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Commission Action:

STAFF REPORT: REGULAR CALENDAR

APPLICATION NO.: 4-97-156

APPLICANT: University of California, Santa Barbara

PROJECT LOCATION: University of California, Santa Barbara, Main Campus - Adjacent to Eastern Lagoon Barrier

PROJECT DESCRIPTION: Expansion of the existing seawater renewal system pumphouse, placement of two 2,500 ft. long seawater intake lines and the construction of a 460 ft. long, 10 ft. high, 15-32 ft. wide, rock revetment core/dune, two stairways, access ramp and removal of 400-450 linear ft. of existing rock revetment.

SUBSTANTIVE FILE DOCUMENTS: Shown on ***Appendix A***

STAFF NOTE

This application was presented to the Commission at two previous hearings on March 12 and April 9, 1998. The application was continued at each of these hearings due to concerns raised by staff and the Commission that the University had not included an adequate analysis of all feasible alternatives to the proposed rock revetment in its submittal as required by Section 30235 of the Coastal Act and by the California Environmental Quality Act (CEQA). At the Commission's request, this item has been rescheduled to be heard at the June Commission hearing in order to allow the University an opportunity to provide the additional information necessary for such analysis. Commission staff met with University staff on April 30 and May 11, 1998, to discuss possible alternatives to the originally proposed rock revetment that would minimize impacts to sand supply and public access.

The University has now modified the originally proposed project to substitute the construction of a 460 ft. long, 10 ft. high, 15-32 ft. wide, rock revetment core/dune (Exhibit 3) for the originally proposed 460 ft. long, 10 ft. high, 15-37 ft. wide, rock

revetment (Exhibit 10), add a second stairway to the south of the pumphouse, and remove approximately 400-450 linear feet of existing revetment located south of the project site at Goleta Point. The primary differences between the new and the original proposal is that the rock revetment core/dune would be located further landward and constructed with a steeper face slope of 1.5:1 (H:V) than the originally proposed rock revetment which would have been constructed at a 2:1 (H:V) slope. In addition, the University would implement an annual program of sand placement on top of the rock structure. The more steeply angled revetment design of the rock revetment core/dune would serve to reduce the footprint of the structure and would be located further landward than the previous proposal in order to decrease impacts to the sandy beach.

However, since the University has submitted only preliminary sketches for the proposed modification, it is not possible to accurately determine how much further landward the proposed rock revetment core/dune would be located than the originally proposed project. Staff recognizes that although the rock revetment core/dune alternative submitted by the University does appear to occupy a smaller portion of certain segments of the beach south of the pump house, the preliminary sketches submitted by the University also appear to indicate that the proposed rock revetment core/dune would occupy substantially the same amount of beach as the original proposal for all portions of the beach located to the north of the pump house. Further, staff notes that the proposed rock revetment core/dune could feasibly be located significantly further landward to the north of the pump house through relocation of the proposed ramp and relocation of the rock core revetment/dune further landward both north and south of the pump house.

Although aspects of the new shoreline protection device component of the project now proposed by the University are an improvement over the previous proposal, staff notes that with additional modifications to the shoreline protective device aspect of the project proposal, the adverse impacts to public access and sand supply from direct occupation of the sandy beach by the structure could still be further significantly minimized. Commission staff is willing to continue to work with the University towards developing an acceptable alternative form of shoreline protection which may include relocation of the proposed ramp and revetment further landward in order to minimize occupation of the sandy beach by rock. Further, Staff will consider any direction provided by the Commission regarding the development of an acceptable alternative form of shoreline protection.

The applicant wishes to proceed now with the proposed improvements to the seawater renewal system and utility lines despite the fact that Staff can not presently recommend approval of the revetment and other aspects of the project as proposed (Exhibits 12 and 13). The seawater renewal system components (the pumphouse and the intake and utility line improvements) proposed in this project are distinct and segregable, and structurally and functionally independent, from the other components of the project. The March 26, 1998, letter by Penfield and Smith Engineers indicates that the proposed seawater renewal system pump house is "designed to be free-standing on its pile foundation" and does not require the construction of a rock revetment or seawall. The University has also confirmed by letter dated May 22, 1998, that the construction

and integrity of the proposed seawater renewal system pump house and associated utility lines are not dependent upon the construction of a rock revetment (Exhibit 12). The applicant has indicated that the intake and electrical lines which are located below grade within the existing lagoon barrier can be adequately protected through encasement of the subterranean intake and utility lines in concrete.

Staff notes that the other components of this project, including the stairways and ramp improvements that are proposed to be constructed as part of the rock revetment core/dune, are integrally related to the construction of the rock revetment and can not be approved separately. In addition, the removal of the 400-450 linear feet of existing rock revetment has been submitted in connection with the proposed construction of the new rock revetment core/dune and should be considered together with the revetment. Therefore, at this time, staff is only recommending approval of the improvements to the seawater renewal system (the pump house and the intake and utility lines).

PLEASE NOTE: Twenty-two letters from the public in addition to a petition titled "Save Campus Point" signed by approximately 962 people in opposition to the construction of a revetment as part of the proposed project have been received (Exhibit 14).

SUMMARY OF STAFF RECOMMENDATION

Staff recommends approval of the proposed project with four (4) special conditions regarding revised plans and assumption of risk, timing of construction, and construction responsibilities/debris removal. The applicant is proposing the expansion of the existing seawater renewal system pumphouse, placement of two 2,500 ft. long seawater intake lines and the construction of a 460 ft. long, 10 ft. high, 15-32 ft. wide, rock revetment core/dune, two stairways, access ramp and removal of 400-450 linear ft. of existing rock revetment.

The project site is located on the southeast perimeter of the Main Campus at UCSB on the sandy beach bordered by the Marine Biotechnology Laboratory to the north and the "lagoon island" to the south. The Campus Lagoon is located directly west from the project site and is separated from the Santa Barbara Channel to the east by the existing lagoon barrier. The shoreline immediately up and downcoast from the project site is characterized by high coastal bluffs. The low-lying project site serves as a primary public access point to the sandy beach between Goleta Point and Goleta Beach. In addition, the State Lands Commission has determined that the proposed revetment will be located on sandy beach seaward of the mean high tide and will therefore be subject to a lease agreement between the University and the State Lands Commission. Although the University has a certified Long Range Development Plan, the proposed project is located within the original jurisdiction of the Coastal Commission (which includes all tidal lands) and is, therefore, subject to a coastal development permit.

The existing seawater renewal system provides seawater to Campus laboratories. The expansion will serve to increase the capacity of the system from its current maximum of 800 gallons per minute (gpm) to 1,200 gpm in order to meet increased educational and scientific needs and to increase the reliability of the system. The University proposes to construct a 460 ft., 15-32 ft. wide, long rock revetment core/dune which would occupy a majority of the sandy beach to prevent the lagoon barrier from breaching. The University has stated in a letter dated May 22, 1998, that the proposed pumphouse and associated intake and utility lines can be constructed "so as to not necessitate a hard form of shoreline protection such as a rock revetment or seawall" (Exhibit 12). The Commission notes, however, that coastline development is routinely subject to potential damage as a result of storm and flood occurrences. Due to the unforeseen possibility of wave attack, erosion, and flooding, the Commission finds that the applicant must assume these risks as a condition of approval. Because this risk of harm cannot be completely eliminated regardless of the construction of a shoreline protective device, special condition two (2) 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.

Although the expansion of the seawater renewal system component of this application is consistent with the applicable policies of the Coastal Act, the other components of this application, the construction of a rock revetment core/dune, two stairways and the ramp, raise issue with the Coastal Act with regard to adverse impacts to shoreline sand supply, public access, and environmentally sensitive habitat area. The Coastal Act allows for the use of shoreline protective devices, such as revetments, when those structures are necessary to serve coastal-dependent uses or to protect existing structures in danger from erosion and when they are designed to eliminate or mitigate adverse impacts on local shoreline sand supply.

The March 26, 1998, letter by Penfield and Smith Engineers, indicates that the proposed seawater renewal system pump house is "designed to be free-standing on its pile foundation" and does not require the construction of a revetment. The applicant has indicated that the seawater intake and electrical lines, which are located below grade within the existing lagoon barrier, may be further protected by encasement of such lines in concrete. The University has confirmed by letter dated May 22, 1998, that the construction and integrity of the proposed seawater renewal system pump house and associated utility lines is not dependent upon the construction of a rock revetment (Exhibit 12). Staff notes that the proposed rock revetment core/dune would serve to protect the existing lagoon barrier and road and prevent breaching of the lagoon. The Commission notes that while coastline development is routinely subject to potential damage as a result of storm and flood occurrences, the lagoon barrier has been maintained with periodic maintenance in its present condition for more than 50 years. Staff observation of the site after recent severe storms has confirmed that both the pumphouse and barrier remained relatively intact. Thus, the applicant has not demonstrated that the proposed rock revetment core/dune is consistent with Section 30235 of the Coastal Act.

In addition, under section 30235, the proposed rock revetment core/dune, can not be considered "necessary" if a feasible alternative which would result in fewer adverse impacts to coastal resources exists. In the case of this project, alternative forms of shoreline protection which could achieve the basic project objectives with fewer adverse impacts are available which have not been adequately addressed in the University's submittal including beach replenishment, reducing the size of the shoreline protective device, relocating the rock revetment core/dune further landward so as to encroach upon less of the beach, etc. Therefore, the applicant has not demonstrated that the proposed project is consistent with Section 30235 of the Coastal Act or CEQA requirements.

Although, the proposed rock revetment core/dune would protect the existing educational and scientific opportunities provided by the Campus Lagoon, it would also result in adverse impacts to the ESHA, habitat, recreational and public access values of the beach area. Further, alternative forms of shoreline protection such as dune nourishment and beach replenishment, may not only be feasible but could also serve to enhance the habitat, educational, and scientific value of the project site which is located within an area designated as ESHA by the UCSB Long Range Development Plan (LRDP). For the purpose of clarification, the project area is located within the Coastal Commission's original permit jurisdiction pursuant to the recent determination by the State Lands Commission. Therefore, special condition one (1) requires the applicant to submit revised plans for the seawater renewal system expansion without the placement of the rock revetment core/dune and any related development such as the stairways and ramp which are integrated into the revetment design.

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 effects 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. Revised Plans

Prior to the issuance of the coastal development permit, the applicant shall submit to the Executive Director for review and approval, revised plans prepared by a qualified civil engineer which delete the proposed rock revetment core/dune and the associated stairways and ramp which have been integrated into the design of the revetment. The plans shall not include the removal of the 400-450 linear feet of existing rock revetment located to the south of the proposed rock revetment core/dune.

2. Applicant's Assumption of Risk

Prior to the issuance of the coastal development permit, the applicant shall submit a signed document in a form and content acceptable to the Executive Director, which shall provide: (a) that the applicant understands the site may be subject to extraordinary hazard from storm waves, erosion or flooding and the applicant assumes the risk from such hazards; and (b) the applicant assumes the liability from such hazards and unconditionally waives any claim of liability against the Commission or its successors in interest for damage from such hazards and agrees to indemnify and hold harmless the Commission, its offices, agents, and employees against any and all claims, demands, damages, costs, expenses or liability arising from the project and relating to such hazards.

3. Timing of Construction

Construction activity involving the placement of the seawater renewal system intake pipelines or the operation of tractor-tread machinery on the sandy beach shall be restricted within the seasonally predicted run period and egg incubation period for the California grunion as identified by the California Department of Fish and Game. If construction of the seawater renewal system, intake lines, or any other development which may involve construction activity on the beach will occur during grunion running and incubation season, then the beach shall be monitored by a biologist(s) or environmental specialist(s) approved by the Executive Director. The biological monitor(s) shall be present on the project site each night, for the entire night, from one night before the beginning of each seasonally predicted Grunion run until one night after the end of each run to monitor the presence of any Grunion present on the site. If any adult Grunion are present on the project site beach, then no construction activities shall be allowed until after the next predicted Grunion run in which no adult Grunion have been observed on the project site beach unless otherwise approved by the Executive Director. The biological monitor(s) will immediately notify the Executive Director after each run during the construction period whether adult Grunion were found to be present.

4. Construction Responsibilities and Debris Removal

It shall be the applicant's responsibility to assure that the following occurs during project construction: a) that no stockpiling of dirt shall occur on the beach; b) that all grading shall be properly covered, sand-bagged, and ditched to prevent runoff and siltation; and, c) that measures to control erosion must be implemented at the end of each day's work. In addition, no machinery will be allowed in the intertidal zone at any time with the exception of construction activity involving the removal and installation of the offshore piping for the seawater renewal system and for the removal of the existing revetment. The permittee shall remove from the beach and lagoon barrier area any and all debris that result from the construction.

IV. Findings and Declarations.

The Commission hereby finds and declares:

A. Project Description and Background

The applicant is proposing the expansion of the existing seawater renewal system pumphouse, placement of two 2,500 ft. long seawater intake lines and the construction of a 460 ft. long, 10 ft. high, 15-32 ft. wide, rock revetment core/dune, two stairways, access ramp and removal of 400-450 linear ft. of existing rock revetment. The new seawater intake lines will be fastened to the sea floor and extend 2,500 ft. seaward from the existing pumphouse. The existing pumphouse will be expanded from 250 sq. ft. to 1,465 sq. ft and will include the addition of a second pump and wet well. A public viewing deck will be located on the roof of the structure and will provide access for the physically challenged through the use of an access ramp. The 460 ft. long rock revetment core/ would be located seaward of the existing seawater renewal system pumphouse and the eastern lagoon barrier. A stairway and access ramp have been incorporated into the design of the revetment to allow for access to the remaining amount of sandy beach that would not be occupied by the revetment.

The project site is located on the southeast perimeter of the Main Campus and is bordered by the Marine Biotechnology Laboratory to the north and the "lagoon island" to the south. The Campus Lagoon is located directly west from the project site and is separated from the Santa Barbara Channel to the east by the existing lagoon barrier. The eastern lagoon barrier was originally constructed using sand and cobblestone in 1942 when the subject site was used as a Marine Air Corp station in order to extend a dirt road to Goleta Point. In 1952, after the project site had been awarded to the Regents of the University of California, the barrier was raised and widened through the placement of available construction debris including soil, broken concrete, brick and pieces of asphalt paving to form a more substantial barrier between the Campus Lagoon and the ocean. At this time, an overflow weir to control the maximum water level of the lagoon was also installed. The Lagoon Barrier serves to retain the water of

the Campus Lagoon which has a surface elevation of approximately 6 ft. above Mean Sea Level (MSL).[1]

Although not part of this coastal development permit application, the University has concurrently submitted a notice of impending development for improvements to the lagoon barrier (which is not in the Coastal Commission's original permit jurisdiction and is subject to the LRDP) which involve the placement of approximately 700 cu. yds. fill to raise the height of the barrier from approximately 8 ft. mean sea level (MSL) to approximately 11 ft. MSL, pavement of the existing access road across the barrier. The Commission notes, however, that the placement of fill along the barrier is integrally related to the revetment which is proposed as part of this coastal development permit application as this grading is only necessary in conjunction with the proposed rock revetment core/dune. Sand elevation is approximately 5 ft. MSL at the lagoon barrier. As the lagoon barrier now exists, beachgoers may easily access the sandy beach from any point along the approximately 400 ft. long barrier road with only an approximate change in elevation between the road and the beach of 3 ft. The placement of fill to increase the height of the barrier raises issue with regard to adverse impacts to public access.

Historically, the lagoon operated as an evaporative salt flat wetlands which was open to occasional tidal action. As it now exists, the lagoon functions artificially receiving its source water from the Campus stormwater drainage system and from seawater discharge of the marine laboratory which has a maximum capacity of 800 gpm. Outflow from the lagoon is from an overflow weir located at the western terminus of the lagoon and from two overflow pipes located in the lagoon barrier. As discharge from the existing seawater renewal system is the main source or input of water for the lagoon, the expansion of the seawater renewal system will serve to increase water circulation and quality within the lagoon. Since the bottom of the lagoon is primarily above mean sea level, if the barrier were breached, the lagoon would partially drain and become re-exposed to periodic tidal inundation creating an evaporative salt flat wetlands. The University asserts that reversion of the lagoon to a salt flat wetlands would adversely affect the educational, research and aesthetic value of the lagoon.

As certified in the UCSB Long Range Development Plan (LRDP), the Campus Lagoon and all beaches (including the project site) are designated as environmentally sensitive habitat areas (ESHAs). The LRDP also describes the Campus Lagoon as a coastal dependent use for instructional and research purposes. Although not specifically mentioned in the LRDP, the existing seawater renewal system, including the pumphouse and wet well located in front of the lagoon barrier, is also a coastal dependent use essential to the operation of the Marine Biotechnology Laboratory which provides unique academic and research opportunities. In past years, the lagoon barrier has been subject to erosion from winter storm events and the University has implemented temporary measures, such as, the placement of fill, sandbags, and concrete debris to prevent the lagoon barrier from breaching. The construction of the

[1] UCSB Draft Lagoon Management Plan

proposed rock revetment core/dune is intended to protect the lagoon barrier and barrier road and permanently prevent the lagoon from breaching.

B. Shoreline Protective Devices

As stated previously, the University proposes to construct a 460 ft. long, 10 ft. high, 15-32 ft. wide, rock revetment core/dune to protect the pumphouse and lagoon barrier. The proposed revetment would be located seaward of the existing lagoon barrier and would connect to the existing rock revetments, which extend approximately 400 ft. both up and downcoast from the project site and serve to protect the high coastal bluffs.

Section 30235 of the Coastal Act allows for the construction of a shoreline protection device when necessary to protect existing development and coastal dependent uses only when designed to eliminate or mitigate adverse impacts to the shoreline sand supply. In addition, Section 30253 of the Coastal Act requires that all new development must assure structural integrity and not contribute to significant erosion or destruction of the site.

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.***

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. In addition, under section 30235, the proposed rock revetment core/dune, can not be considered "necessary" if a feasible alternative which would result in fewer adverse impacts to coastal resources exists. 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 and proposed structures, as well as the existing lagoon, and whether the proposed shoreline

protective device is designed to eliminate or mitigate the adverse impacts of such development or if there are feasible project alternatives which would accomplish equitable shoreline protection which would result in fewer adverse impacts.

1. Site Shoreline Characteristics

The subject site is located within the Santa Barbara Littoral Cell which extends from Point Conception to the Mugu Submarine Canyon. Beach material is derived from stream sources and the erosion of bluff material. Beaches along the coast within the surrounding region tend to be narrow and backed by high cliffs.[2] Broader pockets of sandy beach are often associated with stream outlets. The Campus Lagoon is believed to be part of an old stream channel that may represent the historic mouth of the Goleta Slough system.[3]

Further, the project site is located at one of the three historic natural outlets of the lagoon. The beach within the project site is backed only by the low artificial lagoon barrier rather than the high bluffs characteristic of the surrounding coastline and, thus, constitutes a natural access point for beachgoers. The project site is characterized as a "pocket" type beach which is wider in nature than those sections of the beach immediately up or down coast which are narrow and backed by high bluffs.

2. Beach Erosion Pattern

Determination of the overall beach erosion pattern is an important 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.

Photographic evidence and inspections of the project site by Commission staff have confirmed that some erosion of the backshore and lagoon barrier has occurred over the years. In addition, the final Seawater Renewal System Environmental Impact Report (EIR) in discussion of the "No Shoreline Protection Alternative" states that "Over time, sand sediments comprising the Lagoon Barrier would naturally erode and transport offshore through wave action and littoral processes." This could allow the lagoon to partially breach. However, no time estimate was provided for the rate of erosion of the lagoon barrier or for the possibility of a partial breach and no additional information was submitted by the applicant regarding the immediacy of concern.

The applicant's marine and earth sciences consultant has indicated in his Scour and Overtopping Report dated April 20, 1997, that scour of the beach and foreshore of the subject site does occur during a storm event. The report states:

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[2] BEACON, Draft Environmental Impact Report for BEACON Beach Nourishment Demonstration Project, 1992.
[3] UCSB Draft Lagoon Management Plan

> ***surficial sand is moved offshore and a steep (1 vertical on about 5 horizontal) coarse beach face is formed. Removal of the surficial beach sand results in a temporary retreat of the strand an estimated 20 to 30 ft.***

Although the report does include a discussion of estimated wave runup probabilities which indicates that the proposed revetment will have a 27% chance of being overtopped by wave action per year, no analysis of the resultant erosion of the existing lagoon barrier or the backshore without the benefit of the proposed revetment is included. With regard to long-term erosional trends of the subject site shoreline, the report states that:

> ***virtually no change in the position of the shoreline has taken place at the site during the interval from 1871 to the present...Shoreline retreat does not appear to be occurring at the subject site at present.***

The above analysis of long-term shoreline erosional trends of the subject site submitted by the applicant's marine and earth sciences consultant is based on the comparison of a U.S. Coast Survey Map of Goleta Point from 1871 and topographic maps of Goleta made by the Santa Barbara Flood Control District in 1965 and 1991. Although not stated in the report, the above description of the subject site as having a relatively stable shoreline configuration over time with temporary erosion of the sandy beach area and some permanent erosion resulting to the lagoon barrier would seem to infer that the subject site is a typical example of an "equilibrium beach."

However, the University has also submitted a Draft Lagoon Management Plan (LMP) as part of LRDP amendment 2-97 which is related to this project and which indicates that the subject site is an eroding beach stating that:

> ***Winter-summer sand movements have contributed to significant beach erosion between Goleta Point and the marine laboratory since the mid-1970s. Historic photographic evidence indicates that the Campus Lagoon margin was approximately 1,000 feet from the active shoreline and the shoreline faced southeast. Since 1972, the shoreline has been eroded into a concave form facing northeast and has retreated westward approximately 25 feet toward the Campus Lagoon.***

Based on the contradictory information submitted by the applicant, the Commission finds that there is conflicting evidence to whether the project site is an eroding beach or in a state of equilibrium. Independent research by Commission staff has not identified any long-term studies of the shoreline erosional tendencies of the project area. University staff have since stated that the information contained in the proposed LMP is incorrect but have submitted no further evidence to that effect. The Commission can not conclude that the subject beach is either eroding or in equilibrium based on this

evidence. However, even assuming the accuracy of the applicant's Scour and Overtopping Report dated April 20, 1997, 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.[4]

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 460 ft. long, 10 ft. high, rock revetment core/dune would be variable in width and extend approximately 15-32 ft. seaward of the existing lagoon barrier resulting in the loss of a significant portion of the sandy beach depending on tidal conditions. The proposed revetment would connect with the existing rock revetments which extend approximately 500 ft. up and down coast from the project site in both directions. The existing rock revetments are located at the base of high coastal bluffs typical of the area, whereas the proposed revetment will be located at a break between the high bluffs at a natural low point along the coast which provides convenient access for beachgoers.

The California State Lands Commission has determined that the proposed rock revetment will periodically be located seaward of the ambulatory mean high tide line (Exhibit 9). In addition, although the University has not submitted an analysis of the rate of erosion of the lagoon barrier, the University has prepared a summary list of damages which have occurred since March of 1977, to the existing seawater renewal system and pumphouse due to erosion of the backshore area and the lagoon barrier. Based on the University's records of lagoon barrier erosion and staff observation of the site during varying tidal conditions, the Commission finds that inundation of the beach fronting the proposed revetment does occur during extreme high tide conditions and/or storm events. In addition, the Scour and Overtopping Report dated April 20, 1997, submitted by the University predicts that wave runup would have a 27 percent chance each year of overtopping a 10 ft. rock revetment on the project site. Therefore, based on the determination by the California State Lands Commission and information provided by the applicant, the Commission finds that the proposed rock revetment core/dune would be located seaward of the ambulatory mean high tide line at least some of the time and would be subject to wave action at least during extreme high tide and/or storm events.

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

[4] Coastal Development Permit 4-97-071 (Schaefer)

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.***[5]

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 Commission finds that there are two basic premises of siting coastal protective 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. 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.*

> *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.*[6]

Based on the above discussion, the Commission finds that the rock revetment core/dune, at its proposed location, will periodically be seaward of the Mean High Tide Line and will encroach into an area of the beach that is currently subject to wave action during severe storm and high tide events. Therefore, the following discussion is intended to evaluate the impacts of the proposed shoreline protective device on the

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

[6] 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.

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 460 ft. long rock revetment core/dune will periodically be seaward of the Mean High Tide Line and will be subject to wave action. The revetment, as a result of wave interaction, will potentially result in significant adverse impacts to 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, 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 differences between a vertical bulkhead and rock revetment seawall are their energy dissipation and 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 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 the sandy beach, 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.

Although, the Scour and Overtopping Report submitted by the applicant's Marine and Earth sciences consultant analyzes the effects of scour on the proposed rock revetment, no analysis of how the proposed revetment will affect scouring of the sandy beach is included. In addition, as discussed in a previous section, the subject site is described as having a relatively stable shoreline configuration over time with temporary erosion of the sandy beach area which is characteristic of an equilibrium beach. However, the report does not analyze the effects of the proposed rock revetment in

relationship to the seasonal transport of sand on and offshore and how this would affect the rate of seasonal beach recovery over time. Thus, it is not possible to determine what long-term impacts the proposed revetment may have on shoreline sand supply.

However, the Commission finds that, as discussed in the previous section, the project site is subject to wave action during high tides and/or storm events. It is a generally accepted opinion within the discipline of coastal geology that, "Seawalls usually cause accelerated erosion of the beaches fronting them and an increase in the transport rate of sand along them."[7] 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.***[8]

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 and to protect the public's access along the ocean and to the water, as discussed in more detail in the subsequent Section IV.D. 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.***[9]

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

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

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

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 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.***[10]

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. 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.***[11]

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

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10 Coastal Sediments '87.

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

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 it is the inevitable effect of constructing a seawall on an eroding or equilibrium shoreline.

The impact of potential beach scour is also important relative to public access to and along the beach. The east facing shoreline of the Campus is characterized by high coastal bluffs. As such, the low-lying project site serves as one of only two vertical public access points to the sandy beach between Goleta Point and Goleta Beach. The other public access point, an existing stairway from the blufftop located approximately 1,100 ft. to the north of the project site, has been closed by the Campus for safety reasons. If the beach scours at the base of the revetment, even minimal scouring in front of the 460 ft. long proposed rock revetment core/dune 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 applicant's consultant has indicated that the revetment will be acted upon by waves during storm conditions. Even assuming that the project site functions as an equilibrium beach, 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. In such areas, even as erosion proceeds, a beach would be present in the absence of a seawall. Regardless of whether the subject site is an eroding or an equilibrium beach, the proposed revetment will potentially result in significant adverse impacts to the sand supply as the protective device becomes a dominant component of the shoreline system.

b. <u>End Effects</u>

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 beach 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.[12]

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. 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.[13] 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.***[14]

A more comprehensive study was performed over several years by Dr. Griggs which concluded that beach profiles at the end of a seawall are further landward than natural profiles.[15] This effect appears to extend for a distance of about 6/10 the length of the

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

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

14 "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.

15 "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.

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 460 ft. = 276 ft. or 70% of 460 ft. = 322 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 natural renourishment of end areas are rare for erosional beaches.

In the case of this project, the proposed rock revetment core/dune would connect to the existing rock revetments located both up and downcoast from the project site. The alignment and connection of the proposed revetment with the existing revetments will serve to minimize end effect erosion between the two structures. Therefore, the proposed revetment is designed to minimize erosional end effects along both the up and downcoast ends of the wall.

5. Alternatives Analysis

The Commission finds that the proposed 460 ft. long rock revetment core/dune will have adverse impacts on the shoreline. In addition, there is substantial evidence that the shoreline protection device, as proposed, will adversely impact sand supply and public access as a result of beach scour and the direct occupation of the public beach. Coastal Act section 30235 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 University has stated that the proposed revetment is not necessary to protect the existing pumphouse and intake lines but that it would serve to protect the existing lagoon barrier and barrier road (Exhibit 12). In addition, the Commission notes that while coastline development is routinely subject to potential damage as a result of storm and flood occurrences, the lagoon barrier has been maintained with periodic maintenance in its present condition for more than 50 years. Staff observation of the site after recent severe storms has confirmed that the barrier has remained relatively intact. Thus, the applicant has not demonstrated that the proposed rock revetment core/dune is consistent with Section 30235 of the Coastal Act.

In addition, under section 30235, the proposed rock revetment core/dune, can not be considered "necessary" if a feasible alternative which would result in fewer adverse impacts to coastal resources exists. As required by the California Environmental Quality Act (CEQA), an analysis of alternatives to the proposed revetment which might better eliminate or mitigate adverse impacts, is included in the Seawater Renewal System Final Environmental Impact Report (EIR) dated May 1997.

The Commission notes that alternative forms of shoreline protection which could achieve the basic project objectives with fewer adverse impacts have not been adequately addressed in the Environmental Impact Report or any other information submitted by the University. The UCSB Long Range Development Plan (LRDP) states that the Campus Lagoon must be prevented from naturally breaching in order to maintain its ESHA, instructional and research value. Although, the proposed rock revetment core/dune would serve to prevent the Campus Lagoon from breaching, it would also result in adverse impacts to the shoreline sand supply, ESHA, recreational and public access values of the beach area. Further, as discussed below, alternative forms of shoreline protection such as dune nourishment and beach replenishment, may not only be feasible but could also serve to enhance the habitat, educational, and scientific value of the project site which is located within an area designated as ESHA by the LRDP.

a. No Shoreline Protection Alternative

The EIR identifies a "No Shoreline Protection Alternative" which would allow for the periodic maintenance of the existing barrier. The EIR notes that "Over time, sand sediments comprising the Lagoon Barrier would naturally erode and transport offshore through wave action and littoral processes" which could allow the lagoon to partially breach. Commission staff, in correspondence, requested that this alternative be explored. However, the EIR provides only minimal analysis of this alternative. The University has stated that the pump house and appurtenant pipes and intake lines for the seawater system could be designed to avoid the necessity for shoreline protection (Exhibit 12). Further, the Commission notes that coastline development is routinely subject to potential damage as a result of storm and flood occurrences and that the lagoon barrier has been maintained with periodic maintenance in its present condition for more than 50 years and that the existing pumphouse has been maintained with periodic maintenance in its present condition since the 1970's. Staff observation of the site after recent severe storms has confirmed that the barrier remained relatively intact. Further, since the lagoon is now being maintained as an unnatural closed system, it may be feasible to rebuild the lagoon closure after a partial breach, rather than to provide a solid, long-term closure. Periodic partial breaching may also provide some natural scour of the lagoon which could offset the sedimentation which could occur from upland runoff.

In addition, there is no analysis of the rate of erosion for the lagoon barrier and the possibility of a partial breach. In the Scour and Overtopping Report prepared by Dr. Anikouchine, it was found that "long-term erosion of the beach at the subject site is improbable." It is likely that the no protection alternative was in consideration of the short-term shoreline change which can occur during extreme storm events. Permanent shoreline armoring would provide a greater level of protection against breaching than the *No Protection Alternative*; however, there is no information on the immediacy of concern.

Although, this alternative would not serve to protect the existing seawater renewal system, staff notes that the expanded pumphouse structure will be constructed on 16 grade beam driven piles and that the wetwell structure also serves as an independent support for the structure. Further, as indicated in the March 26, 1998, letter by Penfield and Smith Engineers, the proposed seawater renewal system pump house is "designed to be free-standing on its pile foundation" and does not require the construction of a revetment. The intake and electrical lines, which are located below grade within the existing lagoon barrier, may be further protected through encasement of the subterranean intake and utility lines in concrete. The University has confirmed by letter dated May 22, 1998, that the construction of the proposed seawater renewal system pump house and associated utility lines is not dependent upon the construction of a rock revetment (Exhibit 12). As such, the applicant has not demonstrated that the proposed rock revetment core/dune is consistent with Section 30235 of the Coastal Act.

b. Beach Replenishment Alternative

The EIR found that this alternative would protect the lagoon barrier while resulting in beneficial effects on coastal access and beach recreation. However, this alternative was determined not to be feasible "because beach replenishment would need to be implemented on a periodic basis along the entire 56 mile coastline between Isla Vista and Point Mugu to achieve the basic project objectives of protecting seawater system improvement." It is also noted in the EIR that:

> ***beach replenishment would not provide a permanent structure and would require long-term maintenance activities to permanently stabilize the coastline...Costs associated with beach nourishment make it infeasible."***

However, Commission staff notes that, in many respects, the project site would be a prime area for beach nourishment. (1) The project site is in the upshore portion of the Santa Barbara Littoral Cell and, as such, could serve well as a feeder beach for the regional beach system. The Campus Lagoon Beach would receive primary benefits from the nourishment, but it might easily be developed as a long-term regional program. In addition, this alternative would serve to create new opportunities for educational and scientific studies. (2) There is approximately 24 million cubic yards of sand in an offshore deposit site immediately offshore from Goleta Point.[16] This sand has not been tested extensively for suitability for beach nourishment; however, it does hold promise as a source for the 20 to 40 thousand cubic yards of sand needed for beach replenishment.

[16] The Final EIR for the BEACON Beach Nourishment Demonstration Project, September 1992.

Beach nourishment was found in the EIR to be infeasible because of costs and the need to replenish 56 miles of shoreline. However, the EIR does not indicate what the costs for beach nourishment are, so it is impossible to determine whether beach replenishment would, in fact, be too costly. (Critical to the determination of project costs would be the estimated replenishment rate for long-term stability.) Further, it is not clear why the beach replenishment program must reportedly address the entire Santa Barbara Cell to be effective at the Campus Lagoon Beach. The area between Goleta and the Santa Barbara Harbor is an identified subcell and this provides a better bound for the coastal processes affecting the Campus Lagoon Beach. Since the project site is at the upcoast portion of the cell and subcell, its nourishment could benefit much of the downcoast shoreline, but complete nourishment of the entire cell would not be necessary for nourishment to be successful at the Campus Lagoon Beach. As such, the Commission can not conclude that beach nourishment is not feasible as it has not been satisfactorily demonstrated or supported with evidence.

In addition, for the purpose of an adequate comparison, the analysis of the proposed rip-rap revetment does not address the long-term maintenance of this structure. While the revetment will be an engineered structure, using geotextile material and core rock, it will be founded on sand and old landfill material. From study of revetment structures in the central coast, Griggs and Fulton-Bennet found that:

> ***Most engineered and non-engineered rip rap that we observed required additional stone after almost every moderate (say 5 to 10 year recurrence interval) storm season...In addition, rip rap settlement appears to be reactivated each time a major storm arrives. At many locations, rip rap has moved 5 to 10 feet vertically downward and 10 to 30 feet horizontally seaward during single storms.*** [17]

Further, the option of beach replenishment was found in the EIR to be infeasible due to the need for long-term maintenance; however, the long-term maintenance for a revetment in this location was never considered and could equal or exceed the maintenance required for beach replenishment. Fulton-Bennet and Griggs found that "after a storm of roughly ten-year recurrence interval, engineered structures along the Central California coast required repairs totaling between 20 to 40 percent of their construction cost (2 to 4% per year) and that non-engineered structures required repairs totaling between 50 to 150 percent of construction cost (5 to 15% per year)."[18] Since the proposed rip rap revetment would be located on a significant proportion of the available dry beach, it would be very important for the University to maintain the rip rap revetment and replace all dislodged rock promptly. Dislodged rock does not provide effective protection of the backshore area and further reduces the area of beach available for public access and recreation.

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[17] Fulton-Bennet, Kim and Griggs, Gary (No Date) Coastal Protection Structures And Their Effectiveness. Joint Publication of the State Department of Boating and Waterways and marine Science Institute of the University of California at Santa Cruz.

[18] Ibid.

c. Dune Nourishment Alternative

Another method for maximizing the retention of beach nourishment material not discussed in the EIR is to include a stable back beach dune into the beach nourishment project. This can often be very effective where there is limited space or nourishment material. The beach area seaward of the dunes can provide access and recreational opportunities and the dunes can provide habitat, new educational and scientific opportunities, reduce wind blown losses of sand, and provide a stable barrier to wave erosion and lagoon breaching. If appropriate, the dune system could be underlain by a rock or geotube core and covered by appropriate dune vegetation. Periodic additions of sand are often needed to sustain the dune system over the long term, but the amount of sand is usually less than that required for a standard beach nourishment program. This alternative was not analyzed in the EIR and should be considered. The Commission notes that the educational and research value of a dune nourishment program would complement the use of the lagoon ESHA as an educational and scientific resource. Further, given the academic setting provided by the University, alternative forms of shoreline protection, such as dune nourishment and beach replenishment, may not only be feasible but could be studied providing valuable information to assist in dune restoration efforts elsewhere along the coast while also serving to enhance the habitat, educational, and scientific value of the project site which is located within an area designated as ESHA by the University LRDP.

6. Conclusion

Section 30235 of the Coastal Act allows for the construction of a shoreline protection device when necessary to protect existing development and coastal dependent uses only when designed to eliminate or mitigate adverse impacts to the shoreline sand supply. However, under section 30235, the proposed rock revetment core/dune, can not be considered "necessary" if a feasible alternative which would result in fewer adverse impacts to coastal resources exists. In the case of this project, alternative forms of shoreline protection which could achieve the basic project objectives with fewer adverse impacts are available which have not been adequately addressed in the University's submittal. In addition, as indicated in the March 26, 1998, letter by Penfield and Smith Engineers, the proposed seawater renewal system pump house is "designed to be free-standing on its pile foundation" and does not require the construction of a revetment. The intake and electrical lines, which are located below grade within the existing lagoon barrier, may be further protected through encasement of the subterranean intake and utility lines in concrete. The University has confirmed by letter dated May 22, 1998, that the construction of the proposed seawater renewal system pump house and associated utility lines is not dependent upon the construction of a rock revetment (Exhibit 12). Staff notes that while the proposed rock revetment core/dune would serve to protect the existing lagoon barrier and road and prevent breaching of the lagoon, coastline development is routinely subject to potential damage

as a result of storm and flood occurrences and that the lagoon barrier has been maintained with periodic maintenance in its present condition for more than 50 years. Staff observation of the site after recent severe storms has confirmed that barrier remained relatively intact. Therefore, the applicant has not demonstrated that the proposed project is consistent with Section 30235 of the Coastal Act or CEQA requirements.

Thus, the Commission finds that there may be feasible shoreline protective alternatives which could result in less adverse impacts to the shoreline sand supply and public access than the proposed rock revetment core/dune and that these possible alternatives have not been adequately addressed by the University. Therefore, it is not possible to determine whether the proposed rock revetment core/dune is consistent with Section 30235 of the Coastal Act. In order to ensure that the proposed expansion of the seawater renewal system is consistent with Section 30235 of the Coastal Act, special condition one (1) requires the applicant to submit revised plans for the seawater renewal system expansion without the placement of a rock revetment core/dune or any related development, such as the stairways and ramp, that is integrated into the revetment design. Therefore, the Commission finds that, only as conditioned will the proposed project be consistent with section 30235 of the Coastal Act.

C. Hazards and Geologic Stability

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. Coastal Act Section **30253** 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.***

Coastline development is routinely subject to potential damage as a result of storm and flood occurrences. Therefore, it is necessary to review the proposed project and project site against the area's known hazards.

The "El Nino" storms in 1982-83 caused additional damage to coastal areas, 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 alone. 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 coastline development was documented in an article in California Geology. This article states that:

> ***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).***[19]

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. Further, after the recent 1998 "El Nino," Santa Barbara and Ventura Counties have been declared by the state as disaster areas. These storms have resulted in widespread damage along the shoreline due to high wave and tide caused erosion.

The applicant proposes the placement of two 2,500 ft. long intake lines, the expansion of the existing seawater renewal system pumphouse, and a 460 ft. long rock revetment core/dune. The expanded pumphouse structure will be constructed on 16 grade beam driven piles which will extend below sand scour depths. In addition, the wetwell structure itself will also serve as an independent support for the structure. As such, the proposed pumphouse will be structurally sound. The University has submitted a summary of damages which have occurred to the existing seawater renewal system since 1977, primarily consisting of damage to appurtenant exterior pipes. However, future damage to these components may be minimized through the use of alternatives to protect the seawater system which might include minimal rock at the base of the pumphouse and/or stronger reinforced intake, delivery, and electrical lines.

Further, the Commission notes that the proposed development 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. The Coastal Act recognizes that new development, such as the expansion of the pumphouse and placement of the intake lines, 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.

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. Further, the potential placement of any form of shoreline protection or continued maintenance of the existing lagoon barrier will not serve to completely

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

eliminate the risk inherently associated with development along the shoreline. Because this risk of harm cannot be completely eliminated, special condition two (2) requires the applicant to waive any claim of liability against the Commission for damage to life or property which may occur as a result of the permitted development. The applicant's assumption of risk, 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, 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 and narrowing of the public beach in front of the structure, in contradiction of Coastal Act policies 30211 and 30221. Section 30211 requires that development shall not interfere with access. The State Lands Commission has determined that the proposed rock revetment and seawater renewal system intake lines would be located within State Tidal Lands. As such, the proposed development will be located on sandy beach which is currently available for public use.

As proposed, the revetment would extend out onto a public sandy beach area approximately 15-32 ft. beyond the existing lagoon barrier. As stated in the preceding section, the east facing shoreline of the Campus is characterized by its high coastal bluffs, the low-lying project site serves as one of only two vertical public access points to the sandy beach between Goleta Point and Goleta Beach. The other public access point, an existing stairway from the blufftop located approximately 1,100 ft. to the north of the project site, has been closed by the Campus for safety reasons.

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.[20] 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.[21]

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 seaward 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.

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[20] In this location, the mean high tide line elevation is 1.6 MSL.

[21] The legal location of the tidelands boundary was 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 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 has determined that the proposed rock revetment core/dune and seawater renewal system intake lines would be located within State Tidal Lands (Exhibit 9).[22] The State Lands Commission has informed the Commission that the University is currently in the process of acquiring a lease from the State Lands Commission for the use of public tidelands for the construction of a rock revetment and placement of the intake lines.

As the proposed rock revetment core/dune will be located seaward the mean high tide line, it is understood that the development will 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. The Commission must consider whether a project will have indirect impacts on public ownership and public use of shorelands. In this case, the proposed development will result in direct impacts on tidelands including the occupation of sand area by a structure and narrowing of the public beach in front of the structure from potential scour effects since the revetment 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, there are three additional types of public uses: (1) the public's recreational rights in navigable waters guaranteed to the public under the California Constitution and state common law;[23] (2) any rights that the public might have acquired under the doctrine of implied dedication based on continuous public use over a five-year period; and (3) any additional rights that the public might have acquired through means such as public purchase or offers to dedicate.

In this case, the entire sandy beach, which is located seaward of the mean high tide line as determined by the State Lands Commission, is presently available for public use and the proposed revetment would directly impact public access within state tidal lands. In addition, there is evidence, as discussed above, 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, as

[22] Letter dated December 15, 1997 to Catriona Gay, UCSB Budget and Planning, from Barbara Dugal, State Lands Commission staff member.

[23] The existence and extent of this right was recently litigated in the *Lechuza Villas West* case.

well as the direct occupation by a structure of the public beach. The analysis further indicates that regardless of whether the shoreline is eroding or at a state of relative equilibrium, the revetment will be subject to wave uprush. This too would limit the availability of sandy beach area available for public access and recreation due to changes in the slope of the beach profile due to wave caused scour of the beach in front of the revetment. 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.

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 University beaches are used not only by students, but also 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 revetment will generate a permanent loss of sandy beach over time as a result of both the direct placement of the seawall on the beach and the change in the beach profile or steepening which is likely to result over time. Presently, this shoreline remains open and can be used by the public for access and general recreational activities.

Further, as stated previously, the project site is an existing public access point. Goleta Beach, which is maintained by the County of Santa Barbara as a public beach, is located approximately 3,200 ft. downcoast from the project site. The Commission notes that Goleta Beach, which is located adjacent to the University, is one of the most heavily used beaches in the Goleta area. In addition, beachgoers who access the beach from either Goleta Beach, or from the public access points on Campus, often walk along the shore to Goleta Point (upcoast from the project site) or beyond 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 ensure the protection of the public's ability to both laterally and vertically access the area must be asserted.

In addition, the Commission finds that there may be feasible shoreline protective alternatives which could result in less adverse impacts to the shoreline sand supply and public access than the proposed rock revetment core/dune and that these possible alternatives have not been adequately addressed in the EIR submitted for the proposed project. Further, the Commission notes that although the use of shoreline protection devices such as a rock revetment may serve to protect upland areas, it does not protect the sandy beach seaward of the device. However, alternatives such as dune

nourishment and/or beach replenishment not only provide protection for upland areas but also serve to enhance public access through the stabilization of the existing sandy beach which is currently available for public use. Therefore, it is not possible to determine whether the proposed rock revetment core/dune is consistent with the applicable sections of the Coastal Act. In order to ensure that public access to and along the beach, as well as the public's continued use of State Tidal Lands, is not adversely impacted, special condition one (1) requires the applicant to submit revised plans for the seawater renewal system expansion which eliminate the placement of a rock revetment core/dune and any related development such as the stairways and ramp that are integrated into the revetment design..

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

F. Environmentally Sensitive Habitat Areas and Marine Resources

Section **30230** of the Coastal Act states:

> ***Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.***

Section **30231** of the Coastal Act states that:

> ***The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.***

Section **30240** of the Coastal Acts states:

> ***(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.***
>
> ***(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.***

As previously mentioned, the applicant is proposing the expansion of the existing seawater renewal system pumphouse, placement of two 2,500 ft. long seawater intake

lines and the construction of a 460 ft. long, 10 ft. high, 15-32 ft. wide, rock revetment core/dune, two stairways, access ramp and removal of 400-450 linear ft. of existing rock revetment. The new seawater intake lines will be fastened to the sea floor and extend 2,500 ft. seaward from the existing pumphouse. The existing pumphouse will be expanded from 250 sq. ft. to 1,465 sq. ft and will include the addition of a second pump and wet well.

Section 30231 requires that the biological productivity and quality of coastal waters be maintained. Section 30230 requires that uses of the marine environment be carried out in a manner that will sustain the biological productivity of coastal waters for long-term commercial, recreational, scientific, and educational purposes. The existing seawater renewal system allows the Marine Science Program at the University to provide unique educational and scientific opportunities. The expansion of the existing system (larger pumphouse and new seawater intake lines) will serve to meet the growing needs of the program. In addition, Section 30240 permits development in areas that have been designated as environmentally sensitive habitat areas (ESHAs) only when the location of the proposed development is dependent upon those habitat resources and when such development is protected against significant reduction in value. The project site, including the sandy beach and lagoon barrier, is located within an ESHA area as designated by the LRDP. In the case of the proposed project, the location of the pumphouse expansion and new intake lines are dependent upon the resources within those areas. The pumphouse expansion is located in its proposed location in order to connect to the existing pumphouse and to facilitate the construction of the wet well which requires the presence of sand deposits to a sufficient depth as provided at the proposed site. Although the entire project site is located within ESHA, the primary sensitive habitat resources are the sandy beach and the lagoon. Commission Staff notes that the existing lagoon barrier constitutes an extremely disturbed area within the ESHA.

However, the placement of the 2,500 ft. seawater intake lines will result in some localized short-term impacts to the marine environment (Exhibit 4). The Seawater Renewal System Final EIR dated May, 1997, and the Marine Biology/Water Quality Report by MEC Analytical Systems, Inc., dated 11/22/96 extensively analyze the adverse impacts to the marine environment which will result from the construction and operational phase of the seawater renewal system intake lines. Impacts from the placement of the intake lines during the construction phase will include indirect smothering of benthic organisms from increased turbidity of the water, direct smothering of benthic organisms from placement of the pipe, and possible interference with grunion spawning events. Impacts to kelp beds are not expected as the giant kelp is distributed sparsely at depths of 15-35 ft. along the proposed pipeline corridor and should not be significantly affected. In order to avoid any adverse impacts to grunion spawning events, the University intends to conduct all construction activity outside of the seasonally predicted run period and egg incubation period of the California Grunion. In order to ensure that construction activity does not adversely affect grunion spawning events, special condition three (3) has been required. In addition, special condition four (4) regarding construction responsibility and debris removal is required in order to ensure that impacts from construction activities do not adversely impact the

intertidal zone. In addition, any impacts relating to the smothering of benthic organisms through placement of the intake line would be localized and short-term. Adverse impacts to water quality resulting from increased turbidity during the construction phase of the project will also be localized and short-term. The Marine Biology/Water Quality Report by MEC Analytical Systems dated 11/22/96 states:

> ***Mobile organisms, such as fish and marine mammals (including sensitive species), would have the ability to leave or avoid the area of impact and not be affected. Organisms that are attached or buried, however, would be affected...While some smothering of benthic infauna may occur, effects are expected to be localized and short-term. These organisms are routinely impacted by winter storms and recover rapidly***

Impacts from the operation of the intake lines include increased surface area of hard substrate on the sea floor and impacts to biological resources from the intake of seawater. The increase in hard substrate surface on the sea floor will be localized in nature and result in a change of habitat in the affected area. The pipeline and anchor structures may result in the beneficial impact of the development of a hard-bottom community through the colonization of benthic invertebrates and algae. As such, the adverse impacts to the marine environment resulting from the physical presence of the new intake lines, and corresponding increase in hard substrate habitat will not be significant.

The proposed new intake lines would draw waters at the 60 ft. depth contour and increase the flow form the current capacity of the existing intake lines of 800 gallons per minute (gpm) to 1,200 gpm. The increase of 400 gpm will result in some reduction of larvae and other plankton from the nearshore environment. However, studies on effects of entrainment on plankton at the Ormond Beach Generating System in Oxnard (238,000 gpm at time of study) indicated that while there was no significant reduction in phytoplankton between intake and discharge sampling locations, there was a 10 percent loss of zooplankton due to mechanical damage.[24] The Marine Biology/Water Quality Report by MEC Analytical Systems dated 11/22/96 states:

> ***Although increased mortality of zooplankton is expected, the proposed level of increase (400 gpm) will not substantially diminish the local populations of marine biota; thus, impacts are considered non-significant.***

Based on the analysis of the Marine Biology/Water Quality Report by MEC Analytical Systems and the applicant's Final EIR, the Commission finds that the seawater renewal system component of the proposed project, including the placement of two new 2,500 ft. intake lines and expansion of the existing pumphouse will not result in any significant impacts on marine resources or water quality and is consistent with section 30230, 30231 and 30240 of the Coastal Act.

The University also proposes to construct a 460 ft. long rock revetment core/dune, 15-32 ft. wide, 10 ft. high rock revetment core/dune on the sandy beach in front of the existing lagoon barrier in order to protect the intake lines, pumphouse and lagoon

[24]Marine Biology/Water Quality Report by MEC Analytical Systems, Inc., dated 11/22/96.

barrier. However, as discussed in a previous section (IV.B.) the Commission finds that there may be alternative forms of feasible shoreline protection which have not been adequately addressed in the applicant's EIR.

As discussed in a previous section, one method for maximizing the retention of beach nourishment material not discussed in the EIR is to include a stable back beach dune into the beach nourishment project. This can often be very effective where there is limited space or nourishment material. The beach area seaward of the dunes can provide access and recreational opportunities and the dunes can provide habitat, new educational and scientific opportunities, reduce wind blown losses of sand, and provide a stable barrier to wave erosion and lagoon breaching. If appropriate, the dune system could be underlain by a rock or geotube core and covered by appropriate dune vegetation. Periodic additions of sand are often needed to sustain the dune system over the long term, but the amount of sand is usually less than that required for a standard beach nourishment program.

Staff notes that a sand replenishment project could result in short-term adverse impact to the benthic environment from sedimentation and increased turbidity. However, impacts to the marine environment from increased sedimentation and turbidity are temporary and are comparable to seasonal increases in the sediment load. As discussed above in regards to increased sedimentation resulting from the placement of the intake lines for the seawater renewal system, benthic organisms are routinely and seasonally subject to increased sedimentation conditions. Further, impacts to the benthic organisms may be minimized by conducting sand replenishment operations during those times of the year when the water is already subject to conditions of naturally occurring turbidity.

Further, the proposed rock revetment core/dune will cover most of the upper beach area of the Campus Lagoon Beach. This area has special habitat values and is studied by an upper division marine biology class each year. This area of the beach, which is subject to periodic tidal action, includes potential habitat for grunion spawning activities. The EIR noted that the rock revetment would cover this area, but did not provide a thorough analysis of the impacts from this loss; nor was there any mitigation proposed for this loss.

The UCSB Long Range Development Plan (LRDP) states that the Campus Lagoon must be prevented from naturally breaching in order to maintain its ESHA, instructional and research value. Although, the proposed rock revetment core/dune would protect the existing educational and scientific opportunities provided by the Campus Lagoon, it would also result in significant adverse impacts to the habitat, recreational and public access values of the beach area from the direct occupation of the sandy beach by a structure, as well as the potential scouring of the beach in front of the revetment, as discussed in a previous section. In addition, the Commission notes that alternative forms of shoreline protection such as dune nourishment and/or beach replenishment would not only serve to maintain but actually increase the currently available sandy

beach habitat. Further, given the academic setting provided by the University, alternative forms of shoreline protection, such as dune nourishment and beach replenishment, may not only be feasible but could be studied providing valuable information to assist in dune restoration efforts elsewhere along the coast while also serving to enhance the habitat, educational, and scientific value of the project site which is located within an area designated as ESHA by the University LRDP.

The Commission finds that there may be feasible shoreline protective alternatives which could result in less adverse impacts to the ESHA value of the project site than the proposed rock revetment core/dune and that these possible alternatives have not been adequately addressed in the EIR submitted for the proposed project. Therefore, it is not possible to conclude that the proposed rock revetment core/dune is consistent with Sections 30230, 30231 and 30240 of the Coastal Act. Special condition one (1) requires the applicant to submit revised plans for the seawater renewal system expansion which eliminates the placement of a rock revetment core/dune and any related development such as the stairways and ramp that are integrated into the revetment design. Therefore, the Commission finds that, only as conditioned will the proposed project be consistent with the applicable sections of the Coastal Act.

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 there may be feasible shoreline protective alternatives which could result in less adverse impacts to the shoreline sand supply, public access and the habitat value of the project site than the proposed rock revetment core/dune and that these possible alternatives have not been adequately addressed in the EIR submitted for the proposed project. Special condition one (1) requires the applicant to submit revised plans for the seawater renewal system expansion without the placement of a rock revetment core/dune and any development such as the stairways and ramp which are integrated with the revetment design. The Commission finds that, the proposed project, only 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 SMH,UCSB 2/97-156fu

APPENDIX

SUBSTANTIVE FILE DOCUMENTS

Scour and Overtopping Report by William Anikouchine, PH.D, dated 4/20/97.

Marine Biology/Marine Water Quality Report by MEC Analytical Systems, Inc., dated 11/22/96.

Certified Long Range Development Plan 1990-2005, University of California at Santa Barbara dated 12/11/86.

Final Environmental Impact Report for Seawater System Renewal Project, University of California at Santa Barbara, dated May 1997.

Draft Management Plan for the Campus Lagoon, University of California at Santa Barbara, dated August 1996.

Draft Environmental Impact Report/Environmental Assessment for the BEACON Beach Nourishment Demonstration Project by Chambers Group, Inc. dated February 1992.

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LETTERS and MEMOS

Letter Steve Hudson from Martha Levy, UCSB Director of Budget and Planning, dated May 22, 1998.

Letter to Catriona Gay, UCSB Budget and Planning, from Barbara Dugal, State Lands Commission staff member dated December 15, 1997.

Letter to Frank Castanha, UCSB Facilities Management from Charles Watson, Penfield & Smith Engineers and Surveyors dated February 6, 1998.

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

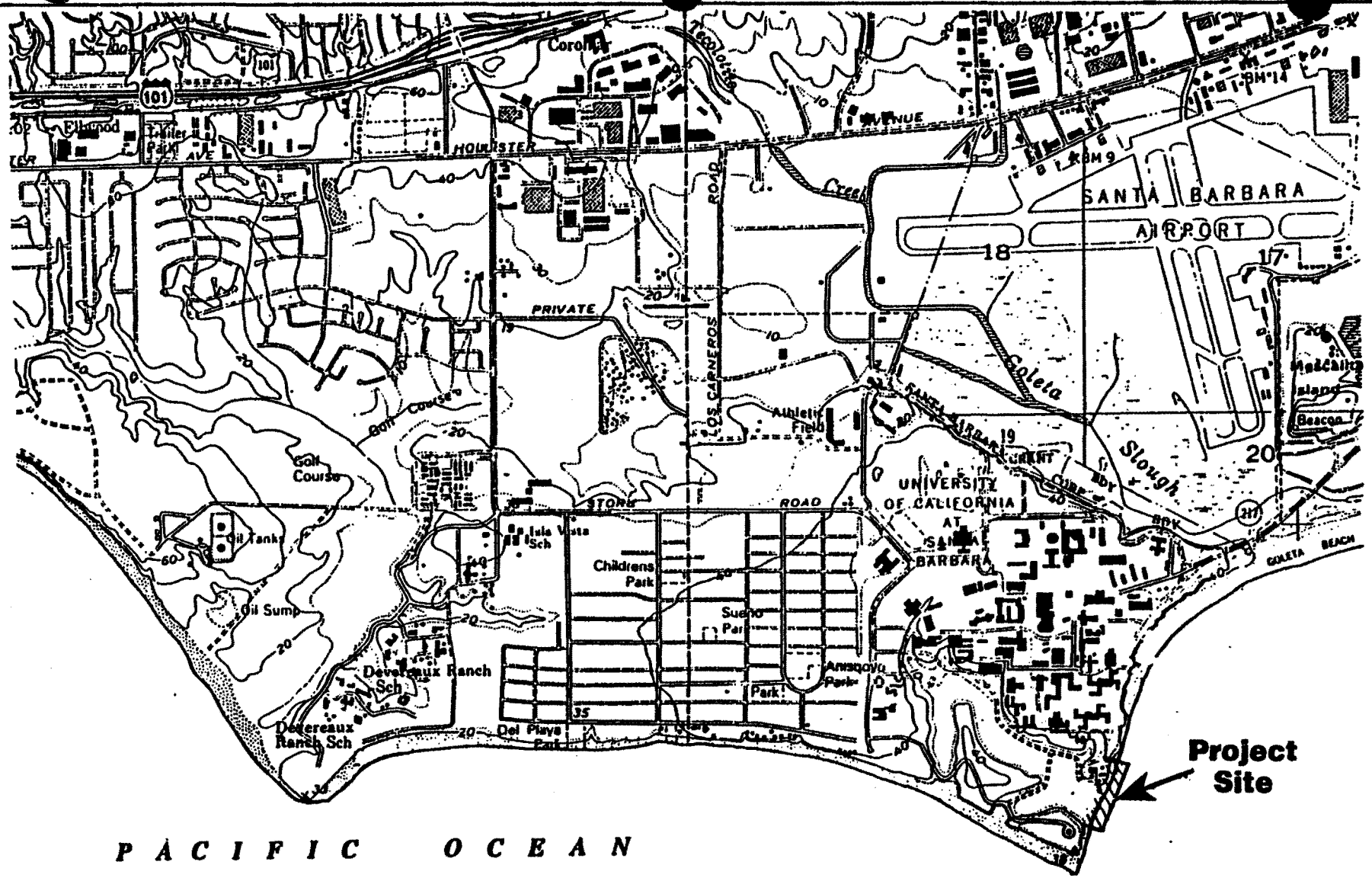
Letter to Lesley Ewing from Dr. Craig Everts of Moffatt and Nichol Engineers, March 14, 1994.

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).

EXHIBITS TO THE STAFF REPORT ARE ATTACHED SEPARATELY AS LISTED BELOW

Regional Location Map	(Exhibit 1)
Project Location Map	(Exhibit 2)
Site Plan	(Exhibit 3)
Intake Plans	(Exhibit 4)
Revetment Details	(Exhibit 5 a & b)
Pumphouse Floor Plan	(Exhibit 6)
Pumphouse Cross Section	(Exhibit 7)
Pumphouse Elevations	(Exhibit 8)
State Lands Determination Letter	(Exhibit 9)
Original Proposal (Site Plans)	(Exhibit 10)
Original Proposal (Details)	(Exhibit 11)
UCSB Letter	(Exhibit 12)
Response to UCSB Letter	(Exhibit 13)
Petition in Opposition	(Exhibit 14)
Letters from Public Against Revetment	(Exhibit 15)
Letters from UCSB Staff	(Exhibit 16)



Source: USGS 7.5' topo, Dos Pueblos Canyon and Goleta Quadrangles.

0 1/2 mile

Figure 1 Regional Location Map

EXHIBIT 1
Permit 4-97-156
Regional Location

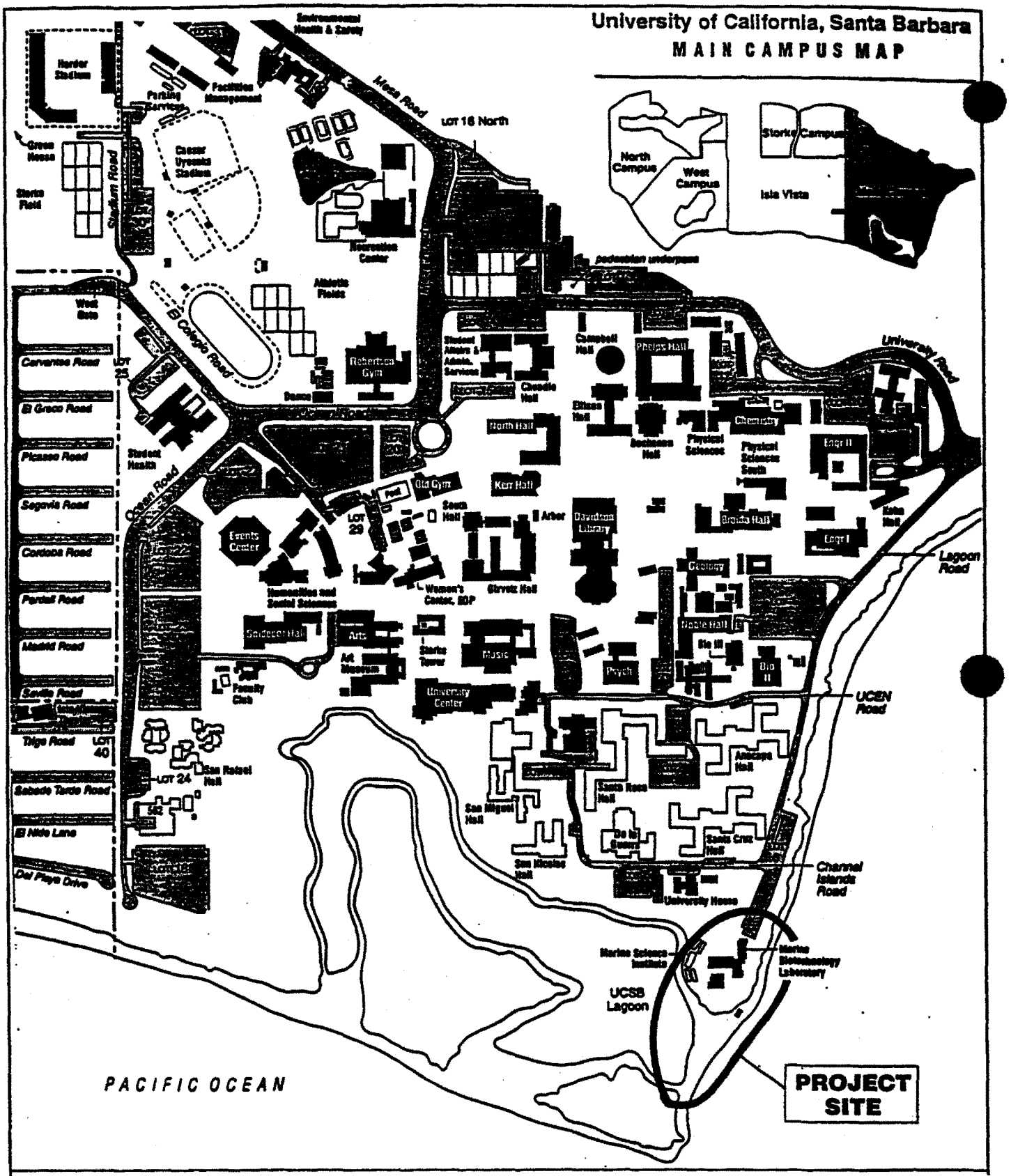
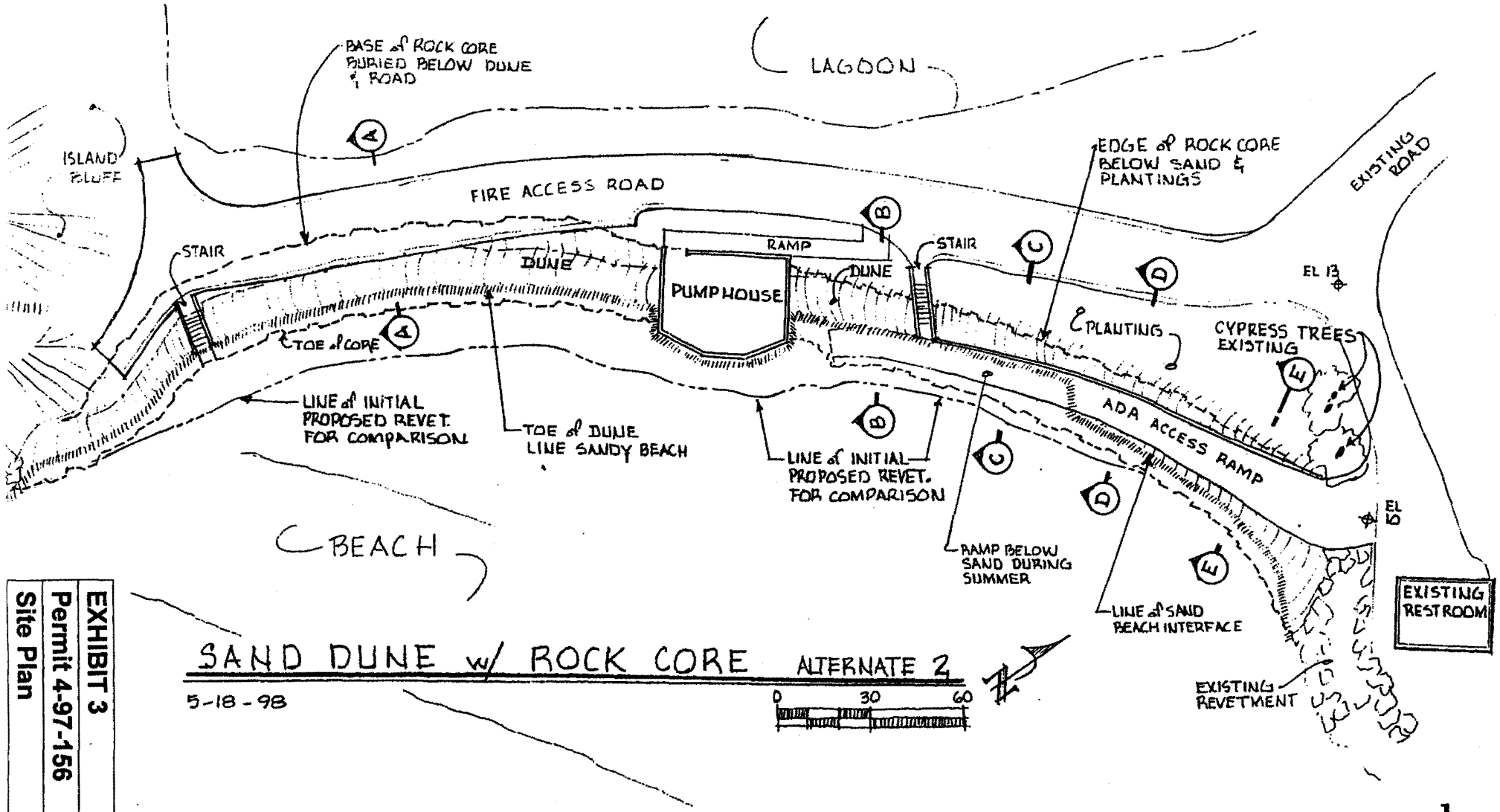


Figure 2 Project Location Map

EXHIBIT 2
Permit 4-97-156
Project Location



SAND DUNE w/ ROCK CORE ALTERNATE 2

5-18-98

EXHIBIT 3
Permit 4-97-156
Site Plan

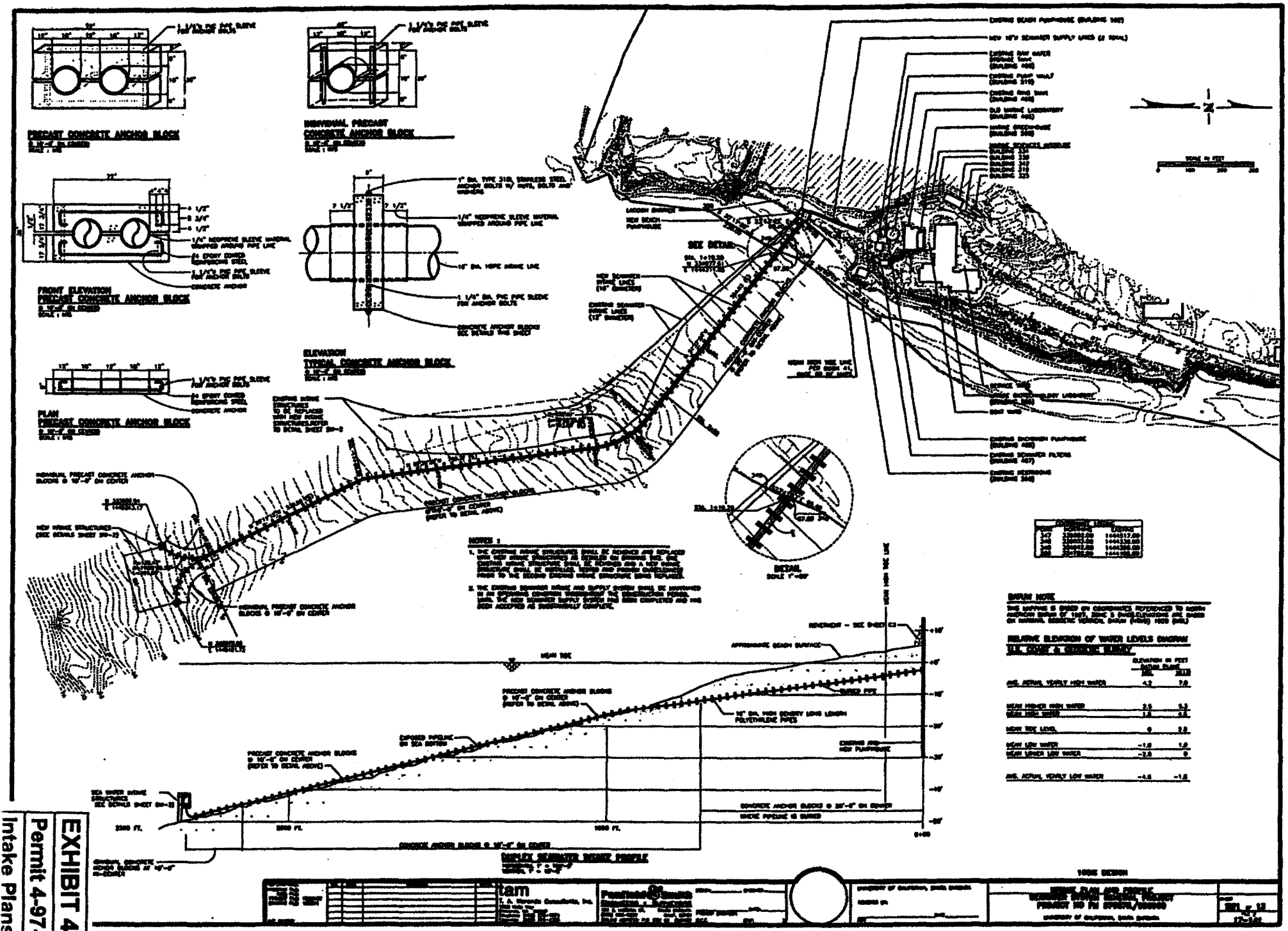


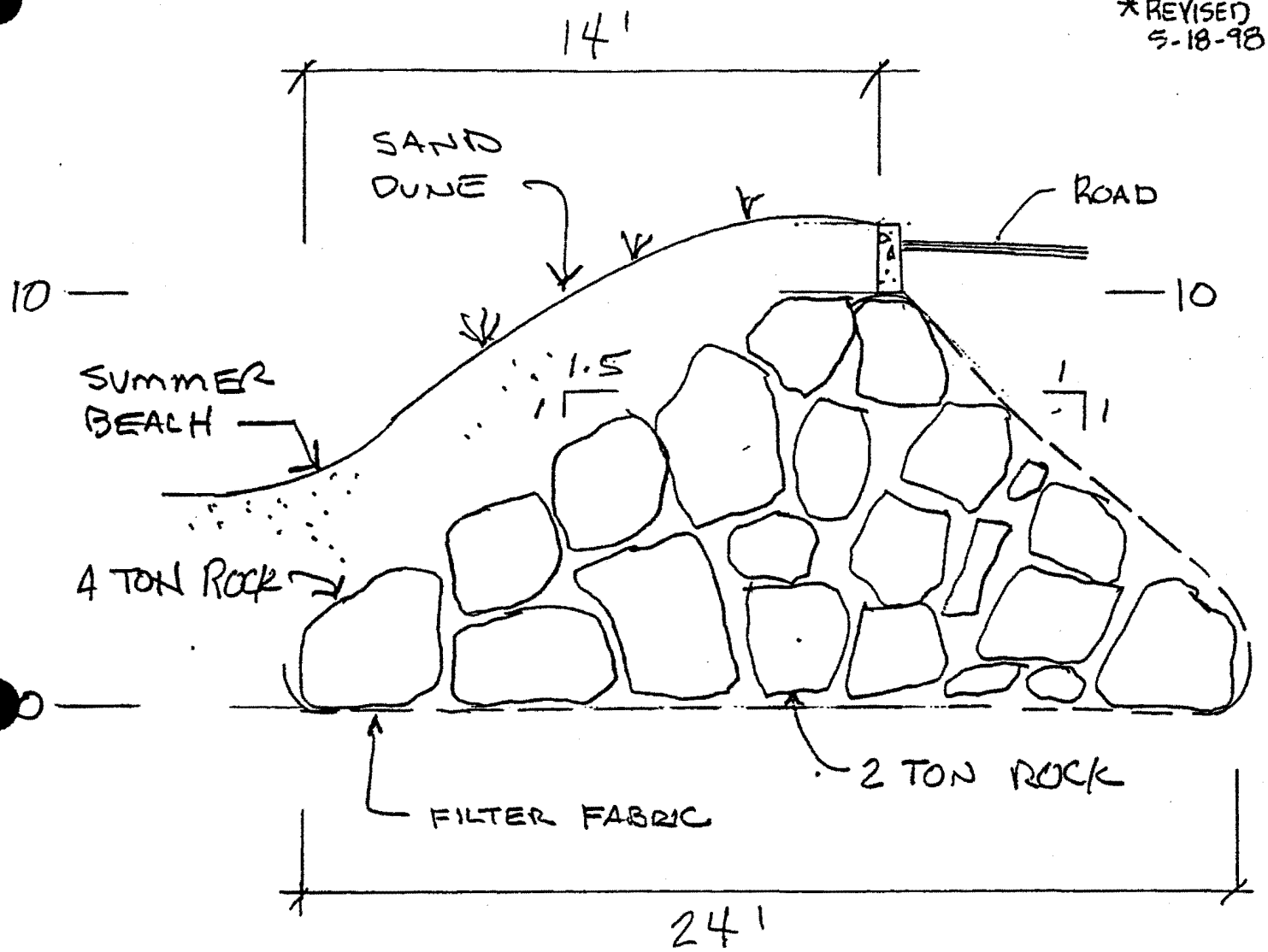
EXHIBIT 4
Permit 4-97-156
Intake Plans

BY CEW
CK. BY

Penfield & Smith
ENGINEERS • SURVEYORS
111 E. VICTORIA STREET, SANTA BARBARA, CALIF (805) 963-9532

SH ___ OF ___
LAGOON BARRIER PROTECTION
UCSB SEAWATER PUMP
*DATE 5-6-98
W.O. NO. 12268.07

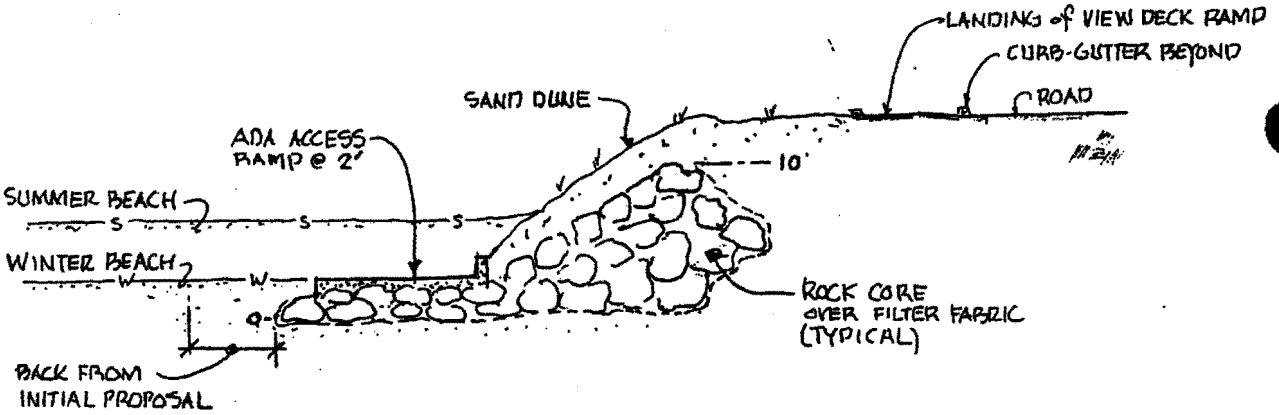
*REVISED 5-18-98



(A) SECTION — SOUTH of PUMP HOUSE

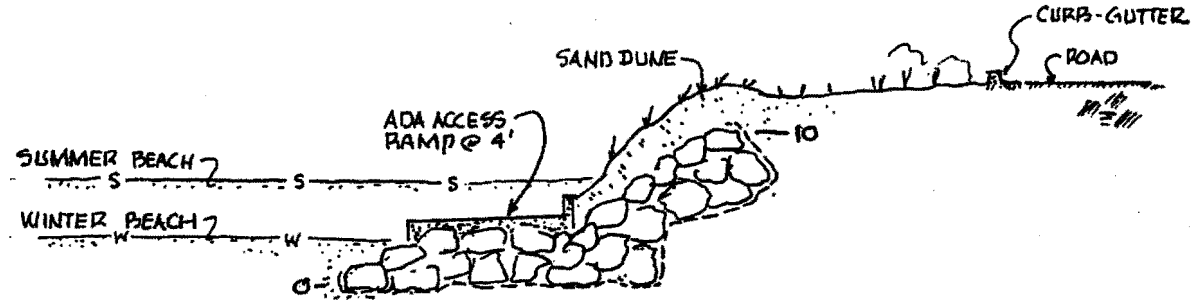
EXHIBIT 5a
Permit 4-97-156
Revetment Details

SOUTH OF PUMPHOUSE
ALTERNATE 2
1" = 4'



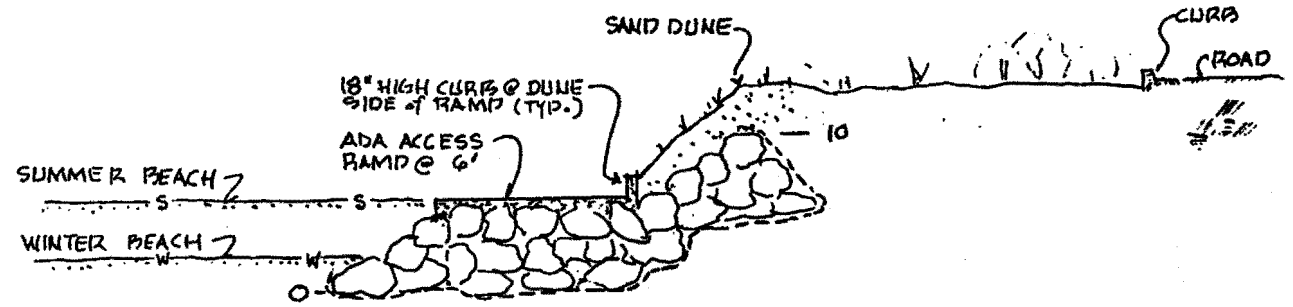
(B) SECTION - BETWEEN PUMPHOUSE & STAIR

5.18.98



(C) SECTION - RAMP ELEV. 4.0

5.18.98



(D) SECTION - RAMP ELEV. 6.0

5.18.98

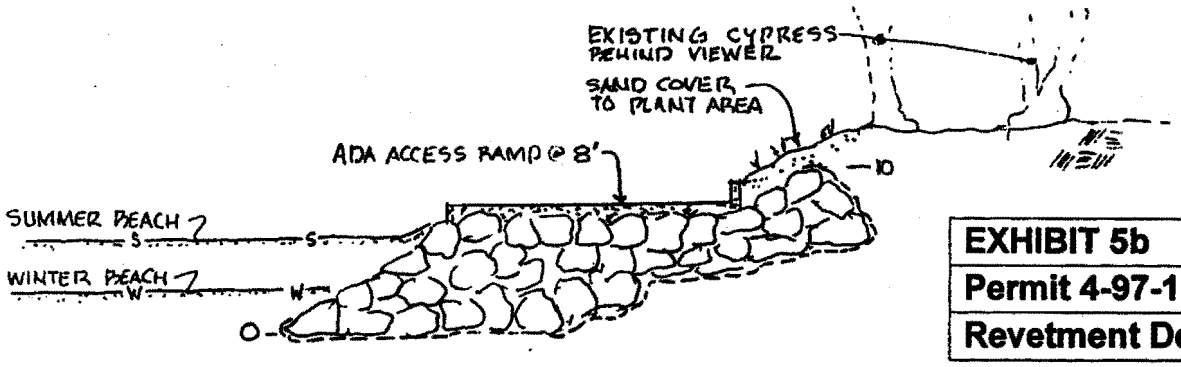


EXHIBIT 5b
Permit 4-97-156
Revetment Details

(E) SECTION - RAMP ELEV. 8.0

5.18.98

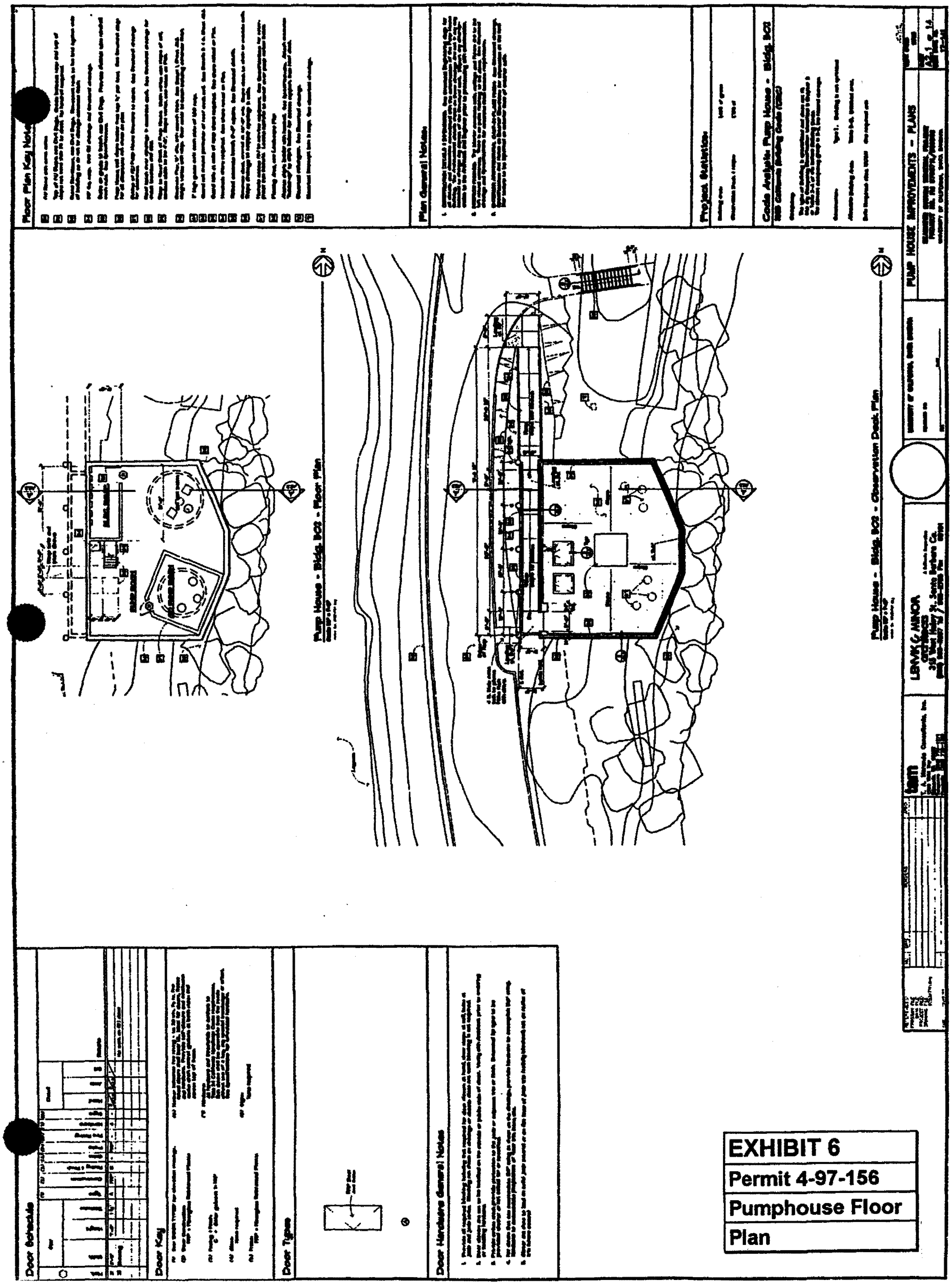
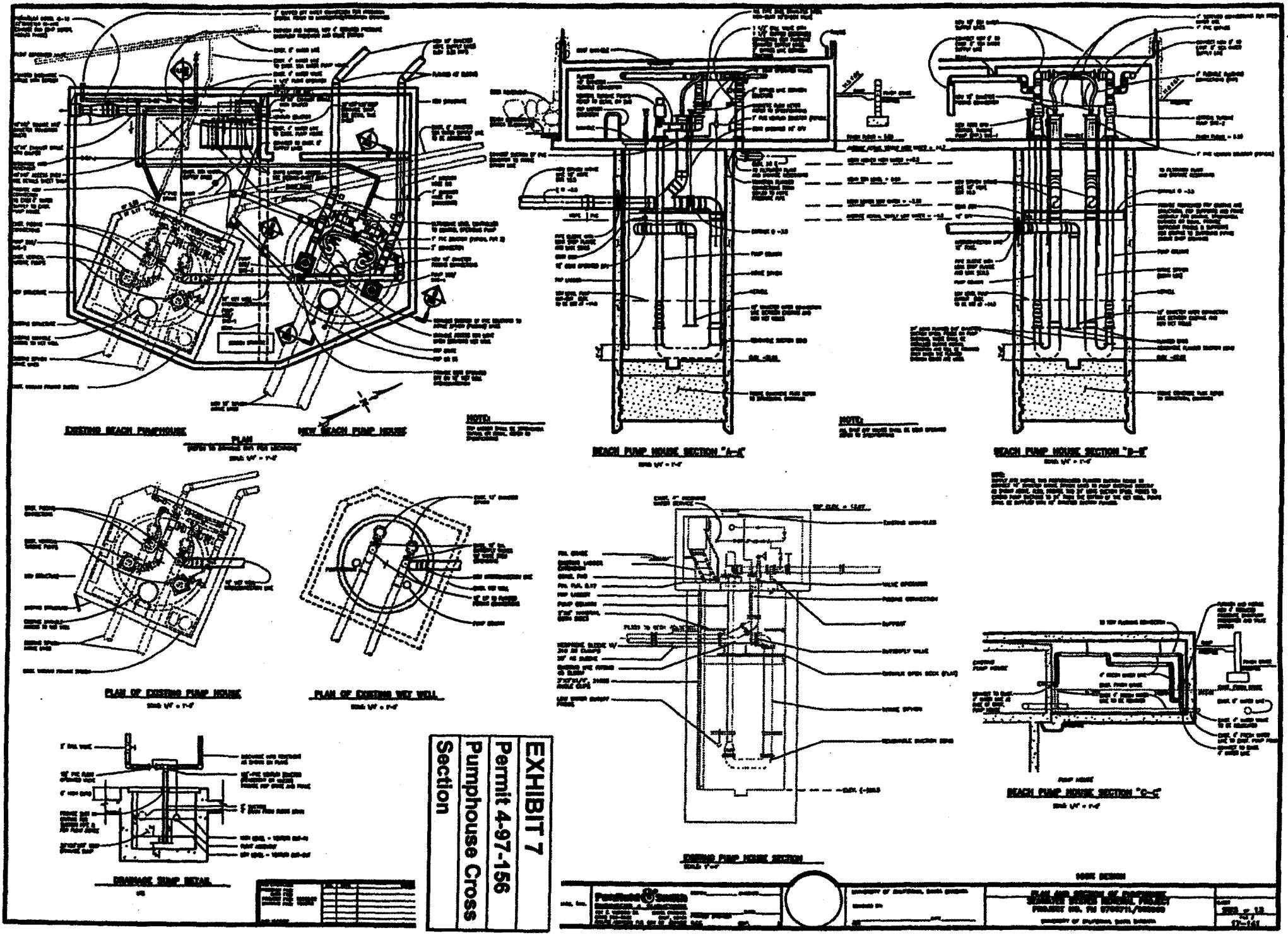


EXHIBIT 6

Permit 4-97-156

Pumphouse Floor Plan



EXISTING BEACH PUMPHOUSE

NEW BEACH PUMP HOUSE

PLAN

BEACH PUMP HOUSE SECTION "A-A"

BEACH PUMP HOUSE SECTION "B-B"

PLAN OF EXISTING PUMP HOUSE

PLAN OF EXISTING WET WELL

EXISTING PUMP HOUSE SECTION

BEACH PUMP HOUSE SECTION "C-C"

DRAINAGE SUMP DETAIL

EXHIBIT 7
Permit 4-97-156
Pumphouse Cross Section

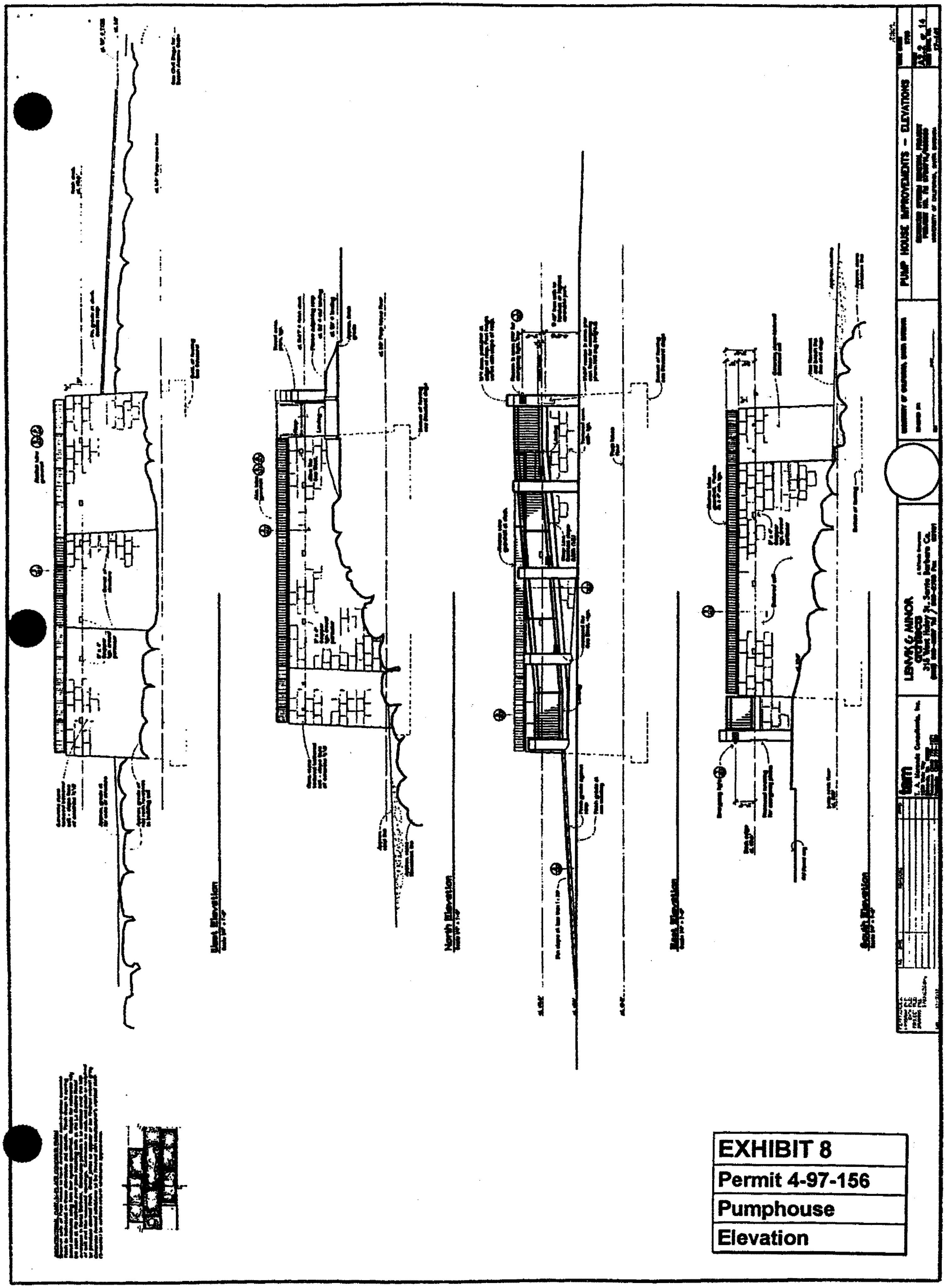


EXHIBIT 8

Permit 4-97-156

Pumphouse

Elevation

STATE OF CALIFORNIA PETE WILSON, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825-8202

ROBERT C. HIGHT, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
California Relay Service From TDD Phone 1-800-735-2[illegible]
from Voice Phone 1-800-735-[illegible]

Contact Phone: (916) 574-1833
Contact FAX: (916) 574-1925

December 15, 1997

File Ref: W 25374

RECEIVED
DEC 18 1997
CALIFORNIA
COASTAL COMMISSION
SOUTH CENTRAL COAST DISTRICT

Catriona Gay
University of California, Santa Barbara
Office of the Assistant Chancellor
Budget and Planning
Santa Barbara, California 93106-2030

Dear Ms. Gay:

Subject: Expansion of Seawater Renewal Project, Santa Barbara County

This letter confirms our recent discussions regarding the University of California, Santa Barbara's (UCSB) proposed seawater renewal project and serves to clarify the status of UCSB's application.

When staff reviewed UCSB's initial application, we determined that the existing and proposed intake pipelines would involve State lands under the jurisdiction of the Commission and a lease would be required. At that time, we had not made a final determination regarding the rock revetment and whether it involved lands under the jurisdiction of the Commission. Commission staff recently completed a formal review of the additional information provided regarding the rock revetment portion of the proposed seawater renewal project. Based on this review, we have determined that the revetment will involve lands under the jurisdiction of the Commission and will, therefore, require a lease. It is our intent to process a lease to the University for both the intake pipelines and for both the existing and proposed rock revetment.

I am currently drafting the proposed lease terms and am having a land description prepared. Normally, this portion of the application process can take between one and two months to complete. Once these two items have been completed, I will forward the proposed lease document to the University for review and consideration. After I receive the signed lease documents from the University, I will schedule this item to be heard by the Commission at a regularly scheduled Commission meeting.

I hope this clarifies the status of the University's application with the Commission. I do appreciate your patience and cooperation regarding the lease application. Please do not hesitate to contact me at (916) 574-1833 should you have any questions regarding the application process.

Sincerely,

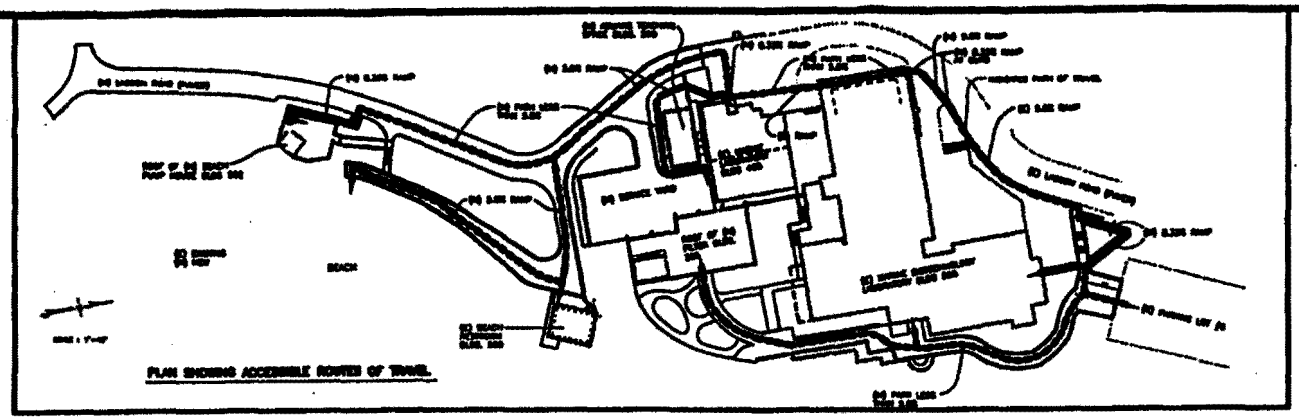
Barbara Dugal
Public Land Management Specialist

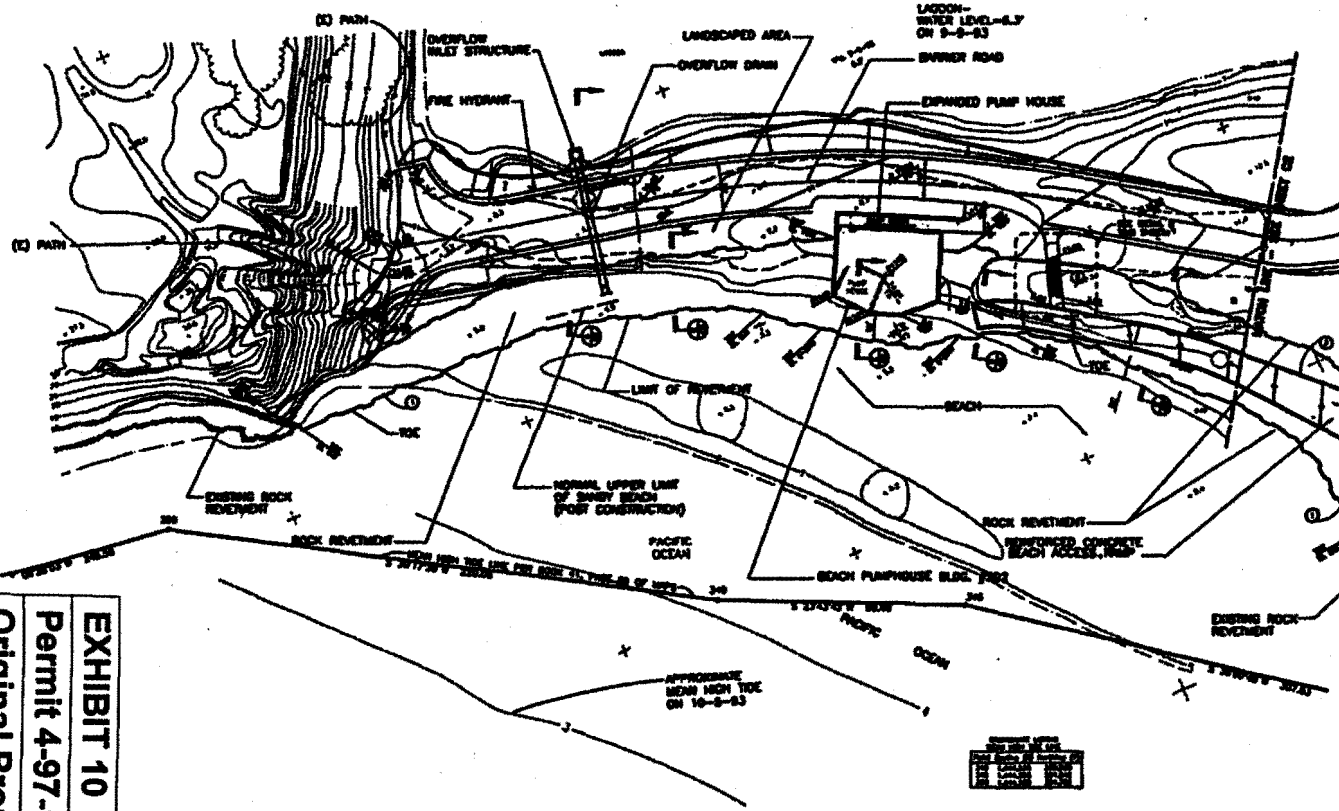
EXHIBIT 9
Permit 4-97-156
State Lands Letter

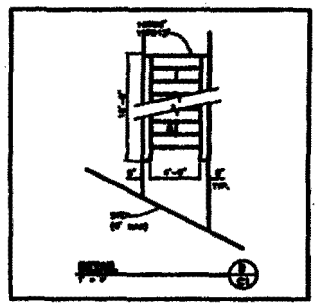
cc: Rebecca Richardson
California Coastal Commission
89 South California Street, #200
San Buenaventura, CA 93001

Gary Timm
California Coastal Commission
89 South California Street, #200
San Buenaventura, CA 93001

Dr. Theresa Stephens
U. S. Army Corps of Engineers
2151 Alessandro Drive, #255
Ventura, CA 93001







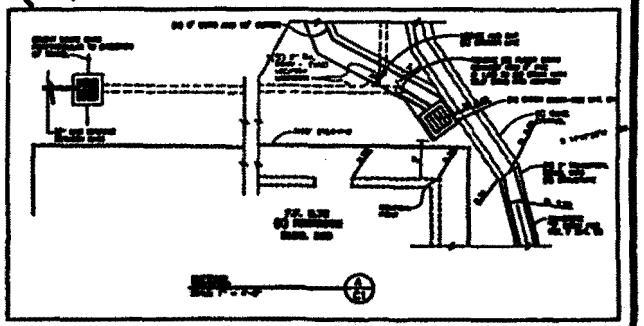
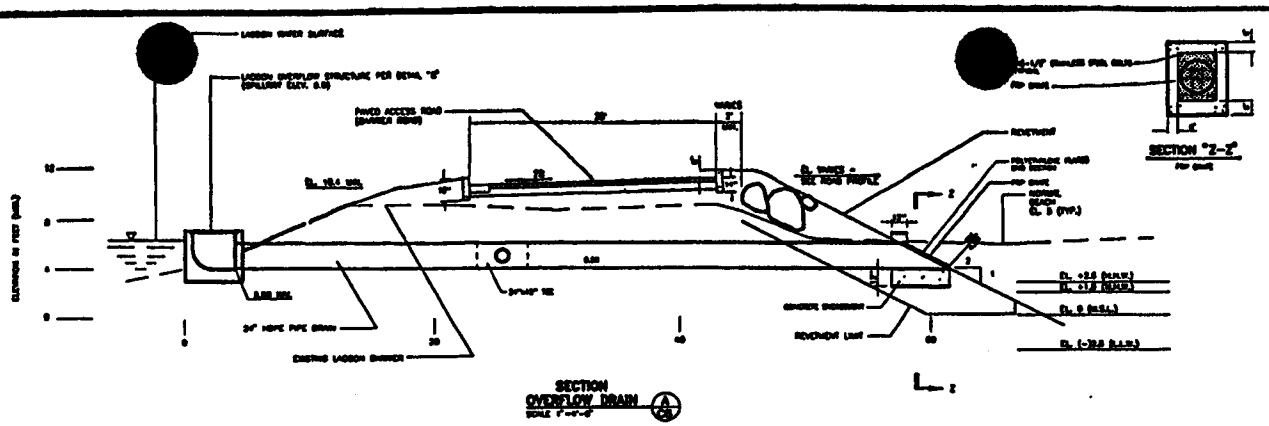
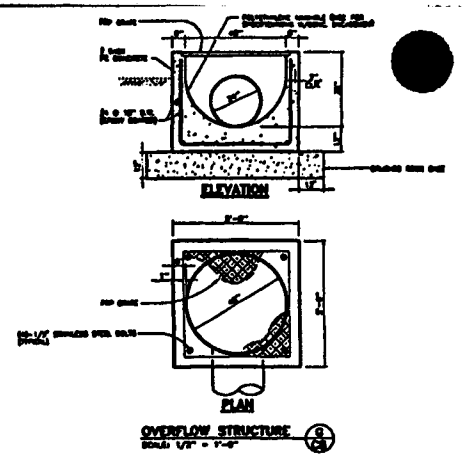


EXHIBIT 10
Permit 4-97-156
Original Proposal (Site Plan)



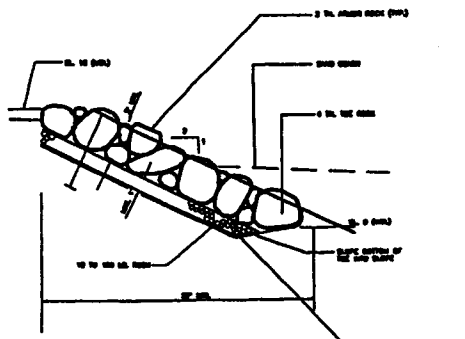
SECTION
OVERFLOW DRAIN



ELEVATION

PLAN

OVERFLOW STRUCTURE



SECTION
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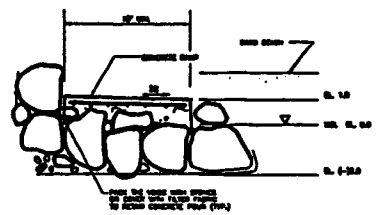

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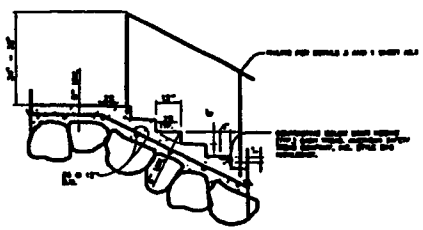
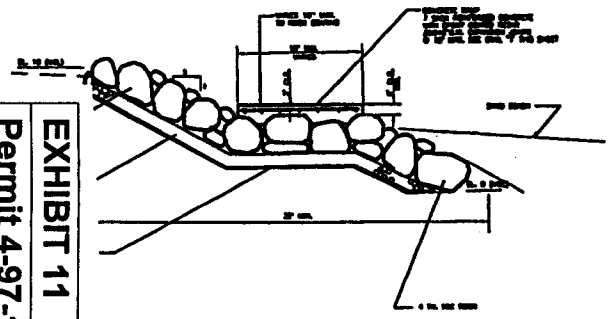
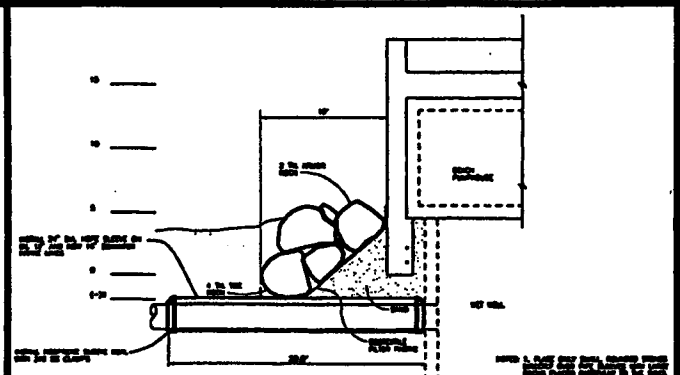
CONCRETE RAMP



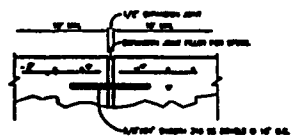
STAIR DETAIL



SECTION
ROCK REVETMENT



SECTION
ROCK REVETMENT



EXPANSION JOINT DETAIL

100% DESIGN

LAGOON BARRIER REVETMENT DETAILS
SEAWATER SYSTEM RENEWAL PROJECT
PROJECT NO. FM 9700711/9000000
UNIVERSITY OF CALIFORNIA, SANTA BARBARA

tam
T. A. Moreno Consultants, Inc.

Penfield & Smith
ENGINEERS & SURVEYORS

DWG. 17-141

EXHIBIT 11
Permit 4-97-156
Original Proposal (Details)

UNIVERSITY OF CALIFORNIA, SANTA BARBARA **UCSB**

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO SANTA BARBARA • SANTA CRUZ

Office of the Assistant Chancellor –
Budget and Planning
Santa Barbara, CA 93106-2030
Tel: (805) 893-3971
Fax: (805) 893-8388

May 22,1998

Mr. Steve Hudson
California Coastal Commission
89 South California Street Suite 200
Ventura, CA 93001

Dear Mr. Hudson:

This letter is in response to your request that the University confirm that the pumphouse and utility lines associated with our proposed Seawater System can be constructed in such a manner as not to require a rock revetment or seawall as a form of protection. It is my understanding from my conversation with Deputy Director Damm that staff are recommending that the Commission approve the Seawater System Project as originally submitted with the exception of the original proposed rock revetment. It is also my understanding from Deputy Director Damm that it is staff's opinion that the barrier road and handicap access ramp constitute structures and that, an appropriate form of shoreline protection, such as proposed in our project revision, is consistent with the Coastal Act.

In recognition that:

1. Staff is requesting to work with the University to refine the design of the handicap ramp to ensure that it is set back as far off the beach as possible;
2. That this may result in deferment of Coastal Commission action on our proposed solution for shoreline protection; and
3. In order to enable the Coastal Commission to be able to take action on the remaining components of the project;

the University confirms that it can construct the beach pumphouse and encase the utility lines in concrete so as not to necessitate a hard form of shoreline protection such as a rock revetment or seawall. I should also state that this is not our preferred option nor do we feel that it is the optimum approach for our overall project.

Sincerely,

Martha J. Levy
Director

EXHIBIT 12
Permit 4-97-156
UCSB Letter

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, *Governor*

CALIFORNIA COASTAL COMMISSION
SOUTH CENTRAL COAST AREA
SOUTH CALIFORNIA ST., SUITE 200
VENTURA, CA 93001
(805) 641-0142

May 22, 1998

Martha J Levy
Director
Capital and Physical Planning
Office of the Assistant Chancellor - Budget and Planning
University of California Santa Barbara
Santa Barbara, CA 93106-2030

Re: Long Range Development Plan Amendment 2-97 and Coastal Development Permit 4-97-156

Dear Ms. Levy:

I have received your letter dated May 22, 1998, and wish to clarify that while it is accurate that staff does believe that the existing barrier road and the new proposed access ramp are structures under the Coastal Act, Staff has not reached an opinion that the form of shoreline protection proposed in UCSB's project revision is consistent with the Coastal Act.

Sincerely,

Steve Hudson
Staff Analyst

cc: Charles Damm
Cat Gay

EXHIBIT 13
Permit 4-97-156
Response to UCSB Letter

Save Campus Point Petition

Staff has received a petition in opposition to the revetment which includes approximately 962 signatures.

(A sample page has been attached)

EXHIBIT 14
Permit 4-97-156
Petition in Opposition

Save Campus Point

Without the benefit of public input, the University of California at Santa Barbara is attempting to gain Coastal Commission approval for expansion of a seawater renewal system, pumphouse, placement of two 2,500 ft. long seawater intake lines and the construction of a 469 ft. long, 10 ft. high, 15-45 ft. wide, rock revetment, stairway, and access ramp. at Campus Point.

The proposed structured will result in several negative impacts to Campus Point, including, but not limited to the:

- **Alteration of the shape and rideability of the waves at Campus Point.**
- **The loss of lateral access.**
- **The loss of the beach, to erosion and structures.**
- **The destruction of the Campus Point environment.**

We, the undersigned, would like to encourage the members of the California Coastal Commission to follow Staff's recommendation and deny the University of California at Santa Barbara a permit for the Campus Point project.

NAME	ADDRESS	PHONE
Tamara Cuerio	1482 E Valley Rd, SB	969-5412
Judy Garcia	1420 Las Positas Pl. 93108	682-1042
J. Mann	1060 Tremont Rd.	
Cyllen D. Camp	6440 W. Camino Cielo	685-5699
Royce Sharp	1374 Shoreline Drive S.B. 93109	564-3101
Cristina Prichard	5458 Parejo Dr CB 93111	964-0159
David Prichard	" " "	"
DIANA STORY	2730 ONTIVEROS SANTA YNEZ	688-2425
Summer Shepard	1624 Garden #3 93101	965-7687
JOHN KLINE	816 SANTA BARBARA	967-2643
Kevin Steele	2976 Glen Albyn Dr SB 93105	569-8884
Howie Gaynes	11 W. Victoria St. Ste 209 93101	568-0999
Diane Wondolowski	227 Palo Alto Dr. Goleta	968-2918
Al Whitehead	395 Sherwood Dr SB 93110	683-6705
JOHN HOUSH	6194 Cathedral Oaks 93117	964-3138
Mike Wondolowski	227 Palo Alto Dr., Goleta	968-2918
Cathy Barnes	474 Cinderella SB	
Patricia Pritchard-Housh	6194 Cathedral Oaks Rd Goleta	93117 964-3138
Mark McRee	PO 32 SANTA YNEZ	6885851

Letter from the Public

Staff has received 22 letters from the public in opposition to the revetment, attached are 5 sample letters.

EXHIBIT 15
Permit 4-97-156
Letters from Public Against Revetment

SURFRIDER FOUNDATION
SANTA BARBARA CHAPTER

April 1, 1998

RECEIVED
MAY 20 1998
CALIFORNIA
COASTAL COMMISSION
SOUTH CENTRAL COAST DISTRICT

California Coastal Commission
Attention: Steve Hudson
89 S. California Street, Suite 200
Ventura, CA 93001

RE: UCSB CAMPUS POINT SEAWALL; SEAWATER RENEWAL SYSTEM PROJECT; LRDP AMENDMENT 2-97

Honorable Coastal Commissioners:

The Santa Barbara Chapter of the Surfrider Foundation is one chapter of the international organization based in Southern California. The Santa Barbara Chapter has a membership of over 900 members dedicated to preserving access and environments of coastal and offshore Santa Barbara County.

The Chapter would like to thank the Coastal Commission for continuing this issue for one month to allow for public input on this issue. I was informed of this issue a mere 36 hours before the March 12th Coastal Commission hearing, being the SEAWALL was disguised under the Seawater System Renewal Project. I also was the one who happened upon the illegal dumping of rebar and pipe laden concrete into the ocean on March 11 and informed the Environmental Defence Center and Fish and Game which resulted in citing of both UCSB and Granite Construction Co.

My personal experience with Goleta Point (Campus Point) started in fall of 1957 when I started surfing at this extremely popular surfing spot. This is by far the most popular surfing beach in the Goleta area, with quality waves for not only beginners but experts alike, and used not only by the University students but the Community extensively. Access to this beach is very limited since the stairs in the cove has been washed out. The only truly safe access is near the lagoon area. Putting a rock revetment and boulder seawall in this area would create an extremely dangerous situation on high tide and large surf episodes. The reflection of waves from this seawall will make it nearly impossible to exit the beach due to the loss of the beach. This could be very dangerous for inexperienced waterusers because once caught in the 4 to 5 knot longshore current they will not be able to exit the ocean for nearly a mile to the east at Goleta Beach County Park.

The University staff contends a net increase in access will result from the seawall development but it is a documented fact that seawalls in tidal zones will result in beach skewering which will result in less beach and less access. The connecting

of the existing revetment along the bluffs South and North will reflect wave energy toward the cove area and will create a scalping of that area of the coast, which is already happening, and threatening the Universities road. The UCSB staff will probably be back to the Coastal Commission looking to get approval of a revetment wall in the cove area extending to Goleta Beach in the next few years. Where will it stop? Seawalls only exasterbate the problems. Arming of the coastal zone is not the answer.

Alernatives need to be explored much more extensively than has been done in this review. Hardscapes along an ever changing coast are not the answer and placing the Pumphouse in the tidal zone is not the answer. The Pumphouse should be placed in a much less susceptible place. Suggestion of some sort of Dune Restoration Program would be much more acceptible and desirable. The Blue Prints look as if an industrial operation is going to take place in the area, such as an oil operation.

The perplexing concept of degrading the coastal environment with this kind of development is hipicritical, to what the University maintains as being one the best environmental studies programs in the UC system. The view of a large Seawall on the beach will ruin views from the lagoon to the beach and from the beach to the lagoon, which are quite pleasant at this time.

This project violates the following sections of the Coastal Act; 30210, 30211, 30212, and 30220 which mandate maximum public access and recreational opportunities and new development not interfere with that access.

The Santa Barbara Chapter of Surfrider Foundation is in agreement with The Coastal Commissions Staff's, RECOMMENDATION OF DENIAL OF THE CAMPUS POINT SEAWALL.

Sincerely,

Keith Zandona

Keith Zandona
Chapter Chair
Santa Barbara Chapter
Surfrider Foudation
PO Box 60021
Santa Barbara, CA 93160

cc: Coastal Commissioners
Steve Hudson, CCC Staff
Environmental Defense Center

Surfrider Foundation
Santa Barbara Chapter

May 18, 1998

California Coastal Commission
Attn; Steve Hudson
89 S. California Street, Suite 200
Ventura, CA 93001

RE: UCSB CAMPUS POINT SEAWALL; SEAWATER RENEWAL SYSTEM PROJECT;
LRDP AMENDMENT 2-97

Honorable Coastal Commissioners:

The Santa Barbara Chapter of Surfrider Foundation would like to thank the Coastal Commission for continuing this issue till June when the Commission will be meeting in Santa Barbara. The continuance will allow the community of Santa Barbara to participate in this very important democratic process.

Surfrider is submitting a petition to Coastal Commission Staff of **962 signatures** of people who are against the Seawall at Campus Point. This is a very important recreational site.

The University has sent the Coastal Commission an apology letter for illegally dumping on the beach to protect the lagoon from breaching, the fact is they cut the rebar off the concrete rubble and left it on the beach.

The cummulative effect of both the 2,200 ft. Seawall at Del Playa and this 470 ft. Seawall at Campus Point less than a mile from each other will have cummulative adverse effects upon this area of the coast. This sort of arming the coast should be avoided whenever possible and alternatives need to be researched and implemented.

The Santa Barbara Chapter of Surfrider urges your denial of the UCSB CAMPUS POINT SEAWALL.

RECEIVED
MAY 20 1998
CALIFORNIA
COASTAL COMMISSION
SOUTH CENTRAL COAST DISTRICT

Sincerely,

Keith Zandona
Chapter Chair
Santa Barbara Chapter
Surfrider Foundation
PO Box 60021
Santa Barbara, CA 93160

cc: Coastal Commission-Steve Hudson
Environmental Defense Center

May 20, 1998

California Coastal Commission
Attention Steve Hudson
89 S. California Street, 2nd Floor
Ventura, CA 93001
by fax: (805) 641-1732

RE: UCSB LAGOON SEAWALL; SEAWATER RENEWAL SYSTEM PROJECT;
LRDP AMENDMENT 2-97

Honorable Commissioners:

The Environmental Defense Center is a public interest environmental law firm representing the Santa Barbara Chapter of the Surfrider Foundation in the matter concerning the proposed LRDP Amendment by UCSB for its proposed seawater renewal project and rip rap seawall at Campus Point. On behalf of Surfrider, we attended the April 9, 1998 Coastal Commission meeting at which time this matter was continued by the Commission until the June hearing in Santa Barbara. Please consider these comments as supplements to our March 31, 1998 letter to you (attached.)

To reiterate our client's position, the proposed LRDP Amendment and Seawater Renewal System is inconsistent with the Coastal Act for the reasons stated in our March 31, 1998 letter. Instead of going through each of the Coastal Act sections that the proposed project and amendment would violate, we refer you to our previous letter.

The purpose of this letter is to address a relatively new proposal by UCSB to remove existing rip rap and an old concrete ramp at Campus Point adjacent to the proposed project site in order to mitigate the proposed project's substantial impacts to shoreline processes and coastal resources.

The proposal by UCSB to remove existing rip rap shoreline protection and the concrete ramp at Campus Point is flawed because the ramp is currently acting as a plug which hinders the down-coast movement of sand. As a result, the ramp has caused sand to accumulate up-coast from Campus Point. This build up of sand resulting from this plug has afforded significant protection to the Lagoon's two other mouths. Elimination of the ramp would allow the accumulated sediment and sand to continue down coast, thereby rendering the lagoon's two other mouths unprotected by the existing sand buffer. As a result of eliminating the existing rip rap and concrete ramp, the Lagoon would be "threatened" by tidal action just as UCSB claims it is now. UCSB would be forced to place rip rap at the other two mouths, just as it is proposing to do now with its currently proposed amendment and project.

Surfrider is opposed to shoreline protective devices such as the one that is proposed by UCSB because they adversely affect coastal access and recreation. UCSB's proposal, including both the rip rap and the pumphouse, also eliminates delineated sandy beach and wetland ESHA, severely impairs the visual attributes of the area, and threatens coastal water quality in the Lagoon in violation of the California Coastal Act. The University has the means available to feasibly implement an alternative that would be consistent with the Act while accomplishing the University's goals. Numerous alternatives exist that have not been proven infeasible (please refer to EDC's March 31, 1998 letter.) Relocation of the pumphouse is one alternative, according to UCSB, that would be more expensive, would require constructing a new dry well into the shale, and would possibly require installing and maintaining submersible pumps in the seawater intake lines. While this may not be the most attractive option for UCSB, it is one of several alternatives that are feasible and consistent with the Coastal Act.

Please deny the proposed amendment to UCSB's LRDP as inconsistent with the Coastal Act, and encourage the University to submit a project that is consistent with the Coastal Act's important provisions for protecting coastal resources.

On behalf of the Surfrider Foundation's Santa Barbara Chapter, thank you for your attention to our comments, and your diligent work to uphold the Coastal Act.

Sincerely,

Brian Trautwein,
Environmental Analyst
Environmental Defense Center

cc: Steve Hudson, Coastal Commission Staff Analyst
Keith Zandona, Santa Barbara Chapter of Surfrider Foundation

Printed on 100% Recycled Paper

March 31, 1998

California Coastal Commission
Attention: Steve Hudson
89 S. California Street
Ventura, CA 93001

RE: UCSB LAGOON SEAWALL; SEAWATER RENEWAL SYSTEM PROJECT;
LRDP AMENDMENT 2-97

Honorable Commissioners:

The Environmental Defense Center is a non-profit environmental law firm representing the Santa Barbara Chapter of the Surfrider Foundation in all matters pertaining to the proposed UCSB Lagoon Seawall, Seawater Renewal System project and LRDP Amendment 2-97. We have reviewed the staff reports and Notice of Impending Development for the subject project and submit the following comments for consideration by the Coastal Commission in anticipation of the April 9, 1998 hearing regarding this issue.

As submitted, it is our conclusion that the proposed LRDP Amendment and the proposed construction of a rip-rap seawall near Campus Point at UCSB is inconsistent with the California Coastal for the reasons described below.

Inhibits Coastal Access

The Coastal Act contains several key provisions for maximizing public access to and along the coastline of this state. Coastal Act Sections 30210, 30211 and 30212 mandate that maximum public access opportunities be provided and that new development not interfere with the public's right to access the beach. The proposed amendment and construction of a rip rap structure on the beach near the UCSB lagoon are inconsistent with these sections of the Act. The rip rap would prevent or inhibit access for the majority of the public to the beach along an approximately 400+ foot section of shoreline where access is currently available to a majority of the public. This section of available access is vital because the shoreline on either side of this site consists of steep bluffs where access is not available.

The proposed rip rap seawall would be substantially higher than the barrier, as noted in the staff report, and this would make it impossible or substantially more difficult to access the sandy beach for most people. The angular nature of the rocks and the crevices that would exist between the rocks would render access difficult and unsafe during normal conditions and impossible during high tide and surf conditions. Additional impacts to public access would result from the extension of the rip rap a significant distance horizontally away from the barrier road onto the sandy beach. This would have the effect of causing people to have to scramble across these dangerous, jumbled, angular rocks to access the sandy beach at locations where currently access is readily available.

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844 E. MAIN ST, VENTURA, CA 93001 • (805) 643-6147 FAX : (805) 643-6148 E-MAIL: edcvent@west.net

It would also result in a lesser availability of beach for lateral access along the sandy coastline. By extending much further onto the sandy beach than the existing minor barrier protection, the proposed seawall would reduce available beach for beach walkers by 25% to 50%, would crowd beach users, and reduce the amount time during which access along the sandy beach would be available. Documentation of the erosive effects of these types of proposed structures is in the Commission's staff reports for this LRDPA. These structures cause the sand on the seaward side of them to be eroded away, depleting the beach of sand, and as a result, reducing the available land surface available for coastal / beach access and walking along the beach.

While the proposed LRDPA includes a new staircase near the eastern end of the proposed project site (near the pump house), it is noteworthy that this feature is purely mitigatory, i.e., it would not be needed without the inhibiting effects of the proposed seawall on coastal access at this location. Additionally, this feature of the project, which is specifically the only feature that would be allowed on the bluff face, may result in significant impacts to biological resources, geological stability, and aesthetics. These potential impacts were not adequately assessed in the EIR, but must be mitigated. Furthermore, according to the plans, it appears that the proposed staircase and ramp would not extend to the beach during times when sand levels are low, such as after storms, and thus would not be considered a reliable, perennial access point for the public.

Inhibits Coastal Recreation

Sections 30210, 30213, and 30220 of the Coastal Act require that the public shall have maximum opportunities to access and recreate in the coastal zone. This project, however, by limiting public access as described above, would also limit recreation. It would eliminate 25% to 50% of the sandy beach available at the project site for recreation, and the public currently uses this site heavily for recreational activities.

Additionally, by modifying the beach geo-morphology, the sea wall would potentially modify the shape, size and formation of waves at this location, a popular surfing spot, especially for beginning surfers. It would also, according to the research done by Commission staff, reduce the amount of sand available at the site, adversely affecting coastal recreational activities. As such, the project would be inconsistent with the Coastal Act Sections 30210, 30220, and 30240(b)'s mandate that coastal recreational opportunities be provided and protected.

It is also important for the Commission to recognize the documented loss of beach sand and the reduction of natural nourishment processes in this region, even since the passage of the Coastal Act. The depletion of this resource has rendered every remaining beach more valuable now.

Adversely Affects Aesthetics and Scenic Resources

Section 30251 of the Coastal Act requires protection of the scenic and visual qualities of coastal areas as a "resource of public importance." The proposed sea wall is inconsistent with

the Coastal Act's requirement for preservation of aesthetic resources because it would eliminate important, visually stunning views of the lagoon area when viewed from the sandy beach at this location. Currently, it is possible to view the striking lagoon environs when standing on the beach looking northwest over the existing barrier road. However, by adding approximately five to six feet to the height of the barrier, these visual resources would be blocked by the proposed sea wall. Additionally, the magnitude of the proposed sea wall would detrimentally impact views of the site from up and down the coast and from in the water, where people frequently recreate, swim, surf, wade and boat. As proposed, the project would be visible from many public viewing locations including Goleta Beach County Park and the Goleta Pier. The proposed wall and expanded pump house would completely dominate the landscape at this location, and thus, both of these elements would be inconsistent with the Coastal Act. They would not be visually compatible with the surrounding areas, and would degrade, rather than enhance the visual quality of the area.

Impacts ESHA

Section 30240 of the Coastal Act requires that (a) "environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those resources." Further, it requires that (b) "development in areas adjacent to ESHA and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas." The project is inconsistent with this section of the Coastal Act because the rip rap seawall would be constructed on the sandy beach, a designated ESHA, would fill a small area of the lagoon wetland, and would be within and adjacent to, and would significantly impact, a park and recreation area.

Threatens Water Quality in Coastal Wetlands

The Coastal Act requires that the biological productivity and the quality of coastal waters, lagoons and estuaries be maintained. This proposal, however, threatens both water quality and the biological productivity of coastal waters. The rip rap would encroach into the wetlands, altering both productivity and water quality, and the paved access road would introduce new asphalt leachate (i.e., oil, fuel, etc.) into the shore of the lagoon. Runoff contaminated with asphalt leachate from road surfaces has been identified as a non-point source pollutant that threatens water quality. Therefore, the proposed seawall and paving of the barrier road is inconsistent with Section 30231, and must be deleted from the project and LRDP Amendment.

Feasible, Less Damaging Alternatives Exist

Coastal Act Section 30235 allows for the use of a shoreline protective device when necessary to protect existing development and coastal dependent uses only when designed to eliminate or mitigate adverse impacts to the shoreline sand supply. The proposed seawall is not designed to eliminate or mitigate impacts to the beach sand supply. In addition, for the wall

to be considered necessary, no feasible, less damaging alternatives can exist. UCSB has improperly joined the seawall and the pump house. Without one, the other is unnecessary/infeasible. UCSB must perform an analysis of relocating the pump house, as will ultimately have to be done anyway, to address the necessity of the seawall. In this case, there are a number of viable options to a rip rap seawall for which adequate analyses and evaluations have not occurred. No evidence has been presented to the Commission, and no evidence exists that less damaging alternatives are not feasible. The EIR and submittals to the Commission for this project fail to adequately address reasonable, less damaging alternatives. Alternatives that must be fully investigated by the University include, but are not limited to:

1. Beach Replenishment
2. No Shoreline Protection/ Rebuilding of the Barrier Following Potential Breaches
3. Dune Nourishment with Dune Habitat Restoration
4. Dune Nourishment with Underlying Geotube
5. Removal of Concrete Plug on Beach at Campus Point to Restore Sand Flow to Site
6. Relocation of Pump House
7. Removal of the Existing, Artificial Barrier and Restoration of Tidal Flow to Lagoon
8. Relocation of the Marine Sciences Building
9. Reinforcement of Appurtenant Intake and Electrical Lines
10. Dredging of the Lagoon
11. Combinations of the Above

The site currently has vegetation establishing on portions of the barrier. This illustrates that establishing a native dune habitat on the barrier may be feasible. Non native vegetation, such as ice plant, present in the substrate of the barrier slope should be removed and replaced with native dune species propagated from naturally-occurring, locally collected seeds and/or cuttings.

Removal of the concrete plug at Campus Point was first suggested to the Environmental Defense Center by University faculty seeking a less damaging alternative to the proposed seawall. This alternative would restore the shoreline sand flow and naturally replenish the sand along the project site, adding protection for the existing barrier. Relocating the pump house would be feasible, and would include placing the wet well elsewhere, rather than on the beach at a time when ocean levels are known to be rising. No detailed economic analyses of these alternatives were done to illustrate their relative cost effectiveness. Moreover, the costs of maintaining the proposed rip rap seawall have not been addressed. Once considered, the costs of maintaining the seawall over the long term would render the proposed project relatively less feasible compared to the less damaging alternatives. The University is a very large institution with a large budget. It is feasible for the University to undertake a less damaging alternative, or a combination of less damaging alternatives.

The purported need for the seawall is questionable because the only damage to the existing pump house has been to appurtenant facilities rather than to the structure itself. Furthermore, the proposed pump house would be almost six times as large as the existing structure on the

beach, and would be built on 16 grade beam driven piles, causing substantial unnecessary impacts.

The University has a History of Poor Coastal Resource Management at this Location

The University and its contractor have recently been cited by the Department of Fish and Game for illegally dumping asphalt, dirt, construction waste and concrete with rebar at this location, along the existing, small barrier (see attached letter). Surfrider and the Environmental Defense Center notified the Department of this illegal dumping. This site is a popular recreational area used extensively by our clients and by the public in general. Aside from the obvious safety issues associated with the placement of this inappropriate material on the beach, the encroachment onto the beach from this illegal dumping affected access, recreation, aesthetics, and possibly water quality and biological resources and exacerbates the proposed project's impacts. Additional environmental review of cumulative impacts from El Nino and this illegal dumping is needed. This history is further grounds for requiring the University to thoroughly investigate alternatives, and must be directed to propose a project consistent with the Coastal Act.

Cumulative Impacts to Beach Resources would be Exacerbated

There is evidence of progressively worsening beach erosion in the cove between the mouth of the Goleta Slough and the proposed project site. Within the cove, willow trees and other patches of vegetation existed along the bluff's toe and along the sandy beach near the bluff until recently. The decrease in beach at this location has occurred since, and can be attributed to, the effects of dams on rivers which prevent sand from reaching the coastal areas and to the effects of other seawalls constructed in our region. Aging seawalls along Ellwood and Isla Vista have contributed to the decline of beaches in this area already. Intensifying the use of such structures, as is proposed, would significantly exacerbate the adverse cumulative effects of the existing structures. In addition, Santa Barbara County recently approved a large seawall for the Del Playa area of Isla Vista. No mitigation of the proposed seawall's impacts to sand supply and beach formation has been proposed by the University. As proposed, mitigation of the project's impacts is not feasible, however alternate project designs would avoid these undesirable effects.

Conclusion

In conclusion, the Surfrider Foundation opposes the proposed project because it is inconsistent with numerous sections of the Coastal Act. It would adversely affect access to a popular public beach, interfere substantially with recreation, result in unmitigated impacts to biological resources, fill a small portion of the lagoon, increase non-point source pollution, significantly degrade the visual resources of the site, and block views to, from, and of the beach and lagoon. Furthermore, because of the documented rise in ocean water levels possibly attenuated by global warming, this is a temporary project for which an alternative project that avoids impacts should be substituted. The Commission should require the

University to analyze alternatives then propose a project that avoids impacts to the beach and the coastal environment consistent with the Coastal Act.

Sincerely,

Marc Chytilo, Chief Counsel
Environmental Defense Center

cc: Steve Hudson, Coastal Commission Staff Analyst
Keith Zandona, President, Surfrider Foundation, Santa Barbara Chapter
Interested Parties

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March 24, 1998

Mr. Gary Timm, District Manager
California Coastal Commission
89 South California Street, Suite 200
Ventura, California 93001

Dear Mr. Timm:

I have been informed that the University mistakenly deposited inappropriate construction material on the barrier road and beach. It is my understanding that University officials have been working with the Department of Fish Game to correct this situation. The University is continuing to remove some of the concrete placed along the barrier road during the winter storms, to avoid any possibility of pieces dislodging onto the beach. As you know, we worked with the Department of Fish and Game when emergency repair work was required during the worst of the winter storms. However, continuing to reinforce the barrier road occurred when no storm condition was present. This incident should not have happened, and additional measures are in place to insure that this type of situation does not reoccur.

If you have any questions concerning this matter, please do not hesitate to call me at 893-8541.

Sincerely,

Martha J. Levy, Director
Capital and Physical Planning

cc: Coastal Commissioners
Acting Director David Gonzales
Tye Simpson
Brian Trautwein

SIERRA CLUB

CALIFORNIA / NEVADA / HAWAII FIELD OFFICE

VIA FAX
March 20, 1998

Steve Hudson
Leslie Ewing
California Coastal Commission
45 Fremont Street
San Francisco, California

Re: Campus Point Seawall
UCSB

Dear Staff:

Thank you again for your well prepared staff report and presentation at the Monterey meeting of the Coastal Commission. We continue to be shocked and disappointed in the UCSB Marine Sciences Department for their outrageous proposal to build a gigantic rip-rap rock seawall at Campus Point.

You will be pleased to learn that many organizations and individuals in the Santa Barbara region have only just learned of this proposal and are requesting an opportunity to participate in these proceedings. This weekend the Santa Barbara County Chapter of Surfrider Foundation is sponsoring a forum on the matter which is to coincide with a surf contest where over 200 people are expected.

In speaking with other surfers who grew up in the area, learned to surf at Campus Point and who recreated on the beach long before the Marine Sciences Department constructed their ill-advised research facility on an eroding bluff above the beach, we are all perplexed at the rise of the water level in the lagoon.

Twenty-five years ago there was no such disparity between the ocean level and the lagoon. They were roughly at the same level. No one recalls the dramatic inequality that exists today. We suspect that the lagoon may have subsequently filled up with sediments, and risen as a result. If this is the case, then the obvious alternative to the rip-rock wall is dredging of the lagoon with beach nourishment of Campus Point the result. Such dredging would of course also be more appropriate for "restoration" of the lagoon. We believe you are correct that such nourishment would benefit the entire southern Santa Barbara County.

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We assume that an analysis of the lagoon must necessarily include a detailed history of it, including its size and depth prior to the University being constructed. Interestingly, the bluff area adjacent to the point itself does not appear to have eroded significantly at all. This will also need examination. Construction of University buildings along the interior of the lagoon may also have impacted it.

Moreover, the Marine Sciences building itself may be the cause of some of the erosion currently underway in the southern reach of the beach. Moving that inappropriately sited building might be the most advantageous long term strategy to prevent further erosion in the area.

We are also extremely concerned that the University may destroy a precious (and famous) surfing environment at the beach. This surfing resource is priceless and entitled to protection by law pursuant to the Coastal Act. The University should be required to conduct surfing studies and monitoring PRIOR to any construction in order to create baseline data. Future monitoring will also need to be conducted and mitigation obtained should the University's Marine Scientists destroy the surfing resource.

Lastly, there is simply no way that this project should be considered without a cumulative effects analysis with recently approved mile long seawall proposed for Isle Vista Beach. Together these two gigantic seawall structures (perhaps the most extensive seawall structures in the history of California?) would wall off nearly the entire town of Isle Vista, and may have dramatic adverse impacts to surfing, beach quality, marine life, and the quality of life for thousands of residents, students and visitors to the region.

We again thank you for allowing the public the opportunity to scrutinize this important project. We look forward also to reviewing with you the documentation the University produces. Since we do not have a contact at the University, please forward this letter to them and request that they provide us with notice and information regarding their analysis at the earliest possible opportunity.

Sincerely,

Mark A. Massara

Dan Fontaine
430 Whitman St. Apt. #42
Goleta, CA 93117

April 12, 1998

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APR 24 1998
CALIFORNIA
COASTAL COMMISSION
SOUTH CENTRAL COAST DISTRICT

California Coastal Commission
South Central Coast Area
89 S. California Street Suite 200
Ventura, CA 93001
Regarding: UCSB Rock Revetment
LRDP Amendment No. 2-97

Commissioners,

Please do not allow the University of California to build a seawall at Goleta Point on the eastern boundary of the campus. I understand and appreciate the need for an expanded seawater renewal system, but the University should not sacrifice the public's beach by using the fastest and cheapest means to achieve its short term agenda. I have several concerns:

- **Beach loss:** The revetment itself will occupy over 10,000 square feet of beach (length of (460')×(25') average width) and even proponents of the seawall agree that it will accelerate erosion of the remaining beach.
- **Move the pumphouse:** *"the university had looked into alternatives such as moving the pump house up a hill toward the labs. But the ground there was solid rock, she said, and it would be difficult to drill a well to the ocean floor."*[1] That it will be "difficult" is no excuse to sacrifice a beach. Furthermore, "solid rock" sounds like a very safe place for the pumphouse.
- **The UCSB Lagoon:** The University is also concerned that its picturesque lagoon may breach and empty into the ocean, but the lagoon isthmus can always be fortified from the other side. Moreover, the lagoon was artificially created. If it did breach, it would behave like the Goleta or Devereux Sloughs and actually support a greater diversity of plants and animals.
- **Safety:** Under the proposed plan, access will be limited to a single narrow ramp. At high tide and/or in heavy surf conditions people can become trapped against the rock wall. This already occurs and would only get worse.
- **Cumulative effects:** Several seawalls have been built around Isla Vista and others are proposed. The bluffs just beyond the proposed and existing revetments are getting closer and closer to Lagoon Road. It will not be long before the University asks to armor that stretch of coast to protect that road. When all of Isla Vista is enclosed by seawalls what will the cumulative effects be for Goleta Beach and beaches further east? This issue has not been addressed at all.

Thanks for protecting our coast,

Dan Fontaine

[1]Santa Barbara News Press, "Surfers say proposal will take their point." 3/28/98

Kambria Wesch
6647 Trigo Rd
Isla Vista, CA 93117

April 12, 1998

California Coastal Commission
South Central Coast Area
89 S. California Street Suite 200
Ventura, CA 93001
Regarding: UCSB LRDP Amendment No. 2-97

Commissioners,

Please do not allow the University of California to build a seawall at Goleta Point on the eastern boundary of the campus. The University is amending its "Long Range" Development Plan so it can sacrifice the public's beach and use the fastest and cheapest means to achieve its short term agenda. Not only is the seawall a poor solution, it creates several new problems:

Concerning the beach: The revetment itself will occupy over 10,000 square feet of beach, and even proponents of the seawall agree that it will accelerate erosion of the remaining beach. Furthermore, the seawall raises public safety issues. Under the proposed plan, access will be limited to a single narrow ramp. At high tide and/or in heavy surf conditions it will be far too easy for people to become trapped against the rock wall.

Concerning the pumphouse and lagoon: The university has said it would be too difficult to move the pumphouse off the beach. That it will be "difficult" is no excuse to sacrifice a beach. Furthermore, the University is also concerned that the lagoon may breach and empty into the ocean. First of all, the lagoon isthmus can always be fortified from the other side. Secondly, the lagoon was artificially created. If it did breach, it would behave like the Goleta or Devereux Sloughs and actually support a greater diversity of plants and animals.

Thank you for your time,

Kambria Wesch

Kambria Wesch
Chairperson,
Isla Vista Surfrider Foundation

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COASTAL COMMISSION
SOUTH CENTRAL COAST DISTRICT

Letters from UCSB Staff

Staff has received 17 letters from UCSB staff in support of the revetment, attached are 3 sample letters.

EXHIBIT 16
Permit 4-97-156
Letters from UCSB Staff

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DEPARTMENT OF ECOLOGY, EVOLUTION & MARINE BIOLOGY
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FAX: (805) 893-4724

SANTA BARBARA, CALIFORNIA 93106-9610

February 27, 1998

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MAR 06 1998
CALIFORNIA
COASTAL COMMISSION

Rusty Areias, Chairman
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, Ca 94105

Dear Mr. Areias:

I am a Professor of Marine Biology at the University of California, Santa Barbara. I am deeply concerned that the Coastal Commission does not fully understand the enormous costs to the State of California should the Seawater Renewal Project not go forward as planned. Without the revetment to protect the pumphouse, utilities, road and lagoon our seawater system, the backbone of the extensive marine research and teaching infrastructure at the campus, will be severely jeopardized from periods of high storm activity. The project is before the Coastal Commission because we cannot protect the system in its present form against the kinds of storm activity California is now experiencing regularly. Without this protection, we will not be able to maintain our seawater system and the organisms that rely on it. Given the low impacts of the project (minor loss of only a few feet of beach, no impact on coastal access (access will actually be improved), minimal impact of beach appearance), the enormous costs of not approving this project become especially appalling. What are those costs?

Costs to the State of California if the project is not Approved.

1. **Quality of Undergraduate Education and qualifications for jobs**: UCSB presently has 300 Aquatic Biology undergraduate majors, most in the marine area, each taking several laboratory courses dependent upon organisms maintained in the seawater system. Without a reliable seawater system we cannot offer these courses. The educational experience of these students will be severely downgraded. These students will no longer be as qualified for jobs in the state or for graduate and professional training. Many of these students come to UCSB because of the availability of live marine organisms for them to study.

UCSB also has over 2400 undergraduate majors in Biology. The year long Introductory Biology course use marine animals maintained in the seawater system for many of its required laboratories. Without a reliable system these students will not experience the diversity of marine organisms or the various investigations of biological principles which use live marine organisms. They might as well have gone to college in Kansas! UCSB is one of the few Universities in the nation directly on the coast. Our location and the unique educational experience we can provide through our facilities is a tremendous draw for students, especially biology students.

2. **Impact on new Programs**: UCSB just started a new Graduate Program in Marine Science with the blessings of the UC system and the State. Without a reliable seawater system to support graduate student research and training the value of this program and its ability to recruit students will be impacted at considerable loss to the program and to industrial, government, and educational institutions in California that might have hired them.

3. **Costs to Research**: The UCSB research marine enterprise is enormous. Extramural funding to the Marine Science Institute was over $17 million dollars last year. Much of this research depends heavily on the seawater system. Without a reliable system, we cannot obtain grants. The loss in overhead to the State of California will total millions each year. The costs of the loss of research that might have benefited the people of California cannot even be evaluated!

5. **Loss of quality faculty**: No major Marine institution in the country can survive without a reliable seawater system. Faculty do not take jobs or stay in jobs where they cannot do their work. I myself could not stay here without access to a reliable sea water system. If the Coastal Commission denies this project, many faculty will be forced to go elsewhere. Such a decision would essentially dismantle 30 years of State investment in building the marine program at UCSB. This would not only be a terrible loss of tax payer dollars, it would be totally irresponsible to the State of California.

6. **Loss to public Education**: UCSB has a very sought-after program where thousands of elementary school students from all over the Tri-counties are brought in each year to view our live animals and enjoy our touch tanks. This experience invigorates many young students to go into science. This program would fold without the facilities to maintain marine organisms. Such a loss would be a great disappointment to many K-12educators in our area as it enriches their programs and their students educational experience.

The Seawater Renewal Project is intrinsically unique. The project proposes to protect the specialized marine facilities of a major State educational institution. This is not a seawall. This is not a proposal to protect private property. It is a proposal to protect public property that benefits the people of the State of California in many, many ways. The proposal will improve beach access and have minimal impact on beach size or appearance.

We cannot continue to maintain revetment as we have done in the past because or pump house is most threatened during times of high waves, when access is the most restricted. Present measures are not working. Other options to protect this system are not viable. We cannot relocate the pump house because the geological conditions which support the wet well cannot be replicated without much greater damage to the environment.

I urge the Coastal Commission to consider all of the costs a denial of this project would incur so that you can make a fully informed decision. There is much more at stake here than may appear. I urge you to approve this project.

Sincerely,

Alice Alldredge
Professor of Marine Biology and Chair of the Interdepartmental Graduate Program in Marine Science

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SANTA BARBARA, CALIFORNIA 93106-9610

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CALIFORNIA
COASTAL COMMISSION

March 2, 1998

Mr. Rusty Areias, Chairman
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105

Dear Mr. Areias:

I am writing to express my enthusiastic support for the Seawater Renewal Project as proposed by the University of California at Santa Barbara. It is my understanding that the Coastal Commission staff will be recommending approval of the Seawater Project, but not the revetment which is a vital component of the entire renewal project. It is imperative that the project be approved by the Commission as proposed by the University. The revetment was designed as part of the project to protect the seawater system pump house and the lagoon.

I have been the manager of resources in the Biological Sciences Department at UCSB for the past 20 years. Part of my responsibilities has involved the maintenance of the existing seawater system. During that time the seawater system intake pipes have been damaged several times by storms and wave action. In each case, the seawater system has become disabled and inoperative for both short and long time periods. In each case, the research and instruction mission of the University has been compromised.

I strongly believe that the revetment will provide adequate protection of the seawater system. The University cannot permit the untimely interruption of the seawater system if it is to maintain its research and teaching responsibilities.

- With regard to teaching. The Biological Sciences has approximately 2300 undergraduate majors. Each major must take specific core courses at the lower division level before progressing to upper division level courses. One of the core courses relies heavily on the seawater system to maintain marine organisms for the laboratory course. Enrollment for this laboratory course averages 800.

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- In upper division courses, related to the Aquatic Biology major, about 300 undergraduates enroll in laboratory and field courses that rely on the

seawater system for maintaining and studying marine organisms and the marine environment.

- The University serves as an important educational experience for elementary school children. The Marine Laboratory and its aquariums are opened to local elementary schools for field trips. Marine aquariums are set-up to introduce young students to the marine environment. The seawater system sustains the marine organisms for these activities. Approximately 5000 elementary students visit the Marine Laboratory annually for this hands-on experience.

- Marine research is an important major activity on the UCSB campus, being located on a coastline where it can take advantage of marine resources. In conducting these Federal and State funded research programs, the seawater system is a vital element. In some cases, these research programs are directly funded by the Coastal Commission. Each of the research programs relies on a reliable and functional seawater system. Any disruption of the seawater system can cause loss of vital marine research organisms, loss of important data, and loss of valuable research time and effort.

The seawater system is a critical element in fulfilling the University's instruction, research and public service functions. Furthermore, protecting the seawater system and maintaining its operation 24 hours a day every day of the year is essential. The seawater system is a utility, similar to electricity or natural gas. It is not a utility that can be turned off periodically for any duration. Consequently, every effort must be made to ensure that it is protected from damage, erosion or other catastrophic interruptions. Installation of the rock revetment will provide that needed protection.

I strongly urge the Commission to approve this project as proposed by the University.

Sincerely,

Lawrence Nicklin

Lawrence Nicklin
Manager

UNIVERSITY OF CALIFORNIA, SANTA BARBARA

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MARINE BIOTECHNOLOGY CENTER
MARINE SCIENCE INSTITUTE
TEL: 805-893-8982
FAX: 805-893-7998; or 805-893-8062

SANTA BARBARA, CALIFORNIA 93106-6150

February 28, 1998

RECEIVED
MAR 09 1998
CALIFORNIA
COASTAL COMMISSION

Mr. Rusty Areias, Chairman
California Coastal Commission
45 Fremont Steet, Suite 2000
San Francisco, CA 94105-2219

Dear Mr. Areias:

I left my previous faculty position at Harvard Medical School to join the faculty at UCSB because of UCSB's unique seawater system, and its unique capabilities for seawater-dependent research and teaching. My use of this seawater system has produced economic benefits to the State, provided training to California industries and regulatory agencies, and trained more than 1,000 students in seawater-dependent research and industrial and regulatory methodolgy over the past two decades. Without UCSB's seawater system (unique in its physical capabilities among those at every marine research institution I have seen in the country) none of this would have been possible.

My students, research colleagues and I discovered the natural "signals" that regulate abalone spawning and larval development, and converted these discoveries to simple, reliable methods that increase the economic efficiency and yield of abalone production. **These methods are now used world-wide in the commercial production of abalone and many other valuable shellfish. We used our seawater labs at UCSB to train members of California's emerging aquaculture industry in the new methods we developed, and we also trained members of California's municipal, county and State regulatory agencies (including researchers at CF&G) in the use of these methods both for production purposes, and for use in a simplified and highly sensitive test we developed for the detection and quantitation of the effects of pollutants in coastal waters.** These new methods of production are now standard operating procedure in the most successful abalone producing aquaculture companies in California, and the pollution assay we developed is widely used by the State's regulatory agencies as one of the most sensitive monitors of coastal pollution.

My colleagues and I now bring more than $2-million/year to the State in grants from the U.S. Department of Commerce, the National Institutes of Health, the National Science Foundation, the Office of Naval Research, the Army Research Office and major chemical, manufacturing and biotechnology industries, **for our research investigating the molecular mechanisms controlling biomineralization in marine organisms**. Recognized internationally as pioneering research, these studies are shedding new light on the mechanisms controlling normal human bone development and abnormal mineralization in human disease, and are providing new paths for the environmentally benign synthesis of high-performance composite materials for use in the next generation of computers, communication devices, smart medical implants and biosensors. **Students trained in our laboratories in this program - in research based on marine organisms cultivated in the University's seawater system - are finding excellent employment in the State's most advanced silicon, biotechnology and manufacturing companies, where they are leading in the development of new technologies and industries that will maintain California's leadership in technology for the future. Remarkably, their training - and its**

strong economic support - is based on research probing the genes and proteins of abalones and other simple marine animals!

Several years ago, I worked with members of the California Coastal Commission and our local community to help draft Santa Barbara's original Coastal Development Plan, and was pleased that mariculture, marine research and marine resource teaching were identified as "coastally dependent" activities. The State's investment of $8-million for the construction of UCSB's Marine Biotechnology Laboratory (with laboratories equipped with thermostatically regulated, fresh flowing seawater as well as the latest in scientific instrumentation), and the State's cumulative investment over the years of more than $15-million for the construction and renovation of UCSB's Seawater System, affirm the State's recognition of the value of the unique seawater-dependent research and training activities of the kind described above, and affirm the State's commitment to continue these activities. **It is necessary that the State now protect these investments and the research and training activities they were intended to support by physically protecting the Seawater System upon which they are based, with the proposed revetment.**

The environmental impact of the proposed protection will be minimal, since the vulnerable sand berm in question already is flanked on both sides by rip-rap that has become "sanded-in" and of relatively low visibility. There is an environmental benefit from the proposed protection as well, since this will maintain the integrity of the lagoon that is both a scenic and recreational resource enjoyed by the wider Santa Barbara community, and a temporary and permanent home to thousands of migratory and resident waterfowl.

My students, colleagues and I ask that you please approve the proposed Seawater System project in its entirely, including the revetment that is essential for protecting the system.

On behalf of the generations of students who already have benefited from the unique training that UCSB's Seawater System has provided, the generations of future students now scheduled to receive such training, UCSB's research community, and California's many beneficiaries of the research and employment training made possible by this Seawater System, I thank you for your consideration of the campus's request for permission to protect this unique resource.

Sincerely,

Daniel E. Morse
Professor of Molecular Genetics
and Biochemistry,

Chairman
Marine Biotechnology Center