CALIFORNIA COASTAL COMMISSION
SAN DIEGO AREA
7575 METROPOLITAN DRIVE, SUITE 103
SAN DIEGO, CA 92108-4402
(619) 767-2370

Th 16c

Addendum

October 12, 2010

To: Commissioners and Interested Persons

From: California Coastal Commission
San Diego Staff

Subject: Addendum to **Item Th 16c**, Coastal Commission Permit Application **#6-09-033 (Garber, et. al.)**, for the Commission Meeting of October 14, 2010

Staff recommends the following changes be made to the above-referenced staff report:

1. On Page 5 of the report, Special Condition No. 2., sub-section 2 should be revised as follows: […]

2) Any future redevelopment of the blufftop residential parcels shall not rely on the permitted seawall to establish geologic stability or protection from hazards. Redevelopment on the sites shall be sited and designed to be safe without reliance on ~~not require~~ shoreline or bluff protective devices~~ for the estimated economic life of such structures, which shall be no fewer than 75 years~~. As used in this condition, "redevelopment" is defined to include: (1) additions; (2) expansions; (3) demolition, renovation or replacement that would result in alteration to 50 percent or more of an existing structure, including but not limited to, alteration of 50 percent or more of interior walls, exterior walls or a combination of both types of walls; or (4) demolition, renovation or replacement of less than 50 percent of an existing structure where the proposed remodel or addition would result in a combined alteration of 50 percent or more of the structure (including previous alterations) from its condition in October 2010; and [….]

2. On Page 6 of the staff report, Special Condition #4 shall be revised as follows:

4. Mitigation for Impacts to Sand Supply. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that a fee of ~~$108,761.13~~ 72,415.04[1] has been deposited in an interest bearing account designated by the

[1] This revised sand supply mitigation fee amount shall be reflected throughout the staff report.

Executive Director, in-lieu of providing the total amount of sand to replace the sand and beach area that will be lost due to the impacts (such as loss of beach from physical encroachment of the seawall and the fixing of the back of the beach) of the proposed protective structures. All interest earned by the account shall be payable to the account for the purposes stated below.

The developed mitigation plan covers impacts only through the approved 20-year design life of the seawall. No later than 19 years after the issuance of this permit, the applicants or their successors in interest shall apply for and obtain an amendment to this permit that either requires the removal of the seawall or mitigation for the effects of the seawall on shoreline sand supply for the length of time the permit for this seawall is extended.

3. On Page 12 of the staff report, the following language shall be added immediately after the last complete paragraph:

The Commission, in approving with conditions both CDP# 6-99-103/Solana Beach Preservation Association and CDP# 6-05-091/O'Neal, et al., required the following special condition language regarding future response to erosion:

> Future Response to Erosion. If in the future the permittee seeks a coastal development permit to construct bluff or shoreline protective devices, the permittee will be required to include in the permit application information concerning alternatives to the proposed bluff or shoreline protection that will eliminate impacts to scenic visual resources, recreation and shoreline processes. Alternatives shall include but not be limited to: relocation of all or portions of the principle structures that are threatened, structural underpinning, and other remedial measures capable of protecting the principal structures and providing reasonable use of the property, without constructing bluff or shoreline stabilization devices. The information concerning these alternatives must be sufficiently detailed to enable the Coastal Commission to evaluate the feasibility of each alternative, and whether each alternative is capable of protecting existing structures that are in danger from erosion. No additional bluff or shoreline protective devices shall be constructed on the adjacent public bluff face above the approved notch fill or on the beach in front of the proposed notch fill unless the alternatives required above are demonstrated to be infeasible. No shoreline protective devices shall be constructed in order to protect ancillary improvements (patios, decks, fences, landscaping, etc.) located between the principal residential structures and the ocean.

Additionally, the Commission, in approving with conditions the various modifications to the individual blufftop structures (as discussed above), included similar special condition language on future response to erosion.

4. On Page 20 of the staff report, the second complete paragraph shall be revised as follows:

Special Condition #4 reflects the applicants' proposal to deposit an in-lieu fee to fund beach sand replenishment of ~~8,651.3~~ 6,624.3 cubic yards of sand, as mitigation for impacts of the proposed shoreline protective device on beach sand supply and shoreline processes. In the case of the proposed project, the fee calculates to be ~~$142,573.42~~ $106,227.33, based on ~~8,651.3~~ 6,624.3 cubic yards of sand multiplied by the cost of obtaining a cubic yard of sand, as proposed by the applicants' engineer at $16.48 per cu. yd. However, the applicants previously paid a $51,640.88 fee for the infill work done in 2000 (ref. CDP# 6-99-103/Solana Beach Preservation Association). The applicant has requested a $33,812.29 credit against the original $51,640.88, because the applicants have already paid for 20 years of sand mitigation fees. The credit also includes $6,500 to account for sand that fell to the beach in spite of the 2000 project because of the portion of the notch overhang that was required to remain in place that has since collapsed. The resulting fee for this project, taking the credits into consideration, is ~~$108,761.13~~ $72,415.04.

5. On Page 26 of the staff report, the third paragraph and continuing through the first paragraph on Page 27 should be revised to read as follows:

To ensure that this project does not prejudice future shoreline planning options, including with respect to changing and uncertain circumstances that may ultimately change policy and other coastal development decisions (including not only climate change and sea level rise, but also due to legislative change, judicial determinations, etc.), staff recommends that this approval be conditioned for a twenty-year period. Despite applicant projections that the seawall will last for more than twenty years, it has been staff's experience that shoreline armoring, particularly in such a significantly high-hazard area as this project, tends to be augmented, replaced, and/or substantially changed within about twenty years. Rising sea levels and attendant consequences will tend to further delimit such a time period in the future, potentially dramatically, depending on how far sea level actually rises. ~~The intent of the twenty-year authorization is to recognize this time-frame reality, and also to allow for an appropriate reassessment of continued armoring at that time in light of what may be differing circumstances than are present today. Of course it is possible that physical circumstances as well as local and/or statewide policies and priorities regarding shoreline armoring are significantly unchanged from today, but it is perhaps more likely that the baseline context for considering armoring will be different – much as the Commission's direction on armoring has changed over the past twenty years as more information and better understanding has been gained regarding such projects, including their affect on the California coastline.~~

~~Another factor that is appropriate to consider when identifying a particular horizon for a seawall in an approval is the changing and somewhat uncertain nature of the context affecting coastal development decisions regarding armoring (including not only climate change and sea level rise, but also due to legislative change, judicial determinations, etc.).~~ A twenty-year period better responds to such potential changes

and uncertainties, including to allow for an appropriate reassessment of continued armoring and its effects at that time in light of what may be differing circumstances than are present today, including with respect to its physical condition after twenty years of existence. In addition, with respect to climatic change and sea level rise specifically, the understanding of these issues should improve in the future, given better understanding of the atmospheric and oceanic linkages and more time to observe the oceanic and glacial responses to increased temperatures, including trends in sea level rise. Such an improved understanding will almost certainly affect CDP armoring decisions, including at this location. Of course it is possible that physical circumstances as well as local and/or statewide policies and priorities regarding shoreline armoring are significantly unchanged from today, but it is perhaps more likely that the baseline context for considering armoring will be different – much as the Commission's direction on armoring has changed over the past twenty years as more information and better understanding has been gained regarding such projects, including their ~~affect~~ effect on the California coastline. For these reasons, the Commission is authorizing the proposed seawall for 20 years from the date of this approval. This limitation is implemented through Special Conditions 2 and 3.

The intent of these conditions is to limit further encroachment on the public resources (adjacent bluff and beach) with additional mid-bluff or upper bluff protective devices, and to allow for potential removal of the approved seawall when it is no longer necessary to protect the development that required the seawall. The conditions are also to put the property owners on notice that redevelopment of the parcels should not rely on bluff or shoreline protective works for stability and such alternatives as removing the seaward portion(s) of the structure, relocation inland, and/or reduction in size should be considered to avoid the need for bluff or shoreline protective devices in this hazardous area. Such options are all feasible for new development and would stop the perpetuation of development in non-conforming locations that would eventually lead to complete armoring of the bluffs and long-term, adverse impacts to the adjacent public beach and State tidelands. ~~In addition,~~ Special Condition #2 recognizes that the proposed seawall is being approved under Section 30235 to protect *existing* structures in danger from erosion. Any future redevelopment of the affected properties will re-evaluate current conditions and new development should be sited safely, independent of any shoreline protection. ~~Therefore, Special Condition #2 requires that any redeveloped structures on these blufftop lots must be sited and designed to be safe for its economic life (no less than 75 years) without the seawall.~~

Special Condition #2 defines redevelopment to include additions and expansions, or any demolition, renovation or replacement which would result, cumulatively, in alteration or reconstruction of 50 percent or more of an existing structure. Thus, this condition requires that if an applicant submits an application to remodel 30% of the existing home, then 5 years later seeks approval of an application to remodel an additional 30% of the home, this would constitute redevelopment, triggering the requirement to ensure that the redeveloped structure is sited safely, independent of any shoreline protection.

As indicated in the Permit History and Background section of this report, the subject property owners have previously been put on notice through deed restrictions as conditions of approval of past Commission actions on proposals involving redevelopment of the residential structures and also previous attempts at preventative measures, including seacave and notch fills, the purpose of which was to avoid seawalls such as that proposed herein. The conditions indicate the preferred alternatives to shoreline or bluff protective devices include such options as relocating all or portions of the structures inland; however, the conditions of approval did not waive the applicants' rights to protection of the existing (pre-Coastal Act) structure pursuant to Section 30235. As a result, the applicants have chosen to pursue a seawall at this time over the options that would revise the blufftop development to decrease the risks over the remaining life of these structures. However, new or redevelopment of these parcels that would rely on the approved seawall for protection is not consistent with Section 30253. The condition acknowledges future development on the site beyond repair and maintenance to the existing structures must meet the requirements of Section 30253 and not require bluff or shoreline protective devices that alter the natural landform of the bluffs.

6. On Page 34 of the staff report, the last paragraph shall be revised as follows:

While none of the methodologies used in the above-cited examples of in-lieu mitigation for the adverse impacts of a seawall can be applied directly to the subject development, it does identify a range of mitigation values that have been applied in other cases. In each case, the Commission found that the mitigation did not fully mitigate for the loss of the public beach and, thereby, the loss of public access and recreational opportunities. In the case of the subject seawall, the loss of ~~3,927~~ 3,213 sq. ft. of public beach cannot be fully offset by the required mitigation fee since the beach itself cannot be replaced. […]

Th 16c

Lee McEachern

From: gary [gcomdist@gmail.com]
Sent: Wednesday, October 06, 2010 2:08 PM
To: Lee McEachern
Subject: Re: SEAWALL PROJECT

Dear Sir

As a resident of Solana Beach i whole heartily support the seawall your voting on next Thursday

Michelle Geoghan

Letters of Support

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Lee McEachern

From: Lee Johnson [lee@casapalmera.com]
Sent: Friday, October 08, 2010 1:16 PM
To: ndreher@costal.ca.gov; Lee McEachern
Subject: Permit # 6-09-033 O'Neal, Perell, Baker, Barr & Garber

Gentlemen,

I am writing in support of the proposed seawall outlined in the above referenced permit # 6-09-033. The foremost reason for backing this seawall is for the protection of our public using the beaches. As you know, there have been several deaths in local areas where there wasn't this protection. Personally, I certainly would not want it on my conscious that I had helped contribute to such a terrible event by blocking a safety factor. From the standpoint of our troubled economy, I believe it is safe to say that tourism helps our local merchants and another death would certainly be a negative factor especially when it could have been avoided by clear thinking people.

Thank you for your time and attention. I am hopeful that you will use your good common sense in supporting this project.

Lee Johnson

(858) 724-2101

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October 06, 2010

Regarding: Permit # 6-09-033 for O'Neal, Perell, Baker, Barr & Garber's 211 to 231 Pacific Ave.

Hearing Date: Thursday, October 14, 2010 in Oceanside

This seawall has been long needed for the safety of all the people that use the beach in Solana Beach and also for the protection of the City's infrastructure along Pacific Avenue, as well as for the protection of the homes.

Mark Tiddens
190 Del Mar Shores #21
Solana Beach, CA 92075
Phone (858) 350-6017
tiddens@jumpingdolphins.com

October 06, 2010

Dear Mr. McEachern,

I am writing this letter as a concerned citizen. I live in Solana Beach. I see how attractive and inviting the city has made our town and have witnessed the influx of tourists. It would be a shame if anything were to happen to our citizens or our tourists at the beach. These seawalls should be built for public safety, the city infrastructure and to protect the property of the homeowners on the bluff.

I believe that the California Coastal Commission should approve Permit # 6-09-033 for O'Neal,Perell, Baker, Barr & Garber's 211 to 231 Pacific Ave.

Thank you,

Kimberly Caccavo
408 Pacific Avenue
Solana Beach, CA 92075
kimberly@c2cmedia.com

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October 06, 2010

To Whomever It May Concern:

I have been a resident of Solana Beach since 1981. A Seawall has been needed for the safety of visitors and residents for many years. For all people who use the beach, safety from above is a great concern.

We also need protection of city infrastructure along Pacific Avenue for protection of homes.

I hope you will give great consideration to this matter.

Sincerely,

Laurence Brody MD
BehavFinancAssoc@aol.com

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10/8/10

Dear Coastal Commissioner:

My name is Robert D. Upp. I am the owner and occupier of 341 Pacific Avenue, Solana Beach, CA, which I bought in October 1967. I added a second story in 1975. Until La Nina storms in the 1900s, there was no erosion along my bluff front. The two adjoining neighbors to the South of me built a 35 foot Seawall some years ago. Signs were posted along the bluff at 341 advising persons sto keep away from the bluff becase of DANGERr. In November 1995, my two adjoining neighbors to the North had a sixable bluff collapse and were required to build a Seawall. An Engineering Geologist expert advised me to join them rather than be left alone between two 35 foot Seawalls. They hired noted Soil Engineering Construcation Company to do the job and I joied them in the contract. The finished Wall means that the seashore below our bluff is now safe for users for the foreseeable future. So Common Sense would say that such protection is for the advantage of the public and should neither be ignored nor penalized by high fees in lieu of taxes.

I have been a member of the State Bar of Callifornia since 1948, but at age 94, have retired and am now Inactive. I retied from the U. S. Army as a Brigadier Generalll of the Judge Advocaate General's Corpa.

Respectfully Yours,

ROBERT D. UPP
brgenupp@cox.net

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October 07, 2010

Dear Mr. Dreher and Mr. McEachern,

We encourage you and the coastal staff to APPROVE permit #6-09-033 for a seawall in Solana Beach. The seawall will have at least these four benefits:

1. It will provide long-needed protection and safety from the toppling rocks above for beachgoers and their little children.

2. It will increase the amount of USABLE beach space by allowing beachgoers to recreate closer to the bluffs.

3. It will provide long range protection for the City's infrastructure, which is now only fifty or sixty feet away in some places from the crumbling bluff.

4. It will provide protection for the homeowners on the bluff, a fair tradeoff since the homeowners' substantial investment provides safety for all of us.

Nowadays, seawalls are artistically designed, blending beautifully in color and texture with the rest of the bluff.

Thank you for your efforts to provide all of us with a safe coastline. Your positive vote is the right vote and will be appreciated by many families.

Sincerely,

Mark and Debra Hajjar
mhajjar@500motors.com

October 06, 2010

Dear Commissioners: Regarding the above Permit Request, and for the protection of the City of Solana Beach Infrastructure along Pacific Ave, along with the homes of the Property owners covered by the above Permit, we hope that this will be Granted at your meeting of Thursday October 14th, 2010.

Sincerely,

Seymour & Barbara Phillips
135 South Sierra Ave #24
Solana Beach, CA 92075

sbp@fitallfeet.com

October 06, 2010
Dear Mr. McEachern,

I am a relatively new transplant to California (and so I pay very high property taxes J). I live in Solana Beach and hope that you will consider the views of neighbors of those applying for seawalls on Pacific Avenue .

Specifically I am writing regarding: Permit # 6-09-033 for O'Neal, Perell, Baker, Barr & Garber's 211 to 231 Pacific Ave.

The hearing date is:

Hearing Date: Thursday, October 14, 2010 in Oceanside

This seawall has been long needed for the safety of all the people that use the beach in Solana Beach and also for the protection of the City's infrastructure along Pacific Avenue, as well as for the protection of the homes.

Please consider the views of the residents of Solana Beach , such as my family. We love the community and want to make certain stays safe and sustainable. I would be there in person but I have to work (as we all do) to support my family and pay my taxes.

Sincerely,

Mindy Aisen
maisen@cpirf.org

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October 06, 2010

Dear Mr Dreher and Mr McEachern,

I wish to let you know that I support the sea wall application for 211 to 231 Pacific Avenue. I am a resident of Solana Beach and I believe that sea walls are critical for the protection of our beach below the bluff and for the safety of our citizens who wish to enjoy the beach below the bluff. We will all benefit from this application being approved, public citizens, home owners and the city.

Best regards,

Will de Burgh
716 South Cedros Ave,
Solana Beach, CA
whddeburgh@aol.com

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Lee McEachern

From: christine@meyersandiego.com

Sent: Wednesday, October 06, 2010 7:01 PM

To: Nicholas Dreher; Lee McEachern

Subject: RE: Permit # 6-09-033 for O'Neal,Perell, Baker, Barr & Garber's 211 to 231 Pacific Ave

Dear Mr Dreher and Mr McEachern,

I am a resident of Solana Beach and I support the sea wall application for 211 to 231 Pacific Avenue. Sea walls are critical for the protection of our beach below the bluff and for the safety of our citizens, especially the children in our community, who wish to enjoy the beach below the bluff. Everyone will all benefit from this application being approved.

Regards,
Brandon & Christine Meyer
629 S. Cedros Ave
(858) 523-1413

Lee McEachern

From: Lisa Garber [lgarber@me.com]
Sent: Wednesday, October 06, 2010 8:46 PM
To: Lee McEachern
Subject: Seawall in Solana Beach

In regards to a seawall being built for the beach and homes north of Fletcher's Cove in Solana Beach, this is a MUST.

There are so many reasons that this wall should be built. The most important reason is SAFETY.

Safety for the people on the beach and safety for the people who homes and lives are in danger from the unstable cliffs.

A wall will not only help protect the homes on the bluff, but it will protect the public who walks along the beach and the sunbathers that lay on the beach just below the cliffs despite being warned that the bluff is unstable.

Someone is going to get killed one day either on the beach or in a home on the cliff from the cliff falling. Allow a wall to be built before this happens. Prevent people being hurt or killed and allow a wall to be built...it is long overdue.

Thank you.
Lisa

Lee McEachern

From: Kim Lubesnick [mikey@oakton.edu]
Sent: Thursday, October 07, 2010 12:10 AM
To: Nicholas Dreher; Lee McEachern
Subject: Permit # 6-09-033 for O'Neal,Perell, Baker, Barr & Garber's 211 to 231 Pacific Ave.

Importance: High

Attachments: untitled-2

untitled-2 (3 KB)

This email is to express my support for building the seawall (Permit # 6-09-033 for O'Neal,Perell, Baker, Barr & Garber's 211 to 231 Pacific Ave.) I believe that seawlls protect the safety of people on the beach as well as provide support for the homes and infrastructure such as roads.
Please vote in favor of it.
Kim Lubesnick
Solana Beach Resident

Lee McEachern

From: alkibrown@aol.com
Sent: Thursday, October 07, 2010 8:11 AM
To: Lee McEachern
Subject: Support for Solana Beach seawall

Include my name among those who support the homeowners attempting to save their houses on Pacific Avenue in Solano Beach. The seawall from what I have read is a necessity.

Mike Brown
836-838 Neptune Avenue
Encinitas, CA 92024

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Lee McEachern

From: Nicholas Dreher
Sent: Thursday, October 07, 2010 9:13 AM
To: Lee McEachern
Subject: FW: Permit # 6-09-033

From: Jon Jessen [mailto:JJESSEN@GOWANCO.com]
Sent: Wednesday, October 06, 2010 6:04 PM
To: Nicholas Dreher; lmceachem@coastal.ca.gov
Subject: Permit # 6-09-033

In the recent past there have been deaths in nearby coastal towns from crumbling sea cliffs and valuable property is being destroyed above the bluffs as they crumble. These misfortunes were not caused by any of us here in Solana Beach but by blockage of the watersheds that replenished our beaches with sand. But the damage it is causing can be mitigated by stabilizing the cliffs with sea walls. It is a straightforward solution to this significant hazard.

I encourage you to approve the sea wall project for 211 to 231 Pacific Avenue.

Jon Jessen
611 Circle Drive,
Solana Beach

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CALIFORNIA COASTAL COMMISSION
SAN DIEGO AREA
7575 METROPOLITAN DRIVE, SUITE 103
SAN DIEGO, CA 92108-4421
(619) 767-2370

Th 16c

Filed:	2/18/2010
49th Day:	4/8/2010
180th Day:	8/17/2010
Length of Extension:	90 Days
Final Date for Commission Action:	11/15/2010
Staff:	NDreher-SF
Staff Report:	9/29/2010
Hearing Date:	10/14/2010

REGULAR CALENDAR
STAFF REPORT AND PRELIMINARY RECOMMENDATION

Application No.: 6-09-033

Applicants: O'Neal Family Trust, S.O. Altfillisch, Baker Trust, Mark Barr and Felicia Schenkel and Gary and Diane Garber

Agent: Walter Crampton

Description: Construction of an approximately 256.3 ft.-long, 35 ft. high, colored and textured concrete tiedback seawall, and concrete backfill on the public beach below five single family homes.

Site: Five separate residential blufftop lots at 211, 215, 219, 225 and 231 Pacific Avenue, City-owned bluffs and beach (Fletcher Cove Beach Park), Solana Beach, San Diego County.
[APNs: 263-323-02, 263-323-01, 263-312-16, 263-312-15, 263-312-14]

STAFF NOTES:

Summary of Staff's Preliminary Recommendation: Staff is recommending approval of the subject seawall development as the applicants have demonstrated that four of the existing blufftop residential structures (which were all originally constructed pre-Coastal Act and pre-Prop 20) are in danger from erosion. Due to ongoing bluff collapse, prevalence of seacaves and exposure of the clean sand layer below the residences, the applicants' geotechnical representative has performed a slope stability analysis of each parcel and concluded that four of the blufftop structures are in danger from erosion. The Commission's staff engineer and geologist have reviewed the applicants' geotechnical assessment and concur with its conclusions. The fifth home (219 Pacific Avenue), situated in the middle of the proposed seawall span, was approved by the Commission in 1984 and is not at this time imminently threatened due to its location and foundation that includes support from five existing drilled pier caissons. Therefore, pursuant to Section

30235, the Commission is not required to approve a seawall to protect the residence at 219 Pacific Avenue. However, the Commission's technical staff determined that a gap in the proposed seawall, excluding this middle property, would be detrimental to the adjacent properties as it would increase wave energy and outflanking of the seawall by erosion.

Staff is recommending approval with a number of conditions that address the direct impact of the proposed seawall on coastal resources such as scenic quality, public access and recreation opportunities, and shoreline sand supply and the direct, indirect and long-term effects on the adjacent public beach and State tidelands that results from armoring the bluffs. In this particular case, the seawall is located on City-owned beach and the bluffs are not owned by the applicant but are also in City-ownership (except at 231 Pacific Avenue where in connection with a permit for seacave fill, the ownership of the public bluff face was transferred to the private owner by quitclaim deed). The Commission subsequently stopped approving such transfer and gift of public land by the City. Due to the uncertainties inherent in providing shoreline protection in a dynamic environment, including the unknown effects of climate change and sea level rise, staff is recommending that the proposed seawall only be authorized for 20 years. Such authorization for a limited period of time acknowledges the seawall is not necessarily a permanent structure and allows for a reassessment of site conditions in the future. After 20 years, an amendment to this permit will be required to allow the Commission to reevaluate the seawall's efficacy and the impacts it causes to public resources. Any reauthorization of the seawall will be based on the conditions at that time taking into consideration the status of the existing development requiring protection, impacts and mitigation and when the seawall might be removed. The City of Solana Beach has submitted the Land Use Plan component of its first Local Coastal program (LCP) to the Commission for review; thus, it is anticipated many of the issues addressed through the proposed conditions of approval will be addressed in a more comprehensive context through the City's certified LUP and, potentially, prior to the expiration of this permit's authorization period.

In addition, the applicants are proposing to pay an in-lieu fee of $108,761.13 to mitigate the associated impacts of the development on regional sand supply and are proposing the payment of a separate mitigation fee of $256,300.00 ($1,000 per linear ft.) to the City of Solana Beach for the impacts of the development on public access and recreational opportunities. With the proposed sand mitigation and recreation mitigation, as well as the limitation on the time for which the seawall is approved, the impacts of the proposed shoreline protection on regional sand supply and public access and recreation will be mitigated to the extent feasible. To ensure that any future redevelopment of these properties is consistent with Chapter 3 of the Coastal Act, this permit requires that any redevelopment of the bluff-top properties cannot rely upon this seawall to determine site suitability for such redevelopment. Other conditions involve an in-depth alternatives analysis for future reauthorization of the seawall, the appearance of the seawall, and approval from other agencies.

Standard of Review: Chapter 3 policies of the Coastal Act.

Substantive File Documents: City of Solana Beach General Plan and Zoning Ordinance; City Resolution No. 2004-171, Case No. 17-04-25; "Coastal Bluff Evaluation and Basis of Design Report" prepared by TerraCosta Consulting Group, dated March 5, 2008; "Additional Permit Application Information Shoreline Stabilization Project" prepared by TerraCosta Consulting Group, dated February 17, 2010; "Foundation Clarifications Specific to 219 Pacific Avenue (Baker Residence) Shoreline Stabilization Project" prepared by TerraCosta Consulting Group, dated June 30, 2010; "Revised Sand Mitigation Fee Calculations Shoreline Stabilization Project, 211-231 Pacific Avenue" prepared by TerraCosta Consulting Group, dated July 23, 2010; "Geotechnical Review Memorandum," prepared by the Commission's Staff Geologist, dated September, 28, 2010; "CDP 6-09-033 -- Issues with a gap between two seawall sections," prepared by the Commission's Staff Coastal Engineer, dated August 23, 2010; 6-81-270; 6-83-022; 6-84-062; 4-87-161/Pierce Family Trust and Morgan; 6-87-371/Van Buskirk; 5-87-576/Miser and Cooper; 6-88-006/Victor; 6-92-082/Victor; 6-92-212/Wood; 6-93-36-G/Clayton; 6-93-85/Auerbach; 6-93-131/Richards, et al; 6-93-136/Favero; 6-95-66/Hann; 6-97-126, 6-97-126-A1; 6-97-126-A2; 6-97-149, 6-97-149-A1; 6-97-149-A2; 6-98-002/Garber; 6-98-39/Denver, Canter; 6-98-131/Glasgow; 6-99-41/Bradley; 6-99-100/Presnell, et. al; 6-99-103/Solana Beach Preservation Association; 6-00-9/Del Mar Beach Club; 6-00-014-G/Solana Beach Preservation Association; 6-00-66/Pierce, Monroe; 6-00-138/Kinzel, Greenberg; 6-02-02/Gregg, Santina; 3-02-024/Ocean Harbor House; 6-02-84/Scism; 6-03-33/Surfsong; 6-03-33-A5/Surfsong; 6-04-83/Johnson, Cumming; 6-05-72/Las Brisas; 6-05-091/O'Neal, et al.; 6-07-133/Li; 6-07-134/Brehmer, Caccavo; 6-08-73/DiNoto, et al.; 6-08-122/Winkler.

I. PRELIMINARY STAFF RECOMMENDATION:

The staff recommends the Commission adopt the following resolution:

MOTION: ***I move that the Commission approve Coastal Development Permit No. 6-09-033 pursuant to the staff recommendation.***

STAFF RECOMMENDATION OF APPROVAL:

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

RESOLUTION TO APPROVE THE PERMIT:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and

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. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. Standard Conditions.

See attached page.

III. Special Conditions.

This permit is for one shoreline protective device on City-owned property to protect residential development located on 5 separately-owned residential properties; thus, each applicant shall be responsible for compliance with the following conditions as the conditions apply to their residential property, the entire protective device and/or that portion of the device below the applicant's individual residential site.

The permit is subject to the following conditions:

1. Final Revised Plans. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit for review and written approval of the Executive Director, final plans for the proposed seawall that are in substantial conformance with the submitted plans submitted on February 18, 2010 by TerraCosta Consulting. Said plans shall first be approved by the City of Solana Beach and be revised as follows:

a. It shall include sufficient detail regarding the construction method and technology utilized for texturing and coloring the seawall, and the concrete backfill behind the seawall. Said plans shall confirm, and be of sufficient detail to verify, that the seawall and limited concrete backfill closely matches the adjacent color and texture of the natural bluffs, including provision of a color board indicating the color of the material.

b. Any existing permanent irrigation system located on the bluff top sites shall be removed or capped.

c. All runoff from impervious surfaces on the top of the bluff shall be collected and directed away from the bluff edge towards the street.

d. Existing accessory improvements (i.e., guest house, decks, patios, walls, windscreens, etc.) located in the geologic setback area on each residential site shall be detailed and drawn to scale on the final approved site plan and shall include measurements of the distance between the accessory improvements and

the bluff edge (as defined by Section 13577 of the California Code of Regulations) taken at three or more locations. The locations for these measurements shall be identified through permanent markers, benchmarks, survey position, written description, or other method that enables accurate determination of the location of structures on the site. No modifications to, removal and/or replacement of any existing accessory structures is authorized by this permit and any such actions shall require a separate coastal development permit or permit amendment.

The applicants shall undertake the development in accordance with the approved plans. Any proposed changes to the approved plans shall be reported to the Executive Director. No changes to the plans shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

2. Encroachment on Public Property/Impacts to Public Trust Lands. By acceptance of this permit, the applicants agree, on behalf of themselves and all successors and assigns, to the following limitations on use of the blufftop residential parcels (APNs 263-323-02, 263-323-01, 263-312-16, 263-312-15, 263-312-14):

1) This coastal development permit authorizes the seawall for twenty years from the date of approval (i.e., until October 14, 2030). No modification or expansion of the approved seawall, or additional bluff or shoreline protective structures shall be constructed, without approval of an amendment to this coastal development permit by the Coastal Commission;
2) Any future redevelopment of the blufftop residential parcels shall not rely on the permitted seawall to establish geologic stability or protection from hazards. Redevelopment on the sites shall be sited and designed to not require shoreline or bluff protective devices for the estimated economic life of such structures, which shall be no fewer than 75 years; and
3) Prior to the issuance of the coastal development permit, the applicant shall submit written evidence that the City of Solana Beach has received a copy of the conditions of this Commission-approved coastal development permit and that it authorizes the proposed encroachment on City property.

3. Extension of Seawall Authorization or Seawall Removal. Prior to the expiration of the twenty year authorization period for the permitted seawall, the property owners shall submit to the Commission an application for a coastal development permit amendment to either remove the seawall in its entirety, change or reduce its size or configuration, or extend the length of time the seawall is authorized. Provided a complete application is received before the 20-year permit expiration, the expiration date shall be automatically extended until the time the Commission acts on the application. Sufficient information shall accompany any amendment application to conform with the permit filing guidelines at the time and to allow the Commission to consider the following in review of the proposed permit amendment:

1) An analysis, based on the best available science and updated standards, of beach erosion, wave run-up, sea level rise, inundation and flood hazards prepared by a licensed civil engineer with expertise in coastal engineering and a slope stability analysis, prepared by a licensed Certified Engineering Geologist and/or Geotechnical Engineer or Registered Civil Engineer with expertise in soils, in accordance with the procedures detailed in the Local Coastal Program (LCP), if certified or the City Zoning Code;
2) An evaluation of alternatives that will increase stability of the existing principal structure for its remaining life, or re-site new development to an inland location, such that further alteration of natural landforms and/or impact to adjacent tidelands or public trust lands is avoided;
3) An analysis of the condition of the existing seawall and any impacts it may be having on public access and recreation, scenic views, sand supplies, and other coastal resources;
4) An evaluation of the opportunities to remove or modify the existing seawall in a manner that would eliminate or reduce the identified impacts, taking into consideration the requirements of the LCP, if certified, and the protection required for remaining properties subject to this coastal development permit;
5) For amendment applications to extend the authorization period, a proposed mitigation program to address unavoidable impacts identified in subsection (3) above;
6) The surveyed location of all property lines and the mean high tide line by a licensed surveyor along with written evidence of full consent of any underlying land owner, including, but not limited to the City, State Parks, or State Lands Commission, of the proposed amendment application. If application materials indicate that development may impact or encroach on tidelands or public trust lands, written authorization from the underlying property owner and the State Lands Commission of the proposed amendment shall be required prior to issuance of the permit amendment to extend the authorization period.

4. Mitigation for Impacts to Sand Supply. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that a fee of $108,761.13 has been deposited in an interest bearing account designated by the Executive Director, in-lieu of providing the total amount of sand to replace the sand and beach area that will be lost due to the impacts (such as loss of beach from physical encroachment of the seawall and the fixing of the back of the beach) of the proposed protective structures. All interest earned by the account shall be payable to the account for the purposes stated below.

The developed mitigation plan covers impacts only through the approved 20-year design life of the seawall. No later than 19 years after the issuance of this permit, the applicants or their successors in interest shall apply for and obtain an amendment to this permit that either requires the removal of the seawall or mitigation for the effects of the seawall on shoreline sand supply for the length of time the permit for this seawall is extended.

The purpose of the account shall be to establish a beach sand replenishment fund to aid SANDAG, or an alternate entity approved by the Executive Director, in the restoration of the beaches within San Diego County. The funds shall be used solely to implement projects which provide sand to the region's beaches, not to fund operations, maintenance or planning studies. The funds shall be released only upon approval of an appropriate project by the Executive Director of the Coastal Commission. The funds shall be released as provided for in a MOA between SANDAG, or an alternate entity approved by the Executive Director, and the Commission, setting forth terms and conditions to assure that the in-lieu fee will be expended in the manner intended by the Commission. If the MOA is terminated, the Executive Director may appoint an alternate entity to administer the fund for the purpose of restoring beaches within San Diego County.

5. Mitigation for Impacts to Public Access and Recreational Use. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that the full interim mitigation fee of $256,300.00, required by the City of Solana Beach to address adverse impacts to public access and recreational use, has been satisfied.

WITHIN 6 MONTHS of the Commission's certification, as part of the certified LCP, of both the City's economic study of the impacts associated with shoreline devices and its method of calculating such fees, the applicants shall submit to the Executive Director for review and written approval, documentation of the final mitigation fee amount required by the City to address impacts of the proposed shoreline protection on public access and recreation. If the amount differs from the interim amount required above, then the applicants shall submit an application for an amendment to this permit to adjust the mitigation fee to be paid to the City to address adverse impacts to public access and recreational use resulting from the proposed development. In the event no mitigation program is certified as part of the LCP process, mitigation to address ongoing impacts to public access and recreation shall be re-assessed after the 20 year authorization period has expired.

6. Monitoring/Maintenance Program. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and written approval, a monitoring program prepared by a licensed civil engineer or geotechnical engineer to monitor the performance of the seawall which requires the following:

a. An annual evaluation of the condition and performance of the seawall addressing whether any significant weathering or damage has occurred that would adversely impact the future performance of the structure. This evaluation shall include an assessment of the color and texture of the seawall and concrete backfill comparing the appearance of the structure to the surrounding native bluffs.

b. Annual measurements of any differential retreat between the natural bluff face and the seawall face, at the north and south ends of the seawall and at 20-foot

intervals (maximum) along the top of the seawall face/bluff face intersection. The program shall describe the method by which such measurements shall be taken.

c. Provisions for submittal of a report to the Executive Director of the Coastal Commission by May 1 of each year (beginning the first year after construction of the project is completed) for a period of three years and then, each third year following the last the annual report, for the 20 years for which this seawall is approved. In addition, reports shall be submitted in the Spring immediately following either:

    1. An "El Niño" storm event – comparable to or greater than a 20-year storm.

    2. An earthquake of magnitude 5.5 or greater with an epicenter in San Diego County.

    Thus, reports may be submitted more frequently depending on the occurrence of the above events in any given year.

d. Each report shall be prepared by a licensed civil engineer, geotechnical engineer or geologist. The report shall contain the measurements and evaluation required in sections a and b above. The report shall also summarize all measurements and analyze trends such as erosion of the bluffs, changes in sea level, the stability of the overall bluff face, including the upper bluff area, and the impact of the seawall on the bluffs to either side of the wall. In addition, each report shall contain recommendations, if any, for necessary maintenance, repair, changes or modifications to the seawall.

e. An agreement that, if after inspection or in the event the report required in subsection c above recommends any necessary maintenance, repair, changes or modifications to the project including maintenance of the color of the structures to ensure a continued match with the surrounding native bluffs, the permittees shall contact the Executive Director to determine whether a coastal development permit or an amendment to this permit is legally required, and, if required, shall subsequently apply for a coastal development permit or permit amendment for the required maintenance within 90 days of the report or discovery of the problem.

The applicants shall undertake monitoring in accordance with the approved monitoring program. Any proposed changes to the approved monitoring program shall be reported to the Executive Director. No changes to the monitoring program shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

7. Storage and Staging Areas/Access Corridors. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and written approval, final plans approved by the City of

Solana Beach indicating the location of access corridors to the construction site and staging areas. The final plans shall indicate that:

a. No overnight storage of equipment or materials shall occur on sandy beach or public parking spaces. During the construction stages of the project, the applicants shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion. In addition, no machinery shall be placed, stored or otherwise located in the intertidal zone at any time, except for the minimum necessary to construct the seawall/slope reconstruction. Construction equipment shall not be washed on the beach or in the Fletcher Cove parking lot or access road.

b. Access corridors shall be located in a manner that has the least impact on public access to and along the shoreline.

c. No work shall occur on the beach on weekends, holidays or between Memorial Day weekend and Labor Day of any year.

d. The applicants shall submit evidence that the approved plans/notes have been incorporated into construction bid documents. The staging site shall be removed and/or restored immediately following completion of the development.

The applicants shall undertake the development in accordance with the approved plans. Any proposed changes to the approved plans shall be reported to the Executive Director. No changes to the plans shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

8. Storm Design/Certified Plans. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit certification by a registered civil engineer that the proposed seawall has been designed to withstand storms comparable to the winter storms of 1982-83.

In addition, within 60 days following construction, the applicants shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying that the seawall has been constructed in conformance with the approved plans for the project.

9. Public Rights. The Coastal Commission's approval of this permit shall not constitute a waiver of any public rights that exist or may exist on the property. By acceptance of this permit, each applicant acknowledges, on behalf of him/herself and his/her successors in interest, that issuance of the permit and construction of the permitted development shall not constitute a waiver of any public rights which may exist on the property.

10. Other Permits. **PRIOR TO COMMENCEMENT OF CONSTRUCTION**, the applicants shall provide to the Executive Director copies of all other required local, state and federal discretionary permits for the development authorized by CDP 6-09-033. The applicant shall inform the Executive Director of any changes to the project required by other local, state or federal agencies. Such changes shall not be incorporated into the project until the applicants obtain a Commission amendment to this permit, unless the Executive Director determines that no amendment is legally required.

11. State Lands Commission Approval. **PRIOR TO COMMENCEMENT OF CONSTRUCTION**, the applicants shall submit to the Executive Director for review and written approval, a written determination from the State Lands Commission that:

a) No state lands are involved in the development; or

b) State lands are involved in the development, and all approvals required by the State Lands Commission have been obtained; or

c) State lands may be involved in the development, but pending a final determination of state lands involvement, an agreement has been made by the applicants with the State Lands Commission for the project to proceed without prejudice to the determination.

12. Assumption of Risk, Waiver of Liability and Indemnity Agreement. By acceptance of this permit, the applicants acknowledge and agree (i) that the site may be subject to hazards from erosion and coastal bluff collapse; (ii) to assume the risks to the applicants and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

13. Deed Restriction. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and approval documentation demonstrating that each applicant has executed and recorded against the parcel(s) governed by this permit a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, the California Coastal Commission has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property; and (2) imposing the Special Conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction shall include a legal description of the entire parcel or parcels governed by this permit. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the

deed restriction for any reason, the terms and conditions of this permit shall continue to restrict the use and enjoyment of the subject property so long as either this permit or the development it authorizes, or any part, modification, or amendment thereof, remains in existence on or with respect to the subject property.

14. Best Management Practices. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit for review and written approval of the Executive Director, a Best Management Plan approved by the City of Solana Beach that effectively assures no shotcrete or other construction byproduct will be allowed onto the sandy beach and/or allowed to enter into coastal waters. The Plan shall apply to both concrete pouring/pumping activities as well as shotcrete/concrete application activities. During shotcrete/concrete application specifically, the Plan shall at a minimum provide for all shotcrete/concrete to be contained through the use of tarps or similar barriers that completely enclose the application area and that prevent shotcrete/concrete contact with beach sands and/or coastal waters. All shotcrete and other construction byproduct shall be properly collected and disposed of off-site.

The applicants shall undertake the development in accordance with the approved Plan. Any proposed changes to the approved Plan shall be reported to the Executive Director. No changes to the Plan shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

IV. Findings and Declarations.

The Commission finds and declares as follows:

1. Detailed Project Description. The proposed project involves the construction of an approximately 256.3 ft.-long, 35 ft. high, colored and textured concrete tiedback seawall, and concrete backfill below five single family residential units on blufftop parcels at 211, 215, 219, 225 and 231 Pacific Avenue in the City of Solana Beach. The proposed seawall will be designed to blend with the natural bluff face and cover the face of an existing seacave fill.

The proposed seawall will be located at the toe of the coastal bluffs on City-owned beach adjacent to Fletcher Cove Beach Park. The bluff-face on all properties except 231 Pacific Avenue are also public resources owned by the City of Solana Beach.

2. Permit History and Background. With the exception of 225 Pacific Avenue, each property has a history of at least one previous coastal development permit. The history is as follows (from south to north):

211 Pacific Avenue: has an existing 2,763 sq. ft. single family residence located approximately 5-10 ft. from the top edge of the coastal bluff. The home was constructed in 1961. In 1995, the Commission approved, with conditions, an application for a remodel and second story addition to this residence (ref. CDP# 6-95-095/O'Neal). In the

same year, the Commission denied an application to transfer the public bluff to the O'Neal's private ownership. In 1997, the Commission approved, and later extended twice, the placement of temporary rip rap at the toe of the bluff, (ref. CDP Nos. 6-97-126, 6-97-126-A1 and 6-97-126-A2). The rip rap was removed by November 1998.

215 Pacific Avenue: has an existing 2,578 sq. ft. single family residence located approximately 25 ft. from the top edge of the coastal bluff. The home was constructed in 1955. In 1998, the Commission approved, with conditions, an application for first and second story additions to this residence (ref. CDP# 6-98-131/Glasgow).

219 Pacific Avenue: has an existing 2-story 3,443 sq. ft. single family residence located approximately 35 ft. from the top edge of the bluff. In 1981, the Commission approved, with conditions, an application to demolish the existing home and construct a new home (ref. CDP# 6-81-270). This permit subsequently expired. In 1984, the owners re-submmitted an application and the Commission again approved, with conditions, the proposed demolition and new construction (ref. CDP# 6-84-062). The Commission also required that the new home be supported on 5 drilled piers. Construction of the new home was completed in 1987. In 1997, the Commission approved, and later extended twice, the placement of temporary rip rap at the toe of the bluff to temper wave energy and prevent scouring (ref. CDP Nos. 6-97-149, 6-97-149-A1 and 6-97-149-A2). The rip rap was removed by November 1998.

225 Pacific Avenue: has an existing 989 sq. ft. single family residence located approximately 20-25 ft. from the top edge of the bluff. The home was constructed in 1926. This property also contains a 345 sq. ft. accessory structure, built in 1955, that is sited from about 10 ft. landward of the bluff edge, west and over onto the bluff face. The accessory structure is equipped with electricity, gas and plumbing.

231 Pacific Avenue: has an existing 2,751 sq. ft. single family residence located approximately 10-15 ft. from the top edge of the bluff. The home was built in 1958. In 1983, the Commission approved, with conditions, an application to demolish an existing bungalow, construct a deck, windscreen and fence (ref. CDP# 6-83-022). In 1988, the Commission approved, with conditions, an application for first and second story additions to the house (ref. CDP# 6-88-006/Victor). In 1992, the Commission approved, with conditions, an application to fill two seacaves at the toe of the bluff and to transfer ownership of the public bluff face property to the private owner by quitclaim deed (ref. CDP# 6-92-082/Victor). In 1998, the Commission approved with conditions the placement of temporary riprap at the toe of the bluff (ref. CDP# 6-98-002/Garber). The rip rap was removed in April 1998.

In addition to these individual permit actions, an approximately 200 ft. long section of concrete infill was approved by the Commission to fill in an undercut area that had developed at the toe of the bluff below 201, 205, 211, 215, 219, 225, 231 Pacific Avenue, Solana Beach, San Diego County. (ref. CDP# 6-99-103/Solana Beach Preservation Association, emergency permit 6-00-014-G/Solana Beach Preservation Association, and later maintained pursuant to 6-05-091/O'Neal, et al.).

The five-lot project site is located approximately 7 to 12 lots north of the Fletcher Cove Beach Park in the City of Solana Beach. The City of Solana Beach does not yet have a certified Local Coastal Program (LCP) and, therefore, Chapter 3 of the Coastal Act is the standard of review.

3. Geologic Conditions and Hazards. Section 30235 of the Coastal Act states, in part:

> 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.

In addition, Section 30253 of the Coastal Act states, in part:

> New development shall do all of the following:
>
> (a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.
>
> (b) 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...

The proposed project involves the construction of an approximately 256.3 ft.-long, 35 ft. high, colored and textured concrete tiedback seawall, and concrete backfill on public beach below five single family residential units. The applicants' geotechnical report identifies that, following the seacave infill project completed in 2000 (ref. CDP# 6-99-103/Solana Beach Preservation Association), "…the portion of notch overhang extending seaward of the existing infill has begun to collapse...[exposing] the clean sand layer above the cliff-forming geologic unit, resulting in upper-bluff instability and some upper-bluff failures." (Ref. "Coastal Bluff Evaluation and Basis of Design Report" by TerraCosta Consulting Group dated 3/5/08). The Report suggests the lower bluff erosion and upper bluff collapse is typical along this stretch of coastline.

The applicants' engineer has identified the upper and lower bluff hazards threatening the blufftop properties:

> Future lower bluff failures will expose those clean sands, resulting in immediate upper bluff instability and progressive slope failures
>
> […]

> The existing upper-bluff slopes are only marginally stable at best, due primarily to the presence of the 10-foot-thick clean sand layer situated above the more resistant Torrey Sandstone. Without appropriate measures, these clean sands, where exposed, will cause progressive upper-bluff failures.
> (Ref. "Coastal Bluff Evaluation and Basis of Design Report" by TerraCosta Consulting Group dated 3/5/08)

The applicants' engineer has indicated that 4 of the existing residences are currently threatened by erosion. While the middle property (219 Pacific Avenue) is not currently threatened, the applicants' engineer explained the necessity of a continuous wall across all five properties:

> The existing slope remains only marginally stable and represents an imminent hazard to the four adjacent properties (211, 215, 225 and 231 Pacific Avenue), with only slightly more stability afforded 219 Pacific Avenue discounting the westerly drilled pier foundations. Of the five properties in this CDP application, 219 Pacific Avenue has the greatest bluff-top setback, with a small incremental benefit afforded by the westerly drilled pier foundations. Regardless, the other four remain at risk and the adjacent properties on either side of 219 Pacific Avenue would still be in imminent danger, more so from the potential flanking from 219 Pacific Avenue if this one property were to be excluded from the proposed seawall.
>
> […]
>
> In summary, we believe that a continuous wall across all five parcels is the environmentally preferred option and is necessary to protect the adjacent properties on both sides of 219 Pacific Avenue. (Ref. "Foundation Clarifications Specific to 219 Pacific Avenue (Baker Residence)" by TerraCosta Consulting Group dated 6/30/10)

The applicants' geotechnical report describes the layer of clean sands lens located between the Torrey Sandstone and Marine Terrace deposits at approximately elevation 25-35 ft. Mean Sea Level (MSL). According to the Commission's staff geologist, the clean sands lens consists of a layer of sand with a limited amount of capillary tension and a very minor amount of cohesion, which causes the material to erode easily. This clean sand layer, once exposed, is susceptible to wind blown erosion and continued sloughing as the sand dries out and loses the capillary tension that initially held the materials together. Geotechnical reports associated with developments near this site have stated that gentle sea breezes and any other perturbations, such as landing birds or vibrations from low-flying helicopters, can be sufficient to trigger small- or large-volume bluff collapses, since the loss of the clean sands eliminates the support for the overlying, slightly more cemented, terrace deposits.

The presence of this clean sands layer within the bluffs along the Solana Beach shoreline has previously been identified in geotechnical reports submitted in conjunction with seawall, seacave and notch infill projects in Solana Beach (ref. CDP 6-00-9/Del Mar

Beach Club, CDP #6-99-100/Presnell, et. al, #6-99-103/ Coastal Preservation Association, #6-00-66/Pierce, Monroe, #6-02-02/Gregg, Santina, #6-02-84/Scism and #6-03-33/Surfsong; #6-04-83, Cumming, Johnson; #6-05-72/Las Brisas and 6-07-134/Brehmer, Caccavo). According to the Commission's staff geologist, the typical mechanism of sea cliff retreat along the Solana Beach shoreline involves the slow abrasion and undercutting of the Torrey Sandstone bedrock, which forms the sea cliff at the base of the bluffs, from wave action which becomes more pronounced in periods of storms, high surf and high tides. Other contributing factors to sea cliff retreat include fracturing, jointing, sea cave and overhang collapse and the lack of sand along the shoreline. When the lower sea cliff is undercut sufficiently, it commonly collapses in blocks. The weaker terrace deposits are then unsupported, resulting in the collapse of the terrace deposits through circular collapses. Such paired, episodic collapses eventually result in a reduction in the steepness of the upper bluff, and the landward retreat of the bluff edge. Such retreat may threaten structures at the top of the slope. When collapses of the upper bluff have sufficiently reduced the overall gradient of the upper bluff, a period of relative stability ensues, which persists until the lower bluff becomes sufficiently undercut to initiate a block collapse once more, triggering a repetition of the entire process.

The mechanism of bluff retreat that occurs in conjunction with the exposure of the clean sands layer is somewhat different than the paired, episodic collapse model described above. On some sections of Solana Beach coastal bluffs, the clean sands lens has an oxidized, protective outer shell. But, once these cohesionless sands are exposed, they continue to slump on an ongoing basis as a result of very small triggers such as traffic vibrations or wind erosion. Continued sloughage results in the further exposure of more clean sand, and ongoing upper bluff collapse. This cycle, once started, occurs so quickly (over months or days, rather than years) that the upper bluff may never achieve a stable angle of repose. Unless the base of the bluff is afforded shoreline protection and the clean sands lens is contained, additional bluff collapses can further expose the layer of clean sands and result in a potential upper bluff collapse and an immediate threat to the structures at the top of the bluff. To address the exposure of this clean sands layer and continued retreat of the lower bluff, the applicant proposes to construct a 256.3-ft. long, 35-ft. high seawall.

According to the Commission's staff geologist, the best regional estimate of historical long-term bluff retreat for Solana Beach is from a FEMA-funded study summarized in Benumof and Griggs (1999). These authors report an average long-term retreat rate ranging from 0.15 to 0.47 ft/yr for the Solana Beach area over the period 1932 - 1994. Episodic erosion events such as sea cave or notch overhang collapses, and erosion related to severe winter storms, can lead to short-term bluff retreat rates well above the long-term average. These short-term retreat rates are inherently included in the estimation of the long-term retreat rate for Solana Beach and, therefore, are included in the methodology used for the in-lieu fee sand replenishment calculations.

While the existing residences are set back from the bluff approximately 5-35 feet, the slope stability analysis performed by the applicants' engineer indicates that further

collapse of the upper bluff would threaten the residences at the top of the bluff. Slope stability analyses for the bluffs at 211 to 231 Pacific Avenue demonstrate factors of safety ranging from 1.01 to 1.15. However, for three of the properties (215, 219 and 225 Pacific Avenue), the computed most likely failure plane does not intersect the buildings' foundations, as these buildings are set back farther from the bluff edge than 211 and 231 Pacific Avenue. Nevertheless, the factors of safety for hypothetical failure surfaces that do underlie the buildings' foundations range from 1.18 to 1.20. This means that if the computer model of the most likely failure surface is incorrect (for example, through unmodelled heterogeneity in its soils) failure along a potential slide plane that would undermine the foundations is likely. The factor of safety against sliding along the most likely slide planes is estimated at a range of between 1.01 and 1.15 for the existing non-reinforced sections of the bluff. (The factor of safety is an indicator of slope stability where a value of 1.5 is the industry-standard value for new development. In theory, failure should occur when the factor of safety drops to 1.0, and no slope should have a factor of safety less than 1.0.) Following construction of the proposed 256.3 ft.-long seawall, the applicants' engineer has demonstrated that the factor of safety for the homes will be increased at this currently non-reinforced section of the bluff to 1.39 (211 Pacific Avenue), 1.24 (215 Pacific Avenue), 1.25 (219 Pacific Avenue), 1.42 (225 Pacific Avenue) and 1.37 (231 Pacific Avenue).

Due to the added structural support beneath 219 Pacific Avenue, it is not currently threatened by erosion. If the residence at 219 Pacific Avenue was the sole property in the application, the geotechnical analysis would not support a finding that protection was required. The applicants' engineer submitted a supplemental geotechnical report to discuss the five drilled piers located at 219 Pacific Avenue (middle property of the five properties), specifically whether it would be more appropriate to construct two seawalls leaving a gap at the base of the bluff seaward of this property (Ref. "Foundation Clarifications Specific to 219 Pacific Avenue (Baker Residence) Shoreline Stabilization Project" by TerraCosta Consulting Group, dated 6/30/10). Due to the added structural support beneath 219 Pacific Avenue and its current setback, it is not currently threatened. Therefore, under Section 30235 of the Coastal Act, a finding that protection is required to protect the residence at 219 Pacific Avenue could not be supported. However, the applicants' engineer contends that there is only a "small incremental benefit afforded by the westerly piers" at 219 Pacific Avenue resulting in "slightly more stability," compared to the other four properties (211, 215, 225, 231). The applicants' engineer explained that a gap in the seawall would result in potential flanking of the seawalls, thereby impacting the properties up and down coast of 219 Pacific Avenue (215 and 225). Therefore, the engineer concluded that a continuous wall across all five parcels, rather than two separate walls with a gap in the middle, is the environmentally preferred option and is necessary to protect adjacent properties on both sides of 219 Pacific Avenue.

The Commission's staff coastal engineer drafted a memorandum explaining the problems associated with leaving a gap in the middle of the proposed seawall (Ref. "CDP 6-09-033 – Issues with a gap between two seawall sections"). The staff coastal engineer identified possible outcomes and risks associated with a 40-ft. long gap between two approximately 90-ft. long seawalls:

> Over time, the native bluff face will be significantly inland of the seawall face and the ends of the seawalls will have erosion inland of the wall such that there will be a cave or opening between the wall and the bluff material inland of wall. This can destabilize the wall if enough bluff material is removed and it is likely that there would be applications to "repair or maintain" the seawall to put some type of concrete (high strength or erodible) in this cave so that there will not be any hollow areas inland of the seawall. Alternatively, there may be an end wall with fill to armor back into the bluff as the gap area enlarges.
>
> […]
>
> The continuous [256.3-ft] wall would reduce the locations where these end wall extensions might be required; however the continuous wall would eliminate the new beach area that would be created in the gap and would reduce the length of coast where natural land forms are visible. If the gap is not armored, this 40 foot-long section of bluff will remain as a reminder of the character of the native bluffs. New beach area will form as the native bluff material continues to erode. The new beach area that will be created as the bluff erodes is likely to be bordered only on the east by native bluff material, with some type of wall extension [to] the north and south.
>
> The gap option will allow the creation of new beach area and will allow another small section of the native bluff to remain. However, the faster that new beach is created, the more likely it is that there will be applications for wall extensions along the sides of the gap to protect the existing walls.
>
> One risk that would be of greater concern with the gap than with the continuous wall is with a rapid bluff collapse. The walls tend to reduce large bluff collapses and allow only collapse of the upper bluff material. With the gap option there is the possibility that the gap area could experience a large collapse extending to the surrounding properties, resulting in a larger collapse than would occur with the more continuous wall. Over a long time period, the upper bluff changes, other than those in the immediate vicinity of the gap, are likely to be the same, with the gap or with the continuous wall. But, for the short-term there would possibly be significant difference in upper bluff conditions if there were to be a large collapse in the gap section.

Accordingly, the Commission's staff engineer and applicants' engineer are in agreement that the alternative to a continuous 256.3 ft seawall, namely two approximately 90 ft. seawalls with a 40 ft. gap excluding the 219 Pacific Avenue property, would likely result in increased threats to the adjacent properties. While approval of seawalls only for the

four properties that are now at risk from erosion and bluff retreat would confine the impacts from shoreline armoring to a smaller section of the coast, the gap is an untenable alternative, because it will result in further bluff instability and armoring similar to what is being proposed now to fill the gap can be anticipated in the foreseeable future.

Thus, given the significant bluff collapses that have occurred over the recent years, the potential collapse of the seacave, the exposure of the clean sands layer, the extreme erodibility of these sands once exposed, and the low factor of safety on the subject bluffs, substantial evidence has been provided to document that at least four of the existing primary blufftop structures are in danger from erosion. However, there are a variety of ways in which the threat from erosion could be addressed. Under the policies of the Coastal Act, the project must eliminate or mitigate adverse effects on shoreline sand supply and minimize adverse effects on public access, recreation, and the visual quality of the shoreline.

Alternatives

The applicants' geotechnical report includes an alternatives analysis to demonstrate that no other feasible less-environmentally-damaging structural alternatives exist to address the threats to the residence at the top of the bluff (Ref. "Coastal Bluff Evaluation and Basis of Design Report" by TerraCosta Consulting Group, dated 3/5/08). The applicants' engineer did not discuss removal or relocation of the residential structure in this or any other report. The engineer did state that while protective rock lowers the rate of erosion at the base of bluffs, riprap cannot provide the necessary support for the lower portion of the sloping upper bluffs and therefore will not eliminate the need for a wall. Notch infill at the base of the existing bluff, which has previously been performed at the site, is only effective when the clean sand layer is not exposed. The clean sand layer has become exposed on the bluff seaward of all five subject properties, and options for protection of development on the upper bluff need to address the upper bluff instability that results from the exposed clean sands layer. Control of groundwater and irrigation restrictions, while recommended by the applicants' representative as a way of reducing bluff sloughage, will not prevent continuation of the bluff collapses that have occurred at the subject sites. Underpinning of the existing residences has not been examined by the applicants, with the exception of 219 Pacific Avenue where five drilled piers are currently in place, however, without controlling the ongoing collapses, the underpinnings will soon be exposed. The applicants' engineer has also examined the potential use of chemical grouting of the bluff face and concluded that it will not work and poses a substantial safety risk to construction workers. Lastly, the engineer considered the no project alternative but concluded it would not protect the existing development. The applicants' engineer concluded that the proposed seawall represents the minimum necessary effort to prevent upper bluff collapses along this section of coastline.

In summary, the unrepaired seacave fill and the exposure of the clean sands layer approximately 30 feet above the beach presents a threat of rapid erosion and bluff collapse that must be addressed by a solution that effectively contains the seacave and the clean sands and affords protection to the residences at the top of the bluff. Given the

substantial amount of documented erosion on the site over the last several years, the presence of the clean sands, the extreme erodibility of these sands, and the low factor of safety on the subject bluff, substantial evidence has been provided to document that four of the existing primary blufftop structures are in danger from erosion and that the proposed seawall is necessary to protect the structures at the top of the bluff from the danger of erosion. While 219 Pacific Avenue is not presently at the same degree of risk of bluff collapse as the other four properties, as noted above, both the applicants' engineer and the Commission's staff coastal engineer conclude that a gap in the middle of the 256.3-ft. seawall would cause the neighboring properties to be outflanked and further threatened and thus recommend a continuous seawall is best. In addition, the above-described alternatives presented by the applicants do not support a conclusion that there is a less-environmentally-damaging feasible structural alternative. The Commission's staff geologist and coastal engineer have reviewed the applicants' geotechnical assessment of the site along with their alternatives analysis and concur with its conclusions and recommendations. Therefore, the Commission finds that the proposed seawall is the least environmentally damaging feasible structural alternative.

Sand Supply/In Lieu Mitigation Fee

Section 30235 of the Coastal Act requires that shoreline protection be designed to eliminate or mitigate adverse impacts on local shoreline sand supply. There are a number of adverse impacts to public resources associated with the construction of shoreline protection. The natural shoreline processes referenced in Section 30235, such as the formation and retention of sandy beaches, can be significantly altered by construction of a seawall, since bluff retreat is one of several ways that beach area and beach quality sand is added to the shoreline. This retreat is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When a seawall or other armoring is constructed on the beach at the toe of the bluff, it directly impedes these natural processes.

Some of the effects of a shoreline protective structure on the beach, such as scour, end effects and modification to the beach profile are temporary or difficult to distinguish from all the other actions which modify the shoreline. Seawalls also have non-quantifiable effects to the character of the shoreline and visual quality. However, some of the effects which a structure may have on natural shoreline processes can be quantified. Three of the effects from a shoreline protective device which can be quantified are: 1) 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.

Loss of beach material and loss of beach area are two separate concerns. A beach is the result of both sandy material and a physical area between the water and the back beach. Thus, beach area is not simply a factor of the quantity of sandy beach material. In Solana Beach, the shoreline is a shallow bedrock layer covered by a thin veneer of sand. The

bedrock layer provides an area for collection of sandy material. The sand material is important to the overall beach experience, but even without the sand, the bedrock layer provides an area for coastal access between the coastal bluff and the ocean. The loss of beach material that will be a direct result of this project can be balanced or mitigated by obtaining similar quality and quantity of sediment from outside the littoral cell and adding this sediment to the littoral cell. There are sources of beach quality sediment that can be drawn upon to obtain new sediment for the littoral cell. Unfortunately there is not a source of extra beach land that can be used to add new land area to the littoral cell. Beach nourishment is a method that allows us to shift the shore profile seaward and create a new area of dry beach. This will not create new coastal land, but will provide many of the same benefits that will be lost when the beach area is covered by a seawall or "lost" through passive erosion when the back bluff location is fixed.

The volume of sand that is calculated by the Beach Sand In-lieu Fee Mitigation Program currently utilized by the Commission is the quantification of the direct impacts to the existing recreational beach from the proposed seawall project. The mitigation that has been proposed by the applicant and recommended as a special condition for this project includes quantification of the impacts from wall, denial of sand to the littoral cell and passive erosion, as discussed herein. The purpose of the Beach Sand In-Lieu Fee Mitigation Program is to mitigate for the small, persistent loss of recreational beach such as will result from the proposed project by placing funds into a program that will be used for placement of sand on the beach in this area. This Beach Sand In-Lieu Fee Mitigation Program is administered by the San Diego Association of Governments (SANDAG) and has been in place in San Diego County for many years.

Special Condition #4 reflects the applicants' proposal to deposit an in-lieu fee to fund beach sand replenishment of 8,651.3 cubic yards of sand, as mitigation for impacts of the proposed shoreline protective device on beach sand supply and shoreline processes. In the case of the proposed project, the fee calculates to be $142,573.42, based on 8,651.3 cubic yards of sand multiplied by the cost of obtaining a cubic yard of sand, as proposed by the applicants' engineer at $16.48 per cu. yd. However, the applicants previously paid a $51,640.88 fee for the infill work done in 2000 (ref. CDP# 6-99-103/Solana Beach Preservation Association). The applicant has requested a $33,812.29 credit against the original $51,640.88, because the applicants have already paid for 20 years of sand mitigation fees. The credit also includes $6,500 to account for sand that fell to the beach in spite of the 2000 project because of the portion of the notch overhang that was required to remain in place that has since collapsed. The resulting fee for this project, taking the credits into consideration, is $108,761.13.

The following is the methodology used by the Commission in developing the in-lieu fee amount. The methodology uses site-specific information provided by the applicants as well as estimates, derived from region-specific criteria, of both the loss of beach material and beach area which could occur over the life of the structure, and of the cost to purchase an equivalent amount of beach quality material and to deliver this material to beaches in the project vicinity.

The following is a description of the methodology:

Fee = (Volume of sand for mitigation) x (unit cost to buy and deliver sand)

$\mathbf{M} = \mathbf{V_t} \times \mathbf{C}$

where

M = Mitigation Fee

$\mathbf{V_t}$ = Total volume of sand required to replace losses due to the structure, through reduction in material from the bluff, reduction in nearshore area and loss of available beach area (cubic yards). Derived from calculations provided below.

C = Cost, per cubic yard of sand, of purchasing and transporting beach quality material to the project vicinity ($ per cubic yard). Derived from the average of three written estimates from sand supply companies within the project vicinity that would be capable of transporting beach quality material to the subject beach, and placing it on the beach or in the near shore area.

$\mathbf{V_t} = \mathbf{V_b} + \mathbf{V_w} + \mathbf{V_e}$

where

$\mathbf{V_b}$ = Volume of beach material that would have been supplied to the beach if natural erosion continued, based on the long-term regional bluff retreat rate, design life of the structure, percent of beach quality material in the bluff, and bluff geometry (cubic yards). This is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structure.

$\mathbf{V_w}$ = Volume of sand necessary to replace the beach area that would have been created by the natural landward migration of the beach profile without the seawall, based on the long-term regional bluff retreat rate, and beach and nearshore profiles (cubic yards)

$\mathbf{V_e}$ = Volume of sand necessary to replace the area of beach lost due to encroachment by the seawall; based on the seawall design and beach and nearshore profiles (cubic yards)

$\mathbf{V_b} = (S \times W \times L/27) \times [(R\ h_S) + (\mathbf{h_u}/2 \times (R + (R_{cu} - \mathbf{R_{cs}})))]$

where

R = Long-term regional bluff retreat rate (ft./yr.), based on historic erosion, erosion trends, aerial photographs, land surveys, or other accepted techniques. For the Solana Beach area, this regional retreat has been estimated by the applicants' representative to be 0.27 ft./year. The use of any alternative retreat rates must be documented by the applicant and should be the same as the predicted retreat rate used to estimate the need for shoreline armoring.

L = Design life of armoring without maintenance (yr.). If maintenance is proposed and extends the life of the seawall beyond the initial estimated design life, a revised fee shall be determined through the coastal development permit process.

W = Width of property to be armored (ft.)

h = Total height of armored bluff (ft.)

S = Fraction of beach quality material in the bluff material, based on analysis of bluff material to be provided by the applicant

h_S = Height of the seawall from the base to the top (ft)

h_u = Height of the unprotected upper bluff, from the top of the seawall to the crest of the bluff (ft)

R_{cu} = Predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming no seawall were installed (ft/yr). This value can be assumed to be the same as R unless the applicant provides site-specific geotechnical information supporting a different value.

R_{cs} = 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 (ft/yr).

This value will be assumed to be zero unless the applicant provides site-specific geotechnical information supporting a different value.

NOTE: For conditions where the upper bluff retreat will closely follow the lower bluff, this volume will approach a volume of material equal to the height of the total bluff, the width of the property and a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed. For conditions where the upper bluff has retreated significantly and would not be expected to retreat further during the time that the seawall is in place, this volume would approach the volume of material immediately behind the seawall, with a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed.

$\mathbf{V_W} = \mathbf{R} \times \mathbf{L} \times \mathbf{v} \times \mathbf{W}$

where

R = Long-term regional bluff retreat rate (ft./yr.), based on historic erosion, erosion trends, aerial photographs, land surveys, or other accepted techniques. For the Solana Beach area, this regional retreat has been estimated by the applicants' representative to be 0.27 ft./year. The use of any alternative retreat rates must be documented by the applicant and should be the same as the predicted retreat rate used to estimate the need for shoreline armoring.

L = Design life of armoring without maintenance (yr.) If maintenance is proposed and extends the life of the seawall beyond the initial estimated design life, a revised fee shall be determined through the coastal development permit process.

v = Volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall; based on the vertical distance from the top of the beach berm to the seaward limit of reversible sediment movement (cubic yards/ft of width and ft. of retreat). The value of v is often taken to be 1 cubic yard per square foot of beach. In the report, Oceanside Littoral Cell Preliminary Sediment Budget Report" (December 1987, part of the Coast of California Storm and Tide Wave Study, Document #87-4), a value for v of 0.9 cubic yards/square foot was suggested. If a vertical distance of 40 feet is used for the range of reversible

sediment movement, v would have a value of 1.5 cubic yards/square foot (40 feet x 1 foot x 1 foot / 27 cubic feet per cubic yard). These different approaches yield a range of values for v from 0.9 to 1.5 cubic yards per square foot. The value for v would be valid for a region, and would not vary from one property to the adjoining one. Until further technical information is available for a more exact value of v, any value within the range of 0.9 to 1.5 cubic yards per square foot could be used by the applicant without additional documentation. Values below or above this range would require additional technical support.

W = Width of property to be armored (ft.)

$$\mathbf{V_e} = \mathbf{E} \times \mathbf{W} \times \mathbf{v}$$

where

E = Encroachment by seawall, measured from the toe of the bluff or back beach (ft.)

W = Width of property to be armored (ft.)

v = Volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall, as described above;

The San Diego Association of Governments (SANDAG) has adopted the Shoreline Preservation Strategy for the San Diego region and is currently working on techniques toward its implementation. The Strategy considers a full range of shoreline management tactics, but emphasizes beach replenishment to preserve and enhance the environmental quality, recreational capacity, and property protection benefits of the region's shoreline. Funding from a variety of sources will be required to implement the beach replenishment and maintenance programs identified in the SANDAG Strategy. In this particular case, SANDAG has agreed to administer a program which would identify projects which may be appropriate for support from the beach sand replenishment fund, through input from the Shoreline Preservation Working Group which is made up of representatives from all the coastal jurisdictions in San Diego County. The Shoreline Preservation Working Group is currently monitoring several large scale projects, both in and out of the coastal zone, they term "opportunistic sand projects", that will generate large quantities of beach quality material suitable for replenishing the region's beaches. The purpose of the account is to aid in the restoration of the beaches within San Diego County. One means to do this would be to provide funds necessary to get such "opportunistic" sources of sand to the shoreline.

Many of the adverse effects of the seawall on sand supply will occur gradually. In addition, the adverse effects impact the entire littoral cell but to different degrees in different locations throughout the cell (based upon wave action, submarine canyons, etc.). Therefore, the applicants are being required to pay a fee in-lieu of directly depositing the sand on the beach, because mitigation of the adverse effects on sand supply is most effective if it is part of a larger project that can take advantage of the economies of scale and result in quantities of sand at appropriate locations in the affected littoral cell in which it is located. The funds will be used only to implement projects which benefit the area where the fee was derived, and provide sand to the region's beaches, not to fund operations, maintenance or planning studies. Such a fund will aid in the long-term goal of increasing the sand supply and thereby reduce the need for additional armoring of the shoreline in the future. The fund also will insure available sandy beach for recreational uses. The methodology, as proposed, ensures that the fee is roughly proportional to the impacts to sand supply attributable to the proposed seawall. The methodology provides a means to quantify the sand and beach area that would be available for public use, were it not for the presence of the seawall.

The above-described impacts on the beach and sand supply have previously been found to result from seawalls in other areas of North County. In March of 1993, the Commission approved CDP #6-93-85/Auerbach, et al for the construction of a seawall fronting six non-continuous properties located in the City of Encinitas north of the subject site. In its finding for approval, the Commission found the proposed shoreline protection would have specific adverse impacts on the beach and sand supply and required mitigation for such impacts as a condition of approval. The Commission made a similar finding for several other seawall developments within San Diego County including an August 1999 approval (ref. CDP No. 6-99-100/Presnell, et. al) for the approximately 352-foot-long seawall project located approximately ¼ mile south of the subject development and a March 2003 approval (ref. CDP No. 6-02-84/Scism) located 2 lots south of the subject site. (Also ref. CDP Nos. 6-92-212/Wood, 6-93-36-G/Clayton, 6-93-131/Richards, et al, 6-93-136/Favero, 6-95-66/Hann, 6-98-39/Denver/Canter and 6-99-41/Bradley; 6-00-138/Kinzel, Greenberg; 6-02-02/Gregg, Santina, 6-03-33/Surfsong, 604-83/Cumming, Johnson, 6-05-72/Las Brisas, 6-07-134/Brehmer, Caccavo, 6-07-133/Li and 6-08-73/Cumming, DiNoto).

In addition to the adverse impacts the seawall will have on the beach as detailed above, the Commission finds that the proposed seawall could also have adverse impacts on adjacent unprotected properties caused by wave reflection, which leads to accelerated erosion. Numerous studies have indicated that when continuous protection is not provided, unprotected adjacent properties experience a greater retreat rate than would occur if the protective device were not present. This is due primarily to wave reflection off the protective structure and from increased turbulence at the terminus of the seawall. According to James F. Tait and Gary B. Griggs in Beach Response to the Presence of a Seawall (A Comparison of Field Observations) "[t]he most prominent example of lasting impacts of seawalls on the shore is the creation of end scour via updrift sand impoundment and downdrift wave reflection. Such end scour exposes the back beach, bluff, or dune areas to higher swash energies and wave erosion." As such, as the base of

the bluff continues to erode on the unprotected adjacent properties, collapse of the bluff is likely. Thus, future collapses could "spill over" onto other adjacent unprotected properties, prompting requests for much more substantial and environmentally damaging seawalls to protect the residences. This then starts a "domino" effect of individual requests for protection.

According to information contained in the Planners Handbook (dated March 1993), which is included as Technical Appendix III of the Shoreline Preservation Strategy adopted by the San Diego Association of Governments (SANDAG) on October 10, 1993, "[a] longer return wall will increase the magnitude of the reflected wave energy. On a coast where the shoreline is retreating, there will be strong incentives to extend the length of the return wall landward as adjacent property is eroded, thereby increasing the return wall, and its effects on neighboring property, with time."

However, although the proposed seawall must be designed to reduce impacts of the wall on adjacent properties, at best, the impacts can be reduced, but not eliminated. Regardless of whether accelerated erosion will occur on the adjacent unprotected properties, the adjacent bluffs will continue to erode due to the same forces that are causing them to erode currently. As this occurs, more surface area of the feathered edges will be exposed to wave attack leading to increased turbulence and accelerated erosion of the adjacent unprotected bluff. These impacts are particularly problematic in the case of the proposed project, as the seawall will be an isolated structure in a stretch of largely unprotected shoreline.

To ensure that this project does not prejudice future shoreline planning options, including with respect to changing and uncertain circumstances that may ultimately change policy and other coastal development decisions (including not only climate change and sea level rise, but also due to legislative change, judicial determinations, etc.), staff recommends that this approval be conditioned for a twenty-year period. Despite applicant projections that the seawall will last for more than twenty years, it has been staff's experience that shoreline armoring, particularly in such a significantly high-hazard area as this project, tends to be augmented, replaced, and/or substantially changed within about twenty years. Rising sea levels and attendant consequences will tend to further delimit such a time period in the future, potentially dramatically, depending on how far sea level actually rises. The intent of the twenty-year authorization is to recognize this time-frame reality, and also to allow for an appropriate reassessment of continued armoring at that time in light of what may be differing circumstances than are present today. Of course it is possible that physical circumstances as well as local and/or statewide policies and priorities regarding shoreline armoring are significantly unchanged from today, but it is perhaps more likely that the baseline context for considering armoring will be different – much as the Commission's direction on armoring has changed over the past twenty years as more information and better understanding has been gained regarding such projects, including their affect on the California coastline.

Another factor that is appropriate to consider when identifying a particular horizon for a seawall in an approval is the changing and somewhat uncertain nature of the context affecting coastal development decisions regarding armoring (including not only climate

change and sea level rise, but also due to legislative change, judicial determinations, etc.). A twenty-year period better responds to such potential changes and uncertainties, including to allow for an appropriate reassessment of continued armoring and its effects at that time in light of what may be differing circumstances than are present today, including with respect to its physical condition after twenty years of existence. In addition, with respect to climatic change and sea level rise specifically, the understanding of these issues should improve in the future, given better understanding of the atmospheric and oceanic linkages and more time to observe the oceanic and glacial responses to increased temperatures, including trends in sea level rise. Such an improved understanding will almost certainly affect CDP armoring decisions, including at this location. Of course it is possible that physical circumstances as well as local and/or statewide policies and priorities regarding shoreline armoring are significantly unchanged from today, but it is perhaps more likely that the baseline context for considering armoring will be different – much as the Commission's direction on armoring has changed over the past twenty years as more information and better understanding has been gained regarding such projects, including their affect on the California coastline. For these reasons, the Commission is authorizing the proposed seawall for 20 years from the date of this approval. This limitation is implemented through Special Conditions 2 and 3.

In addition, Special Condition #2 recognizes that the proposed seawall is being approved under Section 30235 to protect existing structures in danger from erosion. Any future redevelopment of the affected properties will re-evaluate current conditions and new development should be sited safely, independent of any shoreline protection. Therefore, Special Condition #2 requires that any redeveloped structures on these blufftop lots must be sited and designed to be safe for its economic life (no less than 75 years) without the seawall.

Special Condition #3 establishes a process that requires submittal of an amendment to the seawall permit with the Commission prior to the expiration of the 20 year authorization of the permit. As the blufftop lots redevelop and structures are potentially moved inland, this could reduce or eliminate the need for the seawall. Special Condition #3 therefore requires the amendment application to include the submittal of sufficient information for the Commission to consider the need and alternatives to continued authorization of a seawall at this location.

Additional conditions of approval ensure that the applicants and the Commission know when repairs or maintenance are required, by requiring the applicants to monitor the condition of the seawall annually, for three years and at three-year intervals after that, unless a major storm event occurs. The monitoring will ensure that the applicants and the Commission are aware of any damage to or weathering of the seawall and can determine whether repairs or other actions are necessary to maintain the seawall in its approved state.

Special Condition #6 requires the applicants to submit a monitoring report that evaluates the condition and performance of the seawall and overall site stability, and to submit an annual report with recommendations, if any, for necessary maintenance, repair, changes or modifications to the project. In addition, the condition requires the

applicants to perform the necessary repairs through the coastal development permit process, when required.

Special Condition #1 requires the applicants to submit final plans for the project indicating that the seawall conforms to the bluff contours and reconstructed bluff area and that demonstrate that any existing irrigation systems on the blufftop have been removed, as these would impact the ability of the seawall and other shoreline protection devices to adequately stabilize the site.

To assure the proposed shore/bluff protection has been constructed properly, Special Condition #8 has been proposed. This condition requires that, within 60 days of completion of the project, as built-plans and certification by a registered civil engineer be submitted that verifies the proposed seawall has been constructed in accordance with the approved plans. Special Condition #10 requires the applicants to submit a copy of any required permits from other local, state or federal agencies to ensure that no additional requirements are placed on the applicants that could require an amendment to this permit.

Also, due to the inherent risk of shoreline development, Special Condition #12 requires the applicants to waive liability and indemnify the Commission against damages that might result from the proposed shoreline devices or their construction. The risks of the proposed development include that the proposed shoreline devices will not protect against damage to the residences from bluff collapse and erosion. In addition, the structures themselves may cause damage either to the applicants' residences or to neighboring properties by increasing erosion of the bluffs. Such damage may also result from wave action that damages the seawall. Although the Commission has sought to minimize these risks, the risks cannot be eliminated entirely. Given that the applicants have chosen to construct the proposed shoreline devices despite these risks, the applicants must assume the risks. Special Condition #13 requires the applicants to record a deed restriction imposing the conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the property. Only as conditioned can the proposed project be found consistent with Sections 30235 and 30253 of the Coastal Act.

In summary, the applicants have documented that four of the existing primary, blufftop residential structures (which were originally constructed prior to the Coastal Act's enactment and pre-Proposition 20) are in danger from erosion and subsequent bluff collapse; the home at 219 Pacific Avenue (explained in above alternatives section) is not currently in danger. As conditioned, there are no other less damaging structural alternatives available to reduce the risk from bluff erosion. Since the proposed seawall will contribute to erosion and geologic instability over time and also deplete sand supply, occupy public beach and fix the back of the beach, Special Condition #4 requires the applicants to pay an in-lieu mitigation fee to offset this impact. Therefore, as conditioned, the Commission finds that the proposed seawall is consistent with Sections 30235 and 30253 of the Coastal Act.

4. Public Access/Recreation. In addition to the adverse impacts on local sand supply, shoreline protective devices also have significant adverse impacts to 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, on the beach. Coastal Act Sections 30210 through 30213, as well as Sections 30220 and 30221 specifically protect public access and recreation, and state:

> **Section 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.
>
> **Section 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.
>
> **Section 30212(a)**: Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects…
>
> **Section 30213**: Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. …
>
> **Section 30220**: Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.
>
> **Section 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.

Coastal Act Section 30240(b) also protects parks and recreation areas such as the adjacent public beach park. 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 project site is located on a public beach owned and administered by the City of Solana Beach and is utilized by local residents and visitors for a variety of recreational activities such as swimming, surfing, jogging, walking, surf fishing, beachcombing and sunbathing. The site is located 7 lots north of access to Fletcher Cove Beach Park, one of the City's primary public recreation areas providing access to the beach. The proposed seawall, which will be 256.3 ft. long and 2 ft. wide will be constructed on sandy beach

area owned by the public that would otherwise be available for public use and, therefore, will have both immediate and long-term adverse impacts on public access and recreational opportunities.

The proposed seawall will extend approximately 2 ft. seaward of the toe of the bluff. In addition, the beach along this area of the coast is narrow, and at high tides and winter beach profiles, the public may be forced to walk virtually at the toe of the bluff or the area could be impassable. As such, an encroachment of any amount, especially 2 ft. for a length of 256.3 feet, onto the sandy beach reduces the small beach area available for public use and is therefore a significant adverse impact. This is particularly true given the existing beach profiles and relatively narrow beach where access is sometimes only available at low tides. In addition, however, were it not for the seawall and infill structure, the seaward face of the bluff would naturally recede making additional beach area available for public use. During the approved 20 year authorization of the seawall, as the beach area available to the public is reduced, dry sandy beach will become less available seaward of the seawall such that beachgoers will not want to sit or lay a towel in this area. In addition, over time, if the surrounding unprotected bluffs are not permitted to recede, and seawalls are also constructed to the north and south, such structures will likely impede or completely eliminate public access to the beach at the subject site.

Development along the shoreline which may burden public access in several respects has been approved by the Commission. However, when impacts cannot be avoided and have been reduced to the maximum extent feasible, mitigation for any remaining adverse impacts of the development on access and public resources is required. The Commission's permit history reflects the experience that development can physically impede public access directly, through construction adjacent to the mean high tide line in areas of narrow beaches, or through the placement or construction of protective devices, seawalls, rip-rap, and revetments. Since physical impediments adversely impact public access and create a private benefit for the property owners, the Commission has found in such cases (in permit findings of CDP 4-87-161,Pierce Family Trust and Morgan; CDP 6-87-371, Van Buskirk; CDP 5-87-576, Miser and Cooper; CDP 3-02-024, Ocean Harbor House; 6-05-72, Las Brisas, 6-07-133/Li, 6-07-134/Caccavo, 6-03-33-A5/Surfsong, 6-08-73/DiNoto, et.al and 6-08-122/Winkler) that a public benefit must arise through mitigation conditions in order for the development to be consistent with the access policies of the Coastal Act, as stated in Sections 30210, 30211, and 30212.

Appropriate mitigation for the subject development would be creation of additional public beach area in close proximity to the impacted beach area. However, all of the beach areas in Solana Beach are already in public ownership such that there is not private beach area available for purchase. In addition to the more qualitative social benefits of beaches (recreational, aesthetic, habitat values, etc.), beaches provide significant direct and indirect revenues to local economies, the state, and the nation. There is little doubt that the loss of 3,927 sq. ft. of sandy beach in an urban area such as Solana Beach represents a significant impact to public access and recreation, including a loss of the social and economic value of this recreational opportunity. The question becomes how to

adequately mitigate for these qualitative impacts on public recreational beach use and in particular, how to determine a reasonable value of this impact to serve as a basis for mitigation.

In the past ten to fifteen years, the Commission has approved the construction of shoreline devices in San Diego County when they are necessary to protect an existing primary structure and when mitigation is provided according to a formula that the Commission developed to address some of the more easily quantifiable effects on local sand supply, as required by Section 30235 of the Coastal Act. In each of those decisions, the Commission recognized that the mitigation in the form of an in-lieu fee paid for the purchase of sand to offset the sand lost by the shoreline structure, provided some, but not all mitigation, associated with the adverse impacts of shoreline devices.

In recent years, the Commission has sought additional ways to quantify the adverse impacts to public access and recreation that result from shoreline protective devices and, thereby, develop more appropriate mitigation for those impacts. However, except in a few cases, the Commission has been unable to adequately quantify those impacts and thus has been unable to accurately evaluate the economic loss to public access/recreation associated with necessary shoreline protection projects.

In 2005, the Commission contracted with Dr. Phillip King, Chair of the Economics Department at San Francisco State University, to perform an economic analysis of the loss of recreational values associated with a proposed seawall to be located adjacent to Fletcher Cove Beach Park approximately 7 to 12 lots south of the subject site (Ref. CDP #6-05-92/Las Brisas). Since that time, Commission staff have attempted to use Dr. King's study as a basis for evaluating the seawall project impacts in Solana Beach and Encinitas, but because the character of the beach at Fletcher Cove is different in terms of accessibility, number of users and width of beach, and several other variables, staff has concluded that Dr. King's study cannot be used as a basis for determining impacts to the subject site. For instance, Dr. King estimated the number of beach users at Fletcher Cove on what he described as a "flawed" parking study specific to the Fletcher Cove parking lot.

However, as a filing requirement for seawall applications, applicants have been asked to address the adverse impacts of shoreline devices on public access and recreation opportunities and to consider ways those impacts could be mitigated. Mitigation might be in the form of a particular public access or recreational improvement to be located in close proximity to the project or might involve an in-lieu fee to be used sometime in the future for a public access/recreation improvement. In this case, because an established mitigation program is not in place, the applicant is proposing that the Commission make use of the methodology recently utilized for an in-lieu fee program adopted by the City of Solana Beach that addresses impacts of shoreline devices on public access/recreation and on sand supply.

In June of 2007, the City of Solana Beach adopted an interim in-lieu fee program to mitigate the adverse impacts associated with shoreline devices (Ref. Resolution 2007-

042, City of Solana Beach). The program has been designed as "interim" in that until the City completes and the Commission certifies as part of an LCP submittal (see below) an economic study that more precisely determines the economic costs, the ultimate costs to the property are unknown. As such, the City's program requires the $1,000.00 per linear foot fee be assessed in the interim and requires an applicant to agree to modifications to the fee once the economic study is complete and certified and a more site specific fee is assessed. A draft of the City's economic study is now available. According to the City's program, the monies collected through the mitigation program will be directed for City use for public access and recreational projects. The applicants have proposed payment into the City's program as mitigation for adverse impacts of the proposed development on public access and recreation.

In the case of several recent seawall projects in the City of Solana Beach, the Commission has accepted the applicants' proposals for interim mitigation pursuant to the City of Solana Beach's program. As such, the recent seawall projects (Ref. CDP Nos. 6-07-134/Caccavo, 6-03-33-A5/Surfsong, 6-08-73/DiNoto, et. al and 6-08-122/Winkler) approved by the Commission in Solana Beach have been conditioned to require the payment of $1,000 per linear ft. to the City of Solana Beach as an interim temporary fee until the City completes and adopts and the Commission certifies its economic study which is intended to more accurately assess the financial impacts of shoreline devices on public access and recreation opportunities. Each of these recent coastal development permits for seawalls were also conditioned to require the applicants to apply for an amendment to their coastal development permit within 6 months of the Commission's certification of the City's economic study in order to reassess the in-lieu mitigation fee.

The City of Solana Beach continues to work on the study and has submitted a draft Land Use Plan) to the Commission, which is anticipated to be reviewed by the Commission sometime later in 2011. The City's mitigation program to address loss of sand and public access/recreation will be included as part of the LCP, which the Commission will evaluate when it reviews the City's draft LCP. The Commission's acceptance, in this case, of the applicants' proposed mitigation for the loss of public access and recreational opportunities associated with the subject seawall should not be seen as Commission approval of the City's mitigation plan or of the City's economic study, as that plan is not in front of the Commission for evaluation at this time. Instead, due to the lack of sufficient information concerning the economic loss to public access/recreation from the proposed seawall, the Commission agrees to accept the applicants' proposal, and requires them to pay the City's interim fee, until such time that the City completes its economic study and the Commission has certified the City's mitigation program through adoption of an LCP. In order to ensure that any subsequent modification of this mitigation fee is consistent with the Chapter 3 policies of the Coastal Act, the Commission imposes Special Condition #5, requiring the applicants to submit an application for an amendment to this permit to the Commission if the final mitigation fee certified as part of the LCP is different than the proposed $256,300.00 interim fee. The appropriateness of any reduction in the fee amount will be addressed by the Commission at that time to assure compliance with the Coastal Act and the City's LCP.

The City's draft economic study provides information such as the number of beach users throughout the year, what the economic value of a "day at the beach" is, quantification of beach area lost over time and other information which can assist the Commission to more accurately estimate the economic loss associated with seawall devices. However, while the Commission is accepting payment into the City's program with this application, the Commission has not yet had the opportunity to review and address the City's mitigation program as a whole in the context of the LCP and as such, makes it clear that in approving the applicants' proposed mitigation, the Commission is not approving the City's interim ordinance or the findings of the as yet unfinished economic study.

This stretch of beach has historically been used by the public for access and recreation purposes. Special Condition #9 acknowledges that the issuance of this permit does not waive the public rights that may exist on the property. The seawall may be located on State Lands property, and as such, Special Condition #11 requires the applicant to obtain any necessary permits or permission from the State Lands Commission to perform the work.

In addition, the use of the beach or public parking areas for staging of construction materials and equipment can also impact the public's ability to gain access to the beach. The applicants have submitted a preliminary construction staging and material storage plan for the subject development. Beach access to the site will occur via Fletcher Cove, which is located approximately 7 lots south of the subject site. Special Condition #5 has been attached to mitigate the impact of such construction activities on public parking areas and public access. Special Condition #7 prohibits the applicants from storing vehicles on the beach overnight, using any public parking spaces within Fletcher Cove overnight for staging and storage of equipment, and prohibits washing or cleaning construction equipment on the beach or in the parking lot. The condition also prohibits construction on the beach during weekends and holidays and during the summer months (between Memorial Day to Labor Day) of any year.

Comparison to other Public Access/Recreation Mitigations.

In October 2004, the Commission approved the construction of a 585 ft. long seawall fronting a 172 unit condominium complex in Monterey which was estimated to impact 43,500 sq. ft. of beach area over a 50 year period. To mitigate the adverse impacts of the seawall on public access and recreational opportunities, and in lieu of purchasing a comparable area of beach, the Commission required a mitigation fee of $5,300,000.00. This fee was derived from the cumulative 50 year recreational beach impact based on an estimated annual value of the beach area lost of $4,148. Again however, for the purposes of comparison for this review (understanding the methodologies of deriving the fee are different for each), if this site specific loss of recreational value ($5,300,000.00) were equated to its per sq. ft. of impact, the fee would break down to $121.83 per sq. ft. over 50 years. When equated to its wall length impact, comparing it to the proposed mitigation, the fee would break down to $9,059.83 per linear foot over 50 years, or $181.20 per linear foot per year.

In 2005, the Commission approved the construction of a 120 ft.-long, 2 ½ ft. wide seawall below the Las Brisas condominium complex in Solana Beach. The seawall was located below the dripline of the bluff and involved the fill of a 410 sq. ft. void. Therefore, the land area impacted over the 22 year design life of the seawall was estimated to be 1,364.8 sq. ft. After hiring an economist, Dr. Phillip King, to perform an economic analysis of the lost recreational value associated with the construction of the seawall (Ref. CDP# 6-05-72/Las Brisas), the Commission determined that the applicant should pay a mitigation fee of $248,680.72. The fee was designed to be used for purchase of beach land and/or recreational beach park amenities. For the purposes of comparison, if this site specific loss of recreational value ($248,680.72) were equated to its per sq. ft. of impact, the fee would break down to $182.21 per sq. ft. (based on $248, 680.72 mitigation fee divided by 1,364.8 sq. ft of impact area). So in the case of Las Brisas, the mitigation fee was comparatively $182.21 per sq. ft. over 22 years. When equated to its wall length impact, comparing it to the proposed mitigation, the fee would break down to $2,072.34 per linear foot over 22 years, or $94.10 per linear foot per year.

In June 2010, the Commission approved construction of a 57 ft. long seawall fronting a single-family house in Encinitas which was estimated to impact 801 sq. ft. of beach area over a 20 year period. To mitigate the adverse impacts of the seawall on public access and recreational opportunities, and in lieu of purchasing a comparable area of beach, the Commission required the applicant to pay a mitigation fee based on a current per sq. ft. real estate appraisal of the blufftop lot (without improvements) multiplied by 801 sq. ft. of lost public beach. This method was selected due to a lack of specific recreational empirical data necessary to determine the value of the lost public beach. While the value of the public beach is likely to be higher than the value of a blufftop parcel because of the public benefit derived from its use, the Commission determined that the unimproved blufftop appraisal was appropriate until a more accurate method of determining economic value of the loss to public access and recreational opportunities is identified in Encinitas.

While none of the methodologies used in the above-cited examples of in-lieu mitigation for the adverse impacts of a seawall can be applied directly to the subject development, it does identify a range of mitigation values that have been applied in other cases. In each case, the Commission found that the mitigation did not fully mitigate for the loss of the public beach and, thereby, the loss of public access and recreational opportunities. In the case of the subject seawall, the loss of 3,927 sq. ft. of public beach cannot be fully offset by the required mitigation fee since the beach itself cannot be replaced. However, until a more direct form of mitigation is found, the Commission can accept the required in-lieu fee mitigation. The mitigation monies provide the opportunity to potentially purchase or contribute to the purchase of privately-owned beach or bluff top properties along the Solana Beach shoreline from which threatened structures could be removed along with the need for shoreline protective devices. In addition, the monies can be used to purchase privately-owned beach or beach-fronting property if it should become available for purchase that could be used for recreational and beach park amenities which will serve to offset the adverse impacts that result from the installation of the subject seawall. In addition, the monies can be used to purchase or assist with the purchase of public access or recreation uses within the City of Solana Beach.

Therefore, in order to adequately mitigate the loss of public access and recreational opportunities that will occur over the 20 years for which this seawall is authorized, Special Condition #5 has been attached which requires the applicant to pay a mitigation fee based on a per linear foot recreational value of seawall impacts to the City of Solana Beach that will be used for restoration and/or enhancement of public access and recreational opportunities along the Solana Beach shoreline, or acquisition of property. Only with this required mitigation can the proposed development be found to be consistent with the public access and recreation policies of the Coastal Act.

With Special Conditions that require mitigation for the adverse impacts to public access and recreation and authorization from the State Lands Commission, impacts to the public will be minimized to the greatest extent feasible. Thus, as conditioned, the Commission finds the project consistent with the public access and recreation policies of the Coastal Act.

5. Visual Resources/Alteration of Natural Landforms. Section 30240 (b) of the Coastal Act is applicable and states:

> (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.

In addition, Section 30251 of the Coastal Act states, in part:

> 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 . . .

As stated above, the proposed construction will occur at the toe of a coastal bluff and on the public beach. The bluff face to the north of the proposed shoreline device has seacave fills and existing seawalls beginning approximately 100 ft. north and several seacaves and seacave fills occur south of the site. These seacave fills have been colored and textured to match the natural bluff. The proposed 256.3 ft.-long seawall has the potential for adverse impacts on visual resources of the existing natural bluffs. Following construction, the natural appearance of the bluffs will be substantially altered. To mitigate the visual impacts of the proposed seawall, the applicants propose to color and texture the seawall. The visual treatment proposed is similar to the visual treatment approved by the Commission in recent years for shoreline devices along the Solana Beach shoreline. (ref. CDP #6-02-84/Scism; 6-02-02/Gregg, Santina; 6-03-33/Surfsong; 6-04-83/Johnson, Cumming; 6-07-134/Brehmer, Caccavo). The technology in design of seawalls has improved dramatically over the last two decades. Today seawalls typically

involve sculpted and colored concrete that upon completion closely mimic the natural surface of the lower bluff face. In the case of the subject seawall request, the specific design methods for coloring and texturing the seawall have not as yet been submitted. It is also not clear whether the concrete backfill just above the seawall is also proposed to be colored and textured to closely match the natural bluff. Therefore, Special Condition #1 requires the submittal of detailed plans, color samples, and information on construction methods and technology for the surface treatment of the seawall.

In addition, to address other potential adverse visual impacts, Special Condition #6 has been attached to require the applicant to monitor and maintain the proposed new seawall in its approved state. In this way, the Commission can be assured that the proposed structures will be maintained so as to effectively mitigate their visual prominence.

Therefore, as conditioned, the Commission finds that potential visual impacts associated with the proposed development have been reduced to the maximum extent feasible and the proposed development will include measures to prevent impacts that would significantly degrade the adjacent park and recreation area (Fletcher Cove Beach Park and general beach area). Thus, with the proposed conditions, the project is consistent with Sections 30240 and 30251 of the Coastal Act.

6. Protection of Ocean Waters/BMP's. Section 30230, 30231 and 30232 of the Coastal Act require that new development be designed so that ocean waters and the marine environment be protected from polluted runoff and accidental spill of hazardous substances:

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.

Section 30232

Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

The construction of the proposed structures will occur on the public beach within a few feet of ocean waters. Construction activities will only occur at low tides when access along the beach is available. However, at high tides, ocean waters will extend up to the face of the seawall such that the seawall at times will be subject to wave action. The method of construction of the seawall and repairs to the existing seawall involves the multiple application of shotcrete that is sprayed (at high pressure) over the face of the seawall structure. This shotcrete material will eventually be sculpted and colored to closely match the appearance of the natural bluffs. According to the engineers for similar seawall projects in Solana Beach, approximately 10 to 15% of this shotcrete (concrete) material rebounds off the structure onto the beach as it is being applied. Because the material is wet, the applicants' representative indicates it cannot be picked up until it hardens. The Commission is aware that in previously constructed seawalls along the Solana Beach shoreline, this shotcrete "rebound" has not been removed before the ocean waters rise and mix with the wet shotcrete material. After the return of low tides, any remaining hardened shotcrete is then picked up by the construction crews and removed from the beach. According to the Commission's water quality division and staff of the State Regional Water Quality Control Board, San Diego Region, the mixing of this rebound shotcrete with ocean waters is a violation of the State Water Quality Act since it would involve the unauthorized discharge of a pollutant into ocean waters.

Along other sections of the coast, shotcrete is applied without the associated rebound problems. Contractors place tarps on the beach to collect material that drops from the wall. They also use backdrops or drapes along the face of the bluff to contain splatter and rebound and prevent scatter of shotcrete material all around the beach. These and other techniques are possible ways to control shotcrete debris and prevent discharge into the marine environment.

Special Condition #7 is attached which requires that during the construction of the project, "the permittee shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion". This is a standard requirement for all seawall projects approved by the Commission. However, based on information supplied by engineers of similar seawall projects in Solana Beach, this special condition has not effectively served to prohibit the contamination of ocean waters by rebounded shotcrete. To assure that the subject development will not result in the pollution of the ocean waters, Special Condition #14 has been attached. Special Condition #14 requires the applicant to submit a Polluted Runoff Control Plan that incorporates structural and nonstructural Best Management Practices (BMPs), for Executive Director approval, for the construction of the proposed seawall. Construction methods must be devised to assure this rebound shotcrete material does not mix with or pollute ocean waters. With appropriate BMPs, the potential for this polluted material

from the site making its way into the ocean will be eliminated. Therefore, as conditioned, the Commission finds the proposed development consistent with the marine and water quality protection policies of the Coastal Act.

7. Local Coastal Planning. Section 30604(a) also requires that a coastal development permit shall be issued only if the Commission finds that the permitted development will not prejudice the ability of the local government to prepare a Local Coastal Program (LCP) in conformity with the provisions of Chapter 3 of the Coastal Act. In this case, such a finding can be made.

The City of Solana Beach has prepared a draft LCP Land Use Plan (LUP). In preparation of its LCP, the City of Solana Beach is faced with many of the same issues as the City of Encinitas, located immediately north of Solana Beach, whose LCP was certified by the Commission in March 1995. The City of Encinitas' LCP includes the intent to prepare a comprehensive plan to address the coastal bluff recession and shoreline erosion problems in the City. The plan will include, at a minimum, bluff top setback requirements for new development and redevelopment; alternatives to shore/bluff protection such as beach sand replenishment, removal of threatened portions of a residence or the entire residence or underpinning existing structures; addressing bluff stability and the need for protective measures over the entire bluff (lower, mid and upper); impacts of shoreline structures on beach and sand area as well as mitigation for such impacts; impacts for groundwater and irrigation on bluff stability and visual impacts of necessary/required protective structures.

The City of Solana Beach LCP should also address these items in the context of a comprehensive approach to management of shoreline resources. As shoreline erosion along the coast rarely affects just one individual property, it is imperative that a regional solution to the shoreline erosion problem be addressed and solutions developed to protect the beaches. Combined with the decrease of sand supply from coastal rivers and creeks, armoring of the coast will continue to erode beaches without their being replenished. This will, in turn, decrease the public's ability to access and recreate on the shoreline.

As previously described, the draft LUP prepared by the City includes provisions for mitigating the adverse impacts of seawalls on public access, recreational use and sand supply. The Commission has not yet approved the City’s draft LUP. Therefore, the Commission’s acceptance of the applicants’ proposed mitigation for the loss of public access and recreational opportunities associated with the subject seawall should not be seen as Commission approval of the City’s mitigation plan or of the City’s economic study.

In the case of the proposed project, site-specific geotechnical evidence has been submitted indicating that four of the existing structures at the top of the bluff are in danger, and that the middle property should be protected in order to minimize additional impacts to the adjacent properties. The Commission feels strongly that approval of the proposed project should not send a signal that there is no need to address a range of alternatives to armoring for existing development. Planning for comprehensive protective measures should include a combination of approaches including limits on

future bluff development, ground and surface water controls, and beach replenishment. Although the erosion potential on the subject site is such that action must be taken promptly, decisions regarding future shoreline protection should be done through a comprehensive planning effort that analyzes the impact of such a decision on the entire City shoreline.

The location of the proposed seawall is designated for Open Space Recreation in the City of Solana Beach Zoning Ordinance and General Plan, and was also designated for open space uses under the County LCP. As conditioned, the subject development is consistent with these requirements. Based on the above findings, the proposed development is consistent with the Chapter 3 policies of the Coastal Act and will not prejudice the ability of the City of Solana Beach to complete a certifiable local coastal program. However, these issues of shoreline planning will need to be addressed in a comprehensive manner in the future through the City's LCP certification process

8. Consistency with the California Environmental Quality Act (CEQA).
Section 13096 of the Commission's Code of Regulations requires Commission approval of Coastal Development Permits to be supported by a finding showing the permit, as conditioned, to be consistent with any applicable requirements of the California Environmental Quality Act (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 proposed project has been conditioned in order to be found consistent with the Chapter 3 policies of the Coastal Act. Mitigation measures, including conditions addressing sand supply mitigation, public access and recreation mitigation, encroachment on public property/impacts to public trust lands, extension of seawall authorization/seawall removal and project monitoring/maintenance program will minimize all adverse environmental impacts. As conditioned, there are no feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment. Therefore, the Commission finds that the proposed project is the least environmentally-damaging feasible alternative and is consistent with the requirements of the Coastal Act to conform to CEQA.

STANDARD CONDITIONS:

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

2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development

shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

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

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

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

(G:\San Diego\Reports\2009\6-09-033 Garber, et al Stf Rpt.doc)

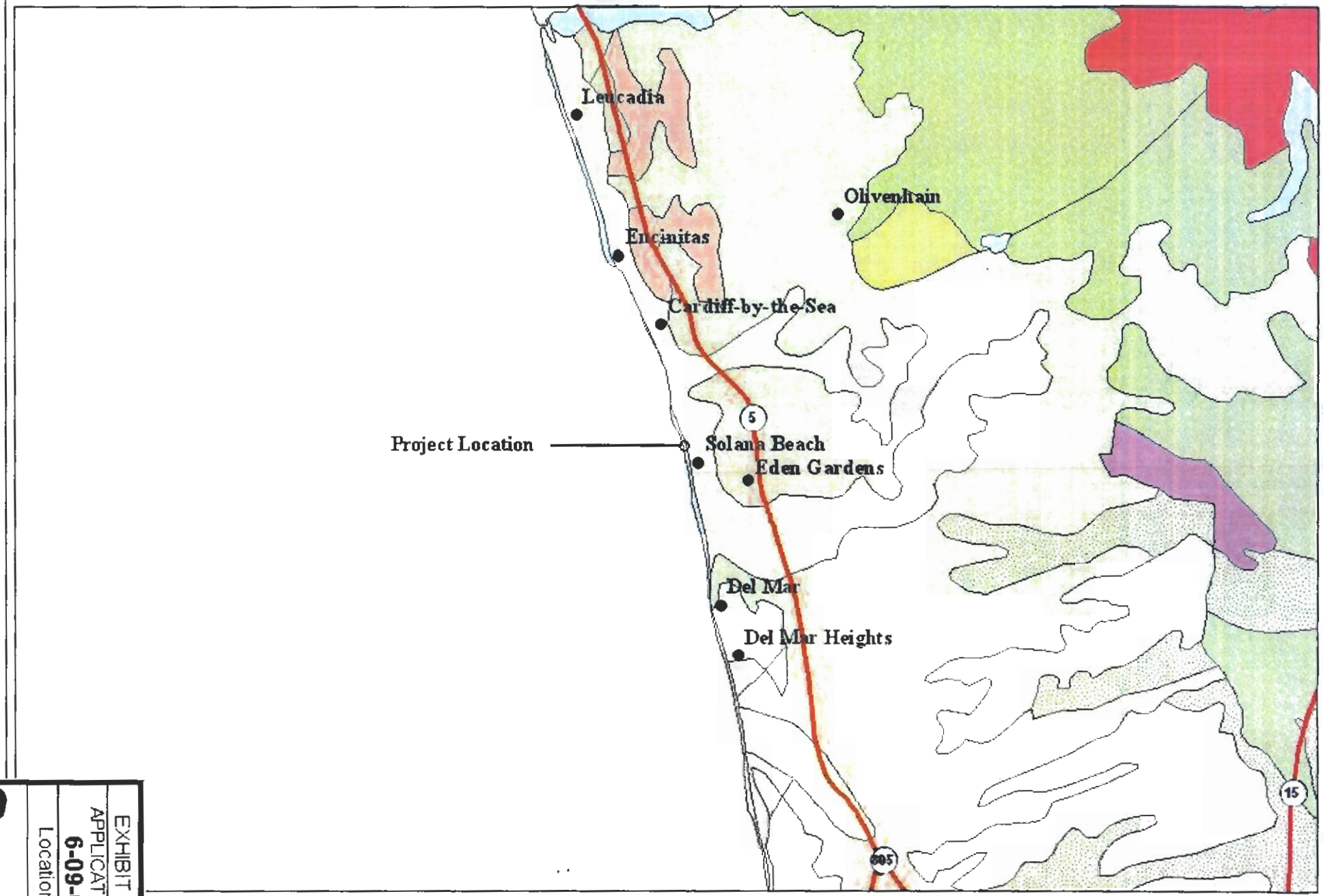
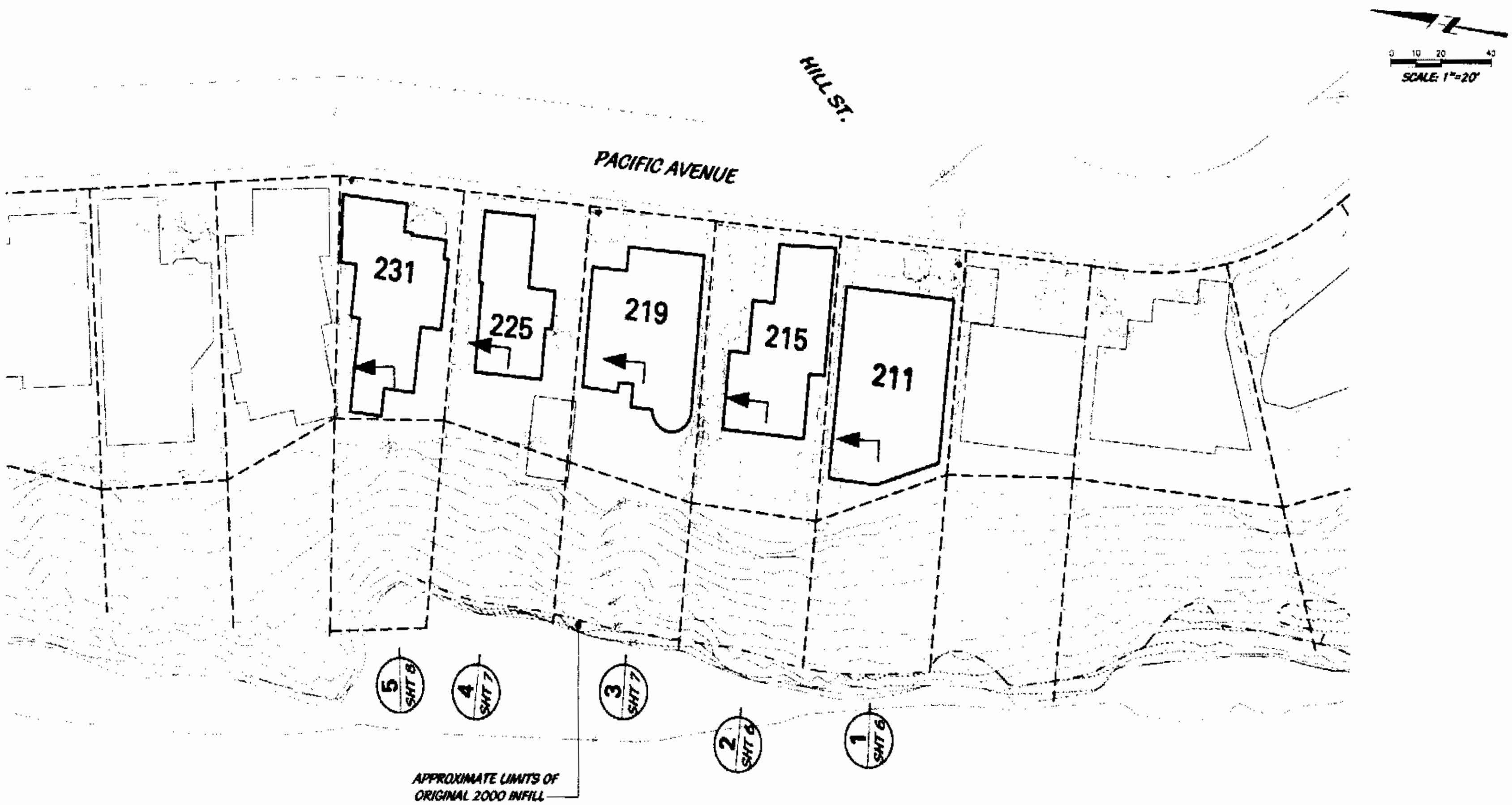


EXHIBIT NO. 1
APPLICATION NO.
6-09-033
Location Map

California Coastal Commission



NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY

FOR REDUCED PLANS

COASTAL COMMISSION PERMIT NO.

TERRACOSTA CONSULTING GROUP
ENGINEERS & GEOLOGISTS
3890 MURPHY CANYON ROAD, SUITE 200
SAN DIEGO, CALIFORNIA 92123
(858) 573-6900

REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA — No. 23792 Exp. 12/31/11

SANTA FE IRRIGATION DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	APP'D DATE	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH — ENGINEERING DEPARTMENT	DRAWING NO.
By: District Engineer Date:	By: WALTER F. CRAMPTON Date: 2-18-10 R.C.E. 23792 Exp. 12/31/11			By: Date: By: Date:	By: Date: Mohammad Sammak, City Engineer R.C.E. 37146 Exp. 6/30/10	SEE DETAILED BLOCK ABOVE LEFT	EXISTING CONDITION FOR: 211 THRU 231 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT	SBGR- SHEET 4 OF 13

EXHIBIT NO. 3
APPLICATION NO.
6-09-033
Site Plan
California Coastal Commission

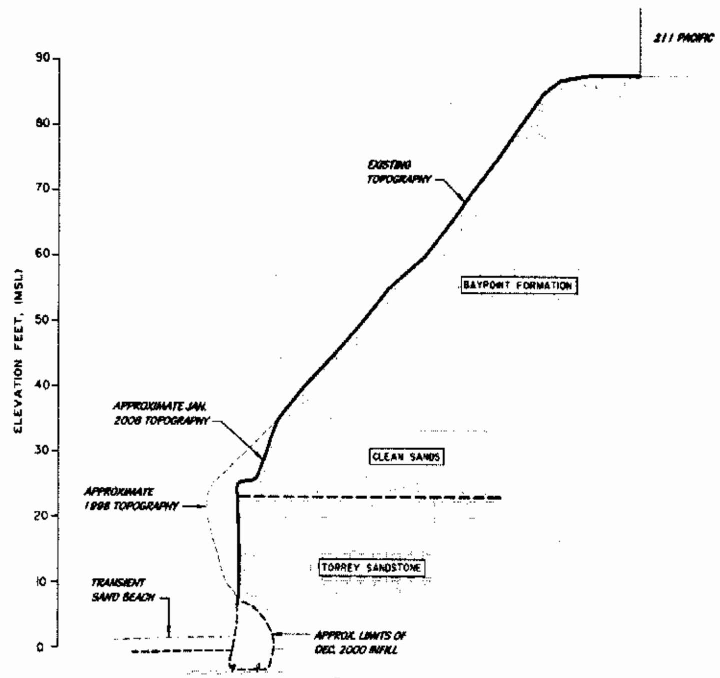
EXHIBIT NO. 4

APPLICATION NO.

6-09-033

Seawall Plans

California Coastal Commission



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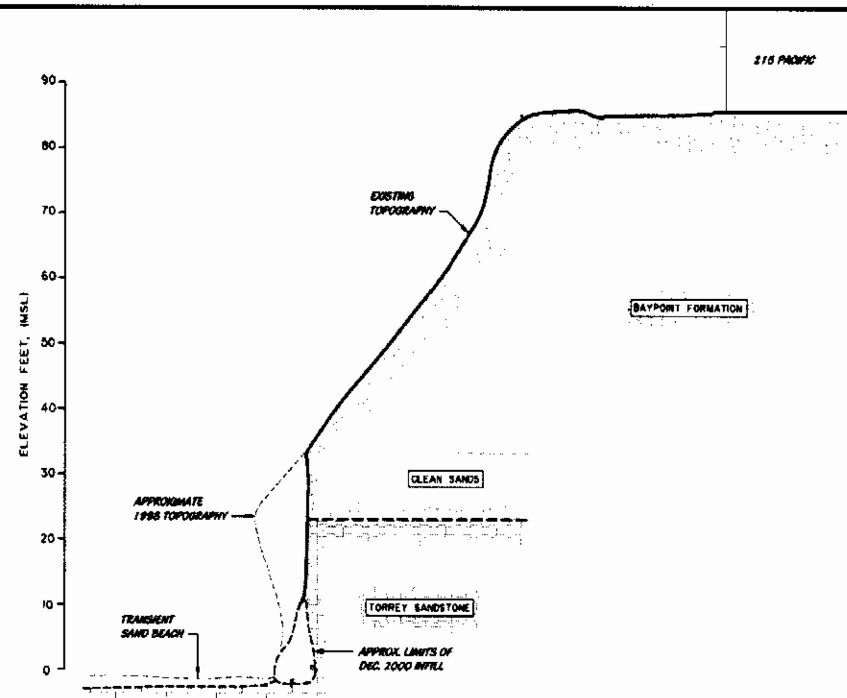
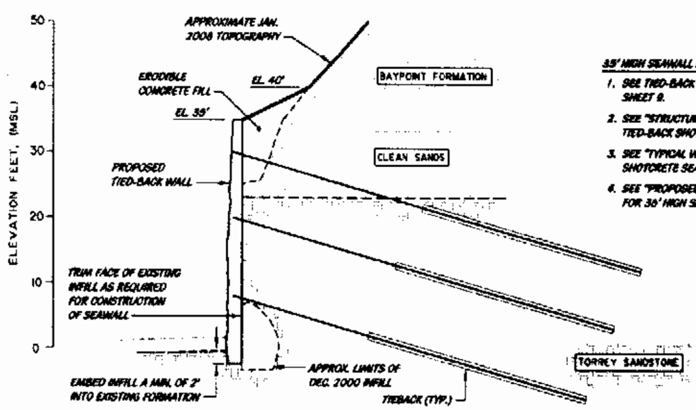
1 SH 4



EXISTING SECTION
216 PACIFIC AVENUE
SCALE: 1"=10' (HORIZ. & VERT.)
2 SH 4

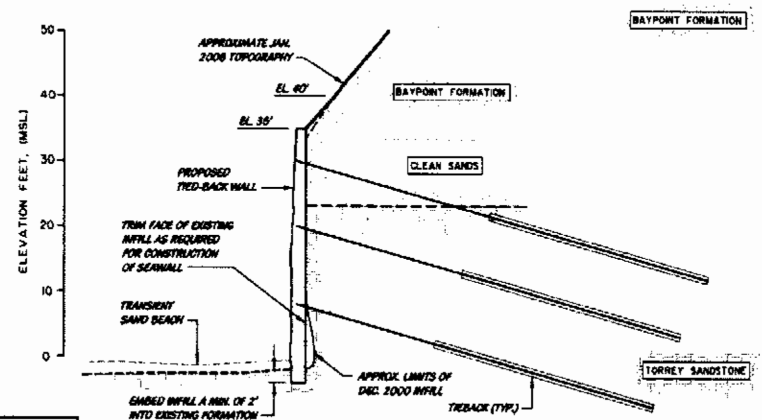


PROPOSED SECTION
211 PACIFIC AVENUE
SCALE: 1"=10' (HORIZ. & VERT.)
1 SH 5

35' HIGH SEAWALL NOTES:

1. SEE TIED-BACK SHOTCRETE SEAWALL PROFILE ON SHEET 9.
2. SEE "STRUCTURAL SECTION FOR 35' HIGH TIED-BACK SHOTCRETE WALL" ON SHEET 10.
3. SEE "TYPICAL WALL DRAIN SECTION FOR 35' HIGH SHOTCRETE SEAWALL" ON SHEET 9.
4. SEE "PROPOSED SACRIFICIAL MARKER-DETAIL FOR 35' HIGH SHOTCRETE SEAWALL" ON SHEET 9.

NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



PROPOSED SECTION
216 PACIFIC AVENUE
SCALE: 1"=10' (HORIZ. & VERT.)
2 SH 5

BAYPONT FORMATION

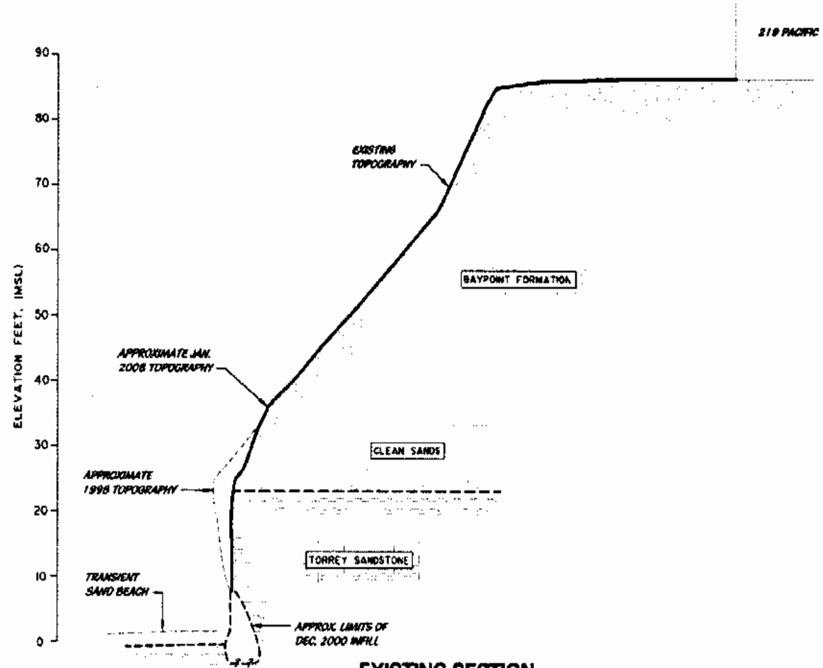
TERRACOSTA CONSULTING GROUP
ENGINEERS & GEOLOGISTS
3890 MURPHY CANYON ROAD, SUITE 200
SAN DIEGO, CALIFORNIA 92123
(858) 573-6900

REGISTERED PROFESSIONAL ENGINEER — WALTER F. CRAMPTON — No. 23792 — Exp. 12/31/11 — STATE OF CALIFORNIA

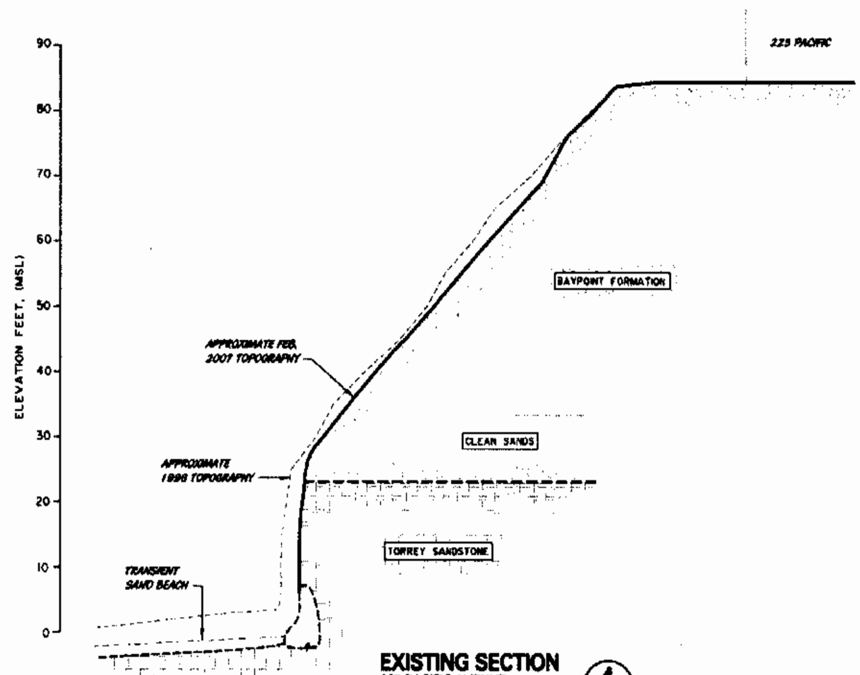
COASTAL COMMISSION PERMIT NO. ________

BENCH MARK
DESCRIPTION: SFD 2-1/2" BRASS DISK SET IN CONC. STAMPED "LX 106 1968"
LOCATION: IN SOLANA BEACH ALONG HWY 101 ... [illegible]
ELEV: 43.79 DATUM: M.S.L.

SOLANA BEACH FIRE DEPARTMENT	SANTA FE IRRIGATION DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES / APPD DATE	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH — ENGINEERING DEPARTMENT	DRAWING NO.
By: ____ Fire Chief Date	By: ____ District Engineer Date	RFT Drawn By; By: WALTER F. CRAMPTON Date: 2-18-10; R.C.E. 23792 Exp. 12/31/11		By: ____ Date: ____; By: ____ Date: ____	By: ____ Date: ____; Mohammad Sammak, City Engineer; R.C.E. 37146 Exp. 6/30/10	SEE DETAILED BLOCK ABOVE LEFT	CROSS SECTIONS FOR: 211 THRU 231 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT	SBGR- SHEET 6 OF 13



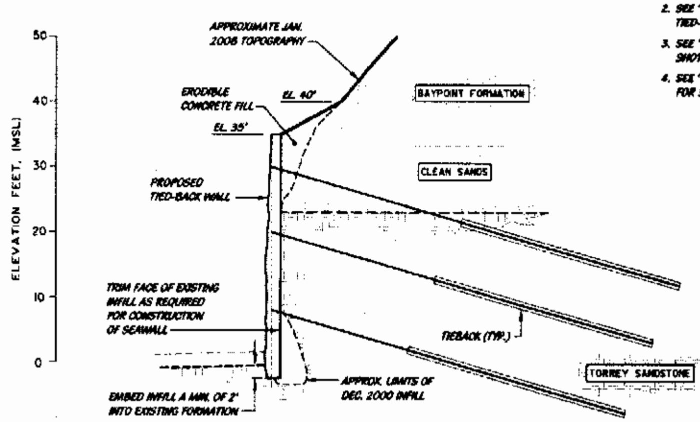
EXISTING SECTION
219 PACIFIC AVENUE
SCALE: 1"=10' (HORIZ. & VERT.)
3 / SH 4



EXISTING SECTION
225 PACIFIC AVENUE
SCALE: 1"=10' (HORIZ. & VERT.)
4 / SH 4

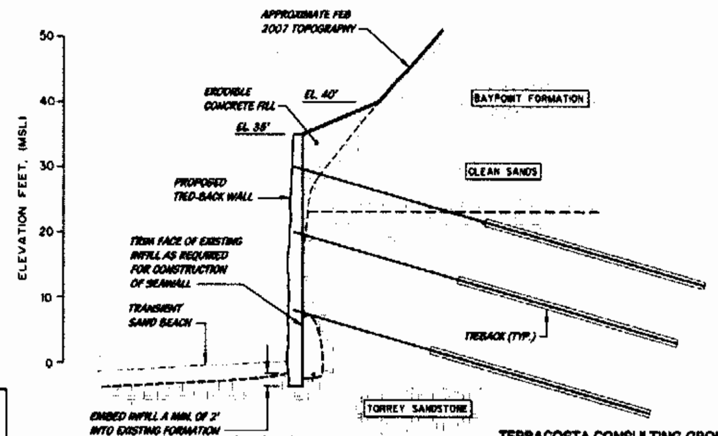
35' HIGH SEAWALL NOTES:

1. SEE TIED-BACK SHOTCRETE SEAWALL PROFILE ON SHEET 9.
2. SEE "STRUCTURAL SECTION FOR 35' HIGH TIED-BACK SHOTCRETE WALL" ON SHEET 10.
3. SEE "TYPICAL WALL DRAIN SECTION FOR 35' HIGH SHOTCRETE SEAWALL" ON SHEET 9.
4. SEE "PROPOSED SACRIFICIAL MARKER-DETAIL FOR 35' HIGH SHOTCRETE SEAWALL" ON SHEET 9.



PROPOSED SECTION
219 PACIFIC AVENUE
SCALE: 1"=10' (HORIZ. & VERT.)
3 / SH 5

NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



PROPOSED SECTION
225 PACIFIC AVENUE
SCALE: 1"=10' (HORIZ. & VERT.)
4 / SH 5

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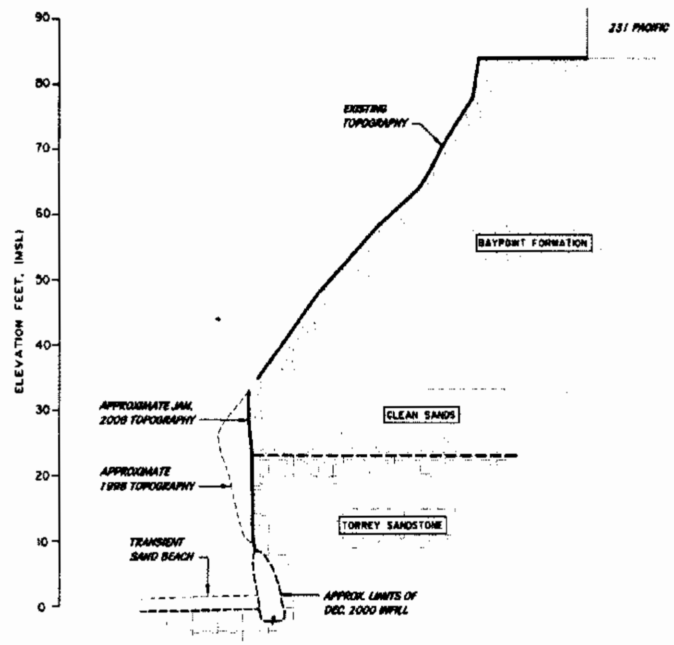
ENGINEERS & GEOLOGISTS
3890 MURPHY CANYON ROAD, SUITE 200
SAN DIEGO, CALIFORNIA 92123
(858) 573-6900

REGISTERED PROFESSIONAL ENGINEER — WALTER F. CRAMPTON — No. 23792 — Exp. 12/31/11 — CIVIL — STATE OF CALIFORNIA

BENCH MARK
DESCRIPTION: ... BRASS DISK ... STAMPED "LJ 108 1968"
LOCATION: IN SOLANA BEACH, ALONG HWY 101 ... [illegible]
ELEV.: 63.78 DATUM: M.S.L.

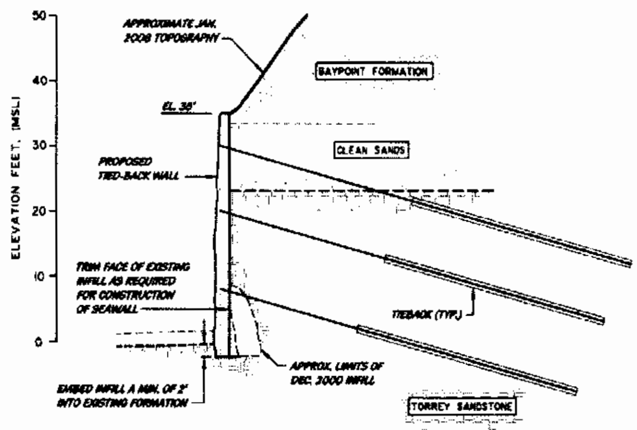
COASTAL COMMISSION PERMIT NO. ______

SOLANA BEACH FIRE DEPARTMENT	SANTA FE IRRIGATION DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES / APP'D DATE	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH — ENGINEERING DEPARTMENT	DRAWING NO.
By: Fire Chief Date ____	By: District Engineer Date:	RF Drawn By / By: WALTER F. CRAMPTON Date: 2-18-10 / R.C.E. 23792 Exp. 12/31/11		By: ____ Date: ____ / By: ____ Date: ____	By: ____ Date: ____ Mohammed Sammak, City Engineer R.C.E. 37146 Exp. 6/30/10	SEE DETAILED BLOCK ABOVE LEFT	CROSS SECTIONS FOR: 211 THRU 231 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT	SBGR- SHEET 7 OF 13



EXISTING SECTION
231 PACIFIC AVENUE
SCALE: 1"=10' (HORIZ. & VERT.)

5 / SH 4



PROPOSED SECTION
231 PACIFIC AVENUE
SCALE: 1"=10' (HORIZ. & VERT.)

5 / SH 5

35' HIGH SEAWALL NOTES:

1. SEE TIED-BACK SHOTCRETE SEAWALL PROFILE ON SHEET 9.
2. SEE "STRUCTURAL SECTION FOR 35' HIGH TIED-BACK SHOTCRETE WALL" ON SHEET 10.
3. SEE "TYPICAL WALL DRAIN SECTION FOR 35' HIGH SHOTCRETE SEAWALL" ON SHEET 9.
4. SEE "PROPOSED SACRIFICIAL MARKER-DETAIL FOR 35' HIGH SHOTCRETE SEAWALL" ON SHEET 9.

NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY

0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

BENCH MARK

DESCRIPTION: STD 2-1/2" BRASS DISK S.D. CO. ENGR. STAMPED "LJ 108 1988"

LOCATION: AT SOLANA BEACH, ALONG HWY 101 [illegible]

ELEV.: 65.78 DATUM: M.S.L.

COASTAL COMMISSION PERMIT NO. ____________

TERRACOSTA CONSULTING GROUP
ENGINEERS & GEOLOGISTS
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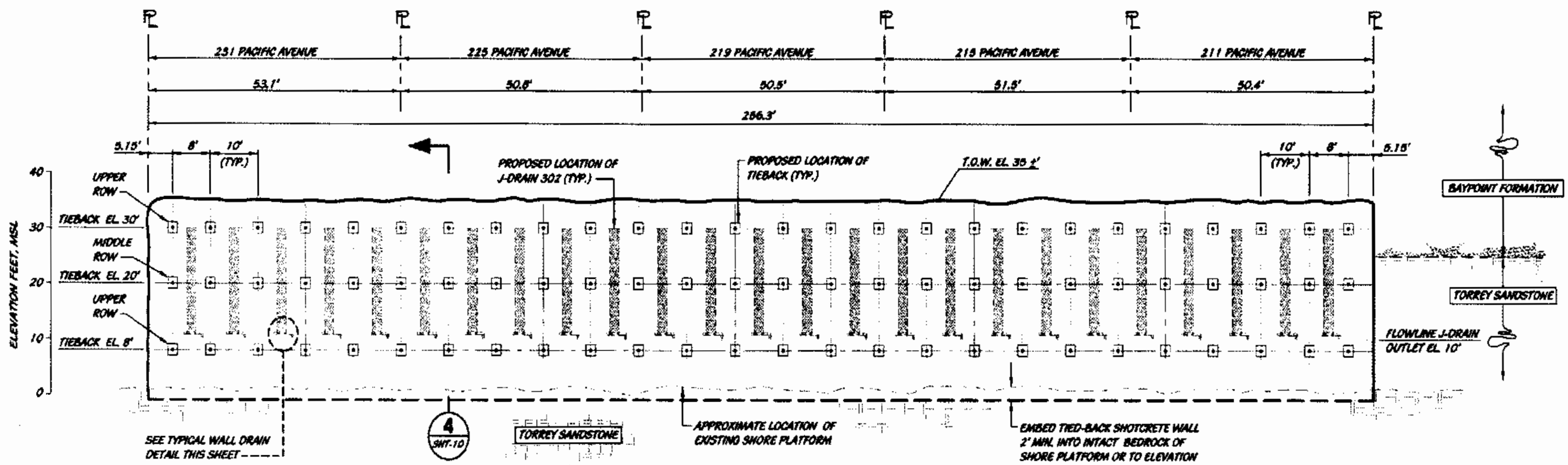
SAN DIEGO, CALIFORNIA 92123
(858) 573-6900

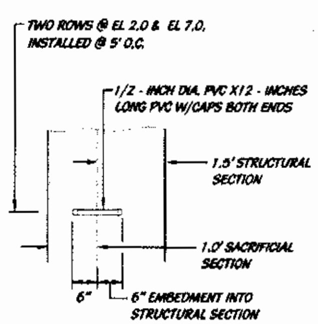
REGISTERED PROFESSIONAL ENGINEER — WALTER F. CRAMPTON — No. 23792 — Exp. 12/31/11 — STATE OF CALIFORNIA

SOLANA BEACH FIRE DEPARTMENT	SANTA FE IRRIGATION DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES / APPR'D DATE	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH — ENGINEERING DEPARTMENT	DRAWING NO.
By: Fire Chief Date	By: District Engineer Date:	RF Drawn By; By: WALTER F. CRAMPTON Date: 2-18-10; R.C.E.: 23792 Exp. 12/31/11		By: ____ Date: ____; By: ____ Date: ____	By: ____ Date: ____; Mohammad Sammak, City Engineer; R.C.E.: 37146 Exp. 6/30/10	SEE DETAILED BLOCK ABOVE LEFT	CROSS SECTIONS FOR: 211 THRU 231 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT	SBGR- SHEET 8 OF 13



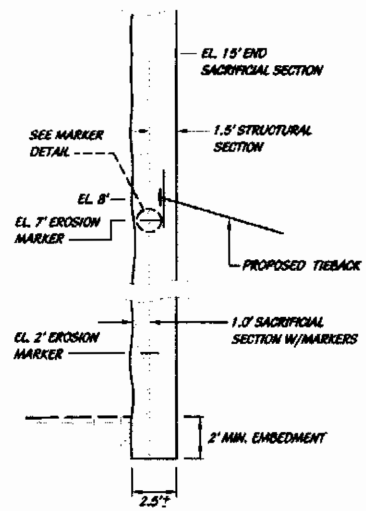
35' HIGH TIED-BACK SHOTCRETE SEAWALL - PROFILE

SCALE: 1"=10' (HORIZ.:VERT.)



MARKER - DETAIL

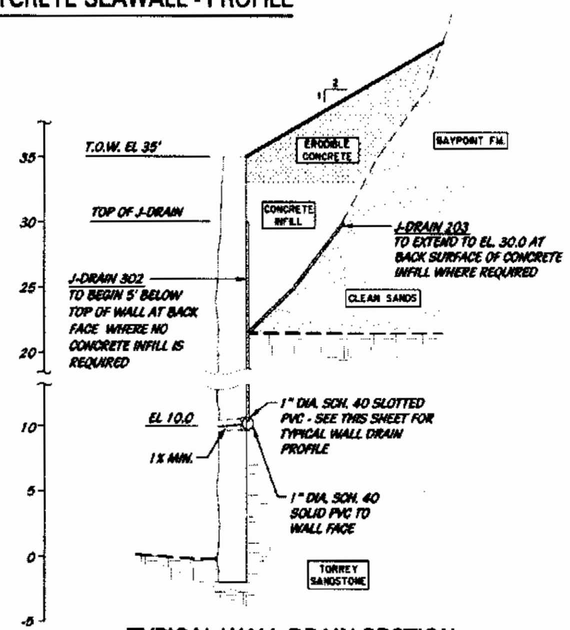
NO SCALE



PROPOSED SACRIFICIAL MARKER - DETAIL

35' HIGH SHOTCRETE SEAWALL

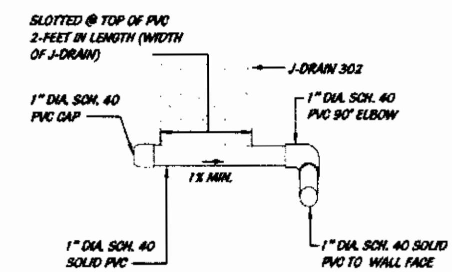
NOT TO SCALE



TYPICAL WALL DRAIN SECTION

35' HIGH SHOTCRETE SEAWALL

NOT TO SCALE



TYPICAL WALL DRAIN DETAIL

NO SCALE

NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY
0 1 2 3
ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

BENCH MARK
DESCRIPTION: STD 2 1/2" BRASS DISK S.D. CO. ENGR. STAMPED "SJ 108 1986"
LOCATION: AT SOLANA BEACH, ALONG HWY 101 9.5 MILE N OF INTERSECTION OF HWY 101 AND VIA LA VALLE, 53 FT E OF CENTER OF HWY 101, 83 FT N OF ... AND ... PROPOSED CENTERLINE OF CARMEL DRIVE ... STANDARD DISK STAMPED SJ 108 1986 ...
ELEV. 63.79 DATUM: M.S.L.

COASTAL COMMISSION PERMIT NO. ______

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SAN DIEGO, CALIFORNIA 92123
(858) 573-6900

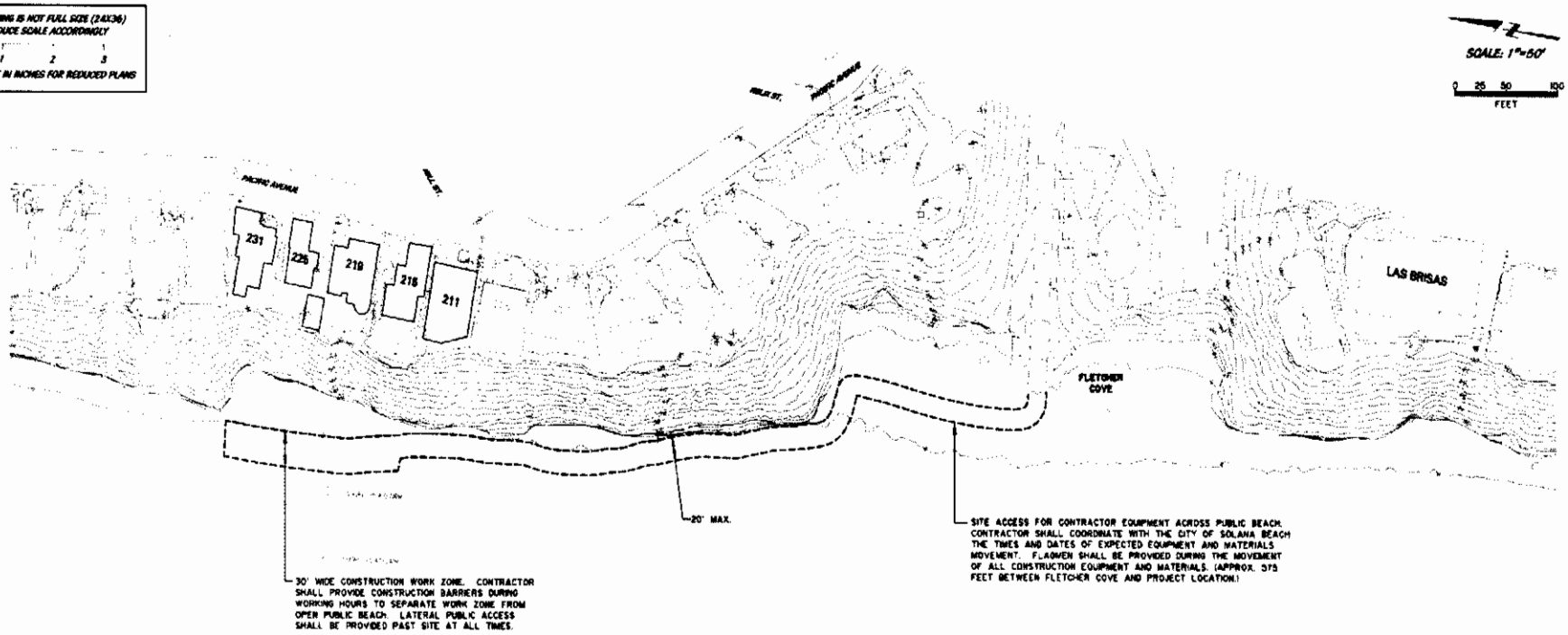
REGISTERED PROFESSIONAL ENGINEER — WALTER F. CRAMPTON — No. 23792 Exp. 12/31/11 — STATE OF CALIFORNIA

SOLANA BEACH FIRE DEPARTMENT	SANTA FE IRRIGATION DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES / APP'D DATE	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH — ENGINEERING DEPARTMENT	DRAWING NO.
By: Fire Chief Date:	By: District Engineer Date:	RF Drawn By: By: WALTER F. CRAMPTON Date: 2-18-10 R.C.E. 23792 Exp. 12/31/11		By: ____ Date: ____ By: ____ Date: ____	By: Mohammad Sammak, City Engineer Date: ____ R.C.E. 37146 Exp. 6/30/10	SEE DETAILED BLOCK ABOVE LEFT	TIED-BACK SHOTCRETE WALL PROFILE & DETAILS FOR: 211 THRU 231 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT	SBGR- SHEET 9 OF 13

NOTE: IF DRAWING IS NOT FULL SIZE (24X36) THEN REDUCE SCALE ACCORDINGLY

0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS



SITE ACCESS & STAGING AREA NOTES

1. CONTRACTOR SHALL MAINTAIN ACCESS TO ALL ALLEYS, SIDEWALKS, PRIVATE DRIVEWAYS, AND PUBLIC STREETS AT ALL TIMES.
2. CONSTRUCTION EQUIPMENT AND ACTIVITIES PERFORMED ON THE SANDY BEACH AREA SHALL NOT RESTRICT LATERAL PUBLIC ACCESS.
3. ACCESS CORRIDORS SHALL BE LOCATED IN A MANNER THAT HAS THE LEAST IMPACT ON PUBLIC ACCESS TO AND ALONG THE SHORELINE.
4. CONSTRUCTION MATERIALS; DISTURBANCE TO SAND AND INTERTIDAL AREAS SHALL BE MINIMIZED. BEACH SAND EXCAVATED SHALL BE REDEPOSITED ON THE BEACH. LOCAL SAND OR COBBLES SHALL NOT BE USED IN ANY PHASE OF THE CONSTRUCTION.
5. SITE ACCESS IS AVAILABLE APPROXIMATELY 575 FEET TO THE SOUTH AT FLETCHER COVE. CONTRACTOR SHALL COORDINATE WITH THE CITY OF SOLANA BEACH REGARDING CONSTRUCTION EQUIPMENT AND SITE ACCESS.
6. CONSTRUCTION SCHEDULE: NO WORK SHALL OCCUR ON THE BEACH ON WEEKENDS, HOLIDAYS OR BETWEEN MEMORIAL DAY WEEKEND AND LABOR DAY OF ANY YEAR.
7. NO OVERNIGHT STORAGE OF EQUIPMENT OR MATERIALS SHALL OCCUR ON SANDY BEACH OR PUBLIC PARKING SPACES AT FLETCHER COVE. DURING THE CONSTRUCTION STAGES OF THE PROJECT, THE PERMITTEE SHALL NOT STORE ANY CONSTRUCTION MATERIALS OR WASTE WHERE IT WILL BE OR COULD POTENTIALLY BE SUBJECT TO WAVE EROSION AND DISPERSION. IN ADDITION, NO MACHINERY SHALL BE PLACED, STORED OR OTHERWISE LOCATED IN THE INTERTIDAL ZONE AT ANY TIME, EXCEPT FOR THE MINIMUM NECESSARY TO CONSTRUCT THE SEAWALL AND NOTCH FILL. CONSTRUCTION EQUIPMENT SHALL NOT BE WASHED ON THE BEACH OR IN THE FLETCHER COVE PARKING LOT.

TERRACOSTA CONSULTING GROUP
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3990 MURPHY CANYON ROAD, SUITE 200
SAN DIEGO, CALIFORNIA 92123
(858) 573-6900

REGISTERED PROFESSIONAL ENGINEER — No. 23792 Exp. 12/31/11 — STATE OF CALIFORNIA

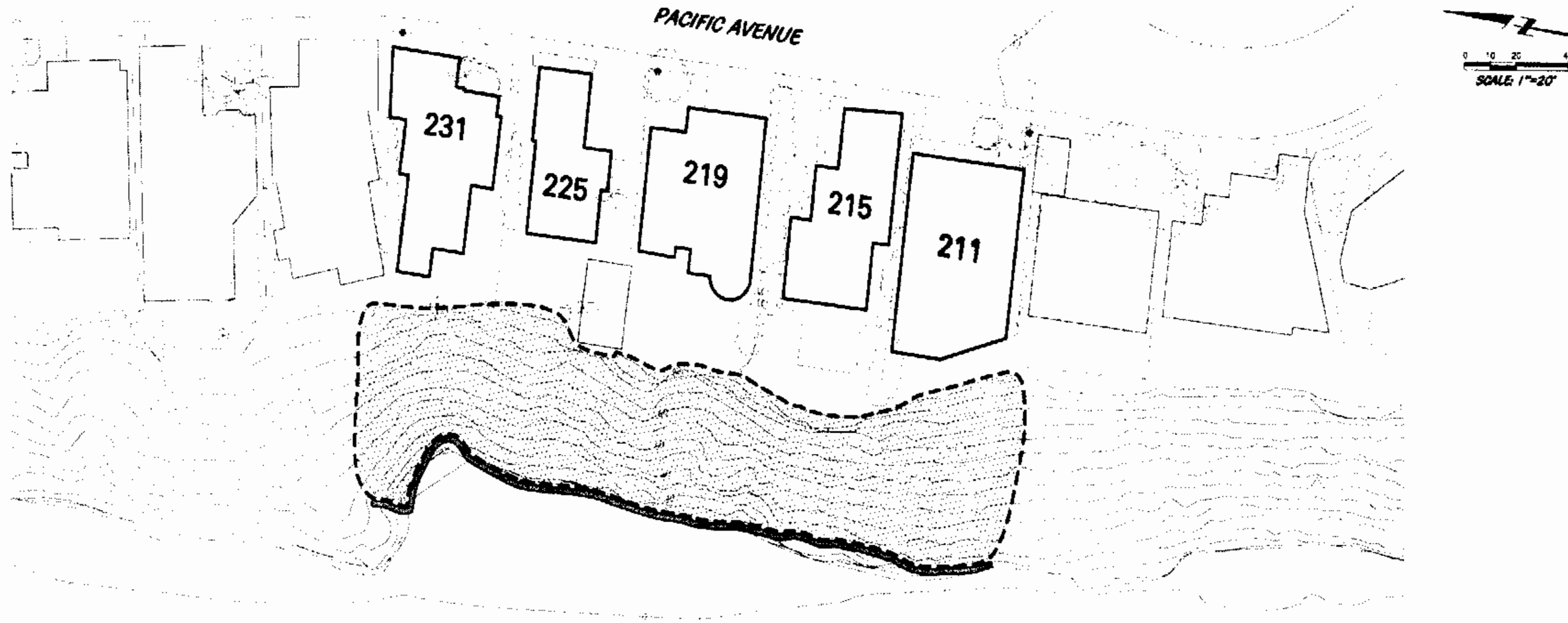
H831F

BENCH MARK: [illegible] S.D. CO. ENGR. STAMPED "LJ 108 1968" [illegible]

COASTAL COMMISSION PERMIT NO. _____

	SANTA FE IRRIGATION DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	APPD DATE	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH ENGINEERING DEPARTMENT	DRAWING NO.
	By: District Engineer Date:	Drawn By	By: WALTER F. CRAMPTON Date: 2-18-10 R.C.E.: 23792 Exp: 12/31/11		By: Date:	By: Date: Mohammad Sammak, City Engineer R.C.E.: 57146 Exp: 6/30/10	SEE DETAILED BLOCK ABOVE LEFT	SITE ACCESS/CONSTRUCTION IN STAGING AREAS FOR: 211 THRU 231 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT	SBGR- SHEET 12 OF 13

EXHIBIT NO. 5
APPLICATION NO. 6-09-033
Staging Plan
California Coastal Commission



HYDROSEEDING SPECIFICATIONS

1. SUPERVISION. ALL HYDROSEEDING IS SUBJECT TO APPROVAL BY THE LANDSCAPE ARCHITECT OR HIS REPRESENTATIVE, AND THEY SHALL, IF NECESSARY, BE RELOCATED AS DIRECTED AS PART OF THE CONTRACT. THE LANDSCAPE ARCHITECT OR HIS REPRESENTATIVE SHALL SUPERVISE THE HYDROSEEDING.

2. HYDROSEED APPLICATION. A SLURRY OF FERTILIZER, SEED, AND WOOD PULP OR FIBER SHALL BE AGITATED TO PROVIDE A UNIFORM MIX. THE OPERATOR SHALL SPRAY THE AREA WITH A COMPLETE UNIFORM VISIBLE COAT USING THE COLOR OF THE CELLULOSE FIBER AS A VISUAL GUIDE. THE SLURRY SHALL BE APPLIED IN A DOWNWARD DRILLING MOTION (EXCEPT ON SLOPES WELL ABOVE THE OPERATOR) VIA A FAN STREAM NOZZLE. THE MATERIALS SHOULD BE UNIFORMLY IMPREGNATED WITH SEED AND SHALL ALLOW PENETRATION OF RAINFALL AND PERCOLATION OF MOISTURE INTO THE UNDERLYING SOIL.

THE HYDROMULCHING SLURRY COMPONENTS SHALL NOT BE LEFT IN THE HYDROMULCH MACHINE FOR MORE THAN TWO HOURS. IF SLURRY COMPONENTS ARE LEFT FOR MORE THAN TWO HOURS IN THE MACHINE, THE CONTRACTOR SHALL ADD 50% MORE OF THE ORIGINALLY SPECIFIED SEED MIX TO ANY SLURRY MIX WHICH HAS NOT BEEN APPLIED WITHIN THE TWO HOURS AFTER MIXING. THE CONTRACTOR SHALL ADD 75% MORE OF THE ORIGINAL SEED MIX TO ANY SLURRY MIXTURE WHICH HAS NOT BEEN APPLIED EIGHT HOURS AFTER MIXING. ANY MIXTURE WHICH HAS NOT BEEN APPLIED WITHIN 8 HOURS OF MIXING SHALL BE REJECTED AND DISPOSED OF OFF-SITE AT CONTRACTOR'S EXPENSE.

3. SPECIAL CARE IS TO BE EXERCISED BY THE CONTRACTOR TO PREVENT THE SLURRY FROM BEING SPRAYED ONTO ANY ADJACENT PLANTERS, PROPERTY, OR ONTO WALKS OR WALLS. ANY SLURRY SPRAYED ONTO THESE AREAS SHOULD BE CLEANED OFF BY THE CONTRACTOR.

4. GERMINATION STAGE IRRIGATION. WITHIN 12 HOURS AFTER HYDROMULCHING THE PLANTING AREAS, THE WATERING SEQUENCE SHOULD BE INITIATED. THE WATER SHOULD BE LEFT ON LONG ENOUGH TO MOISTEN THE SOIL THOROUGHLY TO THE DEPTH OF THE SLURRY MULCH, TAKING CARE NOT TO SUPER SATURATE OR WASH AWAY THE SLURRY AND SEED. THE CONTRACTOR WILL REPAIR ALL SEED WASHING OR EROSION. A LIGHT, FREQUENT IRRIGATION SEQUENCE SHOULD CONTINUE UNTIL THE SEEDLINGS HAVE GROWN BEYOND THE GERMINATION STAGE. THE GERMINATION STAGE WILL RANGE FROM 45 TO 60 DAYS.

5. PREPLANTING FERTILIZER MAY BE APPLIED WITH THE HYDROSEED. FERTILIZER SHALL BE AN ORGANIC, PELLETED OR CHIP TYPE, UNIFORM IN COMPOSITION, FREE-FLOWING, SUITABLE FOR APPLICATION WITH APPROVED EQUIPMENT, AND DELIVERED TO THE SITE IN UNOPENED, ORIGINAL CONTAINERS, EACH BEARING THE MANUFACTURER'S STATEMENT OF GUARANTEED ANALYSIS. FERTILIZERS SHALL BE AT RATES RECOMMENDED BY AGRICULTURAL SUITABILITY SOIL TESTING RESULTS OR THE LANDSCAPE ARCHITECT.

6. GUARANTEE. ALL HYDROSEEDING SHALL BE GUARANTEED BY THE CONTRACTOR AS TO GROWTH AND [illegible] OF THIRTY (30) DAYS AFTER FINAL ACCEPTANCE BY THE LANDSCAPE ARCHITECT. [illegible] GROW SHALL BE RESEEDED UPON DIRECTION OF THE LANDSCAPE ARCHITECT. THE [illegible] JECT TO A SIXTY (60) DAY MAINTENANCE PERIOD OF THE RESEEDED AREAS.

NOTES

GENERAL LANDSCAPE NOTES:

1. ALL VEGETATION PLANTED ON THE SITE SHALL CONSIST OF NATIVE, DROUGHT TOLERANT SPECIES. ALL HYDROSEEDING ON THE 1:1 SLOPE CONSISTS OF SPECIES NATIVE TO THE SAN DIEGO COUNTY COASTAL BLUFFS.

2. ALL PLANTING SHALL BE COMPLETED WITHIN 60 DAYS OF THE CONSTRUCTION OF THE BLUFF.

3. ALL PLANTINGS SHALL BE MAINTAINED IN GOOD GROWING CONDITION THROUGHOUT THE LIFE OF THE PROJECT, AND, WHENEVER NECESSARY, SHALL BE REPLACED WITH NEW, EQUIVALENT PLANT MATERIAL TO ENSURE CONTINUED COMPLIANCE WITH THESE PLANS.

IRRIGATION NOTES:

1. DUE TO THE SENSITIVE NATURE OF THIS COASTAL BLUFF, TEMPORARY IRRIGATION SHALL BE ACCOMPLISHED BY HAND WATERING, AS NECESSARY, UNDER THE SUPERVISION OF THE OWNER'S LANDSCAPE MAINTENANCE CONTRACTOR. HAND WATERING MAY BE ACCOMPLISHED WITH THE USE OF LOW PRECIPITATION RATE (< 3"/HR.) SPRINKLERS AT THE TOP OF THE BLUFF ON STANDPIPES, BUT ONLY IF A MAINTENANCE PERSON IS ON-SITE, MONITORING SAID IRRIGATION. OTHERWISE THE IRRIGATION SHALL NOT BE ALLOWED.

2. SINCE THE HYDROSEED MIX IS NATIVE, IRRIGATION SHALL BE APPLIED ONLY AS NECESSARY TO PROMOTE THE GERMINATION AND EARLY GROWTH OF THE PLANTINGS, AND THEREAFTER FOR UP TO 26 MONTHS AFTER SEEDING, ONLY AS REQUIRED TO MAINTAIN THE PLANTINGS IN A HEALTHY CONDITION.

HYDROSEED NOTES:

1. %P.L.S. = % PURITY TIMES % GERMINATION OF SEED. THIS INDICATES THE MINIMUM PERCENTAGE OF PURITY OF THE SEED TO BE PROVIDED.

2. THE SEED COMPANY SHALL APPLY ALL SEED WITHIN ONE YEAR OF COLLECTION.

3. HYDROSEEDING WILL BE MOST EASILY ESTABLISHED, IF APPLIED BETWEEN OCTOBER 15 AND MARCH 30.

4. ADDITIONAL RATES OF MULCH AND BINDER HAVE BEEN SPECIFIED TO BE ADEQUATE FOR THE STEEPNESS OF SLOPE.

5. CONTRACTOR IS ADVISED THAT THE ACTUAL AREA (ON SLOPE) FOR THIS PROJECT IS APPROXIMATELY 142% LARGER THAN THE AREA SHOWN IN THE PLAN VIEW. SEED, MULCH AND BINDER AND FERTILIZER AMOUNTS SHALL BE COMMENSURATE WITH THIS ACTUAL SLOPE AREA, (NOT THE PLANIMETRIC AREA)

NOTE: IF DRAWING IS NOT FULL SIZE (24x36) THEN REDUCE SCALE ACCORDINGLY

0 1 2 3

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS

HYDROSEED MIX

SCIENTIFIC OR PRODUCT NAME	COMMON NAME	RATE/ACRE P.L.S.		SEEDS/LB.
	AZTACA OR APPROVED EQUAL	238 LBS.		
FERTILIZER	16-16-16	800 LBS.		
	VIRGIN WOOD FIBER	3000 LBS.		
ABRONIA VILLOSA	SAND VERBENA	1 LBS.	24%	69,000
ARTEMISIA CALIFORNICA	COASTAL SAGEBRUSH	3 LBS.	4%	10,000,000
CAMISSONIA CHEIRANTHIFOLIA SSP. SUFFRUTICOSA	SUN CUP (BEACH EVENING PRIMROSE)	1/2 LBS.	72	4,000.00
ENCELIA CALIFORNICA	CALIFORNIA ENCELIA	8 LB.	24%	175,000
ERIOGONUM FASCICULATUM	CALIFORNIA BUCKWHEAT	30 LBS.	7%	480,000
LASTHENIA CALIFORNICA	DWARF GOLDFIELDS	1-1/2 LBS.	0.90%	3,280,000
LASTHENIA GLABRA	GOLDFIELDS	1-1/2 LBS.	77%	1,300,000
LUPINUS BICOLOR	PYGMY-LEAFED LUPINE	3 LBS.	16	110,000
MIMULUS PUNICEUS	MONKEY FLOWER	1-1/2 LBS.	1%	1,200,000
SARVON 1		6 GALS.		
SUPERTHRIVE:		302,400 GALS OF HYDROSEED SLURRY		
MYCORRHIZAL INOCULUM, GLOMUS INTRARADICES		40 OZ.		

PLAN LEGEND

APPROXIMATE LIMITS OF HYDROSEEDING

BENCH MARK
[illegible] S.D. CO. ENGR. STAMPED "LI 108 1968"
[illegible]

COASTAL COMMISSION PERMIT NO. ________

TERRACOSTA CONSULTING GROUP
ENGINEERS & GEOLOGISTS
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SAN DIEGO, CALIFORNIA 92123
(858) 573-6900

REGISTERED PROFESSIONAL ENGINEER · WALTER F. CRAMPTON · No. 23792 · Exp. 12/31/11 · STATE OF CALIFORNIA

SANTA FE IRRIGATION DISTRICT	ENGINEER OF WORK	CITY APPROVED CHANGES	APP'D DATE	RECOMMENDED FOR APPROVAL	APPROVED FOR CONSTRUCTION	BENCH MARK	CITY OF SOLANA BEACH ENGINEERING DEPARTMENT	DRAWING NO.
By: District Engineer Date:	By: WALTER F. CRAMPTON Date: 2-18-10 R.C.E. 23792 Exp. 12/31/11			By: ____ Date: ____ By: ____ Date: ____	By: ____ Date: Mohammad Sammak, City Engineer R.C.E. 37146 Exp. 6/30/10	SEE DETAILED BLOCK ABOVE LEFT	LANDSCAPE PLAN FOR: 211 THRU 231 PACIFIC AVENUE SHORELINE STABILIZATION PROJECT	SBGR- SHEET 13 OF 13

EXHIBIT NO. 6
APPLICATION NO.
6-09-033
Hydroseed Plans
California Coastal Commission

TerraCosta Consulting Group

Geotechnical Engineering
Coastal Engineering
Maritime Engineering

Project No. 1831E
July 23, 2010

Mr. Nicholas Dreher
CALIFORNIA COASTAL COMMISSION
45 Freemont Street, Suite 2000
San Francisco, California 94105

REVISED SAND MITIGATION FEE CALCULATIONS
SHORELINE STABILIZATION PROJECT
211-231 PACIFIC AVENUE
SOLANA BEACH, CALIFORNIA

CDP APPLICATION NO. 6-09-33 (AZCARRAGA, ET AL)

Dear Mr. Dreher:

As you are aware, we recently discussed our sand mitigation fee calculations with Ms. Lesley Ewing for this five-property shoreline stabilization project in Solana Beach, which we submitted to the Coastal Commission on February 17, 2010, as part of the additional information requested by Mr. Gary Cannon in Staff's ongoing review of the subject permit application. As indicated in our February 17, 2010, letter, as part of an earlier 400-foot-long notch infill project, seven property owners paid a total of $91,806 in July 2000 for 20 years of sand mitigation fees. We agree with Ms. Ewing that simply pro-rating one-half of the original 2000 mitigation fees by the new project length (238 / 400 x $91,806 x 1/2 = $27,312.29) would be appropriate for the remaining credit previously paid through 2020. As I understand, Ms. Ewing has agreed with our other numbers, including the $6,500 credit for that sand that actually fell onto the beach, even though a mitigation fee was paid in order to protect the sand.

Taking this approach, the total sand mitigation fee for the new combined project is calculated to be $142,573.42 minus the above-described credit of $33,812.29, resulting in a net sand mitigation fee now due of $108,761.13. We have revised our sand mitigation fee calculations to reflect these numbers.

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If you have any questions or require additional information, please feel free to give us a call.

Very truly yours,

TERRACOSTA CONSULTING GROUP, INC.

Signature on file

Walter F. Crampton, Principal Engineer
R.C.E. 23792, R.G.E. 245

WFC/jg

cc: Mr. Lee McEachern, California Coastal Commission
Ms. Lesley Ewing, California Coastal Commission
Ms. Leslea Meyerhoff, City of Solana Beach
Mr. Dan Goldberg, City of Solana Beach
Ms. Nancy O'Neal
Ms. Ann Baker
Mr. Gary Garber
Mr. Jon Corn
Mr. Ben Bloom

CALCULATION OF MITIGATION FEE FOR IMPACTS TO SAND SUPPLY
PROPOSED SEAWALL
211 - 231 PACIFIC AVENUE
SOLANA BEACH, CALIFORNIA

Basic Equations:

$$\mathbf{M} = \mathbf{V_t} \times \mathbf{C} \qquad (1)$$

where,

M = mitigation fee,

$\mathbf{V_t}$ = total volume of sand required to replace losses due to the structure, and

C = cost per cubic yard of sand

$$\mathbf{V_t} = \mathbf{V_b} + \mathbf{V_w} + \mathbf{V_e} \qquad (2)$$

where,

$\mathbf{V_b}$ = the amount of beach material that would have been supplied to the beach if natural erosion continued or the long-term reduction in the supply of bluff material to the beach, over the life of the structure; based on the long-term average retreat rate, design life of the structure, percent of beach quality material in the bluff, and bluff geometry (cubic yards)

$\mathbf{V_w}$ = the long-term erosion of the beach and nearshore resulting from stabilization of the bluff face and prevention of landward migration of the beach profile; based on the long-term average retreat rate, and beach and near-surface profiles (cubic yards)

$\mathbf{V_e}$ = the volume of sand necessary to replace the area of beach lost due to encroachment by the original (2000) sea cave infill and the new seawall; based on the new combined design and beach and nearshore profiles (cubic yards)

$$V_b = (R \times L \times W \times H \times S) / 27 \quad (3)$$

where,

R = long-term regional bluff retreat rate (ft/yr),

L = design life of armoring without maintenance (yr),

W = width of property to be armored (ft),

H = total height of armored bluff (ft),

S = fraction of beach quality material in the bluff material,

$$V_w = R \times L \times V \times W \quad (4)$$

where,

R = long-term regional bluff retreat rate (ft/yr),

L = design life of armoring without maintenance (yr),

v = volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall, and

W = width of property to be armored (ft),

$$V_e = E \times W \times V \quad (5)$$

where,

E = average encroachment of combined infill and seawall, measured from back of notch or back beach (ft),

W = width of property to be armored (ft), and

V = volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall.

Site-specific values for equation variables:

C = $16.48 per cubic yard to purchase and deliver sand

R = 0.3 ft/yr

L = 30 years

W = 238 feet

S = 0.75

H = 86 feet

V = 0.9 cubic yards per square foot of beach

E = 7.50 feet

Utilizing equation (3):

$$V_b = \frac{0.3 \times 30 \times 238 \times 86 \times 0.75}{27}$$

$$V_b = 5117\ yard^3$$

Utilizing equation (4):

$$V_w = 0.3 \times 30 \times 0.9 \times 238$$

$$V_w = 1927.8\ yard^3$$

Utilizing equation (5):

$$V_e = 7.50 \times 238 \times 0.9$$

$$V_e = 1606.5\ yard^3$$

Utilizing equation (2):

$$V_t = 5117 + 1927.8 + 1606.5$$

$$V_t = 8651.3\ yard^3$$

Utilizing equation (1):

$$M = 8651.3\ x\ \$16.48/yd$$

$$M = \$142{,}573.42$$

Minus that portion of the previous fee that would pay for sand mitigation from 2000 to 2020, assumed to be pro-rated for 10 years, calculated as follows:

$$Credit = 1/2\ (of\ 20\ years)\ x\ \frac{238\,ft\ (current\ project)}{400\,ft\ (original\ project)}\ x\ \$91{,}806\ (original\ fee) = \$27{,}312.29$$

Minus $6,500 for the volume of bluff that fell onto the beach after the fees were paid to preclude the failure (for explanation, refer to TerraCosta's February 16, 2010, Response Letter).

Total net sand mitigation fee:

$108,761.13

Sand Mitigation Fee Parameters

W	=	238 ft
E	=	7.50 ft
V	=	0.9 cy/sf
R	=	0.3 ft/yr
L	=	30 yr
S	=	75%
H	=	86 ft
C	=	$16.48/cy

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

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August 23, 2010

TO: Nicholas Dreher, Coastal Analyst
Lee McEachern, District Regulatory Supervisor
Sherilyn Sarb, Deputy Director

FROM: Lesley Ewing, Sr. Coastal Engineer

SUBJECT: CDP 6-09-033 -- Issues with a gap between two seawall sections.

One of the current seawall decisions for the Garber et al. (CDP 6-09-033) is whether there are valid engineering reasons to consider approval of a seawall across a property for which there seems no current need for shoreline protection. The property sits in the middle of 5 properties for which a permit has been requested, such that there could be seawalls for two properties south of the subject property and for two properties north of the subject property. The two armoring options would be:

A continuous 231 foot-long seawall across five contiguous properties
Two approximately 95 foot-long seawalls with a middle gap approximately 40 feet long.

My understanding of the site and the surrounding area is that there is a section of seawall to the north of, but not contiguous with these properties and there are some remnant sections of cave filling at and to the south of these properties. Thus, for the contiguous wall option, the wall would end at native bluff material at the north and south – establishing two wall endings. For the gap wall option, each wall would end at native bluff material at the north and south – establishing four wall endings.

Wall endings are difficult. They require a transition from a constructed bluff feature to the natural bluff. The difficult with the transition arises because the seawall material is usually more resistant to erosion than the native material and the seawall is usually installed to resist the erosion that is occurring in the area. One result of this difference in erosion character for the seawall material and the native material is that the seawall will create a fixed back beach location and the native bluff material will continue to retreat landward. The wall across 231 Pacific Avenue will terminate at a natural outcrop to the north and this end location may allow the wall to connect with some more durable native material that might minimize the different erosion characteristics of the seawall and the native material. Nevertheless, this still leaves the concerns with terminating the southern portion of the continuous wall, or the terminations in the gap sections and the southern end for the two wall option.

Problems or bluff changes that could arise at the wall endings, with the northern wall ending having the potential to experience the least amount of change could include:

- Differential erosion rates between the seawall and the native material resulting in a staggered back bluff location
- Scour inland of the end of the wall, occurring when there is a difference in the seaward location of the seawall and the native bluff material and waves can erode material from behind the seawall.
- Accelerated erosion of the native material resulting from "end effects" where the vertical seawall will transfer more wave energy along the face of the wall and onto the native material at the end of the wall than would occur from the natural variability of the native bluff material. The sculpting and texturing of the wall is likely to minimize the differences between native bluff material and the seawall face, but there is still likely to be less variability with the seawall than the natural bluff.

Over time, the native bluff face will be significantly inland of the seawall face and the ends of the seawalls will have erosion inland of the wall such that there will be a cave or opening between the wall and the bluff material inland of wall. This can destabilize the wall if enough bluff material is removed and it is likely that there would be applications to "repair or maintain" the seawall to put some type of concrete (high strength or erodible) in this cave so that there will not be any hollow areas inland of the seawall. Alternatively, there may be an end wall with fill to armor back into the bluff as the gap area enlarges. As the native bluff continues to erode, this filling will likely continue to chase the hollows behind the wall or extend the end wall. Each of these wall extensions would probably require a permit or permit amendment so the Commission would have some control over the frequency and type of end wall extensions through the regulatory process[1].

The continuous wall would reduce the locations where these end wall extensions might be required; however the continuous wall would eliminate the new beach area that would be created in the gap and would reduce the length of coast where natural land forms are visible. If the gap is not armored, this 40 foot-long section of bluff will remain as a reminder of the character of the native bluffs. New beach area will form as the native bluff material continues to erode. The new beach area that will be created as the bluff erodes is likely to be bordered only on the east by native bluff material, with some type of wall extension the north and south.

The gap option will allow the creation of new beach area and will allow another small section of the native bluff to remain. However, the faster that new beach is created, the more likely it is that there will be applications for wall extensions along the sides of the gap to protect the existing walls.

One risk that would be of greater concern with the gap than with the continuous wall is with a rapid bluff collapse. The walls tend to reduce large bluff collapses and allow only collapse of the upper bluff material. With the gap option there is the possibility that the gap area could experience a large collapse extending to the surrounding properties, resulting in a larger collapse than would occur with the more continuous wall. Over a long time period, the upper bluff changes, other than those in the immediate vicinity of the gap, are likely to be the same, with the gap or with the continuous wall. But, for the short-term there would possibly be significant difference in upper bluff conditions if there were to be a large collapse in the gap section.

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[1] I cannot estimate the time period before the inland retreat of the gap area will exacerbate end conditions are the seawalls and trigger some application for repairs to the back of the wall.

In summary, the gap will result in the creation of new beach area that would not occur with the continuous wall. However, the gap will provide more opportunities for end effects and this option might also result in a large bluff collapse that would be less likely to occur with the continuous wall.

Please contact me if you have any questions about this memo.

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

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28 September 2010

GEOTECHNICAL REVIEW MEMORANDUM

To: Nick Dreher, Coastal Program Analyst
From: Mark Johnsson, Staff Geologist
Re: CDP 6-09-33 (Garber et al.)

With respect to the above referenced CDP application, I have reviewed the following documents:

1) TerraCosta Consulting Group, 2008, "Coastal bluff evaluation and basis of design report, 139-231 Pacific Avenue, Solana Beach California", 21 p. geotechnical report dated 29 February 2008 and signed by W.F. Crampton (GE 245) and B.R. Smillie (CEG 207).

2) TerraCosta Consulting Group, 2009, "Application for coastal development permit, Coastal bluff stabilization, 129-231 Pacific Avenue, Solana Beach, California", 5 p. letter dated 4 June 2009 and signed by W.F. Crampton (GE 245).

3) TerraCosta Consulting Group, 2009, "Clarification regarding application for use permit, Coastal bluff stabilization, 129-231 Pacific Avenue, Solana Beach, California", 4 p. letter report dated 4 June 2009 and signed by W.F. Crampton (GE 245).

4) TerraCosta Consulting Group, 2010, "Additional permit application information, shoreline stabilization project, 211-231 Pacific Avenue, Solana Beach, California", 4 p. letter report dated 17 February 2010 and signed by W.F. Crampton (GE 245).

5) TerraCosta Consulting Group, 2010, "Foundation clarifications specific to 219 Pacific Avenue (Baker Residence), shoreline stabilization project, 211-231 Pacific Avenue, Solana Beach, California", 4 p. letter report dated 30 June 2010 and signed by W.F. Crampton (GE 245).

In addition, I have visited the base of the coastal bluff at this site many times over the past several years. I was unable, however, to observe the base of the bluff to specifically evaluate the proposed project due to tide and wave conditions at the time of my visit.

Reference (1) contains information regarding the stability of the bluffs just north of Fletcher Cove in Solana Beach beneath 10 lots (139-231 Pacific Avenue). The southernmost 5 of these lots (139-205 Pacific Avenue) are already protected by an infill of the wave-cut notch at the base of the bluff. The proposed project was to repair and enlarge that infill. This part of the project was later dropped, and I will not evaluate it further in this memo. The northern 5 lots (211-231 Pacific Avenue) also have a wave-cut notch at their base, albeit of lesser depth than the southern lots. The proposed project for these lots is a tied-back seawall extending to above the cohesionless "clean sand lens" found at the base of the marine terrace deposits throughout most of Solana Beach. This memo is primarily meant to address the need for such a seawall to protect existing principle structures on the lots above.

As detailed in reference (2), the 10-foot thick "clean sand lens" beneath these five residences is covered by a thin veneer of fine-grained material washed down from above, forming a weak crust covering the cohesionless sands. A common mode of bluff failure in Solana Beach is for the steep or undercut lower bluff, consisting of well-cemented bedrock called the Torrey Sandstone, to suddenly fail as a block failure. This undercuts the clean sand lens, which in turn fail, destroying the crust of fine-grained material. Thus unsupported, the rest of the upper bluff marine terrace deposits fail, potentially putting at risk any structure on the bluff top.

The stability of the bluff can be evaluated by a quantitative slope stability analysis, in which the forces tending to resist a landslide (primarily the strength of the rocks) are divided by the forces tending to drive a landslide (primarily the weight of the rocks). The resulting quotient, or factor of safety, can theoretically never be less than 1.0, as a landslide would already have occurred. At 1.0, even the smallest change in conditions should result in slope failure. The standard for new development is a factor of safety of 1.5. The Commission has typically found that when a factor of safety is in the range of ~1.0 to ~1.2 *and* the most likely failure plane intersects the shallow foundations of a building, the building may be at risk from erosion or bluff retreat. If the building is on a coastal bluff, this risk may be sufficient to trigger consideration of some type of shore protection under section 30235 of the Coastal Act, as long as no other less environmentally damaging alternatives exist and there has been adequate mitigation for any impacts caused.

Reference (1) presents quantitative slope stability analyses for coastal bluffs at 211 to 231 Pacific Avenue; the factors of safety range from 1.01 to 1.15. However, for three of the properties (215, 219, and 225 Pacific Avenue) the computed most likely failure plane does not intersect the buildings foundations, as these buildings are further set back from the bluff edge than 211 and 231 Pacific Avenue. Nevertheless, the factors of safety for hypothetical failure surfaces that do underlie the buildings' foundations range from 1.18 to 1.20. This means that if the computer model of the most likely failure surface is incorrect (for example, through unmodelled heterogeneity in the soils) failure along a potential slide plane that would undermine the foundations is, indeed, likely.

Reference (1) also contains a set of pseudostatic slope stability analyses that demonstrates that during a large earthquake all of these bluffs would likely fail. Finally, it contains analyses showing the improvement in stability obtained through the project, which results in factors of safety ranging from 1.24 to 1.42.

Subsequent to the preparation of reference (1), it was determined that the structure at 219 Pacific Avenue is not founded on shallow foundations, but rather on 20-foot deep drilled piers. This deep foundation, combined with the relatively large bluff top setback, means that it is unlikely that the structure is imminently threatened. To illustrate the degree of threat, reference (5) was prepared, and hypothetical failures were calculated, stopping at the piers (and, by inference, not threatening the structure). Although a failure exposing the top 5 feet of the piers is relatively likely (having a factor of safety of only 1.13), a failure that exposed the entire pier, undermining the structure is unlikely (having a factor of safety of 1.53). Accordingly, this structure still meets the stability requirements for *new* development.

Nevertheless, the applicants propose to extend the seawall across this property as well as the ones that are threatened, rather than leave a gap in the 256-foot-long seawall. They have argued that leaving a gap leads to potential stability risk to the portions of the wall adjoining the gap, as well as to the structures north and south of 219 Pacific Avenue. It is well established that the ends of a seawall have a tendency to serve as diffraction centers, focusing wave energy with greater intensity than if a sharp corner had not existed. Even without this effect, as the bluff below 219 Pacific Avenue continued to retreat, it would outflank the seawall on both sides, compromising its integrity. Without a functioning seawall, the residences north and south of 219 Pacific Avenue could then be placed at risk. I have discussed the consequences of leaving a gap in the proposed seawall with the Commission's Senior Coastal Engineer, Lesley Ewing, and we are in agreement in recommending that the project be approved to extend across 219 Pacific Avenue.

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

Sincerely,

Signature on file

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