

CALIFORNIA COASTAL COMMISSION

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 Hearing Date: 3/17-19/04
 Commission Action:

STAFF REPORT: REGULAR CALENDAR**APPLICATION NUMBER: 5-03-078****APPLICANT: Greg & Anne Buchanan****AGENT: Scott Betancourt, Summit Design****PROJECT LOCATION: 16822 Baruna Lane, Huntington Beach, Orange County**

PROJECT DESCRIPTION: Installation of 5/8 inch thick plastic sheet pile adjacent to the outside facing of the existing bulkhead. The plastic sheet pile reinforcement is proposed to run the 50 foot width of the property.

LOCAL APPROVALS RECEIVED: City of Huntington Beach Approval in Concept, 2/24/03.

SUBSTANTIVE FILE DOCUMENTS: City of Huntington Beach certified LCP (used as guidance only in this area of original certification).

SUMMARY OF STAFF RECOMMENDATION:

The major issues of this staff report relate to construction and operation phase impacts of placing bulkhead enhancements in the marine environment. With conditions, the project will have no significant adverse construction phase impacts on water quality or marine habitat. In addition, due to the absence of eelgrass in the project area, there will be no adverse impacts upon sensitive marine habitats, as conditioned. However, the project will have permanent impacts upon soft bottom habitat that will be mitigated.

Staff recommends **APPROVAL** of the proposed development with special conditions which require: 1) preparation of a Bulkhead Maintenance Plan providing for inspection monitoring assessing the continued integrity of the bulkhead reinforcement; 2) applicant to consider the use of alternatives to plastic should such alternative become available in the future; 3) conformance with specific construction responsibilities to avoid impacts upon water quality and marine resources; 4) preparation of a survey to confirm the absence of *Caulerpa taxifolia* in the project area; 5) preparation of a pre-construction eelgrass survey to confirm the absence of eelgrass; 6) the applicant to implement the required soft bottom mitigation; 7) acknowledgement that permit approval does is not a waiver of any public rights at the site; 8) evidence of legal ability to carry out the proposed project.

I. STAFF RECOMMENDATION:

MOTION: *I move that the Commission approve Coastal Development Permit No. 5-03-078 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:

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 this permit is reported to the Commission. 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.

III. **SPECIAL CONDITIONS**

1. **Bulkhead Maintenance**

- a. The permittees shall maintain the bulkhead reinforcement in good condition throughout the life of the development. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit a Monitoring Plan, for the review and approval of the Executive Director. The permittees, and their successors in interest shall be responsible for carrying out all provisions of the approved Monitoring Plan for as long as the bulkhead reinforcement remains in place. The monitoring plan, at a minimum, shall provide for:
- (1) Regular inspections by a licensed engineer. These inspections shall be performed at least every 2 years for the first 12 years after the bulkhead has been installed, and at least every year thereafter.
 - (2) The inspections shall examine the exposed portions of the bulkhead reinforcement (to the mud line) for signs of weakness or possible failure, including, but not limited to cracking, bending, splitting, splintering, or flaking. All weak or potential failure areas should be marked on an as-built plan of the bulkhead reinforcement, and there should be photographs and text to explain the nature and extent of each weakness.
 - (3) Inspection reports shall be prepared and conveyed to the Executive Director within 30 days of the inspection work. These reports shall provide information on and photographs from the date of the inspection, the name and qualifications of the person performing the inspection, and an overall assessment of the continued integrity of the bulkhead reinforcement. If the inspection identifies any areas where the bulkhead reinforcement has been damaged, the report shall identify alternatives to remedy the damage.
- b. In the event that any sections of the bulkhead reinforcement are damaged or flaking, the permittees shall notify the Commission within 10 days; and in such event, within 30 days of such notification, submit to the Commission a complete application for any coastal development permit amendment, or new permit, necessary for the repair or replacement of the bulkhead reinforcement.

2. **Alternatives to Plastic**

By acceptance of this permit, the applicant agrees to submit an application for an amendment to this permit or a new coastal development permit if new information becomes available that indicates that plastic has harmful effects on the marine environment, and that environmentally superior, feasible alternative(s) are available. The amendment or new coastal development shall include measures to eliminate or significantly reduce the adverse impacts of the plastic.

3. CONSTRUCTION RESPONSIBILITIES AND DEBRIS REMOVAL

The permittee shall comply with the following construction-related requirements:

- (a) No construction materials, equipment, debris, or waste shall be placed or stored where it may be subject to inundation or dispersion in the waters of the harbour;
- (b) All debris and trash will be disposed in suitable trash containers on land at the end of each construction day;
- (c) Any and all debris resulting from construction activities shall be removed from the site within 10 days of completion of construction;
- (d) No machinery or construction materials not essential for project improvements shall be allowed at any time in the waters of Huntington Harbour;
- (e) If turbid conditions are generated during construction, a silt curtain shall be utilized to control turbidity;
- (f) Floating booms shall be used to contain debris discharged into coastal waters and any debris discharged shall be removed as soon as possible but no later than the end of each day;
- (g) Non-buoyant debris discharged into coastal waters shall be recovered by divers as soon as possible after loss;
- (h) Discharge of any hazardous materials into Huntington Harbour is prohibited;
- (i) Reasonable and prudent measures shall be taken to prevent all discharge of fuel or oily waste from heavy machinery, pile drivers or construction equipment or power tools into the waters of the Huntington Harbour. The applicant and the applicant's contractors shall have adequate equipment available to contain any such spill immediately.

4. CAULERPA TAXIFOLIA PRE-CONSTRUCTION SURVEY

- A. Not earlier than 90 days nor later than 30 days prior to commencement or re-commencement of any development authorized under this coastal development permit (the "project"), the applicant shall undertake a survey of the project area and a buffer area at least 10 meters beyond the project area to determine the presence of the invasive alga *Caulerpa taxifolia*. The survey shall include a visual examination of the substrate.
- B. The survey protocol shall be prepared in consultation with the Regional Water Quality Control Board, the California Department of Fish and Game, and the National Marine Fisheries Service.
- C. Within five (5) business days of completion of the survey, the applicant shall submit the survey:
 - 1. for the review and approval of the Executive Director; and

2. to the Surveillance Subcommittee to the Southern California Caulerpa Action Team (SCCAT). The SCCAT Surveillance Subcommittee may be contacted through William Paznokas, California Department of Fish & Game (858/467-4218) or Robert Hoffman, National Marine Fisheries Service (562/980-4043).

D. If *Caulerpa taxifolia* is found within the project or buffer areas, the applicant shall not proceed with the project until 1) the applicant provides evidence to the Executive Director that all *C. taxifolia* discovered within the project and/or buffer area has been eliminated in a manner that complies with all applicable governmental approval requirements, including but not limited to those of the California Coastal Act, or 2) the applicant has revised the project to avoid any contact with *C. taxifolia*. No revisions to the project shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

5. PRE-CONSTRUCTION EELGRASS SURVEY

- A. Pre Construction Eelgrass Survey. A valid pre-construction eelgrass (*Zostera marina*) survey shall be completed during the period of active growth of eelgrass (typically March through October). The pre-construction survey shall be completed prior to the beginning of construction and shall be valid until the next period of active growth. The survey shall be prepared in full compliance with the "Southern California Eelgrass Mitigation Policy" Revision 8 (except as modified by this special condition) adopted by the National Marine Fisheries Service and shall be prepared in consultation with the California Department of Fish and Game. The applicants shall submit the eelgrass survey for the review and approval of the Executive Director within five (5) business days of completion of each eelgrass survey and in any event no later than fifteen (15) business days prior to commencement of any development. If the eelgrass survey identifies any eelgrass within the project area which would be impacted by the proposed project, the development shall require an amendment to this permit from the Coastal Commission or a new coastal development permit.
- B. Post Construction Eelgrass Survey. If any eelgrass is identified in the project area by the survey required in subsection A of this condition above, within one month after the conclusion of construction, the applicants shall survey the project site to determine if any eelgrass was adversely impacted. The survey shall be prepared in full compliance with the "Southern California Eelgrass Mitigation Policy" Revision 8 (except as modified by this special condition) adopted by the National Marine Fisheries Service and shall be prepared in consultation with the California Department of Fish and Game. The applicants shall submit the post-construction eelgrass survey for the review and approval of the Executive Director within thirty (30) days after completion of the survey. If any eelgrass has been impacted, the applicants shall replace the impacted eelgrass at a minimum 1.2:1 ratio on-site, or at

another location, in accordance with the Southern California Eelgrass Mitigation Policy. All impacts to eelgrass habitat shall be mitigated at a minimum ratio of 1.2:1 (mitigation:impact). The exceptions to the required 1.2:1 mitigation ratio found within SCEMP shall not apply. Implementation of mitigation shall require an amendment to this permit or a new coastal development permit unless the Executive Director determines that no amendment or new permit is required.

6. Soft Bottom Habitat Mitigation Plan

The applicant shall mitigate the loss of soft bottom habitat with the substantial restoration of open water soft bottom or other tidally influenced wetland habitat at a ratio of 2:1 [mitigation : impact]. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall take one or a combination of the following actions:

Submit for the review and approval of the Executive Director written evidence of participation in the mitigation program outlined in *Soft Bottom Mitigation Plan, Humboldt Island and Trinidad Island Bulkhead Repair Project, Huntington Beach, California* dated April 2000 prepared by Tetra Tech, Inc. of Pasadena, California and approved by Coastal Development Permit 5-01-020; or another on-going wetland restoration effort in an area ecologically connected with the site of the wetland impact;

Or

If the permittee is unable to successfully participate in an existing wetland mitigation program as identified above, the permittee shall submit an alternative means of satisfying the mitigation requirement to the Executive Director. The applicant shall not proceed with the project unless a Coastal Commission approved amendment to this coastal development permit is obtained for the revised proposal unless the Executive Director determines that no amendment is legally required.

7. 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. The permittee shall not use this permit as evidence of a waiver of any public rights that may exist on the property.

8. Legal Interest

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit, for the review and approval of the executive Director, written documentation demonstrating that it has the legal ability to carry out the proposed project and all conditions of approval of this permit.

IV. FINDINGS AND DECLARATIONS:

The Commission hereby finds and declares:

A. Project Description and Location

The applicant is proposing to reinforce an existing bulkhead on a residential lot that fronts on Huntington Harbour. The proposed reinforcement includes installation of a 5/8 inch thick High Density Polyethylene (HDPE) sheet immediately adjacent to the existing bulkhead. The top of each panel of sheet pile is proposed to be anchored with bolts and epoxied into the bulkhead footing to provide support. The proposed project also includes thirteen 2 inch by 4 inch interlocks. The proposed sheet pile will extend approximately 5 feet below the existing footing and will extend the entire 50 foot width of the lot. The proposed sheet pile is intended to serve as a barrier to protect the existing wood piles at the base of the existing bulkhead. In addition, existing voids beneath the structure will be filled with pressurized grout.

In describing the need for the proposed development the applicant's engineering consultant, in a letter dated 9/15/03 (see exhibit C), states:

"The existing bulkhead appears to be in good condition. In some areas, the soil has eroded slightly below the bottom of the existing footing. The Bulkhead wall is supported by timber piles, therefore, undermining of the footings does not affect the structural integrity of the wall. The exposure does, however, affect the wood piles supporting the bulkhead wall by allowing access by woodborers. The woodborers feed on the pile, which decreases the cross section of the pile, and decreases the pile's ability to support the wall. The proposed project is intended to prevent erosion below the footing and protect the piles."

The letter goes on to explain the proposed project as follows:

"The proposed project is intended to prevent erosion below the footing and protect the piles. This is accomplished by placing a 5/8" thick high-density polyethylene plastic (HDPE) sheet pile driven adjacent to the outside face of the footing. The upper edge of the sheet is attached to the footing with stainless steel adhesive anchors. The sheet pile will extend to approximately 5' - 0" below the bottom of the footing. While the HDPE pile will not affect the erosion in the channel, it is designed to retain the soil behind it and provide a barrier between the woodborers and the pile. The sheet pile is to extend the entire length of the property and will not affect the adjoining properties."

With regard to the methods of installation, the engineer's 9/15/03 letter states:

"The proposed piles will be installed adjacent to the toe of the existing seawall [bulkhead] footing using a modified driving hammer. The hammer size and impact

is decreased due to the material properties. Each sheet pile has an interlocking mechanism that acts as a guide to keep the pile aligned while driving and provides for a mechanical attachment at each joint. The sheet piles will attach to the wall footing and extend the entire length of the property. The piles will terminate at each end of the property. Due to the thickness of the piles (5/8" thick), no special termination or transition is required. Any future protection, repair, or replacement of the seawalls [bulkheads] at the adjacent properties can progress unimpeded by this protective measure."

The California State Lands Commission has reviewed the project and in a letter (file reference SD 2003-09-16.1, see exhibit D) "asserts no claims that the project intrudes onto State owned lands. As to the retained Public Trust Easement, based on our review, your client's project does not appear to be inconsistent with Public Trust needs of the area." In addition, the California Department of Fish and Game has reviewed the project and, in a letter dated 7/15/03, finds that no Streambed Alteration Agreement is necessary for the proposed project (see E).

The subject site is located in the City of Huntington Beach. The City has a certified Local Coastal Program. However, because the proposed development is located seaward of the mean high tide line (seaward of the existing bulkhead), the project falls within the Commission's retained permit jurisdiction.

The nearest public access in the area is at a pocket park located across the channel from the subject site near Scepter Lane and Warner Avenue (approximately ¼ mile to the southeast) and also at Sunset County Beach located approximately ½ mile to the southwest.

B. Shoreline Protective Devices

Section 30235 of the Coastal Act states:

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

The proposed development involves structural reinforcement to protect an existing bulkhead which is necessary to protect an existing home located in Huntington Harbour. In some areas of the subject site, the soil has eroded slightly below the bottom of the existing bulkhead's footing. The bulkhead wall is supported by timber piles, therefore, undermining of the footings does not affect the structural integrity of the wall. The exposure does, however, affect the wood piles supporting the bulkhead wall by allowing access by woodborers. The woodborers feed on the pile, which decreases the cross

section of the pile, and decreases the pile's ability to support the wall. Damage to the supporting timber piles could lead to bulkhead collapse. If protective measures are not implemented, damage to the bulkhead could result, leading to failure of the bulkhead and damage to the residence landward of the bulkhead. The proposed development is designed to prevent erosion below the footing, to protect the timber piles, and to protect the existing bulkhead, and ultimately the existing residence.

The proposed project involves the fill of coastal waters in the form of the 5/8 inch thick sheet piles and thirteen 2 inch by 4 inch interlocks. The purpose of the proposed fill is to protect the existing residence, which is not one of the eight allowable uses enumerated under section 30233 of the Coastal Act. However, as stated in the policy above, Section 30235 of the Coastal Act requires the Commission to approve seawalls and other similar structures provided that such structures are for the purpose of protecting existing structures and provided that the structures are designed to eliminate or mitigate adverse impacts on local shoreline sand supply. The proposed reinforcement of the existing bulkhead/seawall is the type of structure described in Section 30235 because it is a protective device that minimizes shoreline erosion (a natural shoreline process) and is for the purpose of protecting an existing structure (the single family residence located landward of the bulkhead). In addition, the proposed project is occurring within an urban harbour at a location isolated from the nearest open coastal shoreline and longshore littoral sand transport mechanisms. The proposed sheet pile has been designed to minimize the amount of fill of coastal waters and to minimize the amount of soft bay bottom covered which may contribute to shoreline sand supply. Therefore, in this case, by minimizing the area of soft bay bottom covered, the proposed project mitigates adverse impacts on local shoreline sand supply. Accordingly, the proposed project is approvable under section 30235 of the Coastal Act rather than section 30233 of the Coastal Act.

The applicant's coastal engineer indicates that the proposed project is the least environmentally damaging feasible alternative. Section 30108 of the Coastal Act states that "feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors. Alternatives considered were: 1) installation of driven sheet piles with rip rap rock at the base; 2) concrete encasement of the existing wood piles in place; 3) the use of steel sheet piles rather than plastic; and 4) repair of individual piles as they become damaged (do nothing alternative).

The use of driven sheet piles with rip rap rock at the base (alternative 1), as well as encasement of the piles with concrete (alternative 2) were not pursued because both options require an extensive amount of work below the waterline which would result in significantly greater impacts to the marine environment than the proposed project

The use of steel rather than plastic sheet piles was also considered (alternative 3), but dismissed for the following reasons. The susceptibility of the steel to corrosion when submerged would require cathodic protection that would not be required for plastic sheet piling. The cathodic protection would require the placement of a sacrificial piece of metal adjacent to the proposed sheet pile and a constant stream of electricity to draw corrosive

forces away from the steel sheet pile. If the cathodic protection were to fail, the failure may not be immediately discovered. If the failure continued, the protective sheet pile itself would begin to corrode, which would then require additional work. The proposed plastic would be inert, whereas the steel is not. Furthermore, the life of the plastic sheet pile is expected to be significantly longer than the life of the steel. The plastic sheet pile has an expected life of 50 years versus 20 years for steel. The longer life expectancy would mean longer intervals between major work on the bulkhead, thus fewer disturbances to the marine environment. Finally, installation can be accomplished with reduced hammer size and impact when plastic (rather than steel) is used.

Alternative 4, repair of the piles as they become damaged, considered by the applicant to be the "do nothing" alternative was also rejected because this option would require periodic monitoring. If the monitoring failed to provide adequate assessment of the conditions, a partial failure of the bulkhead may result. If the bulkhead were to partially fail, the impact on the marine environment would be increased over the proposed project's impacts due to post-failure replacement or repair of the bulkhead and foundations. In addition, bulkhead failure would not protect the existing residence. The "do-nothing" alternative would ultimately lead to damage of the timber piles, thus, it would not achieve avoidance of the impact, but rather delay. Furthermore, if no action is taken until damage to the piles has actually occurred, the repair necessary at that time would be much more extensive than that proposed, and would create a substantial increase in the disturbance to the marine environment, including a multi-fold increase in the quantity of fill necessary to stabilize the site and protect the existing residence.

In addition, if the bulkhead were allowed to fail, it would collapse into the harbour. Debris from the collapsed bulkhead would likely fall upon sensitive marine habitat resulting in impacts upon that habitat. In addition, sediment released from behind the collapsed bulkhead would enter the water column causing turbidity. Furthermore, debris from the collapsed bulkhead would result in the fill of coastal waters, covering soft bottom habitat. The proposed project would have less impact than the no project alternative because any permanent impacts upon soft bottom habitat will be controlled and mitigated under the proposed project while such impacts from the no project alternative would be uncontrolled and much more extensive. Consequently the "do nothing" alternative was not pursued.

The proposed bulkhead reinforcement is necessary to protect the existing bulkhead and the single family residence. In addition, the proposed development mitigates adverse impacts upon shoreline sand supply and is the least environmentally damaging feasible alternative. Therefore, the Commission finds that the proposed project is consistent with Section 30235 of the Coastal Act.

C. Marine Habitat

Section 30230 of the Coastal Act requires that marine resources shall be maintained, enhanced, and where feasible, restored. Section 30230 of the Coastal Act states:

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

Section 30231 of the Coastal Act states:

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.

1. Soft Bottom Habitat

The proposed development is occurring in the waters of Huntington Harbour. The development area is entirely submerged. The proposed placement of sheet piles and interlocks will result in the permanent coverage of approximately 3.7 square feet of soft bottom habitat and associated benthic (bottom-dwelling) organisms.

The California Department of Fish and Game (CDFG) has reviewed the proposed project and in a letter dated July 15, 2003 stated that no Streambed Alteration Agreement is necessary and that the applicant could begin the project once all other necessary permits have been obtained. Further, the subject site is not designated in the certified local coastal program as an environmentally sensitive habitat area.

The applicant has not proposed mitigation to offset the permanent loss of the 3.7 square feet of soft bottom habitat. However, similar projects in Huntington Harbour did include mitigation for loss of soft bottom habitat. The mitigation proposed in conjunction with previous bulkhead reinforcement projects is contained within the document titled *Soft Bottom Mitigation Plan, Humboldt Island and Trinidad Island Bulkhead Repair Project, Huntington Beach, California* dated April 2000 prepared by Tetra Tech, Inc. of Pasadena, California. The previously approved mitigation provided replacement habitat at a 2:1 ratio (mitigation to impact) and included restoration of tidal wetlands in the Bolsa Chica Ecological Reserve at a location near the intersection of Warner Avenue and Pacific Coast Highway in Huntington Beach. This mitigation site is approximately ½ mile southwest of the proposed impact area.

On-site wetland restoration is not feasible because the impact area is a bulkheaded harbour area where there are no opportunities to create new wetlands or restore former

wetlands. Meanwhile, the previously approved restoration site, located approximately ½ mile away, is within the Bolsa Chica Ecological Reserve which is an open space area managed as a passive recreation and wildlife habitat area. The impact site and restoration site are hydraulically connected to one another via Huntington Harbour and the Bolsa Chica wetlands complex. Therefore, the impact site and restoration site are geographically close and are part of the same ecological system. The Bolsa Chica Ecological Reserve area contains wetlands and historic wetland habitat that has been impacted over time by human development. Restoration of the wetlands within this area would increase the function and value of the habitat within the reserve.

The habitat to be impacted at the subject site consists of soft bottom containing amphipods and hydroids. These species are common to soft bottom habitat throughout the harbour. No sensitive wildlife species are known to occur within this habitat at the site. Meanwhile, the wetland habitat restoration would occur in an area known to be high in plant and animal species diversity, including rare and endangered species. Therefore, the restoration of habitat at Bolsa Chica Ecological Reserve would be beneficial to a wide variety of wildlife. Any restored wetland habitat in a bulkheaded harbour area similar to the impact area would not be expected to attract the diversity and abundance of wildlife that the off-site restoration would. A high probability of successful restoration is expected at the Bolsa Chica site because the project would restore former and degraded wetland areas. Commission staff have reviewed the restoration plan and agree with the expectation of success. Accordingly, the Commission is requiring the applicant to submit a mitigation plan that commits the applicant to participate in the above described Bolsa Chica restoration plan (provided the permit holder for the restoration site is willing to allow this applicant's participation in that program) at a ratio of 2:1 for the proposed impacts. This mitigation ratio is similar to that required by CDPs 5-98-179, 5-98-201, 5-98-443, 5-98-444, 5-99-031, 5-99-032, 5-99-108, 5-99-473, 5-00-389, 5-00-390, 5-01-358 and 5-01-359. A higher mitigation ratio, such as 4:1, has not been required due to the anticipated success of the restoration and the high habitat value that the restored wetland area will have compared with the impact area.

The required mitigation would occur in conjunction with other soft bottom mitigation required due to wetlands impacts caused by bulkhead reinforcement projects elsewhere on Trinidad Island [5-00-389, 5-00-390 and 5-01-359] and Humboldt Island [5-98-179, 5-98-201, 5-98-443, 5-98-444, 5-99-031, 5-99-032, 5-99-108, 5-99-473, 5-01-358, 5-01-062] which have been approved or are pending approval by the Commission. In total, 1,363.6 square feet of soft bottom habitat will be impacted by the bulkhead reinforcement projects on Humboldt Island [5-98-179, 5-98-201, 5-98-443, 5-98-444, 5-99-031, 5-99-032, 5-99-108, 5-99-473, 5-01-358, 5-01-062] and 366.4 square feet of soft bottom will be impacted on Trinidad Island [5-00-389, 5-00-390 and 5-01-359 (pending)] for a total of 1,730 square feet of impact. The proposed project's required mitigation would add 7.4 square feet to that. In total 3,467.4 square feet of mitigation will be implemented in the Bolsa Chica Ecological Reserve for the proposed impacts by bulkhead reinforcement projects throughout Huntington Harbour.

The mitigation at the Bolsa Chica Ecological Reserve consists of removing concrete debris from a former wetland, grading the area to match site elevations of adjacent functioning wetlands, and restoring tidal influence to the graded area to create a tidal wetland by replacing and enlarging culverts that provide a connection to the Bolsa Chica channel. The Commission has approved Coastal Development Permit 5-01-020 for the construction of 5,358 square feet of wetland mitigation. This quantity, 5,358 square feet, exceeds the amount of total mitigation required by previously approved bulkhead reinforcement projects. At the time CDP 5-01-020 was approved, the remainder area was identified as remaining available as mitigation for future bulkhead reinforcement projects in Huntington Harbour which cause wetland impacts, such as the proposed project. As approved by CDP 5-01-020, the mitigation must be undertaken prior to or concurrent with the commencement of the bulkhead reinforcement project. The mitigation program includes a 5 year monitoring period, with yearly monitoring and reporting during that period. The proposed soft bottom mitigation has been reviewed and approved by the California Department of Fish and Game.

The required mitigation is necessary to offset permanent losses of soft bottom habitat. Therefore, the Commission imposes Special Condition 6 which requires the applicants to participate in the previously approved soft bottom mitigation plan within the Bolsa Chica Ecological Reserve. Any deviations from the plan must be reported to the Executive Director and may require an amendment to the coastal development permit.

The Executive Director may accept the applicant's participation in an alternative mitigation program provided that mitigation site is ecologically connected to the impact site. Further, if the applicant's participation in an existing program becomes infeasible, the applicant may seek an amendment for an alternative means of satisfying the mitigation requirement.

Only as conditioned to provide mitigation to offset the loss of soft bottom habitat can the proposed project be found consistent with Section 30233 of the Coastal Act regarding fill of coastal waters.

2. Water Quality and Construction Impacts

The proposed project involves the reinforcement of an existing bulkhead using 5/8 inch thick plastic sheet pile immediately adjacent to the existing bulkhead to a depth of approximately 5 feet below the existing footing. Due to the proposed project's location in the water, the proposed work may have adverse impacts upon water quality and the marine environment.

The proposed project was submitted to the California Regional Water Quality Control Board, Santa Ana Region, for their review and approval. The Regional Board approved 401 certification contingent upon the following conditions:

1. To the maximum extent practicable, the project must limit turbidity and the dispersion of suspended solids and other pollutants that could affect water quality standards of the receiving waters.

2. There shall be no discharge of wastes, including construction-related refuse, to waters of the United States or State.
3. Non-stormwater discharges from the project site to Huntington Harbour are prohibited.
4. The following Best Management Practices described in the Coastal Resources Management Report dated February 26, 2003, shall be implemented. These are:
 - Debris and silt curtains should be deployed around the perimeter of the project area to minimize the spread of debris and turbid waters in Huntington Harbour.
 - All debris and trash shall be disposed in suitable trash containers on land at the end of each construction day.
 - The discharge of any hazardous material into Huntington Harbour is prohibited.

The applicant has submitted a Pre-Construction Marine Biological Survey Assessment, prepared by Coastal Resources Management, dated February 5, 2003. The Assessment identifies potential impacts to water quality arising from the proposed project. The potential adverse impact to water quality identified in the Assessment is an increase in water turbidity when panels are installed. The resuspended sediments will have a potential to reduce water clarity and decrease ambient dissolved oxygen concentrations in the water column during the periods of panel construction if the sediments are anoxic. The Assessment recommends the Best Management Practices identified above, which have been endorsed by the RWQCB.

In addition, the improper storage of construction equipment and materials during construction can contribute to adverse water quality impacts; therefore, the Commission finds it necessary to identify the following other construction related restrictions: all construction materials and equipment shall be stored landward of the bulkhead, on impervious surfaces only; all construction materials or waste shall be stored in a manner which prevents their movement via runoff, or any other means, into coastal waters; and that any and all construction equipment, materials and debris are removed from project site and discarded or stored in an appropriate manner at the conclusion of construction. The Commission finds it necessary to identify the permittee's responsibilities regarding construction and the utilization of best management practices and has conditioned the project accordingly. Thus, to assure that adverse impacts to water quality are minimized, the Commission imposes Special Condition No. 2 which requires the applicant to utilize best management practices including those described above. The special condition will help supplement the applicant's water quality program and ensure that the applicant's program is consistent with the Commission's water quality requirements for development in the water.

3. Plastic

The Commission has expressed concern about the use of plastic in the marine environment due to the potential for leaching toxins into the marine environment caused by the possible deterioration of the plastic. In a leach test of recycled plastic composite containing polyethylene, polypropylene, polystyrene, polyvinyl chloride, and other plastics, only minor amounts of copper, iron, and zinc leached from the plastic. None of the

contaminants had a concentration significant enough to have any adverse effects on the marine environment.

The Commission's concern with plastics, however, also includes the potential to increase plastic debris in the marine environment due to cracking, peeling, and sloughing of plastic used in marine related projects. Since plastic is an inorganic material, it does not biodegrade, but rather continually breaks down into ever-smaller pieces which can adversely effect the marine environment.

The presence of plastics in the coastal and ocean environment is both widespread and harmful to human and marine life. An article, written by Jose G.B. Derraik, entitled "The Pollution of the Marine Environment by Plastic Debris: A Review," reviews much of the literature published on the topic of deleterious effects of plastic debris on the marine environment. The article states:

The literature on marine debris leaves no doubt that plastics make-up most of the marine litter worldwide.¹

In support of this statement, the article includes a table that presents figures on the proportion of plastics among marine debris around the world. In most of the locations listed on the table, plastics represented more than 50 percent of the total marine debris found.² In other studies, the percentage is even higher.

Existing studies clearly demonstrate that plastic debris creates problems for marine life. Plastic marine debris affects at least 267 species worldwide, including 86% of all sea turtle species, 44% of all sea bird species, and 43% of marine mammal species.³ For example, plastics cause significant adverse impacts in seabirds, when birds mistakenly ingest the plastic debris. A study performed in 1988, concluded that seabirds consuming large amounts of plastics reduced their food consumption, which limited their ability to lay down fat deposits and in turn reduced fitness. In addition, ingesting plastics can block gastric enzyme secretion, diminish feeding stimulus, lower steroid hormone levels, delay ovulation, and cause reproductive failures.⁴

Plastic debris that has settled on the seabed floor also harms the biological productivity of coastal waters. In Derraik's article, he states:

The accumulations of such [plastic] debris can inhibit gas exchange between the overlying waters and the pore waters of the sediments, and the resulting hypoxia or anoxia in the benthos can interfere with the normal

¹ Derraik, Jose. "The Pollution of the Marine Environment by Plastic Debris; A Review", Marine Pollution Bulletin, 44: 842-852, 2002.

² Ibid.

³ Laist, D. W. "Impacts of Marine Debris: Entanglement of Marine Life in Marine Debris Including a Comprehensive List of Species with Entanglement and Ingestion Records", Coe, J.M., Rogers, D.B. (Eds.)

⁴ Derraik, Jose. "The Pollution of the Marine Environment by Plastic Debris; A Review", Marine Pollution Bulletin, 44: 842-852, 2002.

*ecosystem functioning, and alter the make-up of life on the sea floor. Moreover, as for pelagic organisms, benthic biota is likewise subjected to entanglement and ingestion hazards.*⁵

There are no examples that staff can identify that document the deterioration rate of plastic used in the marine environment. The standard manufacturer's warranty for plastic floats, often used in marina construction, ranges from 10 to 12 years. The warranties are against cracking, peeling, sloughing and deterioration from ultraviolet rays. Marina operators have indicated that plastic floats will last as long as 20 years before they need to be replaced. To extend the life of the plastics used in the marine environment, stabilizers are added to increase protection from degradation that may result from UV exposure. Thus it is significant to note that the plastic sheet piles proposed in subject project will be entirely submerged and 70% will be below grade, which further reduces exposure to ultraviolet (UV) radiation. In addition, unlike some other uses of marine plastics, the bulkhead sheet pile will not be adjacent to abrasive forces (such as docking boats, etc.) which may result in breakage.

Notwithstanding the protection provided by the stabilizers and location of the proposed plastic sheet piles, the potential does exist that the plastic may degrade over time. If the plastic were to become brittle, it may splinter or chip and would introduce plastic debris into the coastal waters, and thus would adversely affect water quality and marine resources. However, unlike pilings and fenders that may use plastic for protection, and are constantly subject to abrasive forces from boats, the potential for impact and damage to the bulkhead sheet pile is nominal. Due to the location of the bulkhead sheet piles, they are protected from boater impact. Furthermore, the sheet piles will be submerged and not exposed to extensive ultraviolet radiation.

Among the alternatives to the proposed project that were considered was installation of driven sheet piles with rip rap rock at the base, and the use of steel sheet piles rather than plastic. The first alternative would substantially increase the area of disturbance due to the placement of the rip rap rock. For this reason, it has been dismissed as environmentally inferior. The use of steel sheet piles was considered, but dismissed for the following reasons. The susceptibility of the steel to corrosion when submerged would require cathodic protection that would not be required for plastic sheet piling. The cathodic protection would require the placement of a sacrificial piece of metal adjacent to the proposed sheet pile and a constant stream of electricity to draw corrosive forces away from the steel sheet pile. If the cathodic protection were to fail, it may not be immediately obvious. If the failure continues, the protective sheet pile itself would begin to corrode. The proposed plastic would be inert, whereas the steel is not. Furthermore, the life of the plastic sheet pile is expected to be significantly longer than the life of the steel. The plastic sheet pile has an expected life of 50 years versus 20 years for steel. The longer life expectancy would mean longer intervals between major work on the bulkhead, thus fewer disturbances to the marine environment. Finally, installation can be accomplished with

⁵ibid.

reduced hammer size and impact when plastic (rather than steel) is used. Therefore, the use of plastic sheet piles is proposed as the least environmentally damaging.

The use of treated wood was not considered, but it should be noted that in a study comparing the toxic effects of plastics to treated wood, the researchers concluded that, "in all these experiments with four different species of estuarine organisms, the recycled plastic proved to be far less toxic material than the treated wood."⁶ Commission staff has also reviewed a 1999 Navy Region Southwest document, "*Plastic Pier Piling Evaluation Report*," which reported on an evaluation of 1,200 fiberglass- and steel- reinforced plastic pier pilings installed since 1995. The report acknowledges that because use of plastic pier pilings is a relatively recent occurrence, the pilings' long-term durability and maintenance requirements are not known. However, the report concluded that plastic pilings appear to be more durable than timber pilings, maintenance requirements appear to be limited, and none of the pilings has required replacement because of degradation from exposure to the marine environment. In addition, toxicity leaching tests and metal analyses of a plastic piling sample indicated that the use of these pilings does not appear to present any environmental concerns to fish and wildlife.

Nevertheless, the potential for plastic to break apart and enter the marine environment is not entirely eliminated. Consequently the plastic sheet piles must be monitored to ensure that they are maintained in an environmentally safe operating condition and replaced when damage or degradation has occurred. To minimize the potential of the plastic sheet piles breaking apart and entering the water due to damage or deterioration, Special Condition No. 1 requires that the project be carefully monitored once every two years for the first 12 years, and then every year thereafter. If monitoring confirms that the use of the plastic sheet piles is damaging marine resources, the applicant is required to submit an application for an amendment to this permit or a new coastal development permit. At that time the proposed repair and/or replacement will be evaluated, including consideration of whether use of such materials should be stopped, and whether more environmentally friendly products have been developed. Further, if new information becomes available indicating that the use of plastic does have harmful effects on the marine environment, and that environmentally superior products are available, consideration must be given to substitution of the environmentally superior alternative to plastic. As a condition of approval, the applicant shall agree to submit an application for an amendment to this permit or a new coastal development permit if new information becomes available that indicates that plastic has harmful effects on the marine environment, and that environmentally superior, feasible alternative(s) are available. The amendment or new coastal development shall include measures to eliminate or significantly reduce the adverse impacts of the plastic. Only as conditioned can the proposed project be found consistent with Sections 30230 and 30231 of the Coastal regarding protection of the marine environment.

⁶ Toxicity of Construction Materials in the Marine Environment; Weis, Peddrick; Weis, Judith; Greenberg, Arthur; and Nosker, Thomas; **Archives of Environmental Contamination and Toxicology**; 1992.

3. Caulerpa taxifolia

Recently, a non-native and invasive aquatic plant species, *Caulerpa taxifolia* (herein *C. taxifolia*), has been discovered in parts of Huntington Harbour (Emergency Coastal Development Permits 5-00-403-G and 5-00-463-G). *C. taxifolia* is a tropical green marine alga that is popular in the aquarium trade because of its attractive appearance and hardy nature. In 1984, this seaweed was introduced into the northern Mediterranean. From an initial infestation of about 1 square yard it grew to cover about 2 acres by 1989, and by 1997, blanketed about 10,000 acres along the coasts of France and Italy. Genetic studies demonstrated that those populations were from the same clone, possibly originating from a single introduction. This seaweed spreads asexually from fragments and creates a dense monoculture displacing native plant and animal species. In the Mediterranean, it grows on sand, mud and rock surfaces from the very shallow subtidal to about 250 ft depth. Because of toxins in its tissues, *C. taxifolia* is not eaten by herbivores in areas where it has invaded. The infestation in the Mediterranean has had serious negative economic and social consequences because of impacts to tourism, recreational diving, and commercial fishing.

Because of the grave risk to native habitats, in 1999, *C. taxifolia* was designated a prohibited species in the United States under the Federal Noxious Weed Act. In addition, in September 2001 the Governor signed into law AB 1334 which made it illegal in California for any person to sell, possess, import, transport, transfer, release alive in the state, or give away without consideration various *Caulerpa* species including *C. taxifolia*.

In June 2000, *C. taxifolia* was discovered in Aqua Hedionda Lagoon in San Diego County, and in August of that year an infestation was discovered in Huntington Harbour in Orange County. Genetic studies show that this is the same clone as that released in the Mediterranean. Other infestations are likely. Although a tropical species, *C. taxifolia* has been shown to tolerate water temperatures down to at least 50°F. Although warmer southern California habitats are most vulnerable, until better information is available, it must be assumed that the whole California coast is at risk. All shallow marine habitats could be impacted.

In response to the threat that *C. taxifolia* poses to California's marine environment, the Southern California *Caulerpa* Action Team, SCCAT, was established to respond quickly and effectively to the discovery of *C. taxifolia* infestations in Southern California. The group consists of representatives from several state, federal, local and private entities. The goal of SCCAT is to completely eradicate all *C. taxifolia* infestations.

A *C. taxifolia* survey was included in the Pre-Construction Marine Biological Survey Assessment prepared by Coastal Resources Management, dated 2/5/03, and submitted with the application. The survey found that no *C. taxifolia* exists within the project area. However, more than a year has elapsed since the *C. taxifolia* survey was conducted. Therefore, in order to ensure that *C. taxifolia* has not established within the project area in the interim, Special Condition No. 3 is imposed, which requires a survey be conducted no

earlier than 90 days nor later than 30 days prior to commencement or re-commencement of any development authorized under this coastal development permit.

4. Eel Grass

Eelgrass (*Zostera marina*) is an aquatic plant consisting of tough cellulose leaves which grows in dense beds in shallow, subtidal or intertidal unconsolidated sediments. Eelgrass is considered worthy of protection because it functions as important habitat and foraging area for a variety of fish and other wildlife, according to the Southern California Eelgrass Mitigation Policy (SCEMP) adopted by the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (USFWS), and the California Department of Fish and Game (CDFG). For instance, eelgrass beds provide areas for fish egg laying, juvenile fish rearing, and waterfowl foraging. Sensitive species, such as the California least tern, a federally listed endangered species, utilize eelgrass beds as foraging grounds.

An eelgrass survey was prepared by Coastal Resources Management as part of the Pre-Construction Biological Survey Assessment on February 5, 2003 and submitted with the application. The survey found no eelgrass within the project vicinity. Due to the ephemeral nature of eelgrass, however, an eelgrass certification is only valid until the next period of active growth. More than a year has elapsed since the project site was surveyed. Even though the eelgrass inspection indicates that no eelgrass is present, and therefore eelgrass will not be impacted by the proposed project, eelgrass may have established within the project area between the time the survey was conducted and commencement of construction. If eelgrass is present in the project area, adverse impacts from the proposed project could result. Therefore, measures to avoid or minimize such potential impacts must be in place in order for the project to be found consistent with Section 30230 of the Coastal Act. Therefore, the Commission imposes Special Condition No. 4 which requires that a current pre-construction eelgrass survey be conducted within the boundaries of the proposed project during the period of active growth of eelgrass (typically March through October). The pre-construction survey shall be completed prior to the beginning of construction and shall be valid until the next period of active growth. The pre-construction survey will identify any eelgrass beds which could be impacted and which must be avoided. If the eelgrass survey identifies any eelgrass within the project area which would be impacted by the proposed project, the development shall require an amendment to this permit from the Coastal Commission or a new coastal development permit. An amendment or new permit is required in order to address any eelgrass impacts. In addition, if there are any impacts upon eelgrass, the applicant will be required to prepare appropriate surveys and mitigation plans in consultation with the California Department of Fish & Game and in conformance with the *Southern California Eelgrass Mitigation Policy* (Exhibit F).

The Commission previously imposed similar conditions for pre-construction eelgrass surveys on Coastal Development Permits: 5-97-230 and 5-97-230-A1 (City of Newport Beach), 5-97-231 (County of Orange), 5-97-071 (County of Orange), 5-99-244 (County of Orange-Goldrich-Kest-Grau), 5-98-179 (Kompaniezy), 5-98-201 (Anderson), 5-98-443 (Whyte), 5-98-444 (Barrad), 5-99-005 (Dea), 5-99-006 (Fernbach & Holland), 5-99-007

(Aranda et al.), 5-99-008 (Yacoel et. al.), 5-99-030 (Johnson), 5-99-031 (Lady Jr., et. al.), 5-99-032 (Appel et. al.), 5-99-108 (Pineda), 5-98-471 (Maginot), 5-99-472 (Bjork), 5-99-473 (Gelbard), 5-00-389 (Ashby et. al.), 5-00-390 (Burggraf et. al.), 5-00-401 (Baghdassarian et. al.), 5-00-402 (Buettner et. al.) and 5-01-358 (Rayhanabad).

D. Public Access

Section 30212 of the Coastal Act states in relevant part:

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

(2) adequate access exists nearby, or,

(b) For purposes of this section, "new development" does not include:

(4) The reconstruction or repair of any seawall; provided, however, that the reconstructed or repaired seawall is not seaward of the location of the former structure.

The subject site is located in Huntington Harbour. Much of Huntington Harbour consists of private communities. The nearest public access in the area is at a pocket park located across the channel from the subject site near Scepter Lane and Warner Avenue (approximately ¼ mile to the southeast) and also at Sunset County Beach located approximately ½ mile to the southwest.

The proposed development involves structural reinforcements to an existing bulkhead which would result in seaward encroachment of the structure. Therefore, the proposed project is considered new development for the purposes of Coastal Act section 30212. However, the proposed project would be underwater. There is no beach area which provides lateral public access on-site upon which the proposed project would encroach. Further, there is no beach area off-site which provides public access that could be eroded as a result of changes in shoreline processes due to the proposed project.

Therefore, the Commission finds that no public access is necessary with the proposed development and that the proposed project is consistent with section 30212 of the Coastal Act.

E. Legal Ability to Undertake Development

Section 30601.5 of the Coastal Act requires states in part,

...prior to the issuance of a coastal development permit, the applicant shall demonstrate the authority to comply with all conditions of approval.

Certain portions of submerged lands within Huntington Harbour are owned in fee by the State of California ("State") and certain portions are not owned in fee by the State but are subject to the public trust easement. Any construction of protective devices upon submerged lands in Huntington Harbour that are owned in fee interest by the state requires a Protective Works Lease (PWL) from the California State Lands Commission (CSLC). In this case, the State does not have fee ownership of the land, however, they do assert a public trust easement. In a letter from the California State Lands Commission (File Ref: SD 2003-09-16.1), CSLC staff state that the project is not inconsistent with current public trust needs in the area and they have no objection to the project as proposed.

According to information submitted by the City of Huntington Beach to the Commission, the City owns the submerged lands adjacent to the project site. In accordance with Section 30601.5 of the Coastal Act, the City has been invited to join as co-applicant. Although the City has not joined as co-applicant, they must still grant the applicant the legal ability to undertake the work authorized by this permit and to comply with the conditions of the permit. In order to assure such authorization is granted prior to issuance of the permit, the Commission imposes Special Condition 7. Special Condition 7 requires the applicant to submit written evidence to the Executive Director that the City has granted the applicant the legal ability to carry out the proposed project on their land including compliance with all conditions of approval of this permit.

Comments provided in communications from CSLC indicate that their approval of the projects does not waive any potential public rights to the subject submerged lands. In addition, the comments provided by the CSLC were provided by their staff and not provided via a resolution or other action by the appointed members of the California State Lands Commission. While there is no indication that any further review by the CSLC is needed, it remains possible that the authorization of use of the submerged lands for the proposed purpose could be challenged. In order to assure that the subject Coastal Development Permit is not utilized to assert that any public rights to the land upon which the development is occurring have been waived, the Commission imposes Special Condition 6 which states that the Coastal Commission's approval is not a waiver of any public rights which exist or may exist on the property.

As conditioned the Commission finds the proposed project is consistent with Section 30601.5 of the Coastal Act.

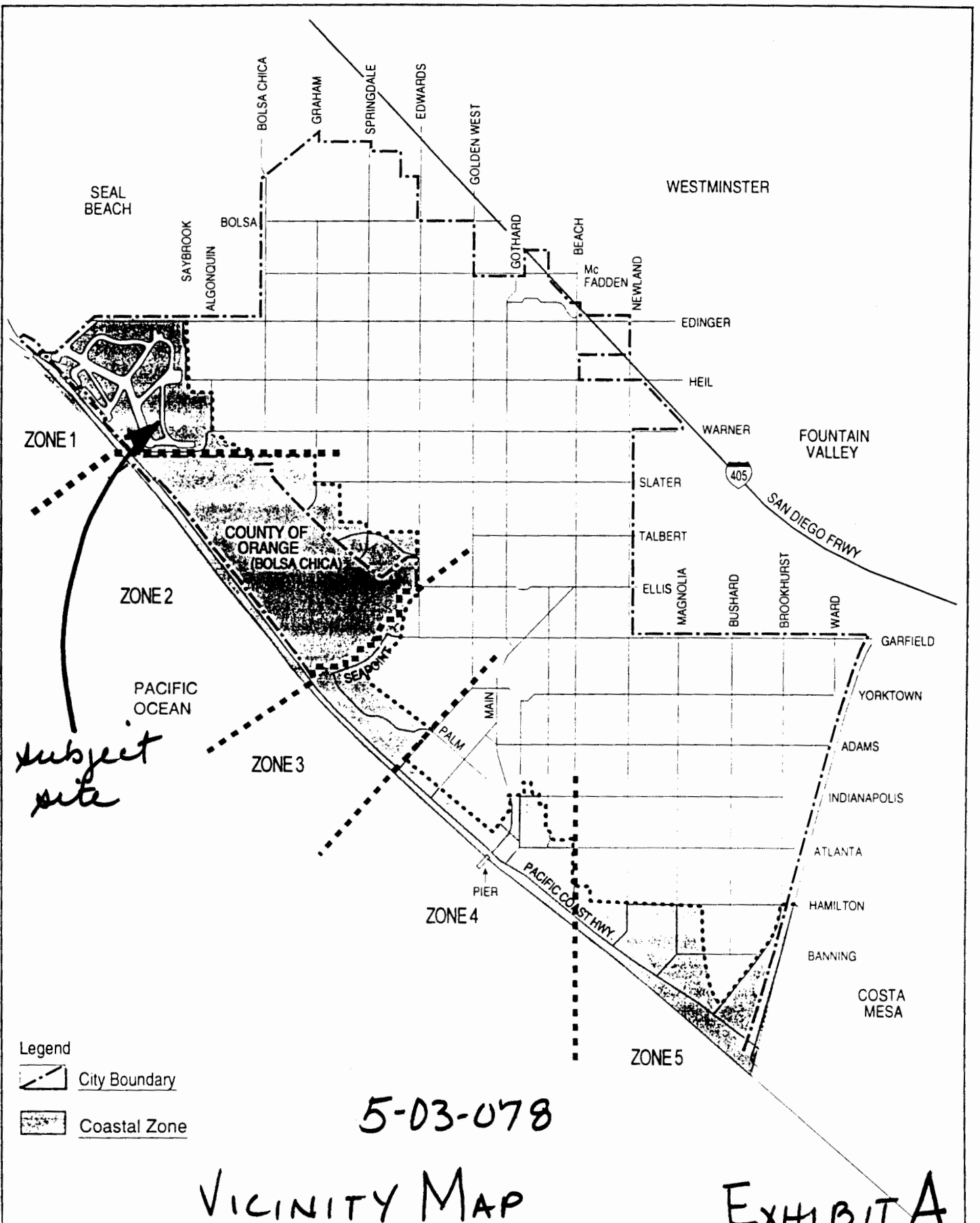
F. LOCAL COASTAL PROGRAM

Coastal Act section 30604(a) states that, prior to certification of a local coastal program ("LCP"), a coastal development permit can only be issued upon a finding that the proposed development is in conformity with Chapter 3 of the Act and that the permitted development will not prejudice the ability of the local government to prepare an LCP that is in conformity with Chapter 3. An LCP for the City of Huntington Beach was effectively certified in March 1985. However, the proposed development is occurring within an area of the Commission's original permit jurisdiction, due to the project location seaward of the mean



high tide line. Consequently, the standard of review is the Coastal Act and the City's LCP is used only as guidance. As conditioned, the proposed development is consistent with Chapter 3 of the Coastal Act and with the certified LCP for the area.

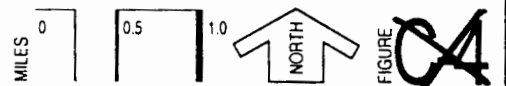
G. CALIFORNIA ENVIRONMENTAL QUALITY ACT

As conditioned, there are no feasible alternatives or additional feasible mitigation measures available that would substantially lessen any significant adverse effect that the activity may have on the environment. Therefore, the Commission finds that the proposed project, as conditioned to mitigate the identified impacts, is the least environmentally damaging feasible alternative and can be found consistent with the requirements of the Coastal Act to conform to CEQA.



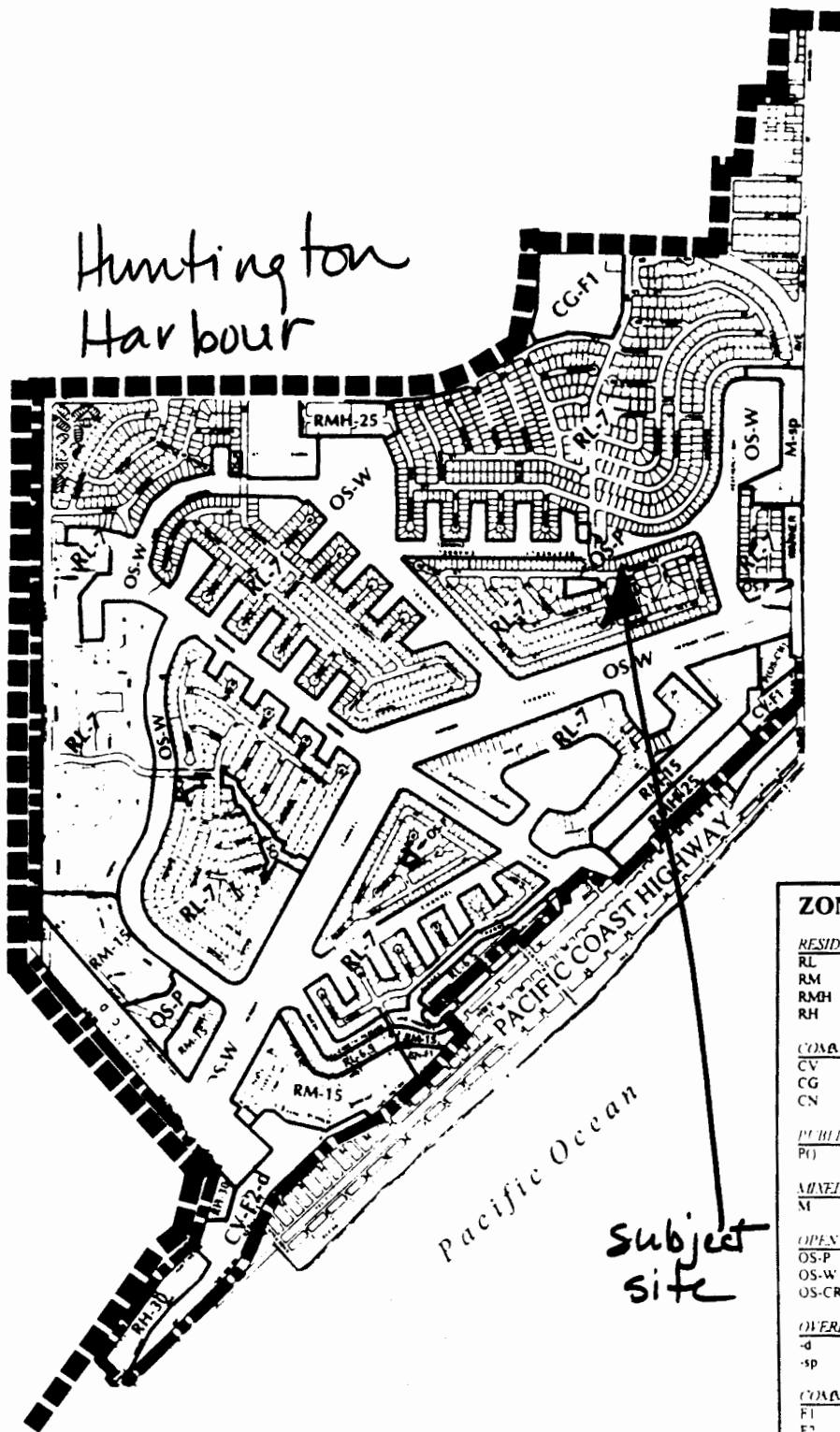
Legend

-  City Boundary
-  Coastal Zone



COASTAL ZONE DIVISIONS
CITY OF HUNTINGTON BEACH COASTAL ELEMENT

Huntington Harbour



Zone 2

ZONE 1 LEGEND

RESIDENTIAL

- RL RESIDENTIAL LOW DENSITY
- RM RESIDENTIAL MEDIUM DENSITY
- RMH RESIDENTIAL MEDIUM HIGH DENSITY
- RH RESIDENTIAL HIGH DENSITY

COMMERCIAL

- CV COMMERCIAL VISITOR
- CG COMMERCIAL GENERAL
- CN COMMERCIAL NEIGHBORHOOD

PUBLIC

- P() PUBLIC (underlying designation)

MIXED USE

- M MIXED USE

OPEN SPACE

- OS-P PARK
- OS-W WATER RECREATION
- OS-CR COMMERCIAL RECREATION

OVERLAY

- d DESIGN OVERLAY
- sp SPECIFIC PLAN OVERLAY

COMMERCIAL INDUSTRIAL MIXED USE DENSITY SCHEDULE

- F1 0.35
- F2 0.5

COASTAL ZONE BOUNDARY



HUNTINGTON BEACH CITY LIMITS



subject site

5-03-078

A₂

**HUNTINGTON BEACH COASTAL ZONE
ZONE 1 LAND USE PLAN**

CITY OF HUNTINGTON BEACH COASTAL ELEMENT



GENERAL NOTES:

- DESIGN CRITERIA:
 DESIGN CODE: 2001 CBC SOIL PROFILE = TYPE SD
 SEISMIC ZONE = 4 WIND SPEED = 70 MPH
 NEAR SOURCE FACTOR $N_s = 1.0$ WIND EXPOSURE = C
 NEAR SOURCE FACTOR $N_e = 1.2$
- NOTES AND DETAILS ON DRAWINGS SHALL TAKE PRECEDENCE OVER THESE GENERAL NOTES.
- ALL MATERIALS AND WORK PERFORMED SHALL CONFORM WITH THE REQUIREMENTS OF THE 2001 CBC BUILDING CODES AND GOVERNING BUILDING ORDINANCES.
- NO CHANGES ARE TO BE MADE TO THESE PLANS WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THIS ENGINEER.
- THE CONTRACT DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE AND DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY FIELD REPRESENTATIVES OF THE ENGINEER SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
- WHERE A SECTION OR TYPICAL DETAIL IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
- GENERAL CONTRACTOR SHALL VISIT THE JOB SITE AND VERIFY ALL GRADES, DIMENSIONS, AND CONDITIONS PRIOR TO BIDDING AND COMMENCING CONSTRUCTION. ALL DIMENSIONS CONTROLLED BY EXISTING CONDITIONS SHALL BE VERIFIED BY THE CONTRACTOR AT THE SITE.
- GENERAL CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES FOUND WITHIN THE CONTRACT DOCUMENTS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHETHER SHOWN HEREON OR NOT AND TO PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL BEAR ALL EXPENSE OF REPAIR OR REPLACEMENT IN CONJUNCTION WITH THE EXECUTION OF THIS WORK.

PROJECT SUMMARY:

OWNER:
 GREGORY J. BUCHANAN
 18822 BARUNA LAKE
 HUNTINGTON BEACH, CA 92648

STRUCTURAL ENGINEER:

SUNIT DESIGN
 20818 BAKE PARKWAY
 SUITE 108
 LAKE FOREST, CA 92630
 CONTACT: SCOTT BETHENCOURT
 TELEPHONE: (949) 215-3330
 FAX: (949) 457-2330

ZONING:

R-10

OCCUPANCY:

R-320-1
 CONSTRUCTION TYPE V-N

PROJECT DESCRIPTION:

THE PROPOSED PROJECT ENTAILS
 INSTALLATION OF 5/8" THICK HIGH DENSITY POLYETHYLENE (HDPE) SHEET PILE ADJACENT TO TOE OF EXISTING BULKHEAD ALL TO PREVENT FUTURE EROSION OF THE SOIL BELOW THE WALL.

SQUARE FOOTAGE SUMMARY:

LOT SIZE: 5120 SF
 BUILDING AREA: 2493 SF

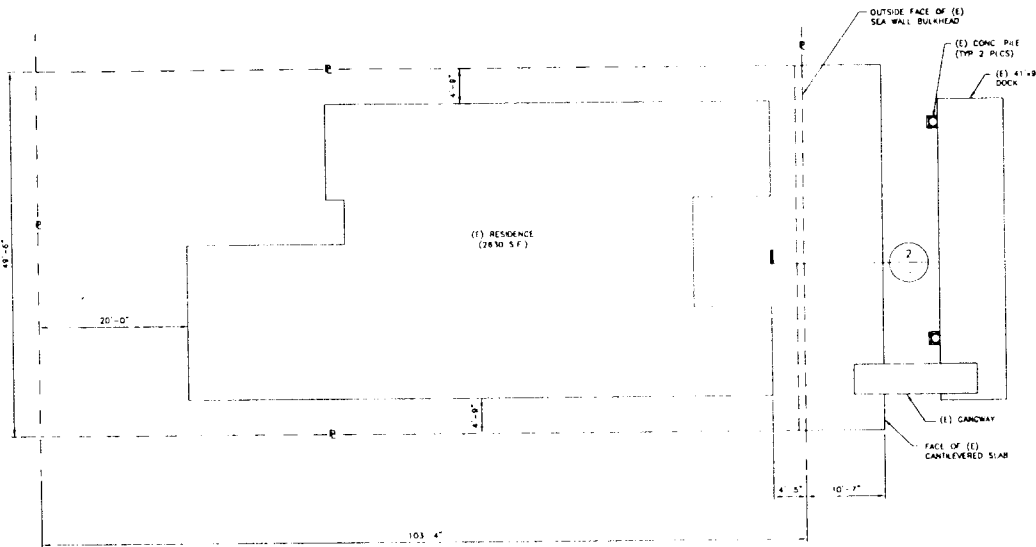
A.P.N. # 178 375 12

LEGAL DESCRIPTION:

LOT 5 OF TRACT NO. 2050, AS MAP RECORDED IN BOOK 181, PAGES 39 TO 43 INCLUSIVE OF MISCELLANEOUS MAPS IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.

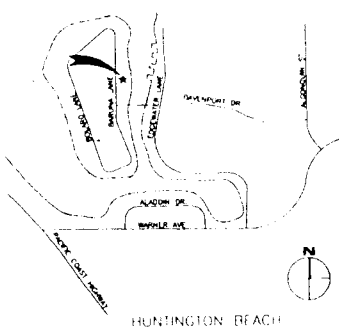
PROJECT SUMMARY

PLOT PLAN



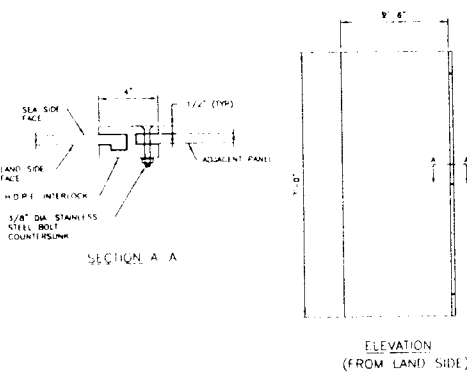
GENERAL NOTES

GENERAL NOTES

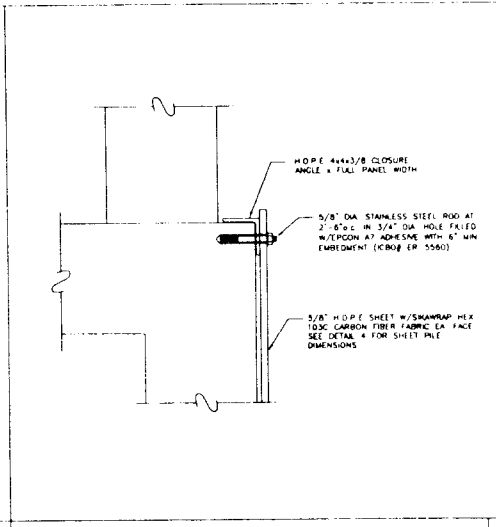


VICINITY MAP

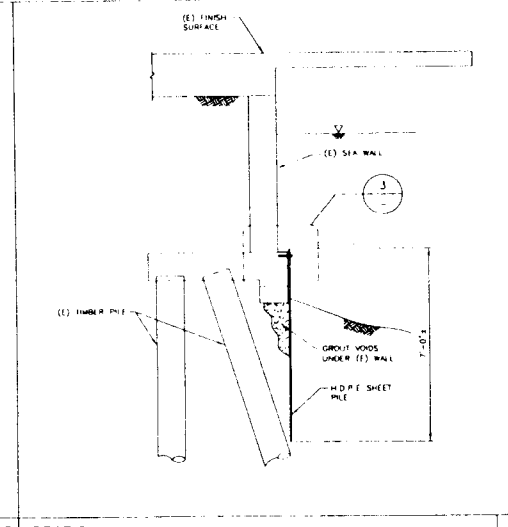
SHEET PILE



4 DETAIL



3 SECTION



2 SECTION

PROPRIETARY INFORMATION
 The information on this drawing is the property of Sunit Design. It is to be used only for the project and location specified on this drawing. It is not to be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage and retrieval system, without the prior written permission of Sunit Design.

20818 BAKE PARKWAY
 SUITE 108
 LAKE FOREST, CA 92630
 PHONE: (949) 215-3330
 FAX: (949) 457-2330

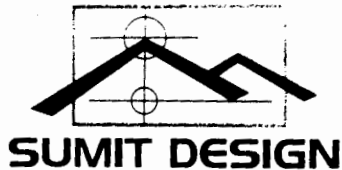
SUNIT DESIGN

PROJECT: BUCHANAN RESIDENCE
 LOCATION: 18822 BARUNA LAKE
 HUNTINGTON BEACH, CA

SHEET BULKHEAD WALL
 TILE PROTECTION

DATE: 1/27/05
 DRAWN BY: SB
 CHECKED BY: AS NOTED
 SCALE: 01/100
 SHEET: 1
 SHEET 1 OF 1

5-03-078 PLANS EXHIBIT B



September 15, 2003

California Coastal Commission
South Coast Area Office
200 Oceangate, Suite 1000
Long Beach, CA 90802-4302

Attention: Ms. Meg Vaughn

Subject: SUPPLEMENTAL INFORMATION
Coastal Development Permit Application: 5-03-078
Applicant: Greg and Anne Buchanan
Site: 16822 Baruna Lane, Huntington Beach, Orange County, CA

RECEIVED
South Coast Region
NOV 21 2003
CALIFORNIA
COASTAL COMMISSION

Dear Ms. Vaughn,

In accordance with your letter of March 19, 2003, we are submitting the following assessments and analyses.

Engineering Assessment

The project scope is to protect an existing seawall at 16822 Baruna Lane, Huntington Beach, CA. The project is not located in a main channel of the Huntington Harbor. The existing bulkhead appears to be in good condition. In some areas, the soil has eroded slightly below the bottom of the existing footing. The bulkhead wall is supported by timber piles, therefore, undermining of the footings does not affect the structural integrity of the wall. The exposure does, however, affect the wood piles supporting the bulkhead wall by allowing access by woodborers. The woodborers feed on the pile, which decreases the cross section of the pile, and decreases the pile's ability to support the wall. The proposed project is intended to prevent erosion below the footing and protect the piles. This is accomplished by placing a 5/8" thick high-density polyethylene plastic (HDPE) sheet pile driven adjacent to the outside face of the footing. The upper edge of the sheet is attached to the footing with stainless steel adhesive anchors. The sheet pile will extend to approximately 5'-0" below the bottom of footing. While the HDPE pile will not affect the erosion in the channel, it is designed to retain the soil behind it and provide a barrier between the woodborers and the pile. The sheet pile is to extend the entire length of the property and will not affect the adjoining properties.

Alternative methods to the proposed construction include corrugated galvanized steel sheet piles with quarry run rock to protect it's base, concrete encasement of the existing wood piles in place, replacement of the seawall with less susceptible materials, or repair of individual piles as they become damaged (do nothing alternative). All of these options will increase the construction cost, the disruption to the neighborhood and environment and increase the likelihood of damage to the structure due to the failure of the seawall.

The HDPE sheet pile is preferred over the above alternatives because it minimizes the impact to the marine environment during construction, easily terminates at the property boundary, provides corrosion, decay and critter resistance, non-leaching barrier to

EXHIBIT C

5-03-078

protect the existing wood piles. The impact to marine life is minimized due to the nominal disturbance to the soil during installation (the sheet pile is only 5/8" thick), the absence of quarry run rock at the toe of the sheet pile, and because the need to remove soil under the wall is eliminated.

The proposed piles will be installed adjacent to the toe of the existing seawall footing using a modified driving hammer. The hammer size and impact is decreased due to the material properties. Each sheet pile has an interlocking mechanism that acts as a guide to keep the pile aligned while driving and provides for a mechanical attachment at each joint. The sheet piles will attach to the wall footing and extend the entire length of the property. The piles will terminate at each end of the property. Due to the thickness of the piles (5/8" thick), no special termination or transition is required. Any future protection, repair, or replacement of the seawalls at adjacent properties can progress unimpeded by this protective measure.

Alternative Analysis

As described above, alternatives to the HDPE sheet piles were explored to confirm that the proposed alternative both minimized the impact to the surrounding environment and provided a cost effective solution for the homeowner. These alternatives included installation of steel sheet piles with quarry run rock to protect it's base, concrete encasement of the existing wood piles in place, replacement of the seawall with less susceptible materials, or repair of individual piles as they become damaged.

One option is to do nothing at this time and wait for damage to occur before implementing a repair or replacement. Currently, there is minimal undermining of the footing and little to no damage to the existing piles. This option requires periodic monitoring which will disturb the local waters every time the extent of undermining and damage to the piles is assessed. If the monitoring fails to provide adequate assessment of the conditions, a partial failure of the wall is possible. The impact on the local environment would be appreciably affected by the replacement or repair of the wall and foundations. In the event of a wall failure, the residence could be structurally affected, in part, due to the long process involved with obtaining the appropriate approvals to perform the repair.

Clearly, the "do nothing" option is not the best long-term solution to maintaining the integrity of the existing seawall. The continuing erosion of the soil adjacent to the seawall cannot be controlled by the homeowner, so he must take other measures to protect the seawall, its foundation, and ultimately, his home. Two popular methods of protection are the installation of driven sheet piles with rip rap rock at the base and encasement of the piles with concrete or HDPE for protection. Both of these options require an extensive amount of labor below the waterline and severely impact the local environment.

In lieu of the traditional methods of protection, this project proposes to install 5/8" thick sheet piles adjacent to the wall. The sheet pile will be installed from the landside, not the adjacent water. The minimal contact area with the harbor bottom will minimize the suspended sediments in the surrounding water and lessen the impact to local marine life. The total fill of HDPE material into the soils is 0.260 cubic feet per linear foot of sheet pile. For this residence, the total displacement of soil is 12.9 cubic feet.

Biological Assessment

A Marine Biological Survey by Coastal Resources Management is enclosed.

Water Quality

The Best Management Practices is shown on page 5 of the Marine Biological Survey.

Plastic

The material proposed for the sheet pile is High Density Polyethylene (HDPE). This material exhibits excellent durability, good impact resistance, and is chemical resistant. The material thickness proposed is 5/8" thick. All previous references to Fiber Reinforced Plastic (FRP) have been removed.

Although generally considered inert, minor amounts of iron, copper and zinc leach from the HDPE when submerged. The concentrations leached are not significant enough to adversely affect the marine environment. The thickness of the material (5/8" thick), location, and minimal exposure to ultraviolet exposure significantly lessens the possibility of cracking, peeling or chipping, which can deposit debris into the marine environment. HDPE is a common material used for the floating dock pontoons, but the thickness is generally about 1/8" thick. The increase in thickness for this application will increase the longevity. The sheet pile will be completely submerged at all times and 70% is below grade. It is also attached directly to the seawall and behind the floating dock, therefore, the chance for impact is negligible. In these conditions, the sheet pile is expected to last a minimum of 15 years.

Steel sheet piles were considered, but their susceptibility to corrosion when submerged, would require cathodic protection that would not be required for plastic sheet piling. The cathodic protection would require additional maintenance. It is our opinion that the plastic would provide an increased service life with lower maintenance over the steel sheet piles.

The permittee shall exercise due diligence in inspection of the plastic sheet piles on a periodic basis. The sheet piles shall be inspected on a five-year basis, on or about the anniversary of the project completion date, from the waterside, during low tide. The homeowner shall remove or replace any damaged sections of the sheet pile immediately upon recognition of a damaged condition.

Ownership

The CSLC asserts no claims that the project intrudes into state owned lands. The documentation is attached.

Public Access


The sea wall is located at the rear of a residence with no public access to the harbor.

Agency Review

Approval from ACOE, CDFG, and RWQCB are attached. I contacted Mr. Bob Hoffman of the NMFS regarding his approval of the project. He stated that the NMFS does not review or issue approvals for sea walls.

Please contact me if you have any questions concerning this letter.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Betancourt". The signature is fluid and cursive, with a long horizontal stroke at the beginning and a large, sweeping flourish at the end.

Scott Betancourt, S.E.

C4

CALIFORNIA STATE LANDS COMMISSION

100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202



OCT 10 2003

PAUL D. THAYER, Executive Officer

(916) 574-1800 FAX (916) 574-1810

California Relay Service From TDD Phone 1-800-735-2922
from Voice Phone 1-800-735-2929

Contact Phone: (916) 574-1900**Contact FAX: (916) 574-1925**

File Ref: SD 2003-09-16.1

Scott Betancourt, P.E.
Sumit Design
20918 Bake Parkway Suite 108
Lake Forest, CA 92630

Dear Mr. Betancourt:

Subject: Project Review – Proposed Installation of Sheet Pile Adjacent to the Toe of the Existing Bulkhead Waterward of the Residence at 16822 Baruna Lane, Huntington Harbour, Huntington Beach, Orange County

This is in response to your request on behalf of your clients, Greg and Anne Buchanan, for a determination by the California State Lands Commission (CSLC) whether it asserts a sovereign title interest in the property that the subject project will occupy and whether it asserts that the project will intrude into an area that is subject to the public easement in navigable waters.

The facts pertaining to your client's project, as we understand them, are these:

Your client proposes to install sheet pile adjacent to the toe of the existing bulkhead waterward of the residence at 16822 Baruna Lane, Lot 5, Tract 5050 in Huntington Harbour. The purpose of this installation is to prevent undermining of soil below the bulkhead. The sheet pile installation appears to extend minimally into the adjacent channel area. This artificial, navigable channel is referred to on the Orange County Assessor's map as "Lot A." It appears that Lots 1 to 16 inclusive of Tract 5050 have private "wharfage rights in a defined area of Lot 'A' as shown" on the Assessor's Parcel Map 178-37. While the Assessor's roll shows the Huntington Harbour Corporation as the owner of Lot A, it is unclear if this parcel has been deeded or transferred to the City of Huntington Beach.

Based on the site plan dated January 27, 2003, submitted by you and prepared by Sumit Design, the proposed project appears to be well within the wharfage area of Lot "A". The City of Huntington Beach has advised us that no permit or permit application is pending for this project.

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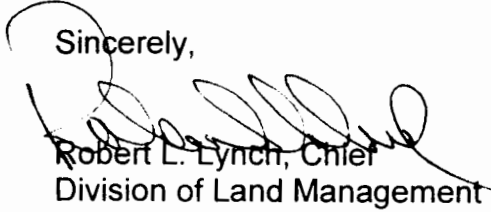
EXHIBIT D

With regard to the jurisdiction of the CSLC, pursuant to two agreements entered into in 1961 and 1962, BLA 18 and SLL 34, the CSLC settled certain property (boundary and title) ownership issues with the Huntington Harbour Corporation involving Huntington Harbour. The CSLC's area of leasing jurisdiction extends over the state's fee title ownership including the areas that are referred to as the Main and Midway Channels. The State retains a Public Trust easement over much of the remaining area within Huntington Harbour.

Accordingly, the CSLC presently asserts no claims that the project intrudes onto State owned lands. As to the retained Public Trust Easement, based on our review, your client's project does not appear to be inconsistent with Public Trust needs of the area. This conclusion is without prejudice to any future assertion of state ownership or public rights, should circumstances change, or should additional information come to our attention.

If you have any questions, please contact, Susan Young, Public Land Management Specialist, at (916) 574-1879.

Sincerely,



Robert L. Lynch, Chief
Division of Land Management

cc: B.Dugal - CSLC
S.Young – CSLC
California Coastal Commission
City of Huntington Beach

D,

DEPARTMENT OF FISH AND GAME

South Coast Region (Region 5)
Habitat Conservation Planning
4665 Lampson Ave., Suite C
Los Alamitos, CA 90720
Tel. No. (562)493-6897



July 15, 2003

Mr. Scott Betancourt
Sumit Design
21092 Bake Pkwy., #114
Lake Forest, CA 92630

Subject: Notification of Proposed Lake or Streambed Alteration No. R5-2003-0181
(Ref: Buchanan Residence Seawall, Huntington Harbor)

Dear Mr. Olmos:

This letter is in response to the Streambed Alteration Notification Package (No. R5-2003-0181) that you submitted to the Department of Fish and Game (Department) for the Buchanan Residence Seawall Project (Project). The project site is located at 16822 Varuna Lane, Davenport Island in Huntington Harbor, in the City of Huntington Beach, County of Orange. The project consists of repairing an existing seawall by placing composite carbon fiberglass panels into the sediments vertically along the outer board face of the existing 50-foot long bulkhead.

Based on the Department's review of the information you submitted, the Department has determined that a Streambed or Lake Alteration Agreement is not required for your project or activity because the project or activity 1) does not substantially divert, obstruct, or change and natural flow or bed, channel, or bank of a river, stream, or lake, or 2) use material from a streambed, or 3) substantially adversely effect existing fish or wildlife resources.

As a result, you may begin your project or activity if you have obtained all other necessary permits. **If the project or activity changes from that stated in the notification package above, a new notification shall be submitted to the Department of Fish and Game.**

Nothing in this letter authorizes the Operator to trespass on any land or property, nor does it relieve the Operator of responsibility for compliance with applicable federal, state, or local laws or ordinances. This letter does not constitute and Department's endorsement of the

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EXHIBIT E

Mr. Scott Betancourt

July 15, 2003

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proposed project or activity, or assures the Department's concurrence with permits required from other agencies.

If you have any questions regarding this matter, please feel free to contact me at (562)493-6897.

Sincerely,

A handwritten signature in cursive script, appearing to read "Laura Crum".

Laura Crum
Environmental Scientist

E₂

SOUTHERN CALIFORNIA EELGRASS MITIGATION POLICY

(Adopted July 31, 1991)

Eelgrass (*Zostera marina*) vegetated areas function as important habitat for a variety of fish and other wildlife. In order to standardize and maintain a consistent policy regarding mitigating adverse impacts to eelgrass resources, the following policy has been developed by the Federal and State resource agencies (National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the California Department of Fish and Game). This policy should be cited as the Southern California Eelgrass Mitigation Policy (revision 8).

For clarity, the following definitions apply. "Project" refers to work performed on-site to accomplish the applicant's purpose. "Mitigation" refers to work performed to compensate for any adverse impacts caused by the "project". "Resource agencies" refers to National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the California Department of Fish and Game.

1. Mitigation Need. Eelgrass transplants shall be considered only after the normal provisions and policies regarding avoidance and minimization, as addressed in the Section 404 Mitigation Memorandum of Agreement between the Corps of Engineers and Environmental Protection Agency, have been pursued to the fullest extent possible prior to the development of any mitigation program.

2. Mitigation Map. The project applicant shall map thoroughly the area, distribution, density and relationship to depth contours of any eelgrass beds likely to be impacted by project construction. This includes areas immediately adjacent to the project site which have the potential to be indirectly or inadvertently impacted as well as areas having the proper depth and substrate requirements for eelgrass but which currently lack vegetation.

Protocol for mapping shall consist of the following format:

1) Coordinates

Horizontal datum - Universal Transverse Mercator (UTM), NAD 83, Zone 11

Vertical datum - Mean Lower Low Water (MLLW), depth in feet.

2) Units

Transects and grids in meters.

Area measurements in square meters/hectares.

All mapping efforts must be completed during the active growth phase for the vegetation (typically March through October) and shall be valid for a period of 120 days with the exception of surveys completed in August - October.

A survey completed in August - October shall be valid until the resumption of active growth (i.e., March 1). After project construction, a post-project survey shall be completed within 30 days. The actual area of impact shall be determined from this survey.

3. Mitigation Site. The location of eelgrass transplant mitigation shall be in areas similar to those where the initial impact occurs. Factors such as, distance from project, depth, sediment type, distance from ocean connection, water quality, and currents are among those that should be considered in evaluating potential sites.

4. Mitigation Size. In the case of transplant mitigation activities that occur concurrent to the project that results in damage to the existing eelgrass resource, a ratio of 1.2 to 1 shall apply. That is, for each square meter adversely impacted, 1.2 square meters of new suitable habitat, vegetated with eelgrass, must be created. The rationale for this ratio is based on, 1) the time (i.e., generally three years) necessary for a mitigation site to reach full fishery utilization and 2) the need to offset any productivity losses during this recovery period within five years. An exception to the 1.2 to 1 requirement shall be allowed when the impact is temporary and the total area of impact is less than 100 square meters. Mitigation on a one-for-one basis shall be acceptable for projects that meet these requirements (see section 11 for projects impacting less than 10 square meters).

Transplant mitigation completed three years in advance of the impact (i.e., mitigation banks) will not incur the additional 20% requirement and, therefore, can be constructed on a one-for-one basis. However, all other annual monitoring requirements (see sections 8-9) remain the same irrespective of when the transplant is completed.

Project applicants should consider increasing the size of the required mitigation area by 20-30% to provide greater assurance that the success criteria, as specified in Section 9, will be met. In addition, alternative contingent mitigation must be specified, and included in any required permits, to address situation where performance standards (see section 9) are not met.

5. Mitigation Technique. Techniques for the construction and planting of the eelgrass mitigation site shall be consistent with the best available technology at the time of the project. Donor material shall be taken from the area of direct impact whenever possible, but also should include a minimum of two additional distinct sites to better ensure genetic diversity of the donor plants. No more than 10% of an existing bed shall be harvested for transplanting purposes. Plants harvested shall be taken in a manner to thin an existing bed without leaving any noticeable bare areas. Written permission to harvest donor plants must be obtained from the California Department of Fish and Game.

Plantings should consist of bare-root bundles consisting of 8-12 individual turions. Specific spacing of transplant units shall be at the discretion of the project applicant. However, it is understood that whatever techniques are employed, they must comply with the stated requirements and criteria.

6. Mitigation Timing. For off-site mitigation, transplanting should be started prior to or concurrent with the initiation of in-water construction resulting in the impact to the eelgrass bed. Any off-site mitigation project which fails to initiate transplanting work within 135 days following the initiation of the in-water construction resulting in impact to the eelgrass bed will be subject to additional mitigation requirements as specified in section 7. For on-site mitigation, transplanting should be postponed when construction work is likely to impact the mitigation. However, transplanting of on-site mitigation should be started no later than 135 days after initiation of in-water construction activities. A construction schedule which includes specific starting and ending dates for all work including mitigation activities shall be provided to the resource agencies for approval at least 30 days prior to initiating in-water construction.

7. Mitigation Delay. If, according to the construction schedule or because of any delays, mitigation cannot be started within 135 days of initiating in-water construction, the eelgrass replacement mitigation obligation shall increase at a rate of seven percent for each month of delay. This increase is necessary to ensure that all productivity losses incurred during this period are sufficiently offset within five years.

8. Mitigation Monitoring. Monitoring the success of eelgrass mitigation shall be required for a period of five years for most projects. Monitoring activities shall determine the area of eelgrass and density of plants at the transplant site and shall be conducted at 3, 6, 12, 24, 36, 48, and 60 months after completion of the transplant. All monitoring work must be conducted during the active vegetative growth period and shall avoid the winter months of November through February. Sufficient flexibility in the scheduling of the 3 and 6 month surveys shall be allowed in order to ensure the work is completed during this active growth period. Additional monitoring beyond the 60 month period may be required in those instances where stability of the proposed transplant site is questionable or where other factors may influence the long-term success of transplant.

The monitoring of an adjacent or other acceptable control area (subject to the approval of the resource agencies) to account for any natural changes or fluctuations in bed width or density must be included as an element of the overall program.

A monitoring schedule that indicates when each of the required monitoring events will be completed shall be provided to the resource agencies prior to or concurrent with the initiation of the mitigation.

Monitoring reports shall be provided to the resource agencies within 30 days after the completion of each required monitoring period.

9. Mitigation Success. Criteria for determination of transplant success shall be based upon a comparison of vegetation coverage (area) and density (turions per square meter) between the project and mitigation sites. Extent of vegetated cover is defined as that area where eelgrass is present and where gaps in coverage are less than one meter between individual turion clusters. Density of shoots is defined by the number of turions per area present in representative samples

within the control or transplant bed. Specific criteria are as follows:

- a. a minimum of 70 percent area of eelgrass bed and 30 percent density after the first year.
- b. a minimum of 85 percent area of eelgrass bed and 70 percent density after the second year.
- c. a sustained 100 percent area of eelgrass bed and at least 85 percent density for the third, fourth and fifth years.

Should the required eelgrass transplant fail to meet the established criteria, then a Supplementary Transplant Area (STA) shall be constructed, if necessary, and planted. The size of this STA shall be determined by the following formula:

$$STA = MTA \times (|A_t + D_t| - |A_c + D_c|)$$

MTA = mitigation transplant area.

A_t = transplant deficiency or excess in area of coverage criterion (%).

D_t = transplant deficiency in density criterion (%).

A_c = natural decline in area of control (%).

D_c = natural decline in density of control (%).

Four conditions apply:

- 1) For years 2-5, an excess of only up to 30% in area of coverage over the stated criterion with a density of at least 60% as compared to the project area may be used to offset any deficiencies in the density criterion.
- 2) Only excesses in area criterion equal to or less than the deficiencies in density shall be entered into the STA formula.
- 3) Densities which exceed any of the stated criteria shall not be used to offset any deficiencies in area of coverage.
- 4) Any required STA must be initiated within 120 days following the monitoring event that identifies a deficiency in meeting the success criteria. Any delays beyond 120 days in the implementation of the STA shall be subject to the penalties as described in Section 7.

10. Mitigation Bank. Any mitigation transplant success that, after five years, exceeds the mitigation requirements, as defined in section 9, may be considered as credit in a "mitigation bank". Establishment of any "mitigation bank" and use of any credits accrued from such a bank must be with the approval of the resource agencies and be consistent with the provisions stated in this policy. Monitoring of any approved mitigation bank shall be conducted on an annual basis until all credits are exhausted.

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11. Exclusions.

1) Placement of a single pipeline, cable, or other similar utility line across an existing eelgrass bed with an impact corridor of no more than ½ meter wide may be excluded from the provisions of this policy with concurrence of the resource agencies. After project construction, a post-project survey shall be completed within 30 days and the results shall be sent to the resource agencies. The actual area of impact shall be determined from this survey. An additional survey shall be completed after 12 months to insure that the project or impacts attributable to the project have not exceeded the allowed ½ meter corridor width. Should the post-project or 12 month survey demonstrate a loss of eelgrass greater than the ½ meter wide corridor, then mitigation pursuant to sections 1-11 of this policy shall be required.

2) Projects impacting less than 10 square meters. For these projects, an exemption may be requested by a project applicant from the mitigation requirements as stated in this policy, provided suitable out-of-kind mitigation is proposed. A case-by-case evaluation and determination regarding the applicability of the requested exemption shall be made by the resource agencies.

(last revised 2/2/99)

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