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W13a

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COASTAL DEVELOPMENT PERMIT APPLICATION

Application number.....**3-02-060, Medeiros Seawall**

Applicant.....Matt & Ellen Medeiros

Project location.....Beach and bluffs seaward of 4760 Opal Cliff Drive (APN 033-132-09) in the unincorporated Opal Cliffs area of Santa Cruz County.

Project description.....Construct a roughly 70-foot long, 25-foot tall, 20-foot wide concrete gravity seawall with wave return.

File documents.....Santa Cruz County Certified Local Coastal Program (LCP); California Coastal Commission Monterey Bay ReCAP.

Staff recommendation ...**Denial**

Summary: The proposed project is located at the base of the bluffs fronting 4760 Opal Cliff Drive in the Opal Cliffs region of the unincorporated Live Oak beach area of Santa Cruz County. Although much of the one-mile stretch of Opal Cliffs is armored, including nearby seawalls up and downcoast, the subject site and its immediate neighbors are not armored. The Applicant proposes to construct a smooth-faced concrete gravity seawall with an angled wave return extending roughly 25 feet high and 70 feet in length along of the base of the bluffs.

The one-story, approximately 1,986 square-foot single-family residence at this location is set back about 53 feet from the blufftop edge at its minimum, and about 76 feet at its maximum (the bluff edge is angled relative to the back of the home). The Applicant's consulting geologist indicates that long-term erosion at this location has averaged about 0.8 to 0.9 feet per year, with a slightly lower rate in the past two decades. The consulting geologist concludes that the bluff would reach the footprint of the home in approximately 60 to 65 years, and would reach a 25 foot setback line in about 30 to 35 years.

Due to its long and short term negative impact on coastal resources, the Coastal Act allows for shoreline armoring when an existing structure is in danger from erosion. In this case, Staff, including the Commission's Coastal Engineer and Geologist, have concluded that the existing residence is not in danger from erosion as required by Coastal Act Section 30235. The 53-foot (minimum) setback is sufficient to protect the structure for the foreseeable future. There is no documentation to indicate that the bluffs in this area have ever receded as a sufficient rate to place a structure set back 53 feet in

immediate danger from erosion. This conclusion is corroborated by the Applicant's geologic report that concludes that the home would still be expected to be set back 25 feet after an additional 30 to 35 years of erosion.

The seawall would be expected to negatively affect coastal views, shoreline processes, and sandy beach access in both the long and short term. The proposed use of an offshore barge anchored in the near tidal zone offshore for construction purposes would exacerbate these impacts during construction, and could also adversely affect offshore public access and Monterey Bay marine resources.

In sum, without a clear demonstration of a near term erosion threat, and in light of the negative coastal resource impacts from armoring that are well known to the Commission, a seawall at this location at this time cannot be found to be consistent with Coastal Act. For these reasons, and as further detailed in the recommended findings that follow, Staff recommends that the Commission deny the proposed project.

Staff Report Contents

I. Staff Recommendation on CDP Application

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

Motion. I move that the Commission approve Coastal Development Permit Number 3-02-060 for the development proposed by the Applicant.

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

Resolution To Deny The Permit. The Commission hereby denies a coastal development permit for the proposed development on the ground that the development will not conform with the policies of Chapter 3 of the Coastal Act. Approval of the permit would not comply with the California Environmental Quality Act because there are feasible mitigation measures or alternatives that would substantially lessen the significant adverse impacts of the development on the environment.

II. Findings and Declarations

The Commission finds and declares as follows:

A.Project Location and Description

The proposed project is located on the bluffs fronting Opal Cliffs in the unincorporated Live Oak area of Santa Cruz County. See exhibit A for project location, and exhibit C for photos of the project area.

Santa Cruz County Regional Setting

Santa Cruz County is located on California's central coast and is bordered to the north and south by San Mateo and Monterey Counties (see exhibit A). The County's shoreline includes the northern half of the Monterey Bay and the rugged north coast extending to San Mateo County along the Pacific Ocean. The County's coastal zone resources are varied and oftentimes spectacular, including the Santa Cruz Mountains coastal range and its vast forests and streams; an eclectic collection of shoreline environments ranging from craggy outcrops to vast sandy beaches (in both urban and more rural locations); numerous coastal wetland, lagoon and slough systems; habitats for an amazing variety and number of endangered species; water and shore oriented recreational and commercial pursuits, including world class surfing areas; internationally renowned marine research facilities and programs; special coastal communities; vast State Park lands; and the Monterey Bay itself. The unique grandeur of the region and its national significance was formally recognized in 1992 when the area offshore of the County became part of the Monterey Bay National Marine Sanctuary – the largest of the 12 such federally protected marine sanctuaries in the nation.

Santa Cruz County's rugged mountain and coastal setting, its generally mild climate, and its well-honed cultural identity combine to make the area a desirable place to both live and visit. As a result, the County has seen extensive development and regional growth over the years that the California Coastal Management Program has been in place. In fact, Santa Cruz County's population has more than doubled since 1970 alone with current census estimates indicating that the County is home to over one-quarter of a million persons.[1] This level of growth not only increases the regional need for housing, jobs, roads, urban services, infrastructure, and community services, but also the need for park areas, recreational facilities, and visitor serving amenities. For coastal counties such as Santa Cruz where the vast majority of residents live within a half-hour of the coast, and many closer than that, coastal zone resources are a critical element in helping to meet these needs. Furthermore, with coastal parks and beaches themselves attracting visitors into the region, an even greater pressure is felt at coastal recreational systems such as that found in Live Oak. With the Santa Cruz County shoreline and beaches providing arguably the warmest and most accessible ocean waters in all of Northern California, and with the large population centers of the San Francisco Bay area and the Silicon Valley nearby, this type of resource pressure is particularly evident in coastal Santa Cruz County.

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

Live Oak Beach Area

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

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[1] Census data from 1970 shows Santa Cruz County with 123,790 persons; California Department of Finance estimates for the 2000 census indicate that over 255,000 persons reside in Santa Cruz County.

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

Proposed Development Site

The project is located along the Opal Cliffs bluffs. Opal Cliffs is the name for the coastal area extending roughly from 41st Avenue to the City of Capitola city limits.[3] This roughly 1-mile stretch of coastline is characterized by a row of private residential properties that are perched atop the bluffs located seaward of the first through public road (Opal Cliff Drive). As a result, seaward public views and access from Opal Cliff Drive have been extremely curtailed.

The proposed project is located on the lower bluffs and back beach of a small, unnamed pocket beach. The beach here is only accessible at low tides due to headlands up and downcoast. Although much of the one-mile stretch of Opal Cliffs is armored, including nearby seawalls up and downcoast, the subject site and its immediate neighbors are not armored (see site photos in exhibit C). Around the headland upcoast is the much used pocket beach known locally as Key Beach or Privates.[4] Downcoast are two more pocket beaches, followed by Hooper Beach and the Capitola Wharf in the City of Capitola. Access and use of the beaches fronting Opal Cliffs between 41st Avenue and Capitola are limited due to a lack of vertical accessways, and due to the fact that beach area is occupied in large part by many different shoreline structures.

The bluffs at the project location are steep, about 60 feet in height, and characterized by about 20 feet of poorly consolidated terrace deposits overlying the more consolidated Purisima Formation below. A small sea cave, extending inland roughly 8 feet from the base of the bluff, is located at the downcoast portion of the bluffs. The residential development atop the bluffs at this site consists of a one-story, approximately 1,986 square foot single-family residence that is set back about 53 feet from the blufftop edge at its minimum, and about 76 feet at its maximum (the bluff edge is angled relative to the back of the home). Between the residence and the blufftop edge are two brick patios and a lawn. See exhibits A B, and C.

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

3 The Capitola city limit is located just downcoast (3 properties away) of the project site.

4 Key Beach or Privates is accessed by a locked stairway from Opal Cliff Drive for which keys can be purchased from the local recreation district for Opal Cliffs. The beach and access thereto provide the only direct vertical accessway for the roughly one-mile stretch of coastline between 41st Avenue (upcoast) and Hooper Beach in Capitola (downcoast).

Proposed Project

The Applicant proposes to construct a smooth-faced concrete gravity seawall with an angled wave return extending roughly 25 feet high and 70 feet in length along of the base of the bluffs (see proposed project plans in exhibit B). The Applicant indicates that project construction methods would generally be dependent upon their approvability, with potential alternatives including the use of a crane on the blufftop, the use of vehicle traversing along the shoreline during low tides to access the site from below, the use of an offshore barge, and/or combinations of all of these.[5]

Standard of Review

The proposed project falls within the Commission's retained jurisdiction and thus the standard of review is the Coastal Act. As relevant, the County's certified LCP can provide non-binding guidance. However, the LCP and Coastal Act policies are very similar as regards allowing shoreline armoring and protecting against its impacts. Thus, the LCP policies do not provide different policy direction in this case, and their usefulness in this review is limited as a result.

B.Coastal Development Permit Determination

1. Geologic Conditions and Hazards

Coastal Act Section 30235 addresses the use of shoreline protective devices:

> ***30235.*** *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.*

Coastal Act Section 30253 addresses the need to ensure long-term structural integrity, minimize future risk, and to avoid landform altering protective measures in the future. Section 30253 provides, in applicable part:

> ***Section 30253.*** *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.*

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[5] It is not critical to further delineate these options unless a armoring project is warranted and otherwise approvable per Chapter 3 of the Coastal Act.

Coastal Act Section 30235 acknowledges that seawalls, revetments, cliff retaining walls, groins and other such structural or "hard" methods designed to forestall erosion also alter natural landforms and natural shoreline processes. Accordingly, with the exception of new coastal-dependent uses, Section 30235 limits the construction of shoreline protective works to those required to protect existing structures or public beaches in danger from erosion. The Coastal Act provides these limitations because shoreline structures can have a variety of negative impacts on coastal resources including adverse affects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach.

In addition, the Commission has generally interpreted Section 30235 to apply only to existing principal structures. The Commission must always consider the specifics of each individual project, but has generally found that accessory structures (such as patios, decks, gazebos, stairways, etc.) are not required to be protected under Section 30235, or can be protected from erosion by relocation or other means that do not involve shoreline armoring. The Commission has generally historically permitted at grade structures within the geologic setback area recognizing that they are expendable and capable of being removed rather than requiring a protective device that would alter natural landforms and processes along bluffs, cliffs, and beaches. Such is the case here where there exist two patios in the blufftop area seaward of the existing home that can be relocated/reconfigured as necessary to the extent they are or become threatened.

Under Coastal Act Section 30235, shoreline protective structures may be approved if: (1) there is an existing structure; (2) the existing structure is in danger from erosion; (3) shoreline altering construction is required to protect the existing threatened structure; and (4) the required protection is designed to eliminate or mitigate the adverse impacts on shoreline sand supply. The first three questions relate to whether the proposed armoring is necessary. The fourth question applies to mitigating some of the impacts from armoring.

A. Existing Structure to be Protected

The Applicant proposes shoreline armoring to protect the residence located on the blufftop at this location. The Applicant indicates that the residence is roughly 40 years old, thus pre-dating the coastal permitting requirements of both 1972's Proposition 20 (the Coastal Initiative) and the 1976 Coastal Act. As such, the blufftop residence qualifies as an existing structure for purposes of Section 30235.

B. Danger from Erosion

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

represents an ordinary and acceptable risk, and danger that requires shoreline armoring per 30235. Lacking Coastal Act definition, the Commission's long practice has been to evaluate the immediacy of any threat in order to make determinations as to whether an existing structure is "in danger." While each case is evaluated based upon its own particular set of facts, the Commission has generally interpreted "in danger" to mean that an existing structure would be unsafe to occupy within the next two or three storm season cycles (generally, the next few years) if nothing were to be done (i.e., in the no project alternative).

Reports Submitted

The Applicant has submitted the following geotechnical evidence to support the contention that the existing residence is in danger from erosion, and that the proposed project is appropriate:

- *Geotechnical and Geologic Report, Proposed Seawall Construction* by LRA Environmental, dated September 21, 1992 (LRA);
- *Geologic Report Medeiros Property* by Rogers E. Johnson & Associates, dated May 12, 1998 (RJA);
- *Geotechnical and Coastal Engineering Investigation for Proposed Seawall*, by Haro Kasunich and Associates Inc., dated March 1999 (HKA);
- *Geotechnical and Geologic Update* by Soil Search Engineering, dated July 27, 2001 (SSE);
- *Addendum Report for Proposed Seawall and Coastal Bluff Protection*, by Bowman and Williams, dated January 9, 2002 (BW);

Each of these reports have slightly different purposes and information. The 1992 geologic and geotechnical report (LRA) was updated by the 1998 (RJA) and 1999 (HKA) reports. One purpose of the 2001 update (SSE) was to verify that the recommendations from the 1998 and 1999 reports could still be used (SSE concluded that they could). The 1999 HKA report is geared primarily towards geotechnical design criteria for a seawall. The 2002 addendum (BW) includes additional detail and information for the project, as well as for the surrounding bluff and built environment characteristics.

Adequacy of Setback

The existing residence is located 53 feet from the blufftop edge at its minimum, and about 76 feet at its maximum (the bluff edge is angled relative to the back of the home) (see exhibits B and C). Based on historical evidence going back to 1853, RJA indicates that long-term erosion at this location has averaged about 0.8 to 0.9 feet per year. More recently (i.e., between 1976 and 1998), RJA estimates the rate as being slightly lower, in the range of 0.3 to 0.7 feet per year.[6] RJA concludes that the bluff would

[6] It should be noted that Opal Cliffs has long been recognized as an area within Santa Cruz County that has exhibited a high rate of bluff retreat, particularly since the time the Santa Cruz Harbor was installed upcoast of Opal Cliffs in the 1960s (and because the direction of offshore littoral drift is roughly from up to down coast at this location). Fore reference, the 0.3 feet (low end) to 0.9 (high end) per year rate is considered a moderate to high erosion rate compared to what has been reported elsewhere in the state.

reach the footprint of the home in approximately 60 to 65 years, and would reach a 25 foot setback line in about 30 to 35 years.[7] The Commission's Geologist concurs with this assessment, but points out that a long-term average erosion rate should only be applied to assess probable approximate bluff location over long time intervals (50 years or more). Episodic erosion events that occur at much higher rates than the long-term average typically are the events that actually threaten structures, and are much more difficult to predict. The best guidance typically is the maximum documented "episodic event" in the recent past. None of the geologic reports document an episodic event that, if it were to recur, would put the structure at risk. Further, given the very large setback of 53 feet, the long-term average erosion rate does, in fact, begin to approach a realistic estimate of future bluff position.

Commission technical staff, including the Commission's Coastal Engineer and Geologist, have reviewed the submitted reports and have concluded that the 53-foot (minimum) setback is sufficient to protect the existing residential structure for the foreseeable future. There is no documentation to indicate that the bluffs in this area have ever receded as a sufficient rate to place a structure set back 53 feet in immediate (i.e., the next few years) danger from erosion. This conclusion is corroborated by the Applicant's geologic report that conclude that the home would still be expected to be set back 25 feet after an additional 30 to 35 years of erosion.

Applicants for shoreline armoring typically submit a quantitative slope stability analysis with their application. In this case, such an analysis was initially requested, but not submitted. Commission technical staff reviewed the materials that were submitted and concluded that there was adequate information and analysis relevant to this point in the submitted reports to be able to make a recommendation on the project such that it was not absolutely necessary to have the applicant pay for the preparation of an additional report. The Commission's Geologist concluded that given the large setback relative to the height of the bluffs, he would not expect the results of any such slope stability analysis to indicate that the bluffs are so marginally stable as to demonstrate an immediate threat to the residential structure. Even were the small sea cave to collapse, it wouldn't have any immediate effect on the stability of the residence as the sea cave extends only about 8 feet into the bluffs.

In conclusion, the existing residential structure is not in danger from erosion, and thus the proposed project does not meet the second Section 30235 test.

C. Feasible Protection Alternatives to a Shoreline Structure

The third Section 30235 test that must be met is that the proposed armoring must be "required" to protect the existing threatened structure. In other words, shoreline armoring can be permitted if it is the only feasible alternative capable of protecting the structure.[8] Other alternatives typically considered include: the "no project" alternative; abandonment of threatened structures; relocation of the threatened

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[7] This corroborates the earlier 1992 geologic report conclusions (LRA) which indicates that "homeowners along Opal Cliffs can expect another thirty (30) to forty (40) years of relative safety" if then current erosion processes were allowed to continue.

[8] Note that Coastal Act Section 30108 defines feasibility as follows: "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

structures; sand replenishment programs; drainage and vegetation measures on the blufftop itself; and combinations of each.

In this case, the existing structure is not in danger from erosion and thus the no project alternative is feasible. Therefore, a shoreline armoring project is not required and the proposed project does not meet the third Section 30235 test.

D. Sand Supply Impacts

The fourth test of Section 30235 (previously cited) that must be met in order to allow Commission approval is that shoreline structures must be designed to eliminate or mitigate adverse impacts to local shoreline sand supply.

Shoreline Processes

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

These natural shoreline processes affecting the formation and retention of sandy beaches can be significantly altered by the construction of shoreline armoring structures since bluff retreat is one of several ways that beach quality sand is added to the shoreline. Bluff retreat and erosion is a natural process resulting from many different factors (such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration); shoreline armoring directly impedes these natural processes.

The subject site is located within the Santa Cruz Littoral Cell. The Santa Cruz Cell is a high volume cell with annual longshore transport estimated between 300,000 and 500,000 cubic yards of beach quality

materials annually.[9] The dominant direction of longshore transport in this sand supply system is north north-west to south south-east (roughly from up top downcoast in relation to the site).[10] Materials in this system have been estimated to come mainly from coastal streams (roughly 75%), with 20% coming from bluffs, and 5% coming from coastal ravines and sand dunes.[11]

Some of the effects of engineered armoring structures on the beach (such as scour, end effects and modification to the beach profile) are temporary or are difficult to distinguish from all the other actions that modify the shoreline. Others are more qualitative (e.g., impacts to the character of the shoreline and visual quality). Some of the effects that a shoreline structure may have on natural shoreline processes can be quantified, however, including: (1) the loss of the beach area on which the structure is located; (2) the long-term loss of beach which will result when the back beach location is fixed on an eroding shoreline; and (3) the amount of material which would have been supplied to the beach if the back beach or bluff were to erode naturally.[12]

Fixing the back beach

Experts generally agree that where the shoreline is eroding and armoring is installed, as is the case here, the armoring will eventually define the boundary between the sea and the upland. On an eroding shoreline fronted by a beach, the beach will be present as long as some sand is supplied to the shoreline. As erosion proceeds, the profile of the beach also retreats. This process stops, however, when the retreating shoreline comes to a revetment or a seawall. While the shoreline on either side of the armor continues to retreat, shoreline retreat in front of the armor stops. Eventually, the shoreline fronting the armor protrudes into the water, with the mean high tide line fixed at the base of the structure. In the case of an eroding shoreline, this represents the loss of a beach as a direct result of the armor.

In addition, sea level has been rising slightly for many years. In the Monterey Bay area, the trend for sea level for the past 25 years has been an increase resulting in a 100 year rate of nearly 1 foot per 100 years.[13] Also, there is a growing body of evidence that there has been a slight increase in global temperature and that an acceleration in the rate of sea level can be expected to accompany this increase in temperature over time. Mean water level affects shoreline erosion several ways and an increase in the average sea level will exacerbate all these conditions. On the California coast the effect of a rise in sea level will be the landward migration of the intersection of the ocean with the shore. On a relatively flat beach (such as that found at Opal Cliffs), with a slope of 40:1, every inch of sea level rise will result in a 40-inch landward movement of the ocean/beach interface.[14] This, too, leads to loss of the beach as a

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[9] United States Army Corps of Engineers (USACOE), San Francisco District, 1994.

[10] USACOE, San Francisco District, 1994.

[11] Griggs and Best, 1991.

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

[13] NOAA, National Ocean Service.

[14] In other words, a one-inch rise in sea level can result in over 3 landward feet of beach loss.

direct result of the armor.

The Commission has established a methodology for calculating the long-term loss of beach due to fixing the back beach, this impact being equal to the long-term erosion rate multiplied by the width of property which has been fixed by a resistant shoreline protective device.[15] Using this calculation, the impact would translate in this case to roughly 63 square feet per year. To convert the 63 square foot loss of beach per year into the volume of sand necessary to restore the beach commensurately in cubic yards, coastal engineers use a conversion value representing units of cubic yards per square foot of beach.[16] In this case, the Commission has not been able to establish an actual conversion factor for the Opal Cliffs vicinity. However, if a 1.0 conversion factor is used (i.e., the low end of the spectrum of values typically assumed by coastal engineers), a conservative estimate of the cubic yard equivalent of 63 square feet per year can be calculated. Using the sand conversion factor of 1.0, the direct loss of beach due to fixing the back beach translates into a yearly impact of 63 cubic yards of sand.

Encroachment on the Beach

Shoreline protective devices such as the seawall proposed are all physical structures that occupy space. When a shoreline protective device is placed on a beach area, the underlying beach area cannot be used as beach. This generally results in a loss of public access as well as a loss of sand and/or areas from which sand generating materials can be derived. The area where the structure is placed will be altered from the time the protective device is constructed, and the extent or area occupied by the device will remain the same over time, until the structure is removed or moved from its initial location, or in the case of a revetment, as it spreads seaward over time. The beach area located beneath a shoreline protective device, referred to as the encroachment area, is the area of the structure's footprint.

In this case, the seawall's base would occupy roughly 910 square feet of beach space.[17] Using the conversion discussed above, this translates into a one-time impact of 910 cubic yards of sand.

Retention of Potential Beach Material

If natural erosion were allowed to continue (absent the proposed armoring), some amount of beach material would be added to the beach at this location, as well as to the larger littoral cell sand supply

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

[16] This conversion value is based on the regional beach and nearshore profiles, and overall characteristics. When there is not regional data to better quantify this value, it is often assumed to be between 1 and 1.5, the idea being that to build a beach seaward one foot, there must be enough sand to provide a one-foot wedge of sand through the entire region of onshore-offshore transport. If the range of reversible sediment movement is from -30 feet msl to +10 feet msl, then a one-foot beach addition must be added for the full range from -30 to +10 feet, or 40 feet total. This 40-foot by 1 foot square parallelogram could be built with 1.5 cubic yards of sand (40 cubic feet divided by 27 cubic feet per cubic yard). If the range of reversible sediment transport is less than 40 feet, it will take less than 1.5 cubic yards of sand to rebuild one square foot of beach; if the range of reversible sediment transport is larger than 40 feet, it will take more than 1.5 cubic yards of sand to rebuild one square foot of beach.

[17] Note that this is based upon a footprint area that is 13 feet wide. The width of the seawall from front to back is roughly 20 feet. The angled back of the wall is what results in the 7-foot difference in width.

system fronting the bluffs. Because littoral drift at this location is from up to downcoast (towards the beaches of Capitola downcoast) the impact would be relatively more towards Capitola than upcoast along Opal Cliffs. The volume of total material that would have gone into the sand supply system over the lifetime of the shoreline structure would be the volume of material between (a) the likely future bluff face location with shoreline protection; and (b) the likely future bluff location without shoreline protection. Since the main concern is with the sand component of this bluff material, the total material lost must be multiplied by the percentage of bluff material which is beach sand, giving the total amount of sand which would have been supplied to the littoral system for beach deposition if the proposed device were not installed. The Commission has established a methodology for identifying this impact.[18] The Applicant indicates that this impact would be roughly 108 cubic yards of sand per year (BW).

Other Impacts

Oftentimes there are concerns that installing shoreline armoring where adjacent properties are not armored, such as is the case here, can result in increased erosion or other "end effects" at that location. This can lead to structural stability issues off-site. Such would be expected to be the case here, particularly during storm scour events when the beach sands have been stripped. The sand supply portion of this impact is difficult to quantify, however, and no attempt, other than to acknowledge that there would be expected to be an impact, is made to do so here.

Sand Supply Impacts Conclusion

The proposed project would be expected to result in quantifiable sand supply impacts totaling 1,081 cubic yards the first year and 171 cubic yards per year thereafter. The Applicant has not proposed any mitigation for these impacts. Without compensating mitigation, the project is thus inconsistent with the fourth test of Section 30235.

Note that mitigation typically required by the Commission for such direct sand supply impacts have been in-lieu fees and/or beach nourishment. With regards to beach nourishment, a formal sand replenishment strategy can introduce an equivalent amount of sandy material back into the system to mitigate the loss of sand that would be caused by a protective device. Obviously, such an introduction of sand, if properly planned, can feed into the Santa Cruz Littoral Cell sand system to mitigate the impact of the project. However, there are not currently any existing beach nourishment programs directed at this beach area.

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[18] The equation is Vb = (S x W x L) x [(R x hs) + (1/2hu x (R + (Rcu - Rcs)))]/27. Where: Vb is the volume of beach material that would have been supplied to the beach if natural erosion continued (this is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structure); S is the fraction of beach quality material in the bluff material; W is the width of property to be armored; L is the design life of structure (100 years assumed per HKA) or, if assumed a value of 1, an annual amount is calculated; R is the long term average annual erosion rate; hs is the height of the shoreline structure; hu is the height of the unprotected upper bluff; Rcu is the predicted rate of retreat of the crest of the bluff during the period that the shoreline structure would be in place, assuming no seawall were installed (this value can be assumed to be the same as R unless the Applicant provides site-specific geotechnical information supporting a different value); Rcs is the predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming the seawall has been installed (this value will be assumed to be zero unless the Applicant provides site-specific geotechnical information supporting a different value); and divide by 27 (since the dimensions and retreat rates are given in feet and volume of sand is usually given in cubic yards, the total volume of sand must be divided by 27 to provide this volume in cubic yards, rather than cubic feet).

Absent a comprehensive program that provides a means to coordinate and maximize the benefits of mitigation efforts in the area now and in the future, the success of such piecemeal mitigation efforts is questionable.

As an alternative mitigation mechanism, an in-lieu fee is oftentimes used by the Commission when in-kind mitigation of impacts is not available. In situations where ongoing sand replenishment programs are not yet in place, the in-lieu sand mitigation fee is deposited into an account until such time as an appropriate program is developed and the fees can then be used to offset the designated impacts. Recent estimates to deliver beach quality sand to Santa Cruz beaches are roughly $25 a cubic yard. For the 1,081 cubic yards the first year and the 171 cubic yards per year thereafter, such a fee would translate to $27,025 the first year and $4,275 per year for the life of the project; if a 100 year design life is presumed (HKA), this would total a fee of $454,525.

E. Future Armoring

Coastal Act Section 30253 requires the project to assure long-term stability and structural integrity, minimize future risk, and avoid additional, more substantial protective measures in the future. In this case, the subject site and the neighboring properties are unarmored. About one-third of the pocket beach fronting this site (downcoast, mostly in the City of Capitola city limits) is currently armored with a base of bluff seawall.

If and when the unarmored sites adjacent to armored sites propose their own armoring, one of the salient facts of those specific cases will be that the adjacent site is already similarly armored and it is just a continuation of that trend, not something atypical because there is already armoring next door. In other words, installing armoring where adjacent sites are not armored, as is proposed here, may prejudice future decisions in the immediate area. Moreover, it can start in motion a series of projects that not only individually result in adverse impacts to beach area resources (for example, as detailed above and below for the proposed project in this case), but can cumulatively lead to overall degradation of the resource on a much grander scale. Shoreline armoring generally begets more shoreline armoring. The reasons for this are many including the fact that armoring on one site can lead to increased and/or more focused erosion at adjacent properties due to end scour and eddying at the point where the unarmored coastline abuts the armor (as discussed above). More generally, as the shoreline continues to actively erode around the now hardened stretch of coast, there can be pressure to extending the existing armoring to cover adjacent areas. Over time, the armoring slowly stretches down the coast until it comes to a headland and/or other armor.

F. Geologic Conditions and Hazards Conclusion

The proposed project does not meet the Section 30235 tests, fundamentally because the existing residential structure is not in danger from erosion. Therefore, the Commission is not required to approve the proposed project per Section 30235. In addition, the proposed project could have adverse erosional effects on up and downcoast properties that could decrease the useful life of their setbacks, and lead to premature armoring proposals there inconsistent with Section 30253.

2. Public Access and Recreation

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

> ***30210.*** *In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.*
>
> ***30211.*** *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*
>
> ***30213.*** *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. ...*
>
> ***30221.*** *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*
>
> ***30223.*** *Upland areas necessary to support coastal recreational uses shall be reserved for such uses, where feasible.*

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

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

These overlapping policies clearly protect the beach (and access to and along it) and offshore waters for public access and recreation purposes, particularly free and low cost access.

Loss of Public Access

The project would occupy roughly 910 square feet of back beach area; and roughly half that during summer when sand levels are relatively higher than winter (and would extend somewhat over the toe of the seawall that extends seaward of the face). Because the seawall would extend out from the base of the

bluffs roughly 13 feet, it would act as a barrier blocking both beach use in that area as well as lateral beach access. Because the beach here is accessible only at low tides, and is not heavily used, this impact would be relatively small. That said, it is an impact due to the project.

More importantly in terms of beach access is that the proposed project, particularly over time, would result in the loss of beach altogether at this location. As discussed in the preceding finding, the back beach location would be fixed on an eroding shoreline and the Monterey Bay would be expected to lap up against the seawall during all tides and at all times of the year eventually. Although difficult to quantify with any precision, downcoast Capitola beaches would be expected to be affected from the loss of sandy materials as well.

During construction, beach access would effectively be precluded resulting in a loss of access at this time as well. Depending upon the construction method chosen, the project also could involve large equipment extending out into the Monterey Bay (i.e., if a barge is used) that would block public use of Bay waters as well. In addition, construction activities would intrude and negatively impact the aesthetics, ambiance, serenity, and safety of the on and immediately offshore recreational beach experience. The public would bear the burden of the negative construction impacts associated with roughly 3 to 4 weeks of construction estimated by the Applicant. During this time, the immediate beach (and potentially offshore) construction area would not be available for public access. Although this impact could be minimized by appropriate construction controls (such as limiting the width of construction corridors, limiting the times when work can take place, fencing the minimum construction area necessary, keeping equipment out of high use areas, storing equipment off of the beach at night, and clearly delineating and avoiding to the maximum extent feasible public use areas, etc.), it cannot be eliminated.

In sum, the subject beach area provides limited public access. That access would be further limited due to the proposed project. Over time, the proposed project would result in the loss of sandy beach area seaward of it. Downcoast, and more heavily used, Capitola beaches would be expected to be incrementally affected by the loss of sand materials as well. During construction, access would effectively be precluded to the beach (and potentially offshore) recreational areas. Although not a heavy use access area, the loss of such access, particularly cumulatively when understood in relation to other armor and potential projects in the area, is contrary the Coastal Act access and recreation policies sited above.

3. Visual Resources and Landform Alteration

Coastal Act Section 30251 states:

> ***Section 30251.*** *The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas. New*

development in highly scenic areas such as those designated in the California Coastline Preservation and Recreation Plan prepared by the Department of Parks and Recreation and by local government shall be subordinate to the character of its setting.

Coastal Act Section 30240(b), previously cited, also protects the aesthetics of beach recreation areas such as those seaward of the bluffs here (including the beach and adjacent Monterey Bay waters). Section 30240(b) states:

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

The proposed project would introduce an unnatural and artificial structure into the public viewshed of the beach and offshore Monterey Bay. The seawall is proposed in a gravity wall, flat concrete style, that does not look anything like the natural bluffs in this area. The Opal Cliffs bluffs are already cluttered with a variety of armor structures and this would incrementally add to that negative impact.

During construction, this impact would be exacerbated by the presence of large construction equipment and activities that are also antithetical to shoreline viewshed qualities.

In sum, the beach viewshed, including as seen from offshore Monterey Bay, would be negatively impacted by the proposed project. The wall proposed has not attempted to camouflage its presence in any way (i.e., through making it look like an integral part of the bluff). It does not protect views of the shoreline, it does not minimize landform alteration, it is not visually compatible with the bluffs, and would worsen the visual quality of the immediate viewshed. All of these visual impacts would be exacerbated during construction. The proposed project is inconsistent with Coastal Act Sections 30251 and 30240(b) as discussed in this finding.

4. Cumulative Impacts

Coastal Act Section 30250(a) addresses cumulative impacts, stating in part as follows:

New residential, commercial, or industrial development, except as otherwise provided in this division, shall be located...where it will not have significant adverse effects, either individually or cumulatively, on coastal resources. ...

The Opal Cliffs area has been substantially armored over the years, much of this predating the Coastal Act. There are a wide variety of armoring styles that have been maintained to varying degrees. Overall, this has resulted in significant visual degradation of the shoreline, a loss of lateral access, and a negative impact on shoreline sand supply processes (see preceding findings for some of the types of impacts associated with this existing shoreline armor). This project would incrementally and cumulatively add to that significant adverse affect inconsistent with Coastal Act Section 30250(a).

5. Marine Resources and Habitat

The Coastal Act protects the marine resources and habitat offshore of this site. Coastal Act Sections 30230 and 30231 provide:

> ***Section 30230.*** *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.*** *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.*

Coastal Act Section 30240 states:

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

The project proposes construction activities adjacent and potentially within Monterey Bay National Marine Sanctuary waters. The Sanctuary is home to some 26 Federal and State Endangered and Threatened species. It is unclear whether any are present at this location. However, Sanctuary waters are teeming with wildlife. The Commission's rebuttable presumption is that Sanctuary waters of themselves are considered environmentally sensitive habitat area (ESHA), much as wetlands are oftentimes categorically defined as ESHA. Although construction impacts on Sanctuary waters can generally be limited through appropriate construction methods, the use of a barge may have significant adverse effects on near shore habitat; this potential impact is not clearly understood.[19]

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[19] Although Commission staff initially requested elaboration from the Applicant on this point, this was not submitted. Ultimately Commission staff did not believe it to be warranted to ask for additional biological studies at the Applicant's expense when the submitted materials indicated that the project was not necessary from a 30235 perspective. In other words, it appears certain that there would be some adverse impact on the near shore Bay environment from a barge being located here for the duration of construction, but

In sum, although the project would result not result in permanent ESHA loss (because the footprint is not located in ESHA), it could have adverse impacts on marine resources. Some of these could be contained and mitigated (and Section 30230 and 30231 consistency achieved), but barge (or potentially other special construction methods due to the limited access for large construction vehicles) raises concerns about impacts to ESHA during construction, as well as any "recovery" period for the habitat that is necessary post-construction.[20] Construction of a seawall is not a resource-dependent use and any such ESHA impact would be inconsistent with Section 30240.

6. Coastal Development Permit Conclusion

The existing residence at this location is not in danger from erosion in a Coastal Act Section 30235 sense. As a result, approval of a shoreline structure is not required in this case. The proposed project would result in individual and cumulative adverse coastal resource impacts on sand supply, public beach and offshore access, visual resources, and potentially marine resources and ESHA. These impacts can be avoided by the "no project" alternative. In the no project alternative, the existing setback is sufficient to protect the existing residence for the foreseeable future.

Denial

Therefore, due to that fact that the proposed seawall is not necessary to protect the existing residence at this location from erosion, and due to the fact that the proposed seawall would have adverse affects on coastal resources that can be avoided if it is not constructed, the proposed project is inconsistent with the cited Coastal Act Chapter 3 policies and is denied.

Future Options

Although not in danger in a Coastal Act sense, there are multiple simple measures that could be undertaken by this Applicant to enhance the stability of the bluff at this location.[21] Perhaps the most obvious of these, and as recommended by the Applicant's consultants, is controlling blufftop drainage.[22] Irrigation controls to avoid bluff over-saturation would appear appropriate as well. Complementary measures to plant drought-resistant native (and long-rooted) plants in the blufftop could also help foster

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a precise description of that impact would only be relevant if the project were required by Section 30235 (and it is not as described in the preceding findings). Note that the Applicant has applied to the Sanctuary for a permit, but the Sanctuary has not taken action on this application.

[20] Although the direct construction impacts themselves would be expected to end when the construction activities themselves ended, the effect of such construction in and/or adjacent to ESHA on the short-term productivity of the affected habitat areas could be felt for some time. In other words, the reduced habitat area productivity during the construction period would not be expected to correct itself instantaneously when construction ended, and its effects may linger for some time, affecting habitat values until previous productivity levels have been reestablished. In addition, the amount of time necessary for such a reestablishment of habitat value also represents lost productivity in and of itself (because this time period when the habitat areas might otherwise be thriving would not be available as a foundation for encouraging habitat values).

[21] Such blufftop measures would be within the coastal permitting jurisdiction of Santa Cruz County, and would need to be pursued independently there.

[22] As shown on the proposed project plans, blufftop drainage could be collected and pumped inland to Opal Cliffs Drive. This should serve to help both stabilize the upper bluff and correct any sheet flow erosion problems.

bluff stability.[23]

In addition, the Commission notes that Opal Cliffs homeowners have begun preliminary efforts toward developing a regional solution to the issue of shoreline armoring for the Opal Cliffs area.[24] As the Commission currently understands it, the regional solution would focus on the removal of the rubble and rock revetments that block much of the beach access in this area between 41st Avenue and the City of Capitola, and would develop measures to sculpt and camouflage any armoring that is allowable under the Coastal Act and LCP in such a way as to mimic the natural bluff topography and vegetation. Options for building in pedestrian platforms in permitted armoring that allow for lateral access at even higher tides would also be evaluated. Within a larger regional project such as this, where part of the premise is to improve the shoreline from its pre-Coastal Act armored state and part is to provide significant mitigation and other public benefits (such as overall improved aesthetics and public access), individual projects that themselves cannot be found consistent with the Act when evaluated based on their individual merits (such as the proposed project in this case) may be evaluated differently when the review lens is calibrated to the larger region, and the overall Coastal Act consistency questions are based on the larger area and the larger mitigation/restoration package associated with the larger project. The Applicant is encouraged to participate in the regional solution process.

The Commission is supportive of the development of such a regional solution for Opal Cliffs provided such a plan is premised within the context of avoiding armoring to the absolute extent feasible (as discussed in this staff report), consistent with the Coastal Act, and ensuring that the public is adequately compensated for any burden borne over the long term by armoring that fully meets the applicable LCP and Coastal Act policy tests.[25] Further, if such a regional planning process proves successful for the Opal Cliffs shoreline, then it would seem to make sense for this type of effort to be expanded to encompass other sections of the urbanized Santa Cruz County coastline.

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[23] It should be noted that the alternative of plantings and bluff drainage and irrigation controls (in some combination) is not necessarily meant to be considered an equal alternative to a seawall or other more major form of bluff altering armor. In fact, they are not generally seen as the ultimate "fix" or as a replacement for a "hard" armoring project such as that proposed. Rather, these types of "soft" alternatives can serve to extend the design life of setbacks by increasing bluff stability and slowing erosion. Thus, they must be understood as alternatives that can allow for natural processes to continue while simultaneously providing continued stability to the bluff. Given the active forces of erosion taking place unabated along the unarmored California coast, erosion will eventually (over the long-term) result in bluff retreat. At that point, in some cases, plantings and bluff drainage controls may not be adequate to address the erosion problem of themselves (particularly if they have already been implemented previously and their effect on bluff stability already factored into the analysis), and other alternatives could become more feasible (including wholesale relocation out of danger and even armoring of the coast).

[24] Commission staff have met on multiple occasions with homeowner and County representatives to discuss the parameters and mechanisms of such planning approach for Opal Cliffs.

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

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

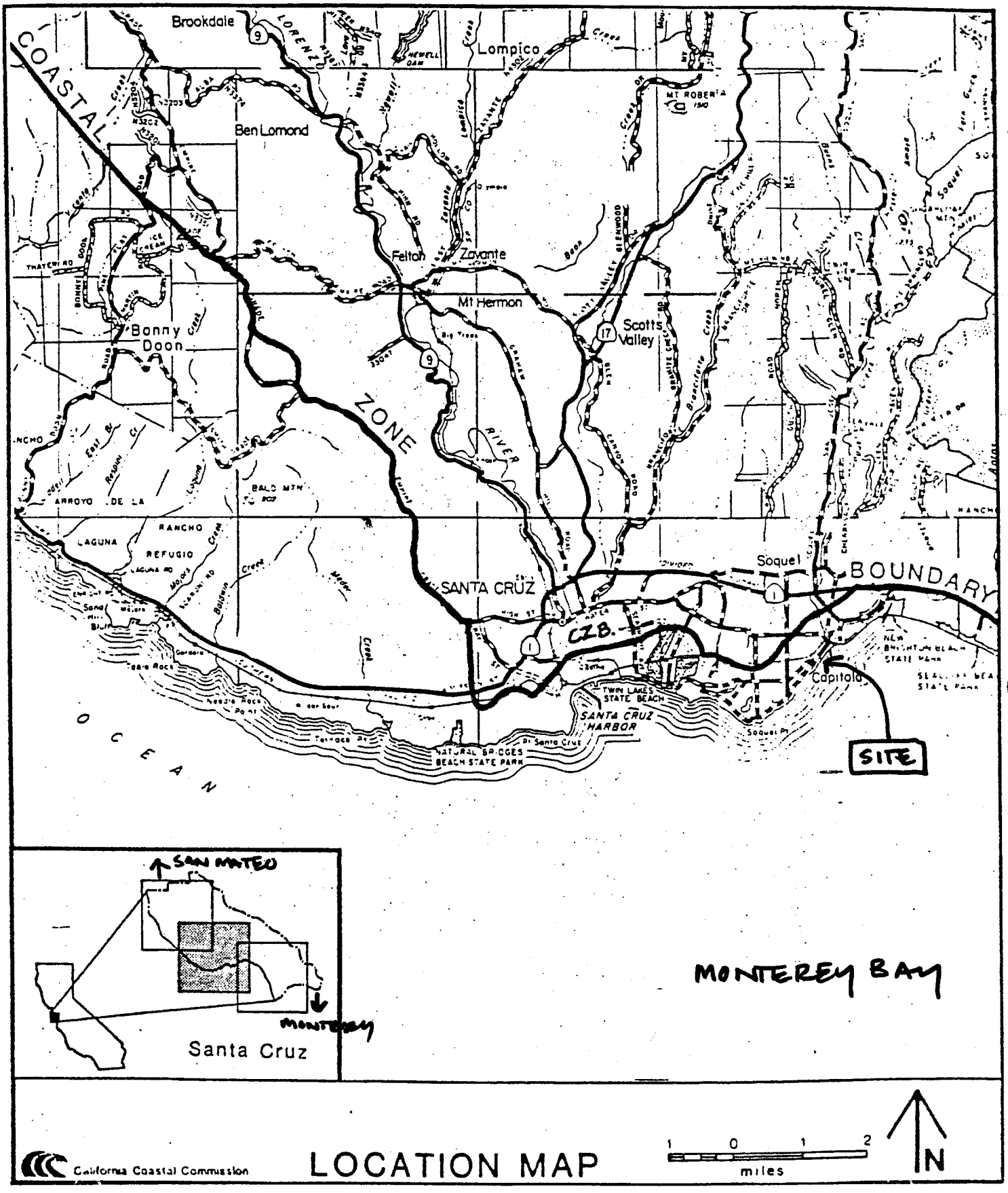
Ultimately, when the back beach is fixed due to armoring, and the shoreline continues to erode, and the sea level continues to rise, the end result is that Santa Cruz County beaches may eventually no longer exist. While this is clearly an issue that needs local debate and deliberation, the coast here is a resource and a treasure for all Californians as well as visitors to the state and thus also has a larger than local importance. The Commission welcomes the opportunity to explore a future vision for Santa Cruz County shoreline and beaches with its local partners and encourages the initiation of regional plans to further this important public policy debate and action.

C.California Environmental Quality Act (CEQA)

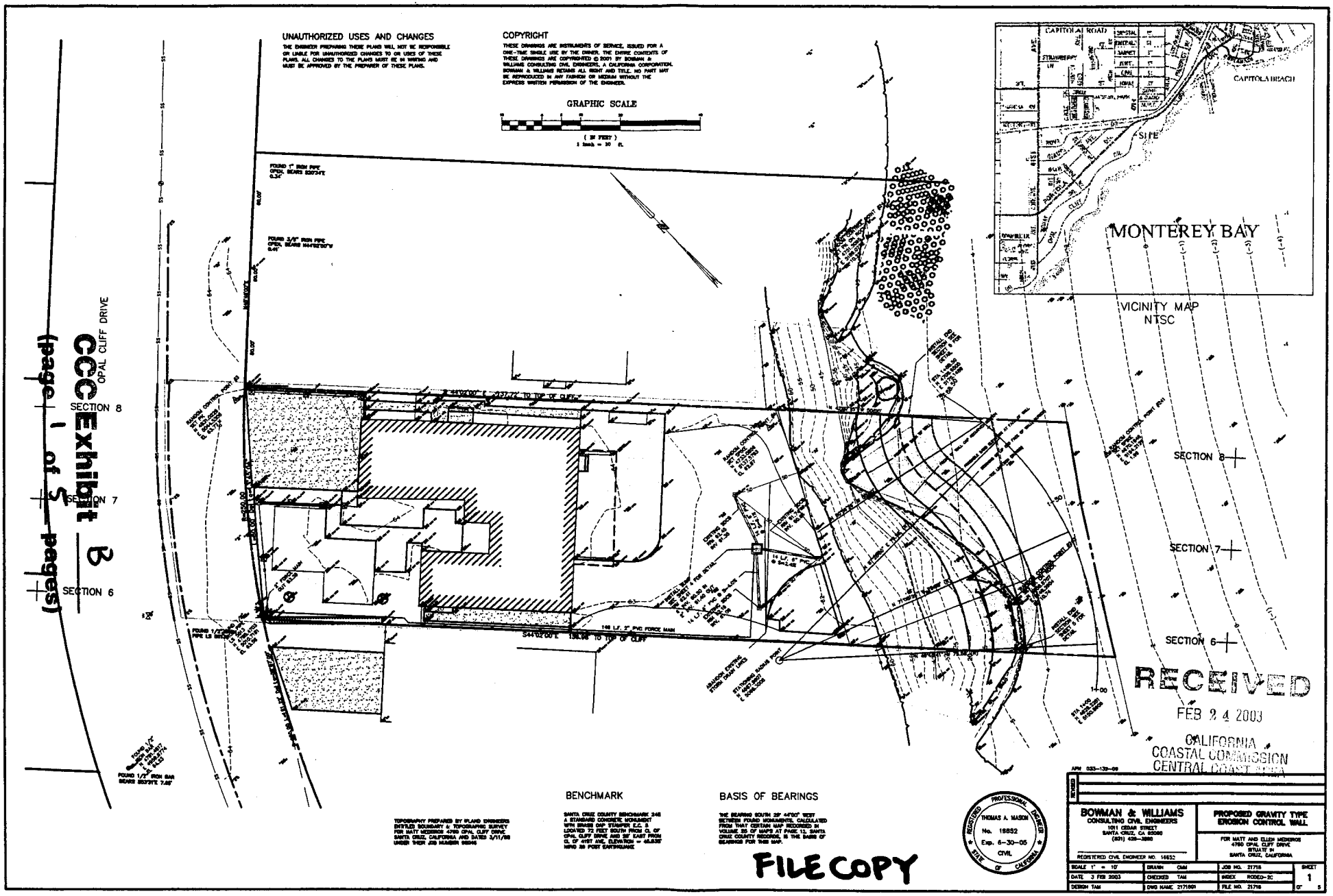
Section 13096 of the California Code of Regulations requires that a specific finding be made in conjunction with coastal development permit applications showing the application to be consistent with any applicable requirements of CEQA. Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development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

The Coastal Commission's review and analysis of land use proposals has been certified by the Secretary of Resources as being the functional equivalent of environmental review under CEQA. This staff report has discussed the relevant coastal resource issues with the proposal. All public comments received to date have been addressed in the findings above. All above Coastal Act findings are incorporated herein in their entirety by reference. As detailed in the findings above, there are less environmentally damaging feasible alternatives to the project proposed (including the no project alternative). Most importantly, the geotechnical information shows that the there is not an existing structure in danger from erosion at this location that would warrant the proposed seawall and the range of negative coastal resource impacts associated with it.

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



CCC Exhibit A
(page 1 of 1 pages)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GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.
CAPITOLA ROAD
CAPITOLA BEACH
SITE
MONTEREY BAY
VICINITY MAP
NTSC
OPAL CLIFF DRIVE
SECTION 8
SECTION 7
SECTION 6
CCC Exhibit B
(page 1 of 5 pages)
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1011 CEDAR STREET
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(831) 426-3560
REGISTERED CIVIL ENGINEER NO. 18852
PROPOSED GRAVITY TYPE EROSION CONTROL WALL
FOR MATT AND ELLEN MEDEIROS
4780 OPAL CLIFF DRIVE
SITUATE IN
SANTA CRUZ, CALIFORNIA
SCALE 1" = 10'
DRAWN CMM
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SHEET 1
DATE 3 FEB 2003
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CCC Exhibit B
(page 2 of 5 pages)

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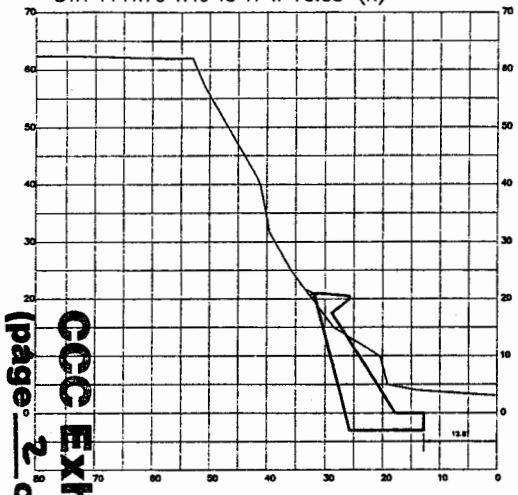

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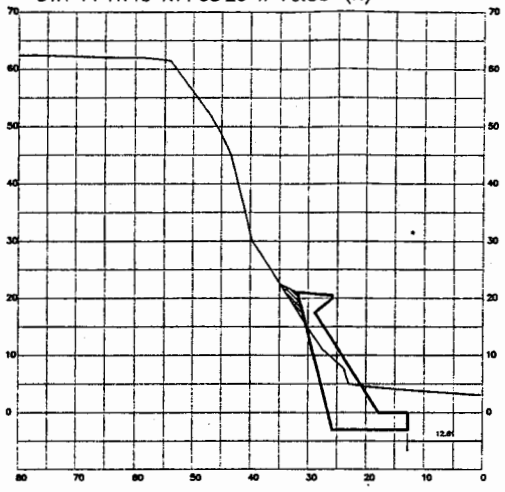

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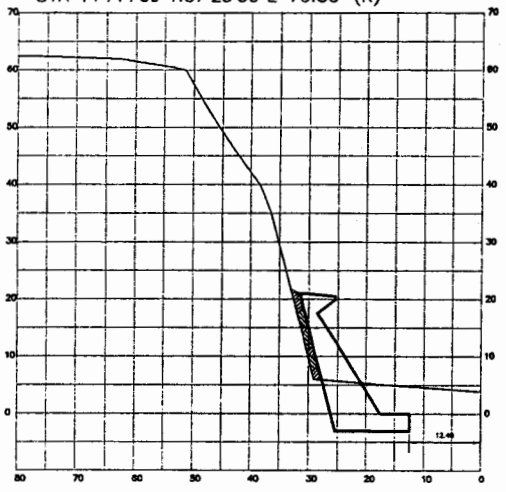

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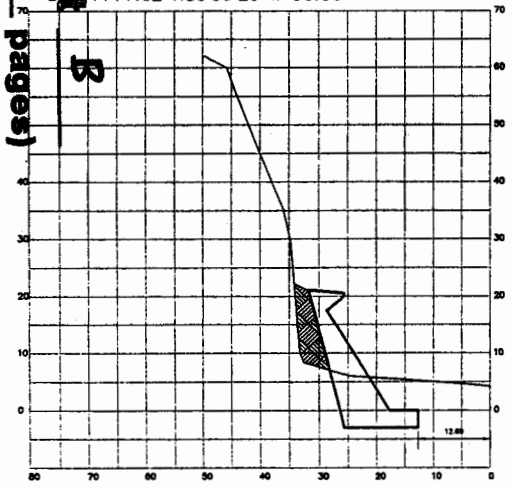

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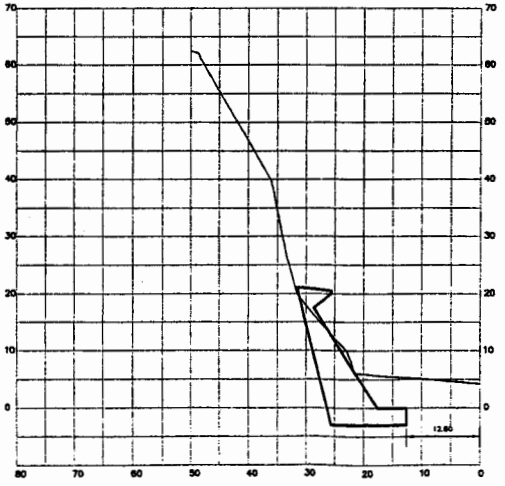

GRAPHIC SCALE

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NOTE:
SECTIONS 1–5 DO NOT INTERSECTION EXISTING STRUCTURE. SEE SHEET 4 FOR ADDITIONS SECTIONS 6, 7, & 8 THAT SHOW PROPOSED WALL AND EXISTING STRUCTURE.

APN 033-133-09

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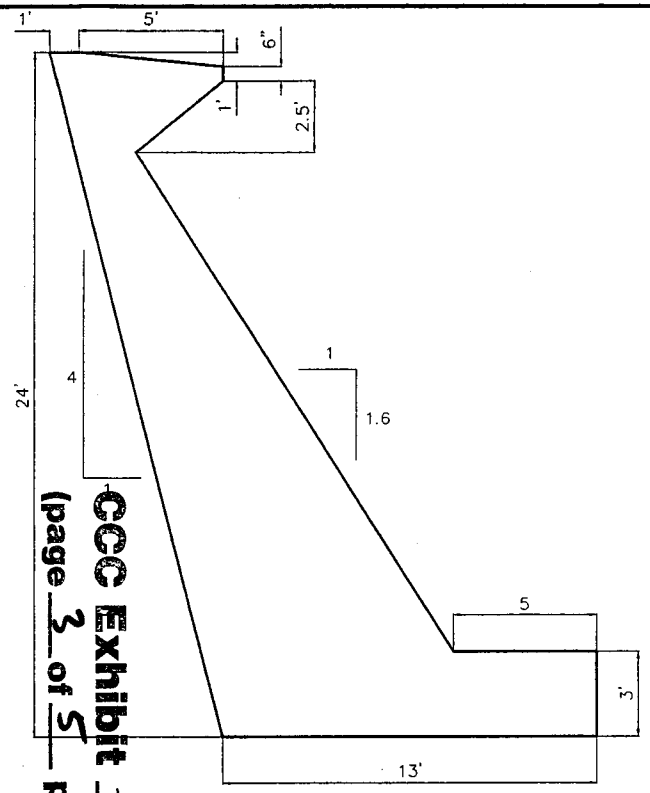
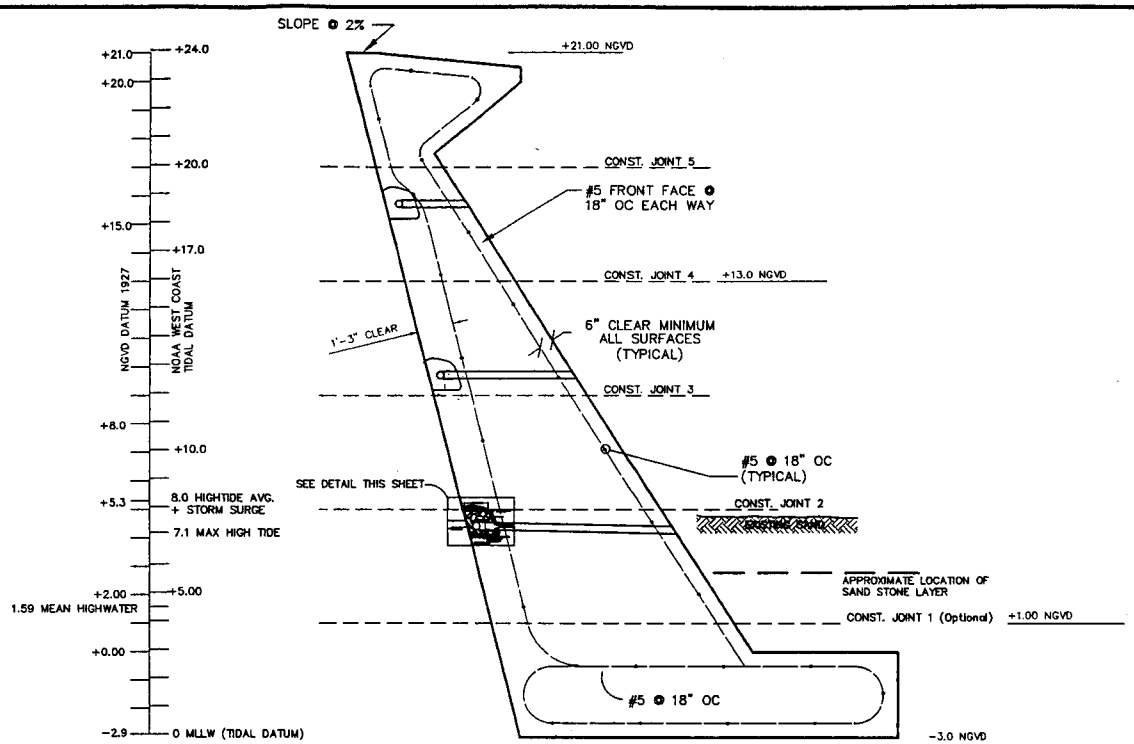
WALL PROFILES 1–5
STA 1+11.70 TO 1+77.02

MATT AND ELLEN MESSNER
4765 CRAIL CLIFF DRIVE
SANTA CRUZ, CALIFORNIA

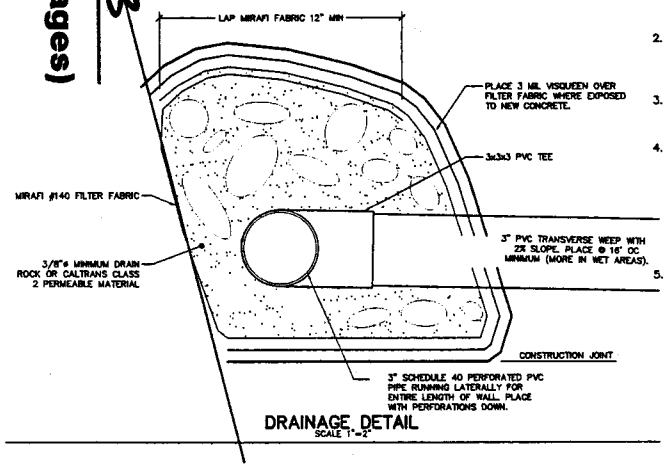
SCALE 1"=10'H,V	DRAWN GMH	JOB NO. 21710	SHEET 2
DATE 3 FEB 2003	CHECKED TAH	SHEET ISSUED 3C	
DESIGN TAH	DWG NAME 21710S5.DWG	FILE NO. 21710	OF 8

PROFESSIONAL ENGINEER
THOMAS A. HANSEN
No. 16652
Exp. 6-30-05
CIVIL
REGISTERED
STATE OF CALIFORNIA





CCC Exhibit B
(page 2 of 5 pages)



DRAINAGE DETAIL
SCALE 1"=2'

GENERAL NOTES AND SPECIFICATIONS

1. LOCATION AND DIMENSIONS TO BE VERIFIED AT THE SITE BEFORE CONSTRUCTION BEGINS. WORK ACCESS TO BE ARRANGED WITH OWNERS.
2. THE AREA OF THE CONCRETE FOOTING SHALL BE EXCAVATED TO SOLID SANDSTONE. EXCAVATION SHALL BE CUT A MINIMUM OF 3'-0" INTO SANDSTONE OR TO -3.0 NGVD WHICH EVER IS LOWER.
3. THIS PLAN IS BASED ON THE CHARACTERISTICS OF FIRM SANDSTONE. ANY OTHER CONDITION ENCOUNTERED SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING.
4. MATERIALS:

   REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM-A615, GRADE 60.

   ALL CONCRETE SHALL BE CALTRANS STANDARD SPECIFICATIONS CLASS "A", 6 SACK MIX WITH AGGREGATE GRADED FOR PUMP DELIVERY, MAX. WATER CONTENT SHALL BE 312 POUNDS PER C.Y. AT THE TIME OF PLACEMENT.
5. WHERE CONSTRUCTION JOINTS OCCUR PAINT PREVIOUSLY POURED CONCRETE WITH EPOXY RESIN ADHESIVE TYPE II, PER CALTRANS STD. SPEC. 95-2.03
6. ELEVATIONS SHOWN ARE BASED ON COUNTY OF SANTA CRUZ DATUM (U.S.G.S.)
7. ROCK RIP-RAP SHALL BE MINIMUM WEIGHT OF 1 TON PER ROCK AND APPROXIMATELY 3 FEET IN DIAMETER.
8. CONTRACTOR SHALL VERIFY THAT ALL PERMITS FOR THE WORK ARE CURRENT AND VALID PRIOR TO STARTING ANY EXCAVATION. PERMITS CONDITIONS SHALL BE FOLLOWED PRECISELY. ANY DEVIATION FROM PERMIT CONDITIONS SHALL BE APPROVED BY THE PERMITTING AGENCY PRIOR TO DOING THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY PENALITIES OR FINES THAT MAY ARISE FROM FAILURE TO COMPLY WITH THE PERMIT CONDITIONS.
9. ALL SPILLED OR EXCESS MATERIAL SHALL BE REMOVED FROM THE SITE DAILY.
10. TEXTURING AND COLOR MAY BE REQUIRED BY THE COASTAL COMMISION COMMISSION. THE WALL WIDTH MAY BE REDUCED BY 3" ALONG THE OCEAN FACE. AND A COLORIZED AND TEXTURIZED SHOTCRETE SURFACE APPLIED.
11. DRAINS BEHIND WALLS AND THROUGH WALLS SHALL BE 3" SCHEDULE 40 PVC WITH GLUED JOINTS WHERE THE PIPE IS PERFORATED THE PERFORATIONS SHALL BE PLACED DOWN.

GRAPHIC SCALE
(IN FEET)
1 inch = 2 ft.

CELSOC
CONSULTING ENGINEERS AND LAND SURVEYORS OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
THOMAS A. MASON
No. 16852
Exp. 6-30-05
CIVIL
STATE OF CALIFORNIA

APN 033-123-09

REVISED

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560

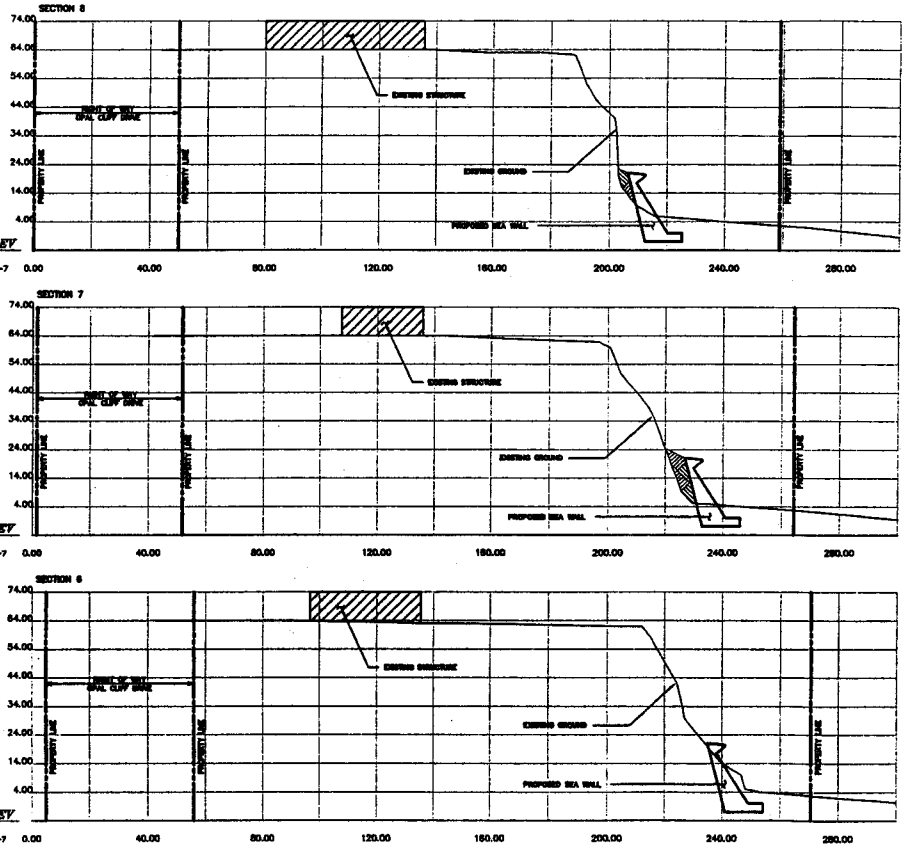
REGISTERED CIVIL ENGINEER NO. 16852

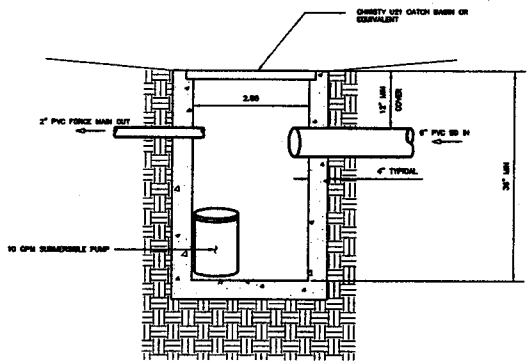
EROSION CONTROL WALL DETAIL

MATT AND ELLEN MCGIBBON
6780 OPAL CLIFF DRIVE
SANTA CRUZ, CALIFORNIA

SCALE 1"=2'	DRAWN CMH	JOB NO. 21718	SHEET 3
DATE 3 FEB 2003	CHECKED TAH	INDEX ROD02 2C	
DESIGN TAH	DWG NAME 21718WALL.DWG	FILE NO. 21718	OF 6

CCC Exhibit B
(page 4 of 5 pages)





DRAINAGE SUMP DETAIL WITH EJECTOR PUMP
SCALE 1"=1'

GRAPHIC SCALE

(IN FEET)
1 inch = 50 ft.

UNAUTHORIZED USES AND CHANGES

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

REGISTERED PROFESSIONAL ENGINEER
THOMAS A. MASON
No. 18652
Exp. 6-30-05
CIVIL
STATE OF CALIFORNIA

APN 032-132-09

REVISED

BOWMAN & WILLIAMS
CONSULTING CIVIL ENGINEERS
1011 CEDAR STREET
SANTA CRUZ, CA 95060
(831) 426-3560

REGISTERED CIVIL ENGINEER NO. 18652

WALL SECTIONS 6-8
INCLUDES EXISTING STRUCTURE AND DRAINAGE SUMP DETAIL

FOR MAIT AND SLADE RESIDENCE
4700 COAL CLIFF DRIVE
STINSON
SANTA CRUZ, CALIFORNIA

SCALE 1" = 20'	DRAWN CMH	JOB NO. 21710	SHEET 4
DATE 3 FEB 2003	CHECKED TAM	SHEET 8X22D-2E	
DESIGN TAM	DWG NAME 2171009	FILE NO. 21710	OF 5

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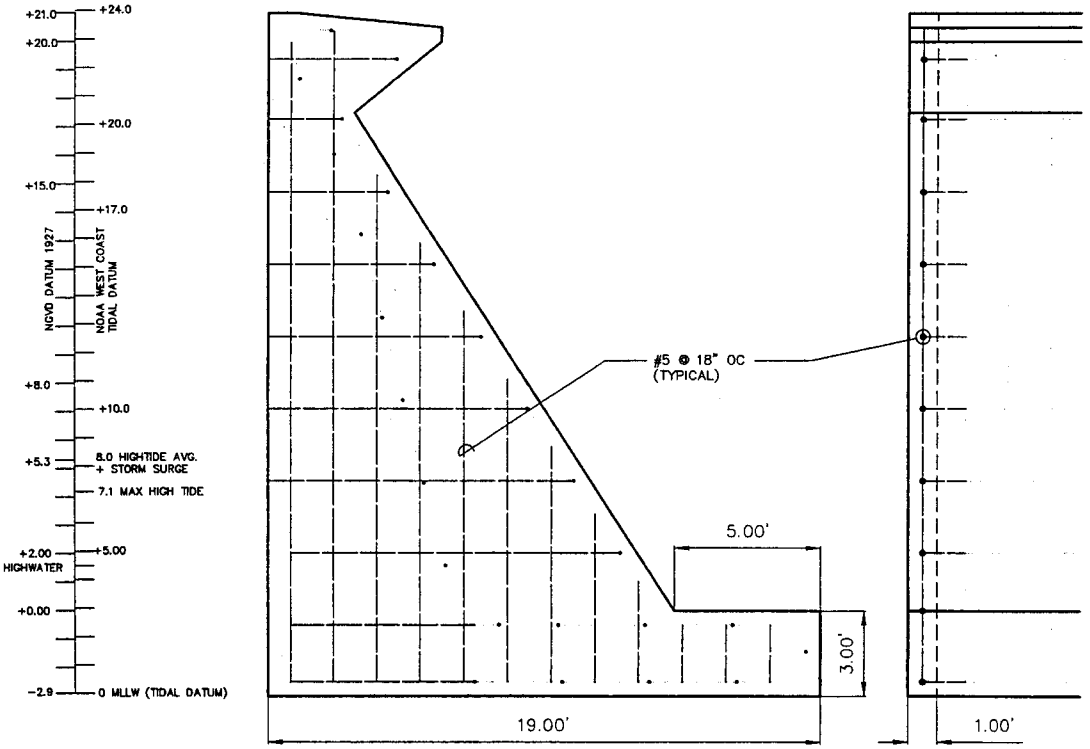
(page 5 of 5 pages)



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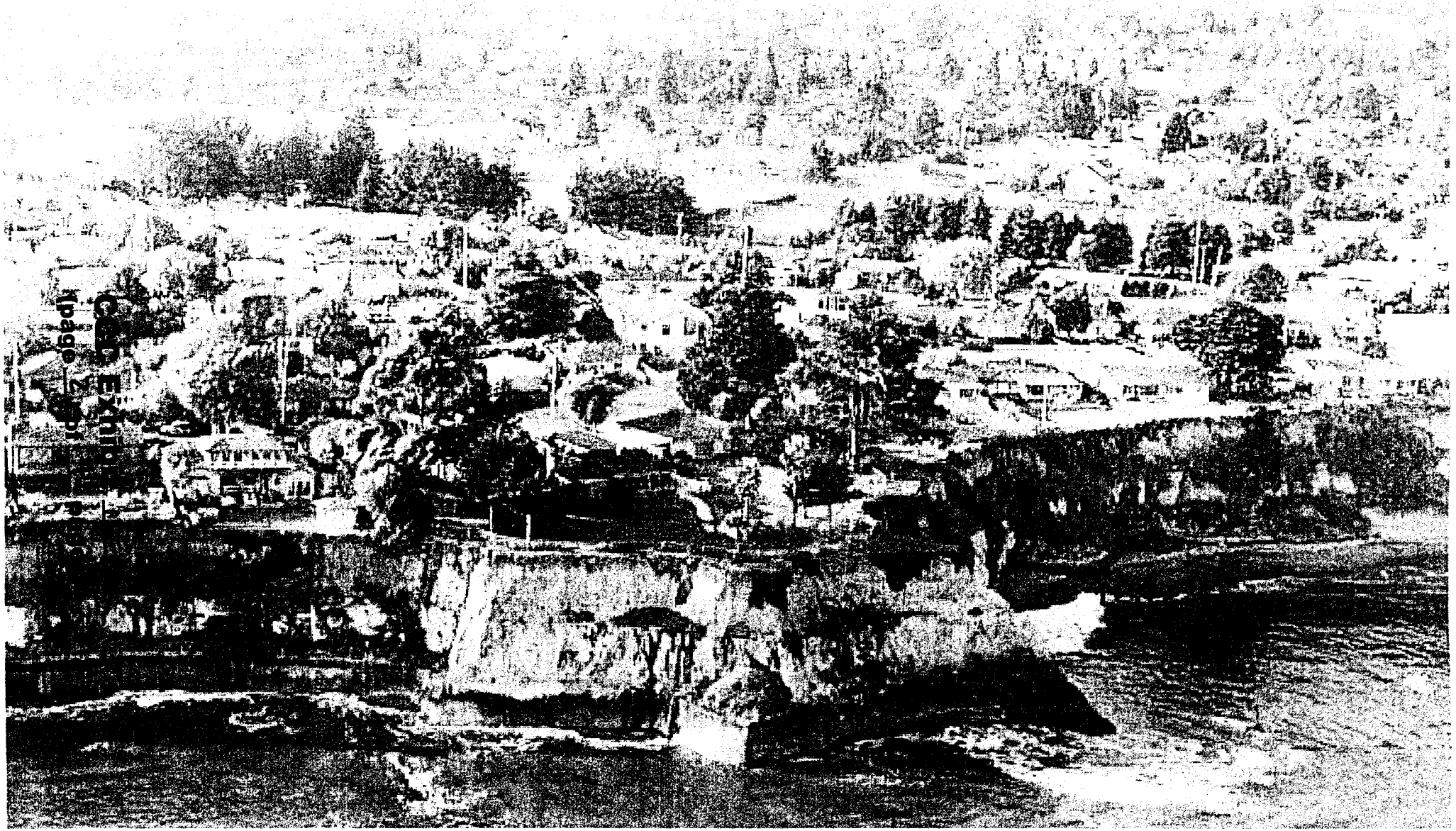
APN 033-133-09

BOWMAN & WILLIAMS CONSULTING CIVIL ENGINEERS 1011 CEDAR STREET SANTA CRUZ, CA 95060 (831) 426-3560 REGISTERED CIVIL ENGINEER NO. 16652	EROSION CONTROL WALL END SECTION DETAIL MATT AND ELLEN MEDEIROS 4780 OPAL CLIFF DRIVE SANTA CRUZ, CALIFORNIA
SCALE 1"=2' / DRAWN CMM / JOB NO. 21710 / SHEET 5	
DATE 3 FEB 2003 / CHECKED TAM / INDEX RODEO 2C / OF 6	
DESIGN TAM / DWG NAME 21710BWALL.DWG / FILE NO. 21710	

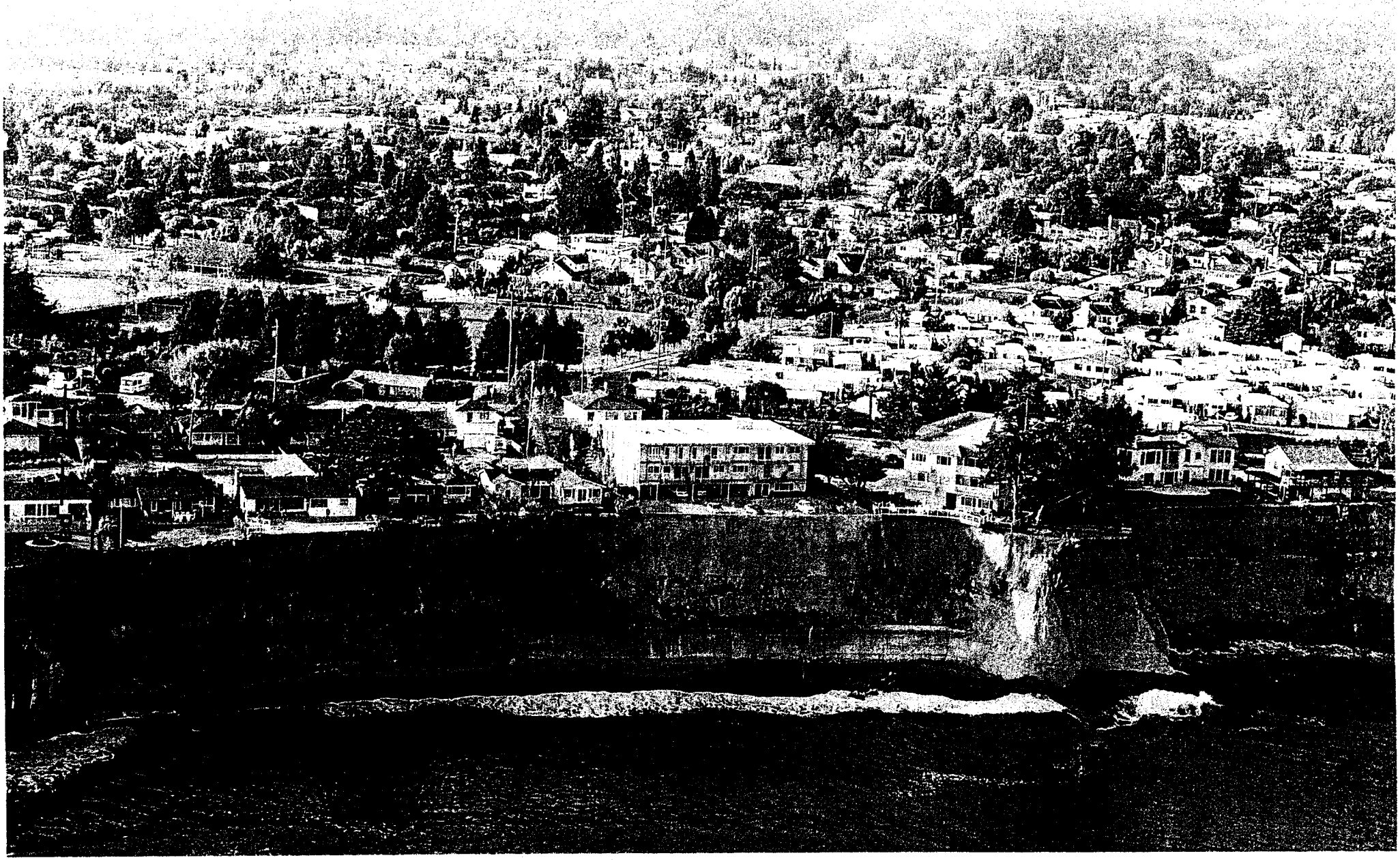
REGISTERED PROFESSIONAL ENGINEER
THOMAS A. MASON
No. 16652
Exp. 6-30-05
CIVIL
STATE OF CALIFORNIA

CALIFORNIA COASTAL RECORDS PROJECT
IMAGE 663 3/16/2002

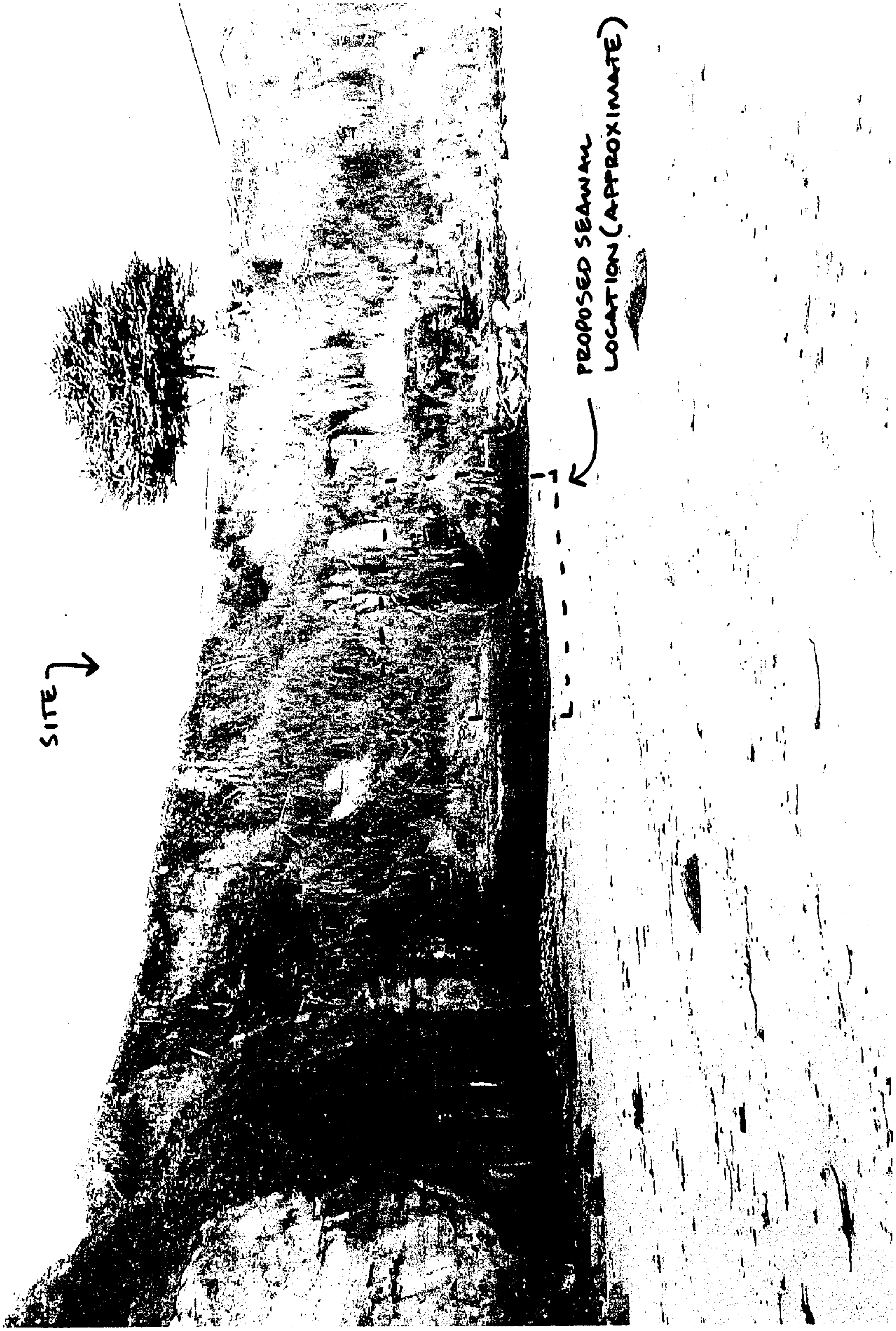
CCC Exhibit C
(page 1 **of** 4 **pages)**



CALIFORNIA COASTAL RECORDS PROJECT
IMAGE 6680 9/30/2002



CALIFORNIA COASTAL RECORDS PROJECT
IMAGE 6681 7/30/2022


PROPOSED SEAWALL LOCATION (APPROXIMATE)
SITE