated behind a relatively wide beach. However, the westernmost portion of Broadbeach, where the project site is located, is unique to the area in that it is subject to substantially different coastal processes than the other parts of Broadbeach and is characterized by a narrow beach lacking a protective dune field. The unique nature of the westernmost portion of Broadbeach is in part due to its location immediately southeast of Lechuza Point which acts as a barrier to littoral transport of beach material (see exhibit 2). In regards to a similar shoreline protection device project at 31368, 31376, 31372, 31350 and 31364 Broadbeach Road (approximately 1,000 ft. east of the proposed project) in which the Commission approved the construction of a vertical bulkhead across all five lots, Noble Consultants concluded in a Coastal Engineering Analysis Letter dated 9/15/94:

It is believed that the indented shoreline configuration immediately east (downcoast) of Lechuza Point temporarily disrupts the normal mode of alongshore transport. A "shadow zone" is formed where a greater proportion of sand moves alongshore but further offshore. As the sediment is transported further downcoast, it progressively moves closer to the beach until it reaches a point of "reattachment" where the normal mode of alongshore transport reoccurs. A localized debit of sand would result within this shoreline section. Therefore, based upon the impact of the Lechuza Point on the localized coastal processes, the...properties... are located within the shadow zone caused by the disruption of Lechuza Point...episodic shoreline losses accumulate when severe storms erode the applicants' unprotected dunes which are not likely to fully recover from the natural coastal processes.

The "shadow zone" created by the interaction of Lechuza Point upon the alongshore littoral transport extends approximately 1500 ft. east from Lechuza Point to where the closest public access way is located. The project site is located within this shadow zone. Due to the shadow effect, the well developed protective dunes which characterize Broadbeach east of the shadow zone are unable to form within the project area.

Moreover, the main sources of sediment for bluff backed beaches are the bluffs themselves, as well as the material that has eroded from inland sources and is carried to the beach by small coastal streams. While beaches seaward of coastal bluffs follow similar seasonal and semiannual changes as other sandy beaches, they differ from a

wide beach in that a narrow, bluff backed beach does not have enough material to maintain a dry sandy beach area during periods of high wave energy. Thus, unlike a wide sandy beach, a narrow, bluff backed beach may be scoured down to bedrock during the winter months. In the case of the westernmost portion of Broadbeach, Victoria Point Road, as well as several residences, have been constructed at the base of the bluff area and have thus altered the natural process of shoreline nourishment which would expose the back of the bluff to frequent wave attack as the beach erodes.

David Weiss, the applicant's coastal engineering consultant, has concluded that the bluff face located on the subject site is not a source of beach sand. The Commission notes that, in a natural setting, wave attack does lead to the eventual erosion and retreat of the lower portions of a bluff, which in turn results in the landward movement of the beach's location and the subsequent establishment of a new beach area. However, in the case of the project site, the back of the beach has been previously fixed in place by Victoria Point Road and the use of shoreline protective devices, and as such, the natural process of beach nourishment resulting from bluff erosion is not able to occur.

2. Beach Erosion Pattern

Having defined the westernmost section of Broadbeach as a narrow, bluff-backed beach, the next step is to determine the overall erosion pattern of the beach. Determination of the overall beach erosion pattern is the key factor in determining the impact of the seawall on the shoreline. In general, beaches fit into one of three categories: 1) eroding; 2) equilibrium; or 3) accreting. The persistent analytical problem in dealing with shore processes in California is distinguishing long-term trends in shoreline change from the normal seasonal variation.

The applicant's coastal engineering consultant has stated in his Coastal Commission Response Letter dated October 6, 1997, that he is unaware of any erosion or accretion records for the beaches of the Malibu area. However, staff investigation has disclosed the U.S. Army Corps of Engineers 1994 Reconnaissance Report regarding the Malibu/Los Angeles County coastline which concludes that Broadbeach has experienced periods of beach recession and recovery and that this scenario is expected to continue in a state of relative equilibrium into the future with the exception of the westernmost or upcoast end of the beach which is more vulnerable to erosion losses possibly due to the effect of Lechuza Point.¹ In addition, observation by Commission staff since 1992, indicates that this particular section of Broadbeach is eroding at a substantial rate. No evidence to the contrary has been submitted or discovered by staff investigation. Further, the applicant's coastal engineering consultant in the Wave Uprush Study dated January 30, 1989, has stated that:

¹This is based on estimated average vertical and horizontal scour prepared with the assistance of the numerical computer program model "SBEACH".

...under extreme conditions of storm wave attack and beach scour, the subject site can undergo considerable scour and erosion damage, possibly undermining the existing residence and road embankment.

Furthermore, the Commission notes that many studies performed on both equilibrium and eroding beaches have concluded that loss of beach occurs on both types of beaches where a shoreline protective device exists. Consequently, based on the studies of the behavior of the westernmost end of Broadbeach performed by the U. S. Army Corps of Engineers, conclusions reached by the applicant's coastal engineering consultant, the Noble Consultants Report, and other available sources as referenced in this report, the Commission finds that the westernmost portion of Broadbeach, which is located immediately downcoast from Lechuza Point, is an eroding beach and the proposed revetment would serve to protect an existing single family residence.

3. Location of the Proposed Shoreline Protective Device in Relation to Wave Action

In order to determine the impacts of the proposed revetment on the shoreline, the location of the proposed protective device in relationship to the expected wave runup must be analyzed. The 55 ft. long, 32 ft. wide, rock revetment is partially located beneath the existing structure and extends seaward 10 ft. beyond the existing deck. The proposed revetment is substantially aligned and connected with the 95 ft. long rock revetment which extends across the two parcels immediately west of the project site to form a single 150 ft. long rock revetment across all three lots. The seaward extent of the revetment will be approximately 80 feet seaward from the terminus of Victoria Point Road. The Wave Uprush Study by David C. Weiss, Structural Engineer and Associates indicates that the position of the proposed revetment does not intrude upon the historical areas of wave run-up and beach sediment transport. The beach profile data included in Wave Uprush Study also shows that the revetment is not located near documented positions of the MHTL. However, the data does indicate that inundation of the beach fronting the seawall will occur during high tide and low beach profile conditions in the winter. What remains unclear is the frequency at which the inundation will occur.

It is important to accurately calculate the potential of wave runup and wave energy to which the seawall will be subject. Dr. Douglas Inman, renowned authority on Southern California beaches concludes that, "the likely detrimental effect of the seawall on the beach can usually be determined in advance by competent analysis." Dr. Inman further explains the importance of the seawall's design and location as it relates to predicting the degree of erosion that will be caused by the shoreline protection device. He states:

While natural sand beaches respond to wave forces by changing their configuration into a form that dissipates the energy of the waves forming them, seawalls are rigid and fixed, and at best can only be designed for a single wave condition. Thus, seawalls introduce a disequilibrium that usually results in the reflection of wave energy and increased erosion seaward of the wall. The degree of erosion caused by the seawall is mostly a function of its reflectivity, which depends upon its design and location.²

Rock revetments operate on the principle that wave energy is dissipated within the voids of the wall, thereby producing less wave reflected energy than a smooth vertical wall. However, similar to a vertical wall, a rock revetment is a rigid structure fixed in place and will reflect wave energy and produce the same type of erosional impacts cited by Dr. Inman above. The applicant has submitted a "Wave Uprush Study Report" prepared by David C. Weiss, Structural Engineer and Associates which discusses the project's location relative to the wave uprush onto the beach area. The report generally indicated that the revetment would be landward of the shoreline except during severe storm and high tide wave conditions. In order to determine a design beach profile to assess the potential shoreline profile during normal and extreme storm conditions, the applicant's Wave Uprush Study was based on historical shoreline conditions as surveyed by the County of Los Angeles in 1951 and 1970. The minimum low beach profile with a high tide line at 127 ft. from Victoria Point Road was used and two wave designs were used to determine the location of where waves would break and the most landward extent of the wave uprush. However, the applicant's consultant states in the same report that "site evidence suggests that this has not been the most extreme shoreward foreshore slope movement." According to both wave design scenarios, the waves would break seaward of the design shoreline; however, the maximum foreshore slope position would be located approximately 74 ft. seaward from Victoria Point Road, which would be landward of the proposed location of the revetment. Therefore, as the maximum foreshore slope position would, at times, be located landward of the proposed revetment, the Commission notes that the proposed revetment would affect the natural beach profile, as discussed in detail in the following section.

Although the applicant's consultant has stated that the revetment will be subject to wave uprush only during severe storm and high tide wave conditions, Commission staff notes that the applicant's Wave Uprush Study and Coastal Engineering Response Letter only address the site in its present condition and do not examine the natural erosional tendencies of the beach or the future condition of the site in relation to the revetment. Given that there is strong evidence that the westernmost portion of Broadbeach is subject to long-term erosional trends, the frequency of wave exposure will increase as the beach width decreases over time. Further, as this erosional trend continues, the proposed rock revetment, over time, will be subject to wave action during a typical storm event and eventually normal wave uprush. This condition will only be exacerbated in the future given the documented long term erosional trends. The

² Letter dated 25 February 1991 to Coastal Commission staff member and engineer Lesley Ewing from Dr. Douglas Inman.

Commission finds that there are two basic premises of siting coastal structures on sandy beaches:

1) *The most important factor affecting the potential impact of a seawall on the beach is whether there is long-term shoreline retreat. (Note: The U.S. Army Corps of Engineers, Los Angeles District 1994 Reconnaissance Study of the Malibu Coast and other available information indicates that the westernmost portion of Broadbeach is suffering long-term shoreline retreat. Such retreat is a function of sediment supply and/or relative sea level change. Where long-term retreat is taking place...and this process cannot be mitigated, then the beaches in front of seawalls in these locations will eventually disappear.*³

2) *One of the most critical factors controlling the impact of a seawall on the beach is its position on the beach profile relative to the surf zone. All other things being equal, the further seaward the wall is, the more often and more vigorously waves interact with it. The best place for a seawall, if one is necessary, is at the back of the beach where it provides protection against the largest of storms. By contrast, a seawall built out to or close to the mean high water line may constantly create problems related to frontal and end scour, as well as upcoast sand impoundment.*

Based on the above discussion, the Commission finds that the rock revetment, at its proposed location, has the potential to encroach into an area of the beach that is currently subject to wave action during severe storm and high tide events. Furthermore, the Commission finds that the westernmost portion of Broadbeach is a narrow beach subject to an erosional trend and as this erosional trend continues, the proposed rock revetment, over time, will be subject to wave action during a typical storm event and eventually normal wave uprush. Therefore, the following discussion is intended to evaluate the impacts of the proposed seawall on the beach based on the above information which identified the specific structural design, the location of the structure and the shoreline geomorphology.

4. Effects of the Shoreline Protective Device on the Beach

The proposed 55 ft. long rock revetment will be constructed on the sandy beach and will extend approximately 80 ft. seaward of Victoria Point Road. This revetment, as a result of wave interaction, will have the potential to adversely impact the configuration of the shoreline and the beach profile. Even though the precise impact of a structure on the beach is a persistent subject of debate within the discipline of coastal engineering,

³ Tait, J.F. and G.B. Griggs, "Beach Response to the Presence of a Seawall: A Comparison of Field Observations," Shore and Beach, 1990, Vol. 58, No. 2, pp 11-28.

and particularly between coastal engineers and marine geologists, it is generally agreed that a shoreline protective device will affect the configuration of the shoreline and beach profile whether it is a vertical bulkhead or a rock revetment. The main difference between a vertical bulkhead and rock revetment seawall is their physical encroachment onto the beach. However, it has been well documented by coastal engineers and coastal geologists that shoreline protective devices or shoreline structures in the form of either a rock revetment or vertical bulkhead will adversely impact the shoreline as a result of beach scour, end scour (the beach areas at the end of the seawall), the retention of potential beach material behind the wall, the fixing of the back beach and the interruption of alongshore processes. In order to evaluate these potential impacts relative to the proposed structure and its location on Broadbeach, each of the identified effects will be evaluated below.

a. **Beach Scour**

Scour is the removal of beach material from the base of a cliff, seawall or revetment due to wave action. The scouring of beaches caused by seawalls is a frequently-observed occurrence. When waves impact on a hard surface such as a coastal bluff, rock revetment or vertical bulkhead, some of the energy from the wave will be absorbed, but much of it will be reflected back seaward. This reflected wave energy in combination with the incoming wave energy, will disturb the material at the base of the seawall and cause erosion to occur in front and down coast of the hard structure. This phenomenon has been recognized for many years and the literature acknowledges that seawalls do affect the supply of beach sand. However, in contradiction, the applicant's consultant, David C. Weiss, Structural Engineer and Associates in the October 6, 1997, coastal engineering response letter states:

The revetment is beyond the normal every day extent of wave uprush and is acted upon by wave action only during storm conditions. As a result, the revetment will have no effect on any beach scour...at this time.

Notwithstanding the accuracy of the applicant's coastal engineering consultant's description of current site conditions and conclusion that no scour will occur on site "at this time," the Commission notes that the Wave Uprush Study and Coastal Engineering Response Letter submitted by the applicant only address the site in its present condition and do not address the natural erosional tendencies of the beach or examine the future condition of the site in relation to the proposed revetment. As explained in detail in the previous section, the Commission finds that there is strong evidence that the westernmost portion of Broadbeach is subject to long-term erosional trends and that the frequency of wave exposure will increase as the beach width decreases over time. This condition will only be exacerbated in the future given the documented long term erosional trends. As such, the Commission finds that the subject site, over time, will likely be subject to wave action during normal tidal conditions. The following quotation

summarizes a generally accepted opinion within the discipline of coastal engineering that, "Seawalls usually cause accelerated erosion of the beaches fronting them and an increase in the transport rate of sand along them."⁴ Ninety-four experts in the field of coastal geology, who view beach processes from the perspective of geologic time, signed the following succinct statement of the adverse effects of shoreline protective devices:

These structures are fixed in space and represent considerable effort and expense to construct and maintain. They are designed for as long a life as possible and hence are not easily moved or replaced. They become permanent fixtures in our coastal scenery but their performance is poor in protecting community and municipalities from beach retreat and destruction. Even more damaging is the fact that these shoreline defense structures frequently enhance erosion by reducing beach width, steepening offshore gradients, and increasing wave heights. As a result, they seriously degrade the environment and eventually help to destroy the areas they were designed to protect.⁵

The above 1981 statement signed by 94 respected coastal geologists indicates that sandy beach areas available for public use can be harmed through the introduction of seawalls. Thus, in evaluating an individual project, the Commission assumes that the principles reflected in that statement are applicable. To do otherwise would be inconsistent with the Commission's responsibilities under the Coastal Act to protect the public's interest in shoreline resources. Specifically, to protect the public's access along the ocean and to the water, as discussed in more detail in the subsequent Section IV.E. Public Access.

The impact of seawalls as they are related to sand removal on the sandy beaches is further documented by the State Department of Boating and Waterways:

While seawalls may protect the upland, they do not hold or protect the beach which is the greatest asset of shorefront property. In some cases, the seawall may be detrimental to the beach in that the downward forces of water, created by the waves striking the wall rapidly remove sand from the beach.⁶

Finally this observation was underscored more recently in 1987 by Robert G. Dean in "Coastal Sediment Processes: Toward Engineering Solutions":

Armoring can cause localized additional storm scour, both in front of and at the ends of the armoring...Under normal wave and tide conditions, armoring can contribute to the

4 Saving the American Beach: A Position Paper by Concerned Coastal Geologists (March 1981, Skidaway Institute of Oceanography), pg. 4.

5 Saving the American Beach: A Position Paper by Concerned Coastal Geologists (March 1981, Skidaway Institute of Oceanography), pg. 4.

6 State Department of Boating and Waterways (formerly called Navigation and Ocean Development), Shore Protection in California (1976), page 30.

downdrift deficit of sediment through decreasing the supply on an eroding coast and interruption of supply if the armoring projects into the active littoral zone.⁷

It is generally agreed that where a beach is eroding, the erection of a seawall will eventually define the boundary between the sea and the upland. This result can be explained as follows: on an eroding shoreline fronted by a beach, a beach will be present as long as some sand is supplied to the shoreline. As erosion proceeds, the entire profile of the beach also retreats. This process stops, however, when the retreating shoreline comes to a seawall. While the shoreline on either end of the seawall continues to retreat, shoreline retreat in front of the seawall stops. Eventually, the shoreline fronting the seawall protrudes into the water, with the winter MHTL 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 seawall.

Dr. Craig Everts found that on narrow beaches where the shoreline is not armored, the most important element of sustaining the beach width over a long period of time is the retreat of the back beach and the beach itself. He concludes that:

Seawalls inhibit erosion that naturally occurs and sustains the beach. The two most important aspects of beach behavior are changes in width and changes in the position of the beach. On narrow, natural beaches, the retreat of the back beach, and hence the beach itself, is the most important element in sustaining the width of the beach over a long time period. Narrow beaches, typical of most of the California coast, do not provide enough sacrificial sand during storms to provide protection against scour caused by breaking waves at the back beach line. This is the reason the back boundary of our beaches retreats during storms.⁸

Dr. Everts further concludes that armoring in the form of a seawall or revetment interrupts the natural process of beach retreat during a storm event and that, "a beach with a fixed landward boundary is not maintained on a recessional coast because the beach can no longer retreat."

The Commission has observed this phenomenon up and down California's coast where a seawall has successfully halted the retreat of the shoreline, but only at the cost of usurping the beach. For example, at La Conchita Beach in Ventura County, placement of a rock revetment to protect an existing roadway has caused narrowing of the existing beach. Likewise, at City of Encinitas beaches in San Diego County, construction of vertical seawalls along the base of the bluffs to protect existing residential development above, has resulted in preventing the bluffs' contribution of sand to the beaches, resulting in narrowing. Although this may occur slowly, the Commission concludes that

⁷ Coastal Sediments '87.

⁸ Letter Report dated March 14, 1994 to Coastal Commission staff member and engineer Lesley Ewing from Dr. Craig Everts, Moffatt and Nichol Engineers.

it is the inevitable effect of constructing a seawall on an eroding shoreline. In such areas, even as erosion proceeds, a beach would be present in the absence of a seawall. As set forth in earlier discussion, the westernmost portion of Broadbeach is eroding and, therefore, the effects of the proposed revetment could potentially cause adverse impacts to the sand supply as the beach erodes further landward and as the protective device becomes a dominant component of the shoreline system.

The above cited studies thus confirm that beach scour is a likely result of the placement of seawalls in an area subject to wave runoff. In this case, the evidence has demonstrated that the westernmost portion of Broadbeach is an eroding beach. Furthermore, there is evidence that the proposed revetment will be routinely subject to wave action during the winter season.

The applicant's consultant has indicated that the revetment will be acted upon by waves during storm conditions (David C. Weiss Structural Engineers and Associates). The applicant's consultant has also stated that a maximum foreshore slope oscillation approximately 74 ft. seaward of Victoria Point Road may be produced by storm generated waves superimposed on high tides. However, the Commission notes that if an eroded beach condition occurs with greater frequency due to the placement of a revetment, this site would also accrete at a slower rate. Therefore, based on the Army Corps of Engineers 1994 Malibu study, the applicant's consultant, and other available sources as referenced in this report, the Commission finds, as discussed in detail above, that the revetment, over time, would be acted upon frequently during winter months and that this frequency would continue to increase over time.

The impacts of potential beach scour is important relative to beach use for two reasons. The first reason involves public access. The subject property is located approximately 1,200 feet from an existing vertical public accessway. If the beach scours at the base of the revetment, even minimal scouring in front of the 55 ft. long revetment will translate into a loss of beach sand available (i. e. erosion) at an accelerated rate than would otherwise occur under a normal winter season if the beach were unaltered. The second impact relates to the potential turbulent ocean condition. Scour at the face of a seawall will result in greater interaction with the wall and thus, make the ocean along the westernmost portion of Broadbeach more turbulent than it would along an unarmored beach area.

As such, the Commission has ordinarily required that all new development on a beach, including shoreline protection devices, be located as landward as possible in order to reduce adverse impacts from scour and erosion. In the case of this project, the Commission notes that the applicant has located the proposed revetment as landward as feasible while still being able to align the revetment with the previously existing revetment located on the two parcels immediately west of the project site. If the

proposed revetment were to be located in a more landward location, the two revetments would not be aligned and would result in a greater amount of end effect erosion between the two structures than if they has been aligned. As such, the alignment and connection of the proposed revetment with the existing revetment will serve to minimize end effect erosion between the two structures. In addition, in past permit actions, the Commission has also required that all new development on a beach, including shoreline protection devices, provide for public lateral access along the beach in order to reduce any adverse impacts to public access. As such, in order to mitigate any adverse impacts to public access, the applicant has proposed to offer a dedication for a public lateral access easement along the beach. Special condition one (1) has been required in order to ensure that the applicant's proposal of an offer to dedicate a new lateral public access easement is carried out. Therefore, as conditioned, the project will minimize the adverse impacts resulting from construction of the revetment and is consistent with the applicable Coastal Act sections and with past Commission action.

b. End Effects

End scour effects involve the changes to the beach profile adjacent to the shoreline protection device at either end. One of the more common end effects comes from the reflection of waves off of the shoreline protection device in such a way that they add to the wave energy which is impacting the unprotected coastal areas on either end. Coastal engineers have compared the end effects impacts between revetments and bulkheads. In the case of a revetment, the many angles and small surfaces of the revetment material reflect wave energy in a number of directions, effectively absorbing much of the incoming wave rather than reflecting it. Because of the way revetments modify incoming wave energy, there is often less problem with end effects or overtopping than that which occurs with a vertical bulkhead. In the case of a vertical bulkhead, return walls are typically constructed in concert with seawall, and, thus, wave energy is also directed to the return walls causing end erosion effects.

In addition, the Commission notes that the literature on coastal engineering repeatedly warns that unprotected properties adjacent to any shoreline protective device may experience increased erosion. Field observations have verified this concern. Although it is difficult to quantify the exact loss of material due to end effects, in a paper written by Gerald G. Kuhn of the Scripps Institution of Oceanography, it is concluded that erosion on properties adjacent to a rock seawall is intensified when wave runup is high.⁹

⁹ Paper by Gerald G. Kuhn of the Scripps Institution of Oceanography entitled "Coastal Erosion along Oceanside Littoral Cell, San Diego County, California" (1981).

An extensive literature search on the interaction of seawalls and beaches was performed by Nicholas Kraus in which he found that, while seawalls will have little if any effect on a beach with a large supply of sand, there will be effects to narrow beaches or beaches eroded by storm activity, such as the westernmost portion of Broadbeach. His research indicated that the form of the erosional response to storms that occurs on beaches without seawalls that are adjacent to beaches with seawalls is manifested as more localized toe scour and end effects of flanking and impoundment at the seawall.¹⁰ Dr. Kraus' key conclusions were that seawalls could be accountable for retention of sediment, increased local erosion and increased end erosion. Kraus states:

At the present time, three mechanisms can be firmly identified by which seawalls may contribute to erosion at the coast. The most obvious is retention of sediment behind the wall which would otherwise be released to the littoral system. The second mechanism, which could increase local erosion on downdrift beaches, is for the updrift side of the wall to act as a groin and impound sand. This effect appears to be primarily theoretical rather than actualized in the field, as a wall would probably fail if isolated in the surf zone. The third mechanism is flanking i.e. increased local erosion at the ends of walls.

In addition, preliminary results of researchers investigating the length of shoreline affected by heightened erosion adjacent to seawalls concluded that:

Results to date indicate that erosion at the ends of seawalls increases as the structure length increases. It was observed in both the experimental results and the field data of Walton and Sensabaugh (1978) that the depth of excess erosion is approximately 10% of the seawall length. The laboratory data also revealed that the along-coast length of excess erosion at each end of the structure is approximately 70% of the structure length.¹¹

A more comprehensive study was performed over several years by Gary Griggs which concluded that beach profiles at the end of a seawall are further landward than natural profiles.¹² This effect appears to extend for a distance of about 6/10 the length of the seawall and represents both a spatial and temporal loss of beach width directly attributable to seawall construction. In the case of this project the scour effects could be as great as 33 ft. to 39 ft. (6/10 of 55 ft. = 33 ft. or 70% of 55 ft. = 39 ft.). These end effects would be expected only when the seawall was exposed to wave attack and, under equilibrium or accreting beach conditions, this scour would disappear eventually during post-storm recovery. However, such cases of renourishment of end areas are rare for erosional beaches.

10 "Effects of Seawalls on the Beach", published in the Journal of Coastal Research, Special Issue #4, 1988.

11 "Laboratory and Field Investigations of the Impact of Shoreline Stabilization Structures on Adjacent Properties" by W.G. McDougal, M.A. Sturtevant, and P.D. Komar in Coastal Sediments '87.

12 "The Interaction of Seawalls and Beaches: Seven Years of Field Monitoring, Monterey Bay, California" by G. Griggs, J. Tait, and W. Corona, in Shore and Beach, Vol. 62, No. 3, July 1994.

In regard to any adverse impacts to adjacent structures resulting from the proposed revetment, the applicant's consultant, David C. Weiss, Structural Engineer and Associates, has stated in the Coastal Engineering Response letter dated October 6, 1997, that:

The revetment will have no effect on the adjacent structures. The house to the west..is protected by the revetment of which this is merely an extension. The house to the east extends considerably further seaward that the proposed revetment and is supported on a timber pile foundation system. Observation of this areas since 1992 has revealed no scour on the east side of the revetment in addition to what might normally occur to an unprotected embankment.

The applicant's coastal engineering consultant has stated that no end effect scour has resulted from the proposed revetment since its construction less than six years ago. Notwithstanding the accuracy of the applicant's coastal engineering engineer' Coastal description of present site conditions, the Commission notes that the Coastal Engineering Response Letter submitted by the applicant only addresses the site over a period of less than six years and does not address include any analysis of the future condition of the site or to future scour effects. As explained in detail in a previous section (IVb), the Commission finds that there is strong evidence that the westernmost portion of Broadbeach is subject to long-term erosional trends and that the frequency of wave exposure will increase as the beach width decreases over time. This condition will only be exacerbated in the future given the documented long term erosional trends. As such, the Commission finds that the subject site, over time, will likely be subject to wave action during normal tidal conditions. Given that the applicant's coastal engineering consultant provided no significant analysis of the erosional trend of the subject site, and based on the above referenced documents regarding end effects erosion, the Commission concludes that, over time, the proposed project is likely to result in some end effect erosion.

The Commission notes that end effect erosion may be minimized by locating a proposed shoreline protection device as landward as possible in order to reduce the frequency that the revetment or seawall is subject to wave action. In the case of this project, the Commission further notes that the proposed revetment is located as landward as feasible and still be able to align and connect with the previously existing revetment located on the two parcels immediately west of the project site. The alignment and connection of the proposed revetment with the existing revetment will also serve to minimize end effect erosion between the two structures. As such, the proposed revetment is designed to minimize erosional end effects along both the western and eastern ends of the wall. Therefore, the proposed project, as conditioned, is consistent with the applicable Coastal Act sections and with past Commission action.

c. Retention of Potential Beach Material

A shoreline protective device's retention of potential beach material inherently impacts shoreline processes. One of the main functions of a bulkhead or revetment is upland stabilization -- to keep the upland sediments from being carried to the beach by wave action and bluff retreat. In the case of the westernmost portion of Broadbeach, which is located in the Zuma Littoral Cell, the back of the beach is fixed at Victoria Point Road. When the beach in front of the structure disappears, over time the natural shoreward migration of the beach is blocked by the structure. The National Academy of Sciences found that retention of material behind a revetment may be linked to increased loss of material in front of the wall. The net effect is documented in "Responding to Changes in Sea Level, Engineering Implications" which provides :

A common result of sea wall and bulkhead placement along the open coastline is the loss of the beach fronting the structure. This phenomenon, however, is not well understood. It appears that during a storm the volume of sand eroded at the base of a sea wall is nearly equivalent to the volume of upland erosion prevented by the sea wall. Thus, the offshore profile has a certain "demand" for sand and this is "satisfied" by erosion of the upland on a natural beach or as close as possible to the natural area of erosion on an armored shoreline...¹³

As explained, the revetment will protect Victoria Point Road from continued loss of sediment. However, the result of this protection, particularly on a narrow, eroding beach, is a loss of sediment on the sandy beach area that fronts the seawall. Furthermore, as explained previously, this loss of sediment from the active beach leads to a lower beach profile, seaward of the protective device, where the seawall will have greater exposure to wave attack.

As such, the Commission has ordinarily required that all new development on a beach, including shoreline protection devices, which may have adverse impacts on the beach sand supply to offer public lateral access easements in order to reduce any adverse impacts to public access. In past permit actions, the Commission has also required that all new development on a beach, including shoreline protection devices, provide for public lateral access along the beach in order to reduce any adverse impacts to public access. As such, in order to mitigate any adverse impacts to public access along the beach, the applicant has proposed to dedicate a new public lateral access easement along the beach. Special condition one (1) has been required in order to ensure that the applicant's offer to dedicate a new lateral public access easement is carried out. Therefore, as conditioned, the project will minimize the adverse impacts resulting from construction of the revetment and is consistent with the applicable Coastal Act sections and with past Commission action.

¹³ National Academy of Sciences, Responding to Changes in Sea Level: Engineering Implications, National Academy Press, Washington D.C., 1987, page 74.

5. Conclusion

In conclusion, the Commission finds that the proposed 55 ft. long rock revetment will potentially have adverse impacts on the shoreline. In addition, there is substantial evidence that the seawall as proposed could adversely impact sand supply and public access as a result of beach scour, retention of potential beach material and interruption of onshore and alongshore processes. However, Coastal Act section 30235, which is previously cited, states that shoreline protective devices, such as revetments and other construction that would alter natural shoreline processes, shall be permitted when those structures are necessary to serve coastal-dependent uses or to protect existing structures or to protect public beaches in danger from erosion and when they are designed to eliminate or mitigate adverse impacts on local shoreline sand supply. In the case of this project, the applicant's coastal engineering consultant has stated that the proposed revetment is necessary to protect an existing single family residence, as well as Victoria Point Road. Further, as previously discussed in detail, the Commission also finds that the subject site is located on an eroding beach and that the proposed revetment would serve to protect the existing single family residence.

In addition, in past permit actions, the Commission has required that all new development on a beach, including shoreline protection devices, be located as landward as possible in order to reduce adverse impacts to the sand supply and public access resulting from the development.¹⁴ The Commission notes that the applicant has located the proposed revetment as landward as feasible in order to align the revetment with the previously existing revetment located on the two parcels immediately west of the project site. Alignment and connection of the proposed revetment with the previously existing revetment to the west will also minimize end effect scour and erosion between the two structures.

Further, in past permit actions, the Commission has also required that all new development on a beach, including shoreline protection devices, provide for public lateral access along the beach in order to reduce any adverse impacts to public access. As such, in order to mitigate any adverse impacts to public access along the beach, the applicant has proposed to dedicate a new public lateral access easement along the beach. Special condition one (1) has been required in order to ensure that the applicant's offer to dedicate a new lateral public access easement is carried out.

Therefore, as proposed, the project will minimize the adverse impacts resulting from construction of the revetment and is consistent with the applicable Coastal Act sections

¹⁴ Coastal Development Permit 4-97-071 (Schaeffer)

and with past Commission action. Therefore, the Commission finds that the proposed project, as conditioned, is consistent with section 30235 of the Coastal Act.

C. Hazards and Geologic Stability

Coastal Act Section 30253 states in part:

New development shall:

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

Section 30253 of the Coastal Act mandates that new development provide for geologic stability and integrity and minimize risks to life and property in areas of high geologic, flood, and fire hazard. In addition to section 30253 of the Coastal Act, the certified Malibu/Santa Monica Mountains LUP contains several policies and standards regarding hazards and geologic stability. For example, Policy 147 suggests that development be evaluated for impacts on and from geologic hazards. Policy 153 suggests that no development should be sited less than 10 ft. landward of the mean high tide line. These policies have been certified as consistent with the Coastal Act and used as guidance by the Commission in numerous past permit actions in evaluating a project's consistency with section 30253 of the Coastal Act.

Storm, Wave and Flood Hazard

The Malibu coast has been subject to substantial damage as a result of storm and flood occurrences, geological failures and firestorms. Therefore, it is necessary to review the proposed project and project site against the area's known hazards. The proposed project involves the construction of a new rock revetment along a developed stretch of Broadbeach.

The site is susceptible to flooding and/or wave damage from storm waves and storm surge conditions. Past occurrences have resulted in public costs (through low-interest loans) in the millions of dollars in the Malibu area alone.

Along the Malibu coast, significant damage has also occurred to coastal areas from high waves, storm surge and high tides. In the winter of 1977-78, storms triggered numerous mudslides and landslides and caused significant damage along the coast.

The southerly and southwesterly facing beaches in the Malibu area were especially hard hit by waves passing through the open windows between offshore islands during

the 1978 and 1980 storms. These waves broke against beaches, seawalls, and other structures, causing damages of between \$2.8 and \$4.75 million to private property alone. The amount of erosion resulting from a storm depends on the overall climatic conditions and varies widely from storm to storm. Protection from this erosion depends largely on the funds available to construct various protective structures that can withstand high-energy waves.¹⁵

The "El Nino" storms in 1982-83 caused additional damage to the Malibu coast, when high tides of over 7 feet were combined with surf between 6 and 15 feet. These storms caused over \$12.8 million in damage to structures in Los Angeles county, many located in Malibu. Due to the severity of the 1982-83 storm events, they have often been cited as an illustrative example of an extreme storm event and used as design criteria for shoreline protective structures. Damage to the Malibu coastline was documented in an article in California Geology. This article states that:

In general, the storms greatly affected the character of the Malibu coastline. Once quiet, wide, sandy beaches were stripped of their sand and high surf pounded residential developments The severe scour, between 8 to 12 feet, was greater than past scour as reported by "old timers" in the area. Sewage disposal systems which rely on the sand cover for effluent filtration were damaged or destroyed creating a health hazard along the coast. Flotsam, including pilings and timbers from damaged piers and homes, battered coastal improvements increasing the destruction. Bulkhead failures occurred when sand backfill was lost due to scour exceeding the depth of the bulkhead sheeting, or scour extending beyond the return walls (side walls of the bulkhead which are extended toward the shore from the front wall of the bulkhead).¹⁶

Storms in 1987-88 and 1991-92 did not cause the far-reaching devastation of the 1982-83 storms, however, they too were very damaging in localized areas and could have been significantly worse except that the peak storm surge coincided with a low tide rather than a high tide.

The applicant proposes to construct a 55 ft. long rock revetment to protect the existing single family residence located on site. Experience from historic storm events in Malibu indicates that this protection is essential to the long-term viability of both the road and the single family residence.

The applicant's submittal includes a Wave Uprush study prepared by David C. Weiss, Structural Engineer and Associates dated 7/28/97 which concludes that a shoreline protective device is necessary as the subject site is vulnerable to "considerable scour and erosion damage, possibly undermining the existing residence and road embankment."

¹⁵ "Coastal Winter Storm Damage, Malibu, Los Angeles County, Winter 1977-78", part of the National Research Council proceedings, George Armstrong.

¹⁶ "Assessment of 1982-83 Winter Storms Damage Malibu Coastline", by Frank Denison and Hugh Robertson, in California Geology, September 1985.

During the winter season, the proposed revetment will extend into an area exposed to wave attack, flooding, and erosion hazards that in the past have caused significant damage to development along the California coast, including the Malibu coastal zone and the beach area nearby the subject property. The Coastal Act recognizes that new development, such as the proposed rock revetment, may involve the taking of some risk. Coastal Act policies require the Commission to establish the appropriate degree of risk acceptable for the proposed development and to determine who should assume the risk. When development in areas of identified hazards is proposed, the Commission considers the hazard associated with the project site and the potential cost to the public, as well as the individual's right to use his property. In addition, the applicant's consultant has further stated in his Wave Uprush study that "the owner should realize that there will always be certain risks associated with living on the beach "the proposed project is "meant to minimize storm wave damage and not to eliminate it."

As such, the Commission finds that due to the unforeseen possibility of wave attack, erosion, and flooding, the applicant shall assume these risks as a condition of approval. Because this risk of harm cannot be completely eliminated, special condition three (3) requires the applicant to waive any claim of liability on the part of the Commission for damage to life or property which may occur as a result of the permitted development. The applicant's assumption of risk, when executed and recorded on the property deed, will show that the applicant is aware of and appreciated the nature of the hazards which exist on the site, and which may adversely affect the stability or safety of the proposed development.

The Commission finds that based on the findings of the Wave Uprush Study Report and Coastal Engineering Response Letter by the applicant's consultant, the study by the U.S. Army Corps of Engineers, the Noble Consultants Report, and other available sources as referenced in this report, that as conditioned above, the proposed project is consistent with Section 30253 of the Coastal Act.

D. Public Access.

One of the basic mandates of the Coastal Act is to maximize public access and recreational opportunities along the coast. The Coastal Act has several policies which address the issues of public access and recreation along the coast.

Section 30210 of the Coastal Act states:

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

Section 30211 of the Coastal Act states:

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

Section 30212 of the Coastal Act states (in part):

(a) Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects...

Section 30220 of the Coastal Act states:

Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

Coastal Act sections 30210 and 30211 mandate that maximum public access and recreational opportunities be provided and that development not interfere with the public's right to access the coast. Likewise, section 30212 of the Coastal Act requires that adequate public access to the sea be provided to allow use of dry sand and rocky coastal beaches. Section 30220 of the Coastal Act requires coastal areas suited for coastal recreational activities, that cannot be provided at inland water areas, be protected.

The major access issue in this permit is the occupation of sand area by a structure, in contradiction of Coastal Act policies 30211 and 30221. Section 30211 requires that development shall not interfere with access.

As proposed, this project would extend out onto a sandy beach area approximately 10 ft. beyond the existing deck dripline. As stated in the preceding section an existing public vertical accessway is located approximately 1,200 ft. to the east of the project site. In addition a second vertical public accessway is located farther to the east on Broadbeach and Zuma Beach, which is public, is located approximately two miles east of the project site. All projects requiring a coastal development permit must be reviewed for compliance with the public access and recreation provisions of Chapter 3 of the Coastal Act. Based on the access, recreation and development sections of the Coastal Act, the Commission has required public access to and along the shoreline in new development projects and has required design changes in other projects to reduce interference with access to and along the shoreline.

As noted above, interference by the proposed revetment has a number of effects on the dynamic shoreline system and the public's beach ownership interests. First, changes in the shoreline profile, particularly changes in the slope of the profile which results from a reduced beach berm width, alter the usable area under public ownership. A beach that rests either temporarily or permanently at a steeper angle than under natural conditions will have less horizontal distance between the mean low water and mean high water lines. This reduces the actual area in which the public can pass on their own property. The second effect on access is through a progressive loss of sand as shore material is

not available to nourish the bar. The lack of an effective bar can allow such high wave energy on the shoreline that materials may be lost far offshore where it is no longer available to nourish the beach. The effect of this on the public are again a loss of area between the mean high water line and the actual water. Third, shoreline protective devices such as revetments and bulkheads cumulatively affect public access by causing accelerated and increased erosion on adjacent public beaches. This effect may not become clear until such devices are constructed individually along a shoreline and they reach a public beach. Fourth, if not sited landward in a location that insures that the seawall is only acted upon during severe storm events, beach scour during the winter season will be accelerated because there is less beach area to dissipate the wave's energy. Finally, revetments and bulkheads interfere directly with public access by their occupation of beach area that will not only be unavailable during high tide and severe storm events but also potentially throughout the winter season.

Due to the aforementioned adverse impacts of shoreline protective structures on public access, the proposed shoreline protection device must be judged against the public access and recreation policies of the State Constitution, Sections 30210, 30220, and 30211 of the Coastal Act. Along the California coast, the line between land and ocean is complex and constantly moving.

The State Owns Tidelands. Which Are Those Lands Below the Mean High Tide Line as it Exists From Time to Time. 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, § 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 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.¹⁷

The Commission Must Consider a Project's Direct and Indirect Impact on Public Tidelands. 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 avoid 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 State Lands Commission presently does not assert a claim that the project intrudes onto sovereign lands.

Even structures located above the mean high tide line, however, may have an impact on shoreline processes as wave energy reflected by those structures contributes to erosion and steepening of the shore profile, 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. As discussed elsewhere in the Commission's findings (see Section IVB Shoreline Protective Devices), there is substantial evidence that this project will result in indirect impacts on tidelands because the bulkhead is located in an area that is subject to wave attack and wave energy.

The Commission Also Must Consider Whether a Project Affects Any Public Right to Use Shorelands That Exists Independently of the Public's Ownership 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, these uses have been identified as: (1) 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 (2) any additional rights that the public might have acquired through public purchase, offers to dedicate and the like.

¹⁷ The legal location of the tidelands boundary is the subject of litigation involving the Coastal Commission, the State Lands Commission and an owner of private uplands. (See *Lechuza Villas West v. California Coastal Commission*, __ Cal. App. 4th __, 97 Daily Journal D.A.R. 15277 (Dec. 19, 1997))

In this case, no evidence has been presented in connection with this application that the public may have acquired rights of use under the doctrine of implied dedication. However, there is evidence that the project would generate adverse individual and cumulative impacts on sand supply, beach profile, and ultimately, public access as a result of localized beach scour, retention of beach material and interruption of the alongshore and onshore sand transport process. The analysis further indicates that there is a strong possibility that the shoreline is eroding and that the revetment will be subject to wave uprush. This too would limit the availability of sandy beach area and public access and recreation use.

These use rights are implicated as the public walks the wet or dry sandy beach below the mean high tide plane. 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.

The beaches of Malibu are extensively used by visitors of both local and regional origin and most planning studies indicated that attendance of recreational sites will continue to significantly increase over the coming years. The public has a right to use the shoreline under the public trust doctrine, the California Constitution and California common law. The Commission must protect those public rights by assuring that any proposed shoreline development does not interfere with or will only minimally interfere with those rights. Here, there is a high probability that the proposed bulkhead will generate a permanent loss of sandy beach over time as a result of both the direct placement of the seawall on the beach, the change in the beach profile or steepening which is likely to result over time, and the presence of the residential structure out over sandy beach. Presently, this shoreline remains open and can be used by the public for access and general recreational activities.

As stated previously, an existing public vertical accessway is located approximately 1,200 ft. to the east of the project site. In addition a second vertical public accessway is located farther to the east on Broadbeach. Zuma Beach, which is maintained by the County of Los Angeles as a public beach, is located approximately two miles east of the project site. The Commission notes that Zuma Beach, which is located adjacent to Broadbeach, is the most heavily used beach in Malibu. In addition, beachgoers who access the beach from either Zuma Beach, or the vertical public accessways along Broadbeach, often walk along the shore to Lechuza Point (upcoast from the project site) and back again passing directly in front of where the proposed revetment is located. Based on both historic and recent observations of beach use in this area, it is clear that measures to insure the protection of the public's ability to laterally access the area must be asserted.

In past permit actions, the Commission has required that all new development on a beach, including shoreline protection devices, be located as landward as possible in order to reduce adverse impacts to the sand supply and public access resulting from the development. The Commission notes that the applicant has located the proposed

revetment as landward as feasible in order to align the revetment with the previously existing revetment located on the two parcels immediately west of the project site. Alignment and connection of the proposed revetment with the previously existing revetment to the west will also minimize end effect scour and erosion between the two structures.

In addition, in past permit actions, the Commission has also required that all new development on a beach, including shoreline protection devices, provide for public lateral access along the beach in order to reduce any adverse impacts to public access if accepted. The Commission notes that a dedication for lateral access was previously recorded on May 7, 1975, for the subject site as a condition of Coastal Development Permit 4661 which was issued by the Commission in 1975, for the construction of a single family residence. The applicant is aware of the existence of the original dedication and has proposed to dedicate a new easement which would supersede and replace the previous dedication. The applicant's offer to dedicate lateral access will differ from the original easement in that the original 1975 easement provided for an area of only 25 ft. in width as measured landward from the mean high tide line. However, the new lateral access easement, which the applicant has proposed to offer as part of this project, will not be fixed at a 25 ft. width but will include the entire beach under all tidal conditions with the exception of a ten ft. privacy buffer as measured seaward from the toe of the proposed revetment. The ten ft. privacy buffer will be available for public use when no other dry areas of the beach are available for public access. The Commission also notes that the new lateral access easement, which the applicant has offered to dedicate as part of this project, will more accurately describe the ambulatory nature of the easement's width in relation to the mean high tide line and will be more consistent with other lateral access easements which have been recorded on properties along Broadbeach.

In order to conclude with absolute certainty what impacts the proposed revetment would cause on the shoreline processes and public access, a historical shoreline analysis based on site-specific studies would be necessary. Because the applicant has proposed, as part of the project, an offer to dedicate a new lateral access easement along the southern section of the lot as measured from the toe of the revetment, it has not been necessary for Commission staff to engage in an extensive analysis as to the adequacy of the original easement or whether the imposition of a new offer to dedicate would be required here absent the applicant's proposal. As such, special condition one (1) has been required in order to ensure that the applicant's offer to dedicate a new lateral public access easement is transmitted prior to the issuance of the coastal development permit.

Further, as noted above, beachgoers who access the beach from either Zuma Beach, or the vertical public accessways along Broadbeach, often walk along the shore to Lechuza Point (upcoast from the project site) and back again. Commission staff notes that more conflicts between private property owners and public beachgoers have been

documented along Broadbeach than along any other beach in the Malibu area. Commission staff also notes that a "Private Beach Patrol" has been used by the Homeowner's Association in past years to patrol Broadbeach and enforce a "No Trespassing" policy on private property. Given the ambulatory nature of the mean high tide line, and thus the boundary between public and private lands, there has been ongoing conflicts and confusion between the beach users and private property owners regarding which portions of Broadbeach are private and which are public. Commission staff received numerous complaints, particularly during summer months, from beachgoers who have stated that private residents, or the Beach Patrol, have inhibited public access along Broadbeach. In fact, Commission staff receive more complaints regarding access conflicts along Broadbeach between private property owners, or the Beach Patrol, and beach users than on any other beach in Malibu.

In addition, the placement of signs on single family beachfront homes which state "PRIVATE BEACH" or "PRIVATE PROPERTY" or contain similar such message prohibiting public use of the beach have routinely caused members of the public to believe that they do not have the right to use the shoreline along Broadbeach. In effect, these signs have served to contradict the public's rights to use the shoreline pursuant to the California Constitution and California common law. In order to ensure that the general public is not precluded from using the shoreline, the Commission finds it necessary to impose special condition two (2) which would prohibit the landowner from placing any signs which explicitly or implicitly indicate that the beach is private or like messages that attempt to prohibit public use of the beach. In addition, it is necessary that any signs posted on the applicant's property or any adjacent properties that pertain to use of this applicant's property be subject to the review and approval of the Executive Director prior to posting. The California Coastal Commission notes that the prohibition on signage on adjacent properties as spelled out in special condition two (2) is only intended to prohibit signage relating to the portion of the beach on Assessor's Parcel Number 4470-017-036 seaward of the revetment permitted in this application.

Therefore, the Commission finds that the proposed project, as conditioned, is consistent with Sections 30210, 30211, 30212 and 30220 of the Coastal Act.

E. Violations

The applicant is requesting "after the fact" approval for the construction of a 55 ft. long rock revetment. All construction activities were previously carried out without the benefit of a coastal development permit and constitute a violation of the Coastal Act.

Although the above mentioned development has taken place prior to submission of this permit application, consideration of the application by the Commission has been based solely upon the Chapter 3 policies of the Coastal Act. Approval of this permit does not constitute a waiver of any legal action with regard to the alleged violation nor does it constitute an admission as to the legality of any development undertaken on the subject site without a coastal permit.

F. Local Coastal Program

Section 30604 of the Coastal Act states that:

a) Prior to certification of the local coastal program, a coastal development permit shall be issued if the issuing agency, or the commission on appeal, finds that the proposed development is in conformity with the provisions of Chapter 3 (commencing with Section 30200) of this division and that the permitted development will not prejudice the ability of the local government to prepare a local program that is in conformity with the provisions of Chapter 3 (commencing with Section 30200).

Section 30604(a) of the Coastal Act provides that the Commission shall issue a Coastal Permit only if the project will not prejudice the ability of the local government having jurisdiction to prepare a Local Coastal Program which conforms with Chapter 3 policies of the Coastal Act. The preceding sections provide findings that the proposed project will be in conformity with the provisions of Chapter 3 if certain conditions are incorporated into the project and accepted by the applicant. As conditioned, the proposed development will not create adverse impacts and is found to be consistent with the applicable policies contained in Chapter 3. Therefore, the Commission finds that approval of the proposed development, as conditioned, will not prejudice the City's ability to prepare a Local Coastal Program for Malibu which is also consistent with the policies of Chapter 3 of the Coastal Act as required by Section 30604(a).

G. CEQA

Section 13096(a) of the Commission's administrative regulations requires Commission approval of Coastal Development Permit application to be supported by a finding showing the application, as conditioned by any conditions of approval, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(i) 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 impact which the activity may have on the environment.

The Commission finds that, the proposed project, as conditioned will not have significant adverse effects on the environment, within the meaning of the California Environmental Quality Act of 1970. Therefore, the proposed project, as conditioned, has been adequately mitigated and is determined to be consistent with CEQA and the policies of the Coastal Act.

SMH-VNT

File SMHp2/4-97180b

APPENDIX

SUBSTANTIVE FILE DOCUMENTS

Wave Uprush Study by David C. Weiss Structural Engineer and Associates, Inc., dated 1/30/89.

Observation of Existing Rock Revetment by David C. Weiss Structural Engineer and Associates, Inc., dated 7/28/97.

Response Letter to California Coastal Commission by David C. Weiss Structural Engineer and Associates, Inc. dated 10/6/97.

Coastal Engineering Analysis by Noble Consultants dated 1/26/94.

Response Letter to California Coastal Commission by Noble Consultants dated 9/15/94.

Malibu/Santa Monica Mountains District Interpretive Guidelines. Coastal Commission. 1981, dated 1/30/89.

Certified Malibu/Santa Monica Mountains Land Use Plan. County of Los Angeles, dated 12/11/86.

Adopted City of Malibu General Plan. November 1995.

City of Malibu. Article IX Interim Zoning Ordinance. 1993.

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State of California. State Department of Boating and Waterways (formerly Navigation and Ocean Development). Shore Protection in California. 1976.

Tait, J.F and G.B. Griggs. "Beach Response to the Presence of a Seawall: A Comparison of Field Observations". Shore and Beach. Vol. 58, No. 2, pp 11-28. 1990.

LETTERS and MEMOS

Letter to Lesley Ewing from Douglas Inman, Ph.D., February 25, 1991.

Letter to Lesley Ewing from Dr. Craig Everts of Moffatt and Nichol Engineers, March 14, 1994.

COASTAL PERMIT APPLICATIONS

Staff Report Lechuza Villas West 2/4/97 (Lechuza Villas West); 4-94-200 (Dussman); 4-97-071 (Schaeffer); and 4-94-012,013,014,107 and 111 (Hill, Green, Irving, Gale & Moorman).

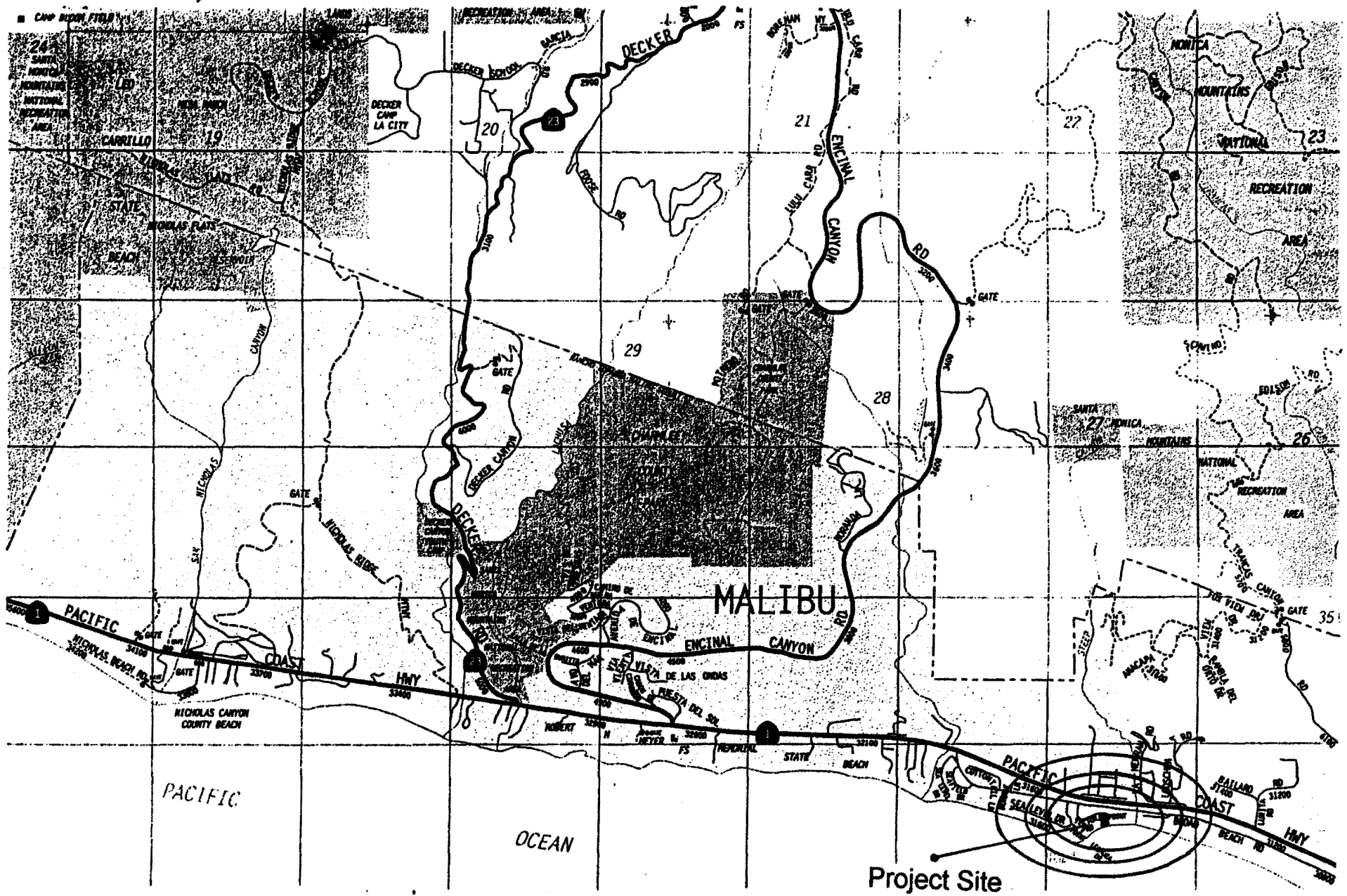
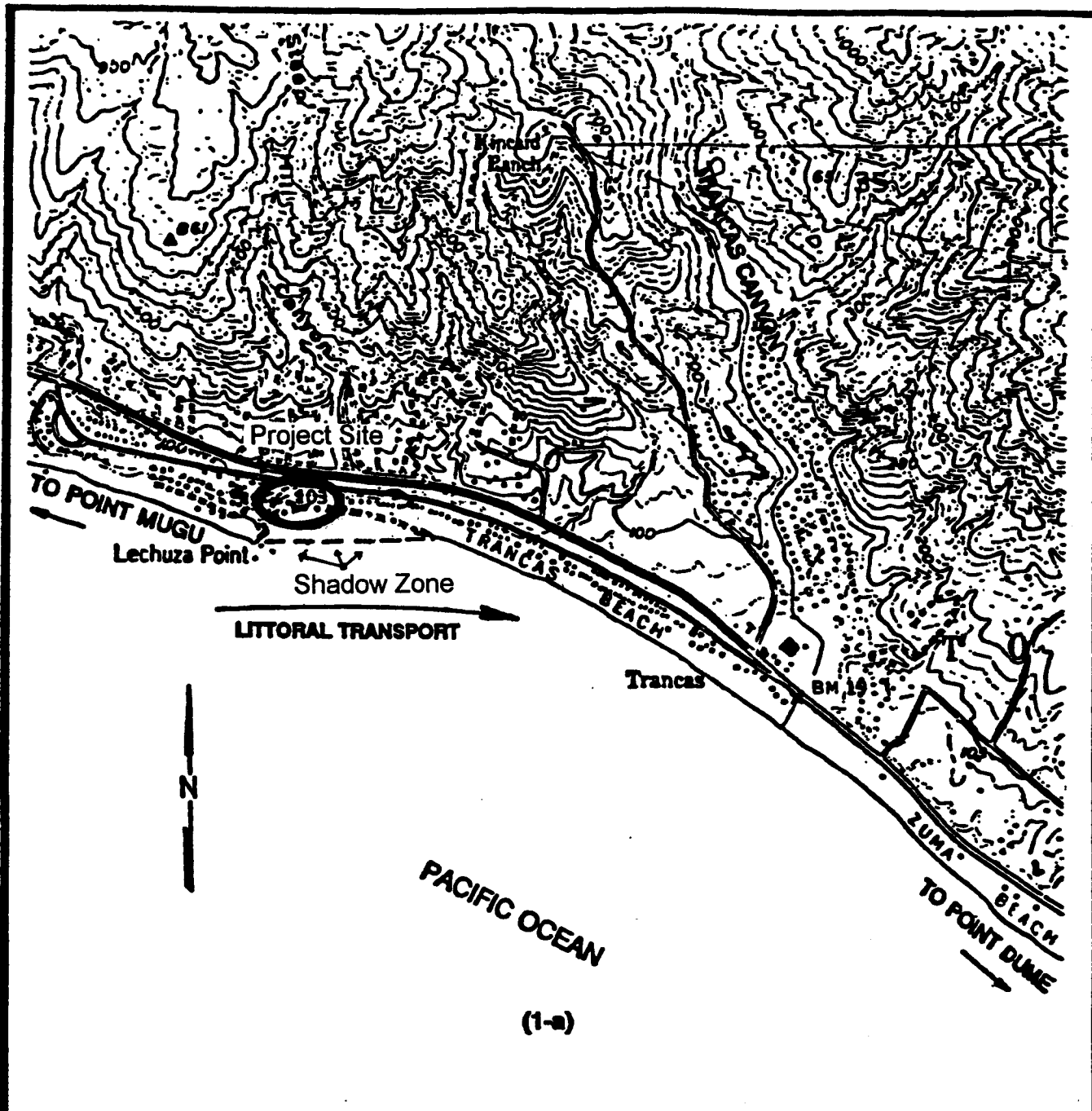
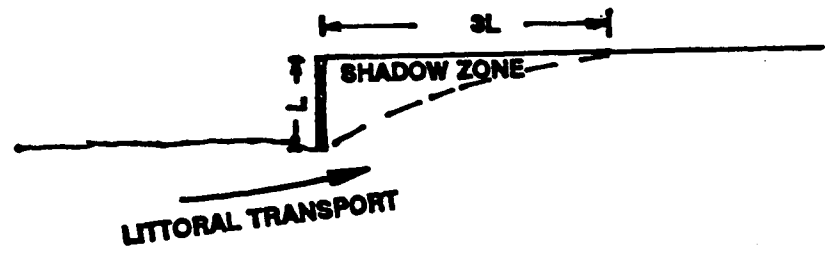


Exhibit No. 1: (4-97-160) Location Map



(1-a)



(1-b)

Exhibit No. 2: (4-97-160) Littoral Transport Along Broadbeach

4470 | 17
SCALE 1" = 100'

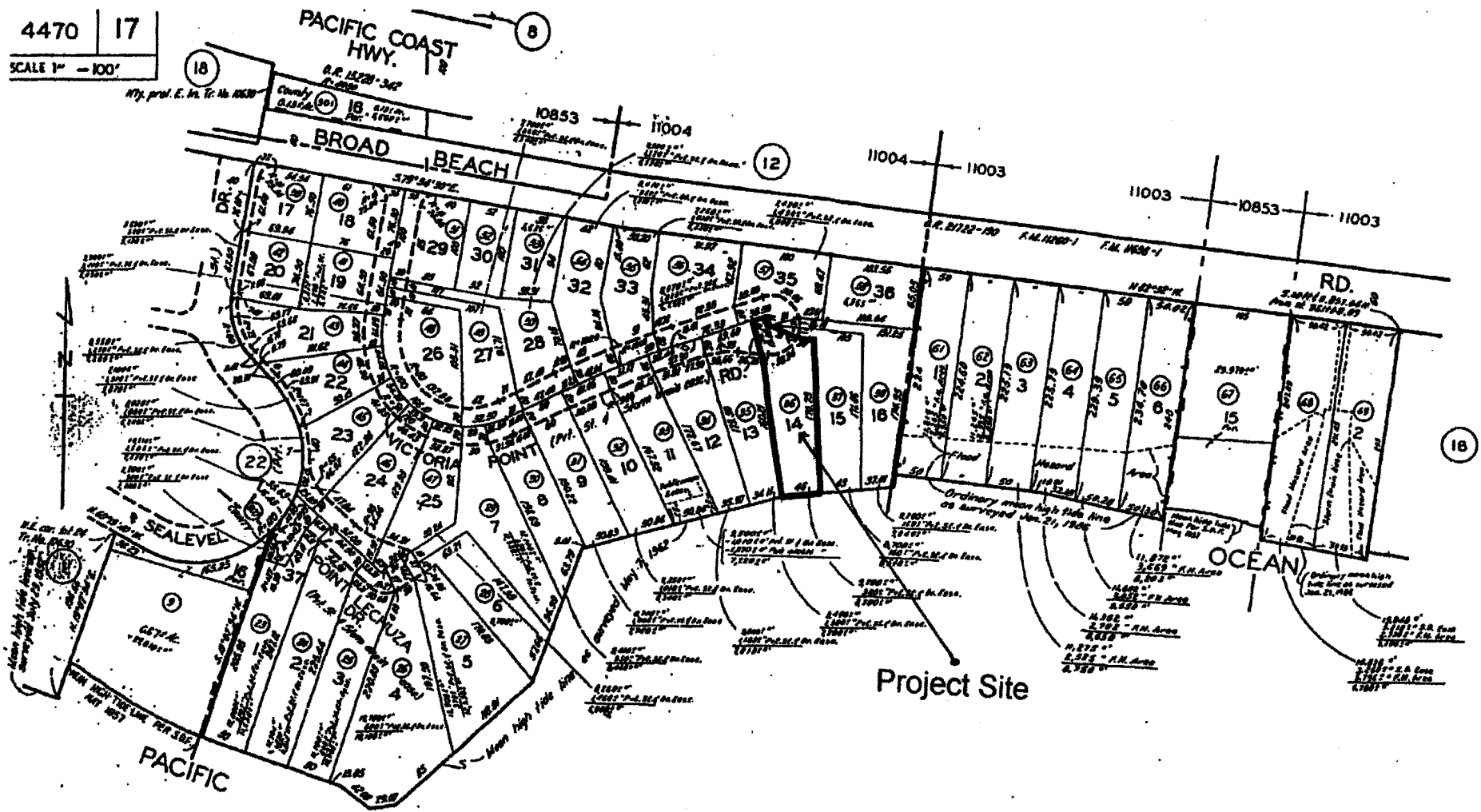
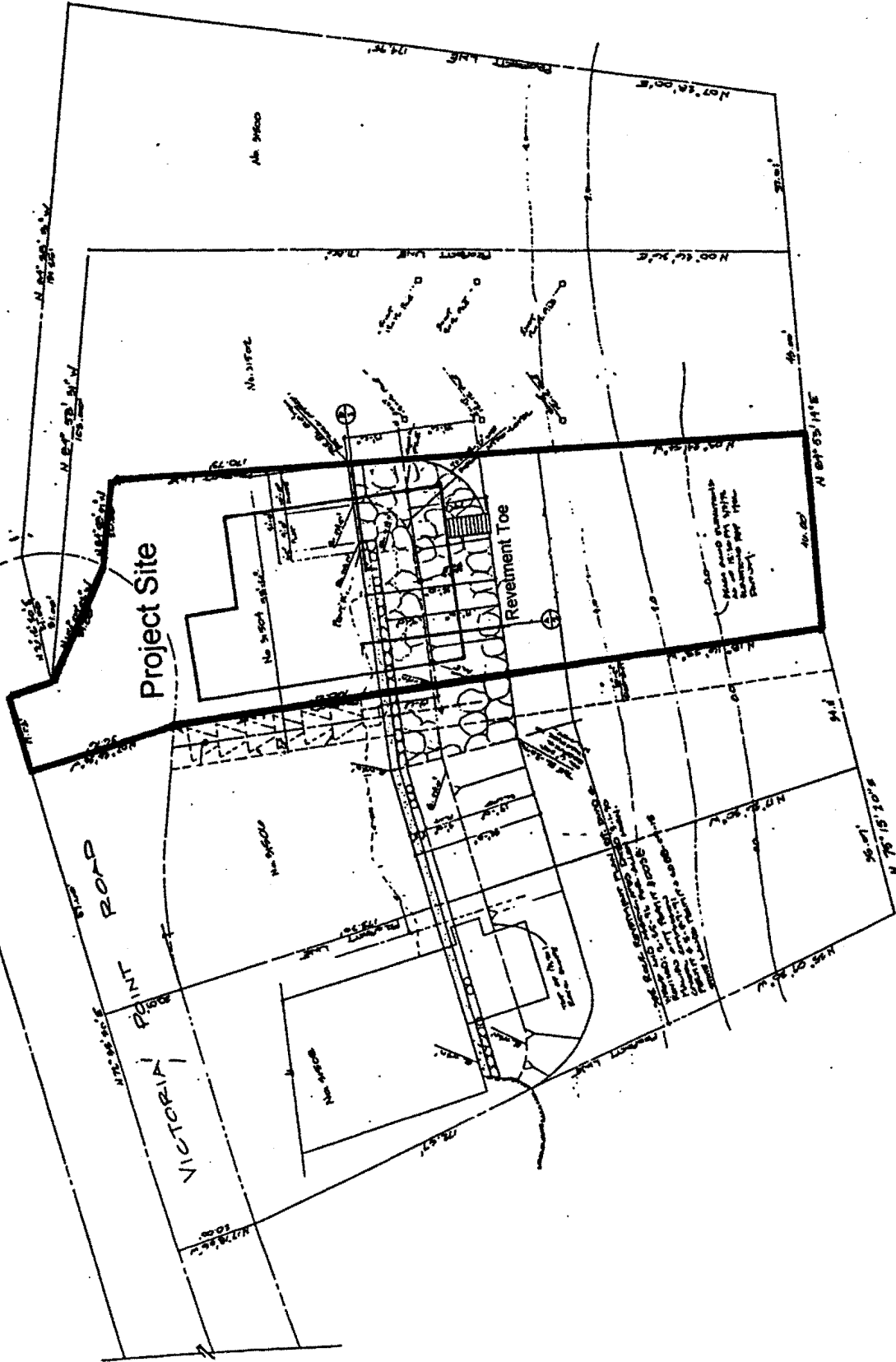
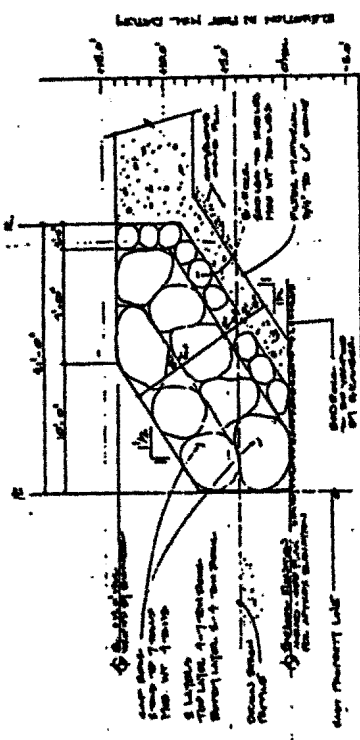


Exhibit No. 3: (4-97-160) Parcel Map for Project Site

ROCK REYETMENT
31504 VICTORIA POINT ROAD
MALIBU, CALIFORNIA

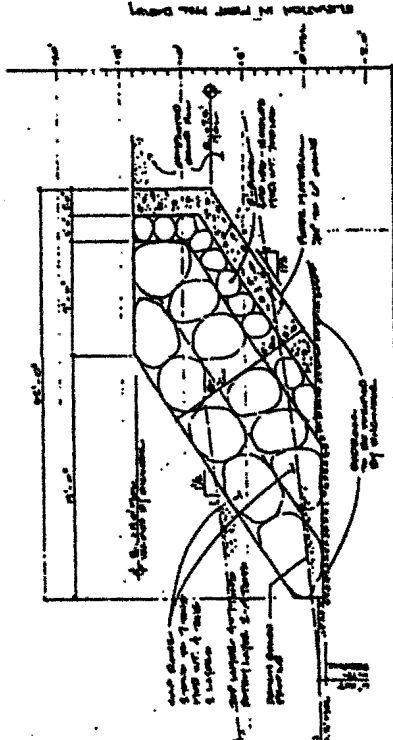
ROCK REYETMENT PLAN





ROCK RETENTION WALL SECTION 13

CONTRACTOR'S NOTE: DO NOT CHINQUE CAP ROCK VOIDS WITH EMPALM ROCK!



ROCK RETENTION WALL SECTION A

CONCRETE STAINLESS STEEL REINFORCED

