

CALIFORNIA COASTAL COMMISSION

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Received: July 15, 1998
Staff: Meg Vaughn-LB
Staff Report: 7/20/06
Hearing Date: 8/8-11/06
Commission Action:

T10a, T10b, T10c, T10d**STAFF REPORT: PERMIT EXTENSION REQUEST**

APPLICATION NUMBER: 5-99-031-E1 through E4; 5-99-032-E1 through E4;
5-00-390-E1 through E4; 5-00-401-E1 through E4

APPLICANT: See Chart on Page 3- 4.

AGENT: Tetra Tech, Inc.
Fernando Pages, Sarah McFadden, Natalie Chen

PROJECT LOCATION: See Chart on Page 2 - 3.

PROJECT DESCRIPTION: Repair and enhancement of existing bulkhead/seawall more specifically described on pages 5 and 6 of this report.

SUMMARY OF STAFF RECOMMENDATION: Staff recommends that the extensions **NOT** be granted for the following reasons: The Executive Director has determined that changed circumstances exist that affect the development's consistency with the marine resources policies of the Coastal Act. The Executive Director has determined that a changed circumstance exists because evidence has emerged in recent years indicating the adverse impacts of the use of plastic in the marine environment, making such use an area of significant concern. Staff recommends that the Commission make a finding of changed circumstances, thereby denying the extension requests. This finding will result in the applications being heard as if they were new applications at a subsequent Commission meeting. In order to deny the extension request, at least three Commissioners must determine that there are changed circumstances that affect the development's consistency with the Chapter 3 policies of the Coastal Act.

STAFF NOTE:

The original coastal development permits were approved on the following dates: 5-99-031 & 5-99-032 on 12/11/00; and 5-00-390 & 5-00-401 on 2/13/01. Thus, the original expiration dates would have been 12/11/02 and 2/13/03. However, the applicants have submitted requests for successive extensions (both the original extensions and each subsequent extension) in a timely manner. Although none of the extension requests has been acted on yet, pursuant to Section 13169(e) of the Commission's regulations, submittal of the requests automatically extended the time for commencement of development until such time as the Commission acts upon the extension requests. However, no development approved by the permit may commence during the period of automatic extension. Thus, the four permits in question have not expired. The extension requests were not scheduled for Commission action earlier because staff and the applicant were attempting to work toward an agreement acceptable to both staff and the applicant such that the issues raised by the changed circumstance would be addressed by

amendments to the underlying permits. However, a mutually acceptable resolution was not achieved, and now the extension requests have been scheduled for Commission review.

PROCEDURAL NOTES:

1. **Report of Extension Requests.** Section 13169 of Title 14 of the California Code of Regulations (“regulations”) provides that permit extension requests shall be reported to the Commission if the Executive Director determines (1) there are no changed circumstances, (2) that an objection to that determination was received but does not identify changed circumstances, or (3) that there are changed circumstances

2. **Commission Action on Permit Extension Requests.** In this case, the Executive Director has determined that, due to changed circumstances, the proposed development may not be consistent with the Coastal Act. Accordingly, the extension requests are being reported to the Commission pursuant to Section 13169(d) of the regulations. Pursuant to Section 13169(d)(1) of the regulations, if three (3) Commissioner’s determine that there are changed circumstances that affect the consistency of the development with the Chapter 3 policies of the Coastal Act, the extension requests shall be denied and the applications shall be set for a full public hearing as though they were new applications. If no such determination is made by three Commissioners, the permit(s) will be extended for an additional one-year period from the most recent expiration date.

SUBSTANTIVE FILE DOCUMENTS:

Coastal Development Permits 5-99-031, 5-99-032, 5-00-390, 5-00-401
Tetra Tech letters dated 8/15/05 and 3/17/06

Extension Request

Staff Report

Application Number	Applicant(s)	<u>Project Location:</u> <u>Humboldt Island,</u> <u>Huntington Beach, Orange</u> <u>County</u>	<u>Lot #</u>
5-99-031	Lady, Jr., Lloyd Zadro, Zlatko Woods, Jr., Henry	16741 Carousel Lane 16742 Wanderer Lane 16752 Wanderer Lane	1501 5115 2
5-99-032	Yacoel, Claude & Michelle McClory, Robert M. Clark, Oliver & Jean Baron, Robert F. Mettler, Lovena McGwire, Mark Kao, Jack & Margaret Appel, Albert & Sharon Schuster, Richard & Iris Faber, Bob & Sarah Brady, Jr., John D. Goss, Joseph & Janice Hutton, Thomas & Victoria DeAlmeida, Gerson Sun, Yung H. Grossman, Jack M.	16501 Carousel Lane 16531 Carousel Lane 16601 Carousel Lane 16611 Carousel Lane 16621 Carousel Lane 16631 Carousel Lane 16641 Carousel Lane 16651 Carousel Lane 16661 Carousel Lane 16671 Carousel Lane 16681 Carousel Lane 16691 Carousel Lane 16701 Carousel Lane 16711 Carousel Lane 16721 Carousel Lane 16731 Carousel Lane	126 129 136 137 1381 39 140 141 142 143 144 145 146 147 148 149

Application Number	Applicant(s)	<u>Project Location:</u> <u>Trinidad Island,</u> <u>Huntington Beach,</u> <u>Orange County</u>	Tract #	Lot#
5-00-390	McNally, Thomas & Lynn Kosta, Nicholas Younessi, Yaghoub Burggraf, Robert & Masako Rayhan, Syrus Daniels, Douglas & La Rae Dauger, Alan B. Uva, Tony & Esther Ong, Hung Van	3382 Venture Drive 3362 Venture Drive 3352 Venture Drive 16281 Typhoon Lane 3612 Venture Drive 3602 Venture Drive 3582 Venture Drive 3421 Sagamore Drive 3441 Sagamore Drive	8636 8636 8636 8636 9168 9168 9335 9347 9347	10 12 13 23 69 70 46 72 74

5-99-031-E4, 5-99-032-E4, 5-00-390-E4, 5-00-401-E4
 Extension Request
 Staff Report
 Page 4

Application Number	Applicant(s)	<u>Project Location:</u> <u>Trinidad Island,</u> <u>Huntington Beach,</u> <u>Orange County</u>	Tract #	Lot#
5-00-401	Sutter, Susan	3502 Venture Drive	8636	1
	Baghdassarian, Ruben & Cheryl	3492 Venture Drive	8636	2
	Tajima, Michiko	3462 Venture Drive	8636	3
	Munoz, Frank & Nancy	3452 Venture Drive	8636	4
	Kubeck, John D. & Nicolette M.	3442 Venture Drive	8636	5
	Goodyear, Francis & Margaret	3422 Venture Drive	8636	7
	Hill, Rodney & Michelle	3402 Venture Drive	8636	8
	Chen, Eric	3392 Venture Drive	8636	9
	Zacharia, Reda	3372 Venture Drive	8636	11
	Schofhauser, George F.	3342 Venture Drive	8636	14
	Newfield, William	3332 Venture Drive	8636	15
	Hodges, Tracey	3322 Venture Drive	8636	16
	Dawson, Harry W.A.	3292 Venture Drive	8636	19
	Broido, Alan	16311 Typhoon Lane	8636	20
	Rosenthal, Yuval & Eva	16301 Typhoon Drive	8636	21
	Do, Liem & Anh	16291 Typhoon Lane	8636	22
	Swain, Robert	16271 Typhoon Lane	8636	24
	Muratore, John S. & Irene D.	3742 Nimble Circle	9168	43
	Jabobs, Joseph & Benita	3682 Escapade Circle	9168	55
	De Gelas, Frank & Donna	3622 Venture Lane	9168	68
Kriesel, Gregory D.	3512 Venture Drive	9335	40	

NOTE: Since the time of the original Commission action on the subject coastal development permits, some of the subject properties have changed ownership. Due to the large number of applicants and properties involved, the original names are still used to minimize confusion.

STAFF RECOMMENDATION

Staff recommends that the Commission find changed circumstances that affect the consistency of the development with the Chapter 3 policies of the Coastal Act and therefore deny the extension request. The steps to accomplish this are listed below.

I. ACTION

"I suggest that the Commissioners determine that there are changed circumstances that affect whether the development approved in permits nos. 5-99-031, 5-99-032, 5-00-390, and 5-00-401 is consistent with the Chapter 3 policies of the Coastal Act."

Staff recommends a YES vote. An affirmative vote of three Commissioners is needed to deny the extension request and adopt the following resolution and findings.

II. Resolution

The Commission hereby denies the request to extend the time in which development must commence under permits numbers 5-99-031, 5-99-032, 5-00-390, and 5-00-401 in order for the permits not to expire, on the grounds that there is sufficient evidence of changed circumstances that affect whether the development approved in those permits is consistent with the Chapter 3 policies of the Coastal Act.

III. FINDINGS AND DECLARATIONS

The Commission hereby finds and declares as follows:

A. Project Description & Location

Development approved under each of the subject coastal development permits involves repair and enhancement of existing bulkheads/seawalls. The subject properties front on the waters of Huntington Harbour. The developments are located on Humbolt and Trinidad Islands within Huntington Harbour, City of Huntington Beach, Orange County (Exhibit A). Humbolt and Trinidad Islands are artificial islands surrounded by cast in place, concrete seawall/bulkheads constructed in the 1960's. The islands are developed primarily with single family residences. The majority of development in Huntington Harbour is dependant upon these types of bulkheads. The existing bulkhead systems in Huntington Harbour were all constructed at approximately the same time using a similar design. Therefore, the problems with the bulkheads encountered on Trinidad Island are similar to those experienced on Humboldt Island.

Specifically, development approved under each of the subject coastal development permits includes:

The repairs and enhancements will entail replacing portions of the timber pile foundation supports with steel jacks, installing sheet pile 1 foot 7 inches seaward of the existing bulkhead and filling the voids between the bulkhead and sheet pile, under the bulkhead and around the jacks with concrete and grouting. In addition, rock slope protection (a.k.a. toe stone) will be placed at a 2(h) to 1(v) slope seaward of the existing bulkhead. A layer of geotextile fabric will be placed beneath the proposed toe stone to prevent the toe stone from sinking into the bay mud. The applicants also propose to mitigate for impacts upon eelgrass with an eelgrass restoration project near the Anaheim Bay National Wildlife Refuge. In addition, permanent impacts to soft bottom bay habitat will be mitigated by restoring a tidal mud flat at Bolsa Chica Ecological Reserve. The soft bottom habitat mitigation project was approved under a separate coastal development permit 5-01-020 (Tetra Tech).

The length of bulkhead involved at each property varies as does the length of sheet pile installed, the quantity of toe stone to be placed, the width of the proposed toe stone from the existing bulkhead and the quantity of eelgrass and soft bottom habitat impacted and mitigated. The portion of the projects affected by the changed circumstances is the placement of the plastic sheet pile. Following is a list of the amount of sheet pile involved in each permit project.

5-99-031 & 5-99-032: Eight hundred and sixty one (861) linear feet of sheet pile will be installed.

5-00-390: Two hundred and seventy nine (279) linear feet of sheet pile will be installed.

5-00-401: One hundred thirty four (134) linear feet of sheet pile will be installed.

Soft Bottom Habitat Mitigation

The applicants have completed the necessary soft bottom habitat mitigation pursuant to Coastal Development Permit No. 5-01-020 (Tetra Tech). The soft bottom habitat mitigation project includes restoration of 5,358 square feet of wetlands including removal of concrete and debris; grading to match elevation of adjacent wetlands; replacement of two 15 inch pipes with 18 inch pipes to improve tidal exchange; and placement of 30.52 square feet of rip rap for erosion control which will fill 30.52 square feet of wetland. The mitigation project approved under Coastal Development Permit 5-01-020 was approved as mitigation for anticipated impacts to soft bottom open water wetlands within Huntington Harbour, Orange County as a result of multiple projects. Specifically the mitigation is to satisfy the mitigation requirements established under Coastal Development Permits 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; and, 5-00-390. Development approved under Coastal Development Permit 5-00-401 did not result in permanent adverse impacts to soft bottom habitat.

Eelgrass Mitigation

Eelgrass mitigation to offset losses due to the subject bulkhead repair projects was proposed and approved as a component of each of the subject coastal development permits. The eelgrass mitigation was to have occurred at a location approximately 1 mile upcoast of the site near the Anaheim Bay National Wildlife Refuge. However, that location is no longer available for the necessary eelgrass re-vegetation. The applicants have submitted an amendment application that includes a revised Eelgrass Mitigation Plan which proposes eelgrass revegetation on-site. This change will be considered either in the context of future hearings on the applications anew, or in the context of hearings on the permit amendment applications.

B. Standard of Review

The City of Huntington Beach Local Coastal Program (“LCP”) is effectively certified and has been since before the first two of the subject permits were approved, in December of 2000. However, the proposed projects are located seaward of the mean high tide line and thus are within the Coastal Commission’s original permit jurisdiction area. Therefore, pursuant to Section 30519 of the Coastal Act, the standard of review for the permit approvals was the Chapter 3 policies of the Coastal Act, and the issue before this Commission on this extension request is whether there are changed circumstances that affect the consistency of the development with the Chapter 3 policies of the Coastal Act. However, the certified LCP may be used for guidance in evaluating the proposed project for consistency with the Chapter 3 policies of the Coastal Act.

C. Description of Changed Circumstances

When the subject permits were heard by the Coastal Commission, on December 11, 2000 and February 13, 2001, the nature and the extent of the potential impacts of the use of plastics in the marine environment were less well known, and the potential issues associated with that practice had not been raised before the Commission. Since that time, new primary research has been conducted, and the results have been presented to the Commission. The Commission has heard testimony regarding plastics that has caused the Commission to have significant concerns about the potential for adverse impacts to the marine environment. At the Commission’s August 6, 2001 hearing, the Algalita Marine Research Foundation made a presentation based on its research paper titled “A Comparison of Plastic and Plankton in the North Pacific Central Gyre”. The Algalita Marine Research Foundation published another research paper in May 2002 titled “A comparison of neustonic plastic and zooplankton abundance in southern California’s coastal waters”. Based on the findings from this research and the information presented to the Commission by the Algalita Marine Research Foundation, the Commission views projects that involve plastic in the marine environment differently than it did previously.

The Commission finds that information generated by new primary research and provided to the Commission subsequent to its actions upon the subject coastal development permits, established a new awareness of adverse impacts to marine resources and the

marine environment associated with plastics, and constitutes a changed circumstance that affects the projects' consistency with the Coastal Act.

D. Consistency of Approved Development with the Marine Resource Policies of the Coastal Act

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.

Huntington Harbour is hydrologically connected to Anaheim Bay National Wildlife Refuge to the north and Bolsa Chica Ecological Reserve to the south. Coastal Act Section 30230 requires that marine resources be maintained, enhanced, and where feasible, restored and provides special protection to areas and species of special biological or economic significance. Coastal Act Section 30231 further requires that the biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of groundwater 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. The Commission considers Anaheim Bay National Wildlife Refuge and Bolsa Chica Ecological Reserve to be unique and important coastal wetlands and finds that any development proposed within the connected Huntington Harbour must be undertaken in such a manner to avoid impacts that would significantly degrade the biological productivity and quality of these connected coastal waters and wetlands. Furthermore, the waters of Huntington Harbour are used extensively for boating, and to a lesser degree fishing. Thus, it is important that the

proposed project protect the health of recreational users of these waters consistent with Section 30231.

1. Potential Issues Raised by Plastics in the Marine Environment

The Commission's concerns with plastic tend to fall into two categories. The first is the question of whether chemicals from the plastic leach into the marine waters and environment. The second is the issue of plastic debris breaking off of structures placed in marine waters and circulating in marine waters endlessly. A corollary of the second concern, breakage, is the extremely long life of plastic. Even if broken down into its smallest parts, those small parts have an expected life of thousands of years. Aside from the adverse visual impacts of plastic debris in the water, it raises the additional, more significant concern of ingestion by marine animals. Documentation of the impacts to marine life stemming from such ingestion is well established.

Commission staff has reviewed information regarding the use of plastic in the marine environment. With regard to the potential for leaching into marine waters, the general conclusion reached based on the literature review was that the evidence does not support a determination that the PVC bulkhead proposed for use in the aquatic environment would be hazardous to human or ecological health. Organotins, the primary leachates of concern, constitute 1% of the PVC chemical make-up. Studies have shown that even though the leaching of organotins does occur, the leachates tend to break down quickly and do not accumulate to levels approaching the reported effective concentrations for the biological indicators used. Similarly, laboratory extraction tests, employing stringent conditions, on CPVC¹ pipes have yielded leached organotin concentrations below even the conservative human health-based criteria. Therefore, even though organotins would be expected to leach from PVC plastic placed in the marine environment, especially immediately upon installation, mitigating factors in the environment such as the dilution provided by surrounding water, the speed with which they break down, and the fact that temperature extremes would not be a factor help ensure that the resultant organotin concentrations in the receiving water would be low and not pose significant adverse impacts to either human or ecological health.

Thus, with regard to the question of leaching, the currently available scientific evidence points to the likelihood that leaching of chemicals is minimal and not likely to have a significant effect on marine resources and the biological productivity and quality of coastal waters necessary to maintain optimum populations of marine organisms and for the protection of human health. State Department of Housing and Community Development studies testing whether PVC plastic pipes are safe for use to convey drinking water have found them to be acceptable for such use.

¹ CPVC consists of long chains of vinyl chloride, to which chlorine is added. PVC is essentially the parent polymer of CPVC. Because of the higher chlorine content, adverse impacts to water quality would be expected to be greater with CPVC than with PVC. Even so, impacts were found to be minor enough that CPVC is approved by the California State Department of Housing and Community Development for use in transporting human drinking water.

Based on current scientific evidence, it appears that leaching does not create adverse impacts on marine resources. However, scientific opinion is constantly evolving. It is possible that new information may become available in the future that reaches a different conclusion. In order to be most protective of marine resources, the Commission has found in past actions that it can only approve the long-term use of plastic in the marine environment if the applicant agrees to submit a permit amendment or a new permit application in the event new information becomes available indicating that plastic does have significant adverse impacts on marine resources. Some of the projects approved by the Commission which incorporate this measure include 5-03-078, Buchanan; 3-03-057, California Department of Parks and Recreation; ND-002-03, U.S. Navy; ND-012-03, U.S. Navy; 3-02-071, Port of San Luis Obispo).

The use of PVC could only be considered for use in the marine environment because current scientific information supports it. However, the Commission could only find that use consistent with Sections 30230 and 30231 when the project also includes the requirement that, should newer scientific evidence become available at some point in the future indicating the use of PVC is not acceptable, the applicant agrees to submit an amendment or new permit application to address the new information and incorporate appropriate changes to the project to minimize or eliminate the adverse impacts on the marine environment.

The question of plastic debris in the marine environment, however, remains a significant concern. Although plastic may break into smaller and smaller pieces, those pieces last for thousands of years. Even when broken into its smallest part, it still presents a problem. The plastic debris is often mistaken by marine life for food and ingested, resulting in illness and death. The proposed bulkhead repair project includes placement of PVC sheetpile within the marine environment. However, because the sheetpile would be placed below the mudline and/or covered with riprap, the likelihood that pieces would break off is dramatically reduced. Nevertheless, the possibility is not eliminated entirely. In the past, the Commission has found that it can only approve the proposed use of plastic, even in the proposed manner, if the applicant agrees to monitor the sheetpile periodically to assure it remains intact and, if breakage is discovered, to implement remedial action. Some of the projects approved by the Commission which incorporate this measure include, but are not limited to 5-03-078, Buchanan; 3-03-057, California Department of Parks and Recreation; 5-04-297, California Department of Parks and Recreation; 5-06-062, County of Orange; ND-002-03, U.S. Navy; ND-012-03, U.S. Navy; 3-02-071, Port of San Luis Obispo).

In the case of these permit extension requests, the applicants have indicated that adding the above-described measures to the project is unacceptable. This position is reflected in a letter from the applicant's representative Tetra Tech, Inc., dated August 15, 2005 (see exhibit C) which states: "...the homeowners believe that no plastic sheetpile monitoring is needed since the use of plastic sheetpile is consistent with the Coastal Act and...the "Future Information" clause that CCC staff suggested is too hypothetical and open ended and unfairly burdens the property affecting its value and salability."

Tetra Tech has indicated that the PVC sheetpile (specifically Shoreguard sheet pile) does not merit the need for monitoring or the requirement for a future amendment/new permit for the following reasons (more specifically described in their letter of August 15, 2005 attached as exhibit C): 1) PVC sheetpile is widely used in the marine environment, and many of the projects that use Shoreguard PVC sheetpile are projects implemented by state and federal resource agencies; 2) rigid PVC is widely used in water distribution systems throughout the United States and Canada. Tetra Tech cites a study by the National Sanitation Foundation which concluded that the use of PVC pipe for drinking water does not pose a risk to human health. Tetra Tech extrapolates that if PVC pipe does not pose a threat to human health when used to transport drinking water, it is reasonable to assume it will be safe for the marine environment; 3) the proposed PVC sheet pile has an expected life of more than 100 years with little or no loss in strength. Shoreguard sheetpile is guaranteed for 50 years. Tetra Tech believes it is unreasonable to require monitoring for a material expected to last 100 or more years; 4) The use of PVC sheetpile is endorsed by the U.S. Army Corps of Engineers; 5) the proposed project's PVC sheetpile has almost no opportunity to become plastic debris. Tetra Tech argues that the sheetpile is designed to withstand the forces exerted during the installation process (the sheetpile is vibrated into place, section by section, with a vibrating hammer) and that forces comparable to those exerted during installation are not likely to occur. Furthermore, Tetra Tech asserts that because the sheetpile will be completely encased in rock, sediment, and cement, there will be no opportunity for the sheetpile to crack, deteriorate, break, or otherwise contribute to marine debris; 6) The PVC sheetpile cannot be accessed for monitoring. Tetra Tech argues that the sheetpile is not visible unless the riprap is removed and thus cannot be monitored without causing significant disruption to the marine environment; 7) PVC sheetpile will not leach harmful chemicals into the water; 8) the applicants feel that it is unfair to impose new requirements this late in the permitting process and would be counterproductive to the goal of protecting property and implementing the necessary bulkhead repairs.

The Study referenced by Tetra Tech as an endorsement of PVC sheetpile by the Army Corps of Engineers, "A Study of the Long-Term Applications of Vinyl Sheet Piles", does not really constitute an endorsement. The executive summary of the report states: "This report, written for the U.S. Army Corps of Engineers, summarizes the results of a brief investigation of the long-term application of vinyl sheet piles to address some of the concerns raised in a recent Engineering and Construction Bulletin about the integrity, durability, impact damage, construction standards, and allowable design of commercially available PVC sheet piles. The data used in this investigation were available from existing literature, technical organizational databases, (e.g. the Vinyl Institute), manufacturers' input, input from the technical experts on vinyl, and a few limited laboratory tests." Based on this review, the Army Corps study concludes, similar to the Commission's current position, that based on the available scientific evidence, PVC sheetpile appears to be acceptable for use in the marine environment. However, the study doesn't endorse use of PVC, nor does it discount the possibility that additional observations and study over time could show there are issues that need to be addressed.

Most of the points outlined by Tetra Tech in their August 15, 2005 letter provide a basis for finding PVC an acceptable material for the proposed bulkhead repair. If the existing data did not support the likelihood that the material is generally considered safe, the use of the plastic would not be acceptable at all. The current evidence supports the position that the proposed plastic sheetpile is an acceptable material for use in the bulkhead repair. However, analysis does not stop there. Based on current scientific evidence, it appears that leaching does not create adverse impacts on marine resources. Were it not for this evidence, the Commission could not consider approving the PVC in the marine environment. However, scientific opinion is constantly evolving. Even when a thorough analysis of the proposed material has concluded that it is expected to be safe for the life of the project, future observations, study and changes in scientific thinking can occur. It is possible that new information may become available in the future that reaches a conclusion that differs from the one currently accepted. In order to be most protective of marine resources, the Commission has required that projects that use PVC in the marine environment include a requirement that 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, an amendment or new coastal development permit will be submitted to address the new information and to include measures to eliminate or significantly reduce the adverse impacts of the plastic.

Monitoring the sheetpile would not require that the buried sheetpile be exposed, but rather confirm whether the sheetpile is indeed still buried. The monitoring would not necessarily have to be performed by an engineer, but rather by anyone able to document via photos and personal observation, whether any portion of the sheetpile has become exposed, and if so, whether any cracks, breaks or deterioration have occurred. If deterioration were observed then the appropriately licensed professional would need to become involved. The applicant's engineering consultant has asserted that the riprap will not move for the life of the project. This assertion is based on a study done by Moffatt and Nichol (1994) in conjunction with the Bolsa Chica Lowlands Restoration Environmental Impact Report (prepared for the County of Orange, 2000) which reported the extreme maximum current within Huntington Harbour to be 1.45 feet per second. The engineering consultant, Tetra Tech, in a letter dated March 17, 2006 states: "Based on the Hydraulic Design of Flood Control Channels Engineer Manual (U.S. Corps of Engineers, 1991), our calculations yield a minimum D_{30} of 0.25-inches. The D_{30} of 8-inch riprap was extrapolated from Table 3-1 (U.S. Corps of Engineers, 1991) to be 3.2 inches. Therefore the design of 8-inch riprap will be more than sufficient for the condition at Huntington Harbour."

However, it is reasonable to say that it can't be known with certainty that the toe rock will never move. For example, the project design standard assumes a water depth at the sheetpile of -1 MLLW. However, this assumption does not consider conditions during storms or due to future sea level rise. Under these conditions it is possible the toe rock may move, potentially exposing the plastic sheetpile. Furthermore, outside factors could cause the toe rock to move. For example, periodic dredging may have effects on the toe rock.

2. Feasible Measures that Would Make the Project Consistent with the Coastal Act

In recent years the Commission has allowed projects that use plastic in the marine environment only when there is an assurance that the projects will include monitoring of the plastic to assess its condition over time and when the applicant agrees to consider alternatives to plastic in the future should new applicable information becomes available.

The applicant believes the changes necessary to bring the project into conformance with the marine resources sections of the Coastal Act (monitoring and future amendment), are overly burdensome and unnecessary. Monitoring is unnecessary, the applicants believe, because much of the sheetpile is buried below the mud and any exposed sheetpile is covered with rock riprap. The applicants' engineering consultant asserts that the rock will never move, and thus the sheetpile will never be exposed and so it will never break apart.

Based on current scientific information, it appears that placement of the PVC sheetpile as proposed in the underlying permits would not create significant adverse impacts on the marine environment. However, this determination is based on the following provisions: that the current scientific information remains viable and unchanged, and that the sheetpile will in fact remain submerged and shielded from breakage. However, scientific knowledge is constantly evolving. It is possible that something that is thought to be true and accurate now, may not be in the future. Likewise, even though the applicant's engineering consultant asserts that the proposed toe rock will never move and the sheet pile will never be exposed, conditions in the harbour are dynamic and it is feasible that harbour conditions could change. There is no certainty that the sheet pile will never be exposed and never suffer damage.

Monitoring once a year, or possibly every other year, to verify whether the rock has moved and thus whether the plastic sheetpile is exposed, would alert the residents to the sheetpile's condition. If disturbance has occurred, action can then be taken, minimizing adverse impacts that may occur if left undetected. Given the large numbers of applicants involved and the many properties, a once a year program may be the simplest to maintain, but monitoring every other year would be acceptable as well.

Another possibility, if monitoring is deemed completely unacceptable by the applicants, would be to remove the plastic sheet pile after the grout is emplaced. This would require coating the sheetpile with non-stick coating prior to pumping in the grout. Although perhaps unconventional, it is a feasible alternative that would eliminate the long term use of PVC plastic from the project and thereby eliminate the need for monitoring (because the PVC sheetpile would become a temporary aspect of the project).

It is the Commission's practice to take the position that is more likely to be protective of the resource in question, in this case the marine environment. At the same time the Commission recognizes the need to go forward with a project that will protect the existing

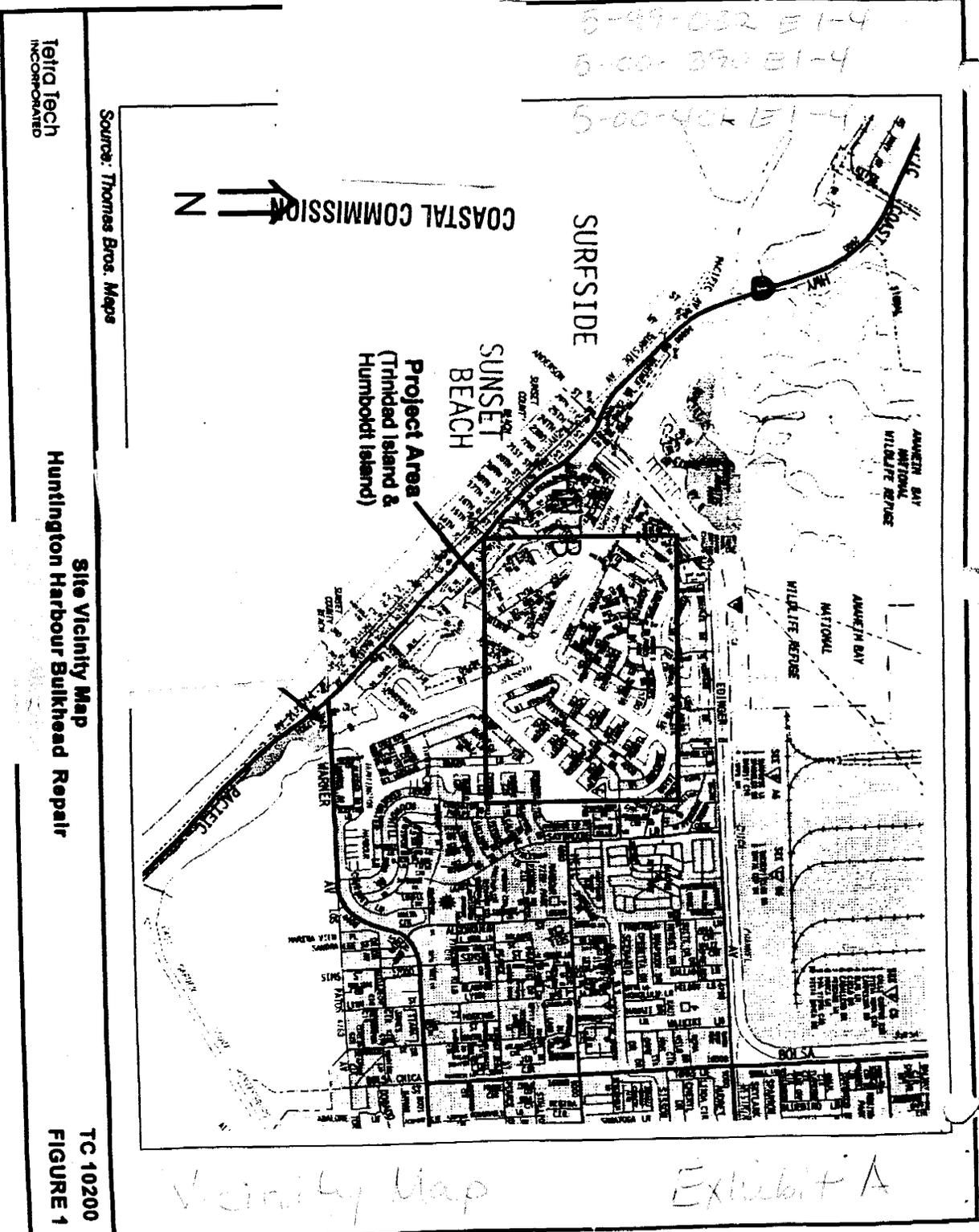
single family residences that may be jeopardized if the bulkheads are not repaired. In an effort to achieve both goals, the Commission, has in past actions approved projects which include plastic in the marine environment only when the project, as approved, specifically addresses the issues raised by the use of plastics.

Therefore, the Commission finds that circumstances have changed at the subject site which would cause the proposed project to be inconsistent with the marine resource policies of the Coastal Act.

3. Conclusion

Therefore, the Commission concurs with the Executive Director's determination that there are changed circumstances that would cause the proposed development to be inconsistent with the marine resource policies of the Coastal Act. Therefore, the Commission finds that the extension request must be denied. The proposed development shall be set for a full hearing of the Commission at a future Commission meeting.

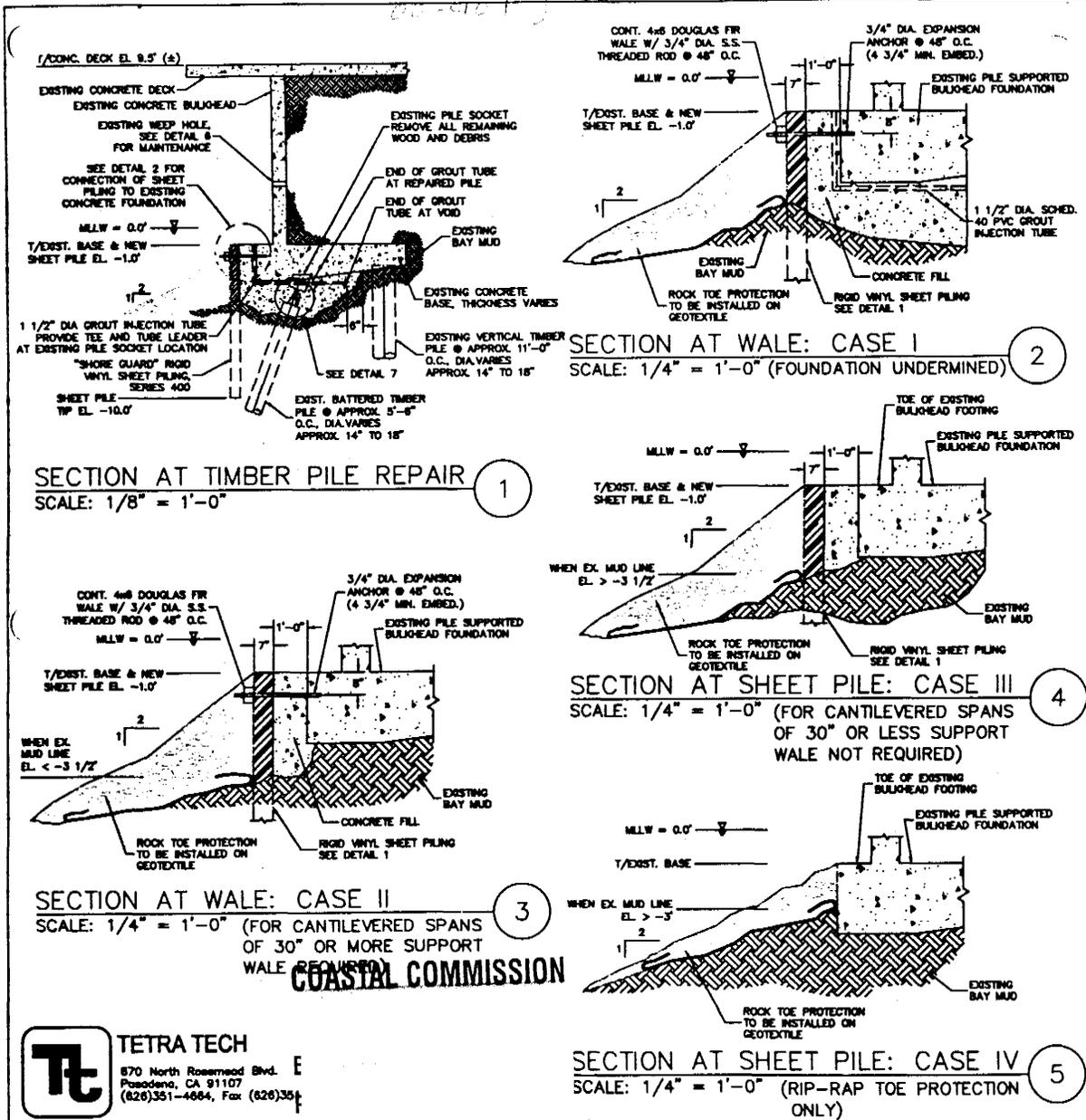
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5-99-032 E1-4
5-00-390 E1-4
5-00-401 E1-4



Plans

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 99-032 } E1-E4
 00-390 }
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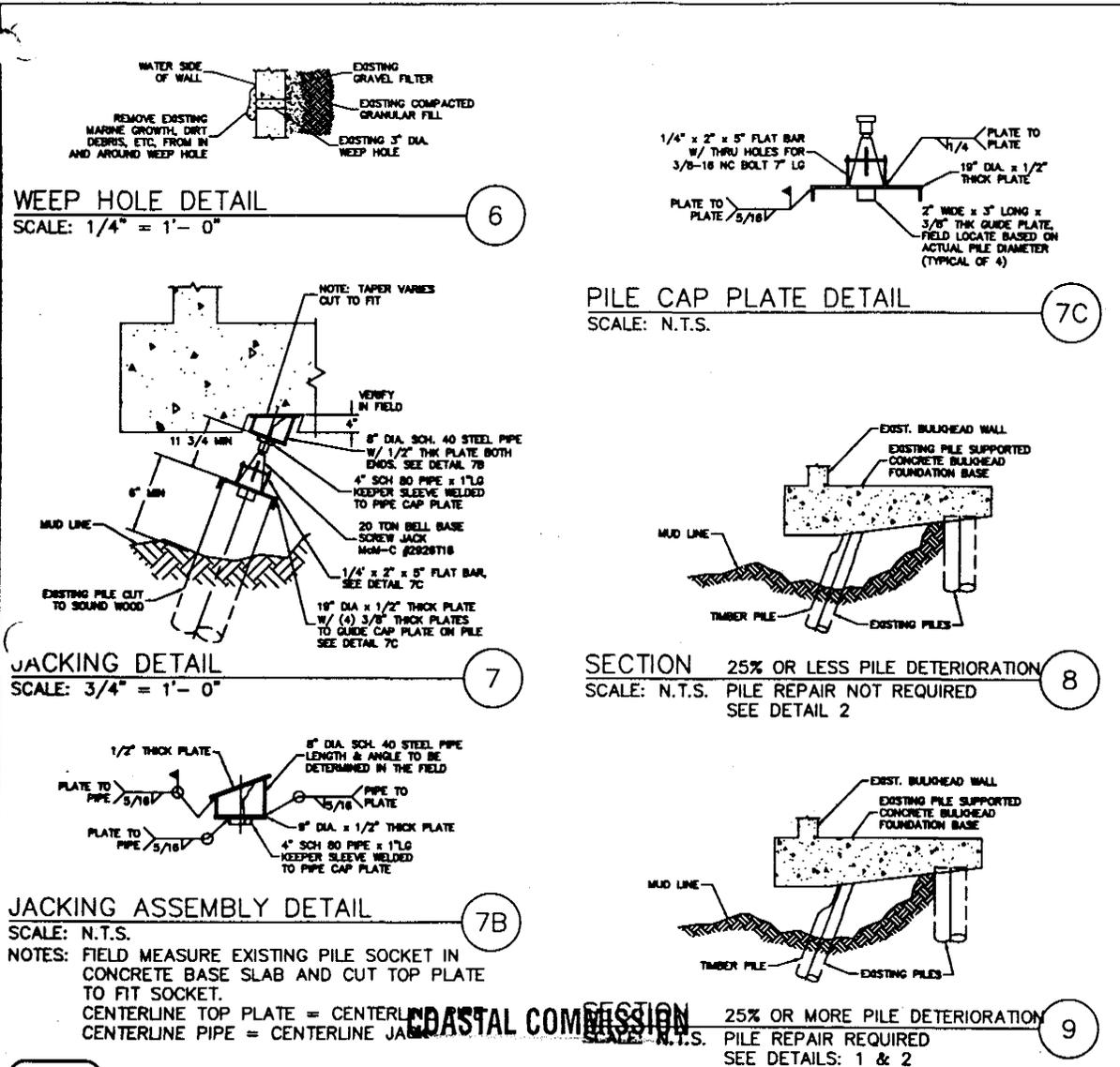
Exhibit B



TETRA TECH
 870 North Rosemead Blvd. E
 Pasadena, CA 91107
 (828)351-4684, Fax (828)351-4685

<p>PURPOSE: Repair Existing Seawall</p> <p>Datum: MLLW = 0 Adj. Property Owners: 1. See Attached List 2. 3.</p>	<p>SECTION VIEW</p> <p>Robert & Masako Burggraf 16281 Typhoon Lane Huntington Beach, CA 92649</p>	<p>Proposed Repair of Existing Seawall</p> <p>IN: Huntington Harbour AT: Trinidad Island, Huntington Beach County of Orange State: CA Application By: Burggraf Sheet 6 of 7 Date: 8/4/00</p>
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B₂



TETRA TECH
670 North Rosemead Blvd.
Pasadena, CA 91107
(626)351-4864, Fax (626)351-5281

<p>PURPOSE: Repair Existing Seawall</p> <p>Datum: MLLW = 0 Adj. Property Owners: 1. See Attached List 2. 3.</p>	<p>SECTION VIEW</p> <p>Robert & Masako Burggraf 16281 Typhoon Lane Huntington Beach, CA 92649</p>	<p>Proposed Repair of Existing Seawall</p> <p>IN: Huntington Harbour AT: Trinidad Island, Huntington Beach County of Orange State: CA Application By: Burggraf Sheet 7 of 7 Date: 8/4/00</p>
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Extension Request

Staff Report

Page 18



TETRA TECH, INC.

201 E. Broadway, Suite 200
Long Beach, CA 90802
Tel: (562) 437-2000 Fax: (562) 437-2001

August 15, 2005

Ms. Meg Vaughn
Staff Analyst
California Coastal Commission
South Coast Area Office
P.O. Box 1450
200 Oceangate, 10th Floor
Long Beach, CA 90802-4325

Re: Amendment Application for CDP 5-99-031 *AJ*

Dear Ms. Vaughn:

The purpose of this letter is to resubmit to you the amendment application for Coastal Development Permit (Permit) 5-99-031 for full commission review and approval (material amendment).

Tetra Tech previously submitted an immaterial amendment application to Coastal Commission staff for the above Permit in February of 2004, however, Coastal Commission staff deemed that application incomplete due to disagreement between the homeowners and the Coastal Commission staff on the proposed plastic sheetpile monitoring language. Tetra Tech is resubmitting the amendment application instead of simply submitting the required material amendment fees for the February 2004 application because the homeowners believe that no plastic sheetpile monitoring is needed since the use of plastic sheetpile is consistent with the Coastal Act, and because the "Future Information" clause that CCC staff suggested is too hypothetical and open ended and unfairly burdens the property affecting its value and salability. Tetra Tech has modified the amendment application accordingly and has included the full material amendment fee.

The purpose of the attached Permit amendment application is two-fold: (1) add 36 properties from CDP 5-99-032, 5-00-390, and 5-00-401, and (2) remove the eelgrass special condition from this permit since none of the homeowners have eelgrass any longer.

*5-99-031 E1-E4
5-99-032 E1-E4
5-00-390 E1-E4
5-00-401 E1-E4*

Exhibit C

5-99-031-E4, 5-99-032-E4, 5-00-390-E4, 5-00-401-E4
Extension Request
Staff Report
Page 19

Letter to Meg Vaughn re: CDP Amendment, Page 2 of 10

August 17, 2005

As mentioned to above, the homeowners are not proposing any amount of plastic sheetpile monitoring with this amendment application. The homeowners feel that the sheetpile monitoring requirements as previously proposed by Coastal Commission staff are much to open ended, would result in great cost due to the indefinite term of monitoring, and stipulation that a professional engineer be the inspector, would not result in any useful information since the sheetpiles are completely encased in sediment and rock, and would unduly encumber their properties with costly requirements that future property purchasers would have to assume. Above all, the homeowners are confident that sheetpile monitoring is not required at all since the weight of science and the long track record of proven performance of PVC sheetpiles demonstrates that it is suitable for use in the marine environment and that its use is indeed consistent with the Coastal Act.

The PVC sheet pile that has been specified for bulkhead repairs in the above mentioned CDP is ShoreGuard® Sheet Piling model 225 manufactured by CMI Limited Co. in Atlanta, GA. ShoreGuard® Sheet Piling is manufactured specifically for use in marine environments. ShoreGuard® Sheet Piling model 225 (see figure 1) is robust and durable having a 0.225-inch web thickness and maximum allowable bending moment of 1,975 Ft-Lbs. This model sheet piling also has strong back ribs integrated into the flat sections for increased strength and stiffness. ShoreGuard® Sheet Piling is designed to function as a sea wall and withstand the effects of horizontal earth pressures, sun, wind, rain, erosive forces, and breaking waves without chipping, breaking, abrading, cracking or otherwise failing.

For the proposed bulkhead repairs in Huntington Harbour, the ShoreGuard® Sheet Piling will not be used as a sea wall, rather it will be used simply as a form for the pouring of concrete underwater. The sections of ShoreGuard® Sheet Piling used in the proposed bulkhead repairs are 6-feet in length and 18-inches in width. The ShoreGuard® Sheet Piling is vibrated into the sediment seaward of the bulkhead footing (Figure 2) by a vibrating hammer. The sections are vibrated into the sediment next to each other and they interlock forming a continuous form that extends the length of the repair. This installation process does not result in the formation of any plastic debris. The 6-foot long sections of sheet piling are vibrated down into the sediment so that the top of the sheet piling is at the same elevation as the top of the bulkhead footing. The length of sheet piling left exposed to seawater after vibrating into the sediment is approximately 20-inches and varies slightly by property. A 2"x4" douglas fir whaler is installed on the top seaward side of the sheet piling (Figure 2) and tied into the bulkhead footing with threaded rods. Concrete is then poured in the space between the footing and the sheet pile and finished to the same elevation as the top of the bulkhead footing and the top of the sheet piling.

Utilizing the ShoreGuard® Sheet Piling as a mold for the concrete serves to further reduce any chipping, breaking abrading, cracking or otherwise failing of the sheet piling since the concrete has adhesive properties and the sheet piling is bonded to the concrete. Geotextile filter fabric and rock toe protection (8" minus rip rap) is then installed seaward of the sheet piling to protect the slope from further erosion (Figure 2). The rock is finished to the top of the sheet pile leaving no sheet pile exposed and therefore eliminating the possibility of any chipping, breaking abrading, cracking or otherwise failing due to impact.

C 2

5-99-031-E4, 5-99-032-E4, 5-00-390-E4, 5-00-401-E4
Extension Request
Staff Report
Page 20

Letter to Meg Vaughn re: CDP Amendment, Page 3 of 10

August 17, 2005

Below are some specific reasons why the homeowners are not proposing sheetpile monitoring:

1. PVC sheetpile is a widely used construction material in marine environments

The PVC sheetpile which has been successfully used in the Huntington Harbour Bulkhead Repair Project for the past 7 years has also been successfully used in countless marine repair projects and developments around the country. According to CMI, the manufacturer of ShoreGuard which is the PVC sheetpile the homeowners are proposing to use, no state Coastal Commission has ever called into question the suitability of PVC sheetpile as a construction material in the marine environment and none have ever requested indefinite monitoring of the sheetpile. **Over 50 million square feet of CMI's sheetpile is are in use and performing well today.** Attached is accounting of some of the projects around the country where ShoreGuard PVC sheetpile has been used successfully in the marine environment to protect homes, prevent flooding, enhance wetlands, and aid in environmental remediation. Many of the listed projects were for state and federal resource agencies in sensitive marine and riparian ecosystems. Please review the attached list of projects and note that in most of these projects, the sheetpile is being used as the main bulkhead material, where in the Huntington Harbour homeowners' repairs, the sheetpile is simply being proposed as a form which will be completely encased underwater in sediment and rock. If the multitude of agencies and coastal commissions around the country have accepted large quantities of PVC sheetpile as the main bulkhead material, then the California Coastal Commission should feel comfortable approving of the comparatively minor amount proposed in this project for use as forms **fully encased in concrete, sediment and rock.**

2. Rigid PVC is used and trusted in water distribution systems and ground water monitoring wells

PVC pipe is the predominate material used in drain, waste, and vent applications and is used in cold water delivery systems (TSA). A study by the National Research Council Canada determined that out of five different pipe materials, iron failed the most and PVC had the lowest failure rate. According to Uni-Bell, PVC pipe accounts for about 70 percent of the new buried water distribution pipes being installed throughout the United States and Canada. PVC pipe is popular because PVC will not corrode due to corrosive soil or water conditions, PVC has a long service life, PVC is durable, PVC is strong, **PVC is flexible resisting cracks and chips**, and PVC does not reduce water quality. **The National Sanitation Foundation (NSF), in collaboration with the U.S. EPA and American Water Works Association (AWWA), has concluded that PVC pipe is protective of human health and that the tin stabilizers used in potable water pipe (mono- and dimethyltin and butyltin compounds, the same used in PVC sheetpile) do not pose a risk to human health.**

Additionally, slotted PVC pipes are used routinely as groundwater monitoring well casings where water quality is critical. Many of the groundwater monitoring wells containing PVC casings are in service for many years and are cased with PVC based on its longevity, resistance to chipping and cracking, as well as no contaminating of the groundwater in the well.

It should be obvious that if the AWWA, the U.S. EPA, the NSF, and other organizations which are in charge of ensuring public and environmental safety have approved the use of PVC to convey potable water to the public, then PVC is also safe to use as a form in a bulkhead repair.

C3

5-99-031-E4, 5-99-032-E4, 5-00-390-E4, 5-00-401-E4
Extension Request
Staff Report
Page 21

Letter to Meg Vaughn re: CDP Amendment, Page 4 of 10

August 17, 2005

3. Long design life

PVC has been used in the medical, electrical, building, and construction industries for more than 50 years. PVC pile has an expected life of more than 100 years with little or no loss in strength (Vinyl Institute), and CMI ShoreGaurd PVC sheetpile met the 100-year design life criteria for The Jefferson Memorial Rehabilitation Project. CMI warrants ShoreGaurd PVC sheetpile for 50 years. **It is not logical to require monitoring on a product that has such a well proven track record and a 100-year or greater design life.**

4. Endorsed by U.S. Army Corps of Engineers

Attached to this application is a report prepared by the U.S. Army Corps of Engineers titled "A Study of the Long Term Applications of Vinyl Sheet Piles". This report contains much information about the suitability of using PVC sheetpiles as a construction material in the marine environment. Please review this report closely. The report reviews the history and manufacture of PVC and notes that it has been used in construction for over 50 years. The report mentions that the use of PVC in applications such as blood bags and food packaging gives evidence of its safety from any toxicity. The report draws its conclusions from direct testing, literature review and case studies. The report stated that field inspection of PVC sheetpile installations found no significant degradation in ten year old sheet piles. Published research has shown that in five years of weathering very little degradation happened in tensile strength and a slight improvement occurred in the flexural properties. The report went on to conclude that:

- The basic material, PVC, is well investigated, and exhaustive data are available from organizations like Vinyl Institute, Vinyl by Design, etc
- Corrosion degradation of steel pile was observed to be much faster than any degradation of PVC sheet pile.
- Laboratory accelerated aging studies showed insignificant degradation in flexural properties with aging.
- UV exposure may cause discoloration after prolonged exposure.
- UV exposure reduces notched impact strength, but the reduction rate can be quantified.
- UV exposure tends to harden the surface. As a result, flexural properties tend to improve. It provides better penetration resistance under low- and high-velocity projectile impacts

It is important to remember that the PVC sheetpile proposed in the Huntington Harbour bulkhead repairs will not be exposed to any ultraviolet light and therefore will entirely avoid the main mode of possible degradation. If the USACOE, which has exhaustive experience protecting and maintaining the Nation's navigable waterways, has endorsed PVC sheetpile as a superior building material in the marine environment, then certainly the homeowners in the bulkhead repair project should be allowed to use the same material and not be subject monitoring conditions.

5. PVC sheetpile has almost no opportunity to become debris

It is important to recall that the Algalita Marine Research Foundation – the organization that first sounded the alarm to the CCC regarding the use of PVC sheetpiles in the marine environment - based their argument against plastic on the fact that the Coastal Commission should not approve of PVC sheetpiles in the marine environment because much plastic debris was allegedly found in the pacific ocean allegedly causing great environmental damage. It was clear from the video - "Our Synthetic Sea" - produced by Algalita - that much of this litter was transported into the

C4

5-99-031-E4, 5-99-032-E4, 5-00-390-E4, 5-00-401-E4
Extension Request
Staff Report
Page 22

Letter to Meg Vaughn re: CDP Amendment, Page 5 of 10

August 17, 2005

ocean by storm water during peak runoff events. **It was never alleged –and more importantly never proven – that the litter found by Algalita in the ocean was from the breakdown of PVC sheetpiles used as forms in bulkhead repairs.** The homeowners cannot possibly be expected to pay for thousands of dollars of monitoring and be saddled with endless conditions because of an obscure environmental organization's presentation to the Coastal Commission which was devoid of facts or proof linking the use of PVC in the proposed bulkhead repairs to debris allegedly found in the pacific ocean. The irony is that more damage was likely done to the water quality of the ocean by the diesel fuel belching vessel used by Algalita to conduct their survey then could ever come from the use of PVC sheetpiles in the repair of bulkheads.

There is effectively no opportunity for the PVC sheet pile to be damaged and contribute to plastic debris either during or after installation. The PVC sheetpile is deigned for the incredible forces exerted during the installation process. There is no imaginable force that could even come close to matching the forces exerted during installation. The sheetpile is being proposed as a form in the bulkhead repair. The sheetpile will be completely encased in rock, sediment and cement. Since the sheetpile is not exposed, boat propellers, anchors, dock equipment, etc. all have no opportunity to come into contact with the sheetpile and cause damage. The opportunity for the sheetpile to crack, deteriorate, break or otherwise contribute to the marine debris - which almost entirely caused by storm water runoff – simply does not exist.

6. The PVC sheetpile cannot be accessed for monitoring

The sheetpile monitoring that the CCC has previously proposed could not even be carried out because of the inaccessibility of the sheet piling after installation. As shown in Figure 3, the sheet pile is barely visible because of the installation of the whaler and the rock toe protection. Additionally, inspection of the surface of the sheet piling as suggested would require the removal of some of the rock toe protection to access the sheet piling, then the removal of the marine growth from an area on the sheet piling to facilitate inspection of the surface. This process would obviously be destructive, be very costly, and harm the marine species that have colonized the rock toe protection and sheet piling. **The fact that the sheetpile is not accessible for inspection without the use of destructive methods should be reason enough for the Coastal Commission not to require it.**

7. PVC sheetpile is not harmful to the marine environment

Attached to this letter are studies by Stellar Environmental Solutions, Inc. and the California Coastal Commission - Northern Central Coast District that both demonstrate that ShoreGuard® Sheet Piling does not harm the marine environment. Both studies were commissioned for a seawall replacement project for the Seadrift Association in Stinson Beach, CA in 2002. In the Stellar report, all the regulatory and resource agencies that the authors of the report contacted either had no concerns about the use of PVC sheet piling in a marine setting or voiced their approval for the use of PVC Sheet piling for this application. The Stellar report goes on to point out that ShoreGuard® Sheet Piling is rigid PVC and as such does not contain phthalate plasticizers such as DEHP and DINP which are considered by many to be endocrine disruptors. This eliminates the possibility of phthalates leaching into the seawater. Also investigated in the Stellar report is the thermal stabilizer organo-tin used in ShoreGuard® Sheet Piling. The report notes that organo-tin is used in PVC pipes that are widely employed to conduct drinking water and that tests have shown that organo-tin is found in the water at very low concentrations (6.4-46 ppb); these concentrations are not considered to be a health hazard and organo-tin is not currently regulated in drinking water. Additionally, the Stellar report states that organo-tin decays very rapidly once it is present in the water. The report cites that based on the

CS

Extension Request

Staff Report

Page 23

Letter to Meg Vaughn re: CDP Amendment, Page 6 of 10

August 17, 2005

conclusions of tests performed on PVC, any organo-tin that did leach into the marine environment would dissipate in the seawater to non detectable levels (< 1 ppb) as a result of organo-tin's rapid decay rate. The report summarized by pointing out that the consensus, from both the literature consulted as well as the regulators contacted, is that rigid PVC is essentially inert in freshwater, and by extension, seawater.

The CCC report, much like the Stellar report, demonstrates that the leaching of plasticizers is not possible since they don't exist in rigid PVC, and also concluded that the leaching of organo-tin would not significantly affect the biological productivity and quality of coastal waters. The report continues to state that any leaching of Vinyl Chloride Monomers from the PVC would not be harmful to human health and that the release of harmful Dioxins from PVC is an impossibility in the marine environment. Therefore, the report by the CCC determined that the use of ShoreGuard® Sheet Piling in the marine environment would be consistent with sections 30230 and 30231 of the California Coastal Act.

According to the Tin Stabilizers Association (TSA) the European Risk Assessment has determined that the use of tin stabilizers does not pose a risk to human health or the environment (see attached information). The TSA also states that "as with all other pipe for potable water, PVC pipe must pass an exacting certification process that covers the manufacturing process as well as the materials used to make the pipe, including tin stabilizers. In 1985, the EPA contracted with a consortium led by NSF International (NSF) to develop health effects standards and a product certification program for components of the drinking water system, as well as treatment chemicals. NSF International is a third party, independent, not-for-profit organization dedicated to public health, safety and protection of the environment. The consortium also included AWWA and its research foundation, AWWRF, and the Association of State Drinking Water Administrators (ASDWA). NSF has concluded that, based upon the ANSI/NSF standard, the evaluation of **PVC/CPVC pipe is protective of human health**. The presence of any tin in potable water due to its use as a heat stabilizer is well below the safe limits imposed by the NSF, and **does not present a human health risk.**" Finally, the TSA states that studies have shown that tin stabilizers do **not** fit the criteria for persistent and bioaccumulative chemicals. Also, as can be seen in Figures 3 and 4, **marine life is growing on what little area of ShoreGuard® Sheet Piling is left exposed** and makes it hard to believe that ShoreGuard® Sheet Piling could be harmful to the marine environment.

8. PVC sheetpile monitoring conditions would be unfair to require in the middle of the project

Many of these homeowners have been waiting to have their bulkheads repaired since 1998 in part due to eelgrass mitigation challenges. The Huntington Harbour bulkhead repair project was initiated with the intent of carrying the group of homeowners through the design, permitting, and repair process together. The dollar values of the engineering and construction contracts were based on this assumption. Many of the homeowners have already had the repairs completed and had to pay more than if the whole group had the repairs conducted at one time. The homeowners who are still waiting for their Permits object to any new conditions that would further segregate the group and make the bulkhead repair more costly for the homeowners who were already unfortunate enough to have eelgrass. The homeowners feel that **any additional requirements or conditions imposed on them this late in the permitting process would be counter productive to our shared goal of protecting property and marine resources** through these much needed bulkhead repairs.

C 4

5-99-031-E4, 5-99-032-E4, 5-00-390-E4, 5-00-401-E4
Extension Request
Staff Report
Page 24

Letter to Meg Vaughn re: CDP Amendment, Page 7 of 10

August 17, 2005

Summary

To summarize why the homeowners feel that their amendment application should be approved by the commissioners without any sheetpile monitoring:

- PVC Sheetpile is a widely used construction material in Marine Environments
- Rigid PVC used and trusted in water distribution systems and ground water monitoring wells
- PVC Sheetpile has an very long design life
- PVC Sheetpile is endorsed for use in the marine environment by U.S. Army Corps of Engineers
- PVC sheetpile has almost no opportunity to become debris
- The PVC sheetpile cannot be accessed for monitoring
- PVC sheetpile is **not** harmful to the marine environment
- PVC sheetpile monitoring conditions would be unfair to require in the middle of the project

Therefore due to the fact that the ShoreGuard® PVC Sheet Piling is completely encased in concrete, sediment, and rock toe protection, the chances for any chipping, breaking abrading, cracking or otherwise failing is virtually non-existent, and due to the fact that any disturbance caused by inspection would be destructive to the repair and injurious to marine life living on the sheet piling, and due to the fact that the monitoring would be an additional and unnecessary expense for the homeowners who have been waiting for over 5 years for their repairs, and due to the fact that it has been demonstrated that the PVC used in sheetpile is not harmful to the marine environment – so much so that PVC is even used to convey drinking water and human blood- **Tetra Tech respectfully requests that the Coastal Commission staff recommend approval of the attached amendment as proposed and not recommend the addition of any plastic monitoring or future information conditions.**

Please schedule this amendment for a hearing as soon as possible and please contact Tetra Tech immediately if you find this application to be deficient in any way so that Tetra Tech may respond promptly and the homeowners can have their permit amended and their bulkhead repairs completed.

Please call me at (805) 541-4011 if you have any questions or wish to discuss this matter further.

Sincerely,
TETRA TECH, INC.


Robert Yates,
Project Engineer

C 7

5-99-031-E4, 5-99-032-E4, 5-00-390-E4, 5-00-401-E4
Extension Request
Staff Report
Page 25

Letter to Meg Vaughn re: CDP Amendment, Page 8 of 10

August 17, 2005

Enclosures:

1. Application for CDP Amendment with payment
2. California Coastal Commission Staff Report for Application no. 2-02-001 (Seadrift Lagoon)
3. Stellar Environmental Solutions, Inc. report to the Seadrift Association regarding environmental data associated with Polyvinyl Chloride Sheet Piling
4. U.S. Army Corps of Engineers – “A Study of the Long Term Applications of Vinyl Sheet Piles”
5. Information from Crane Materials International
6. Information from The Vinyl Institute
7. Information from Vinyl By Design
8. Information from Tin Stabilizers Association

Cc:

Fernando L. Pagés, P.E. – Tetra Tech, Inc.
Sarah McFadden - Tetra Tech, Inc.

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5-99-031-E4, 5-99-032-E4, 5-00-390-E4, 5-00-401-E4
 Extension Request
 Staff Report
 Page 26

Letter to Meg Vaughn re: CDP Amendment, Page 9 of 10

August 17, 2005

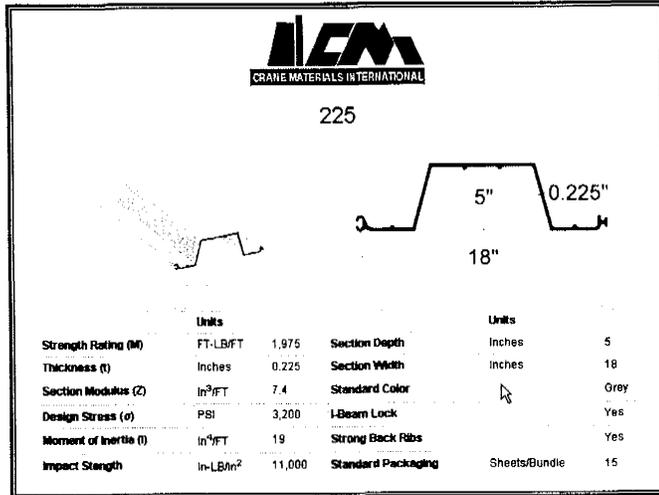


Figure 1 - ShoreGuard 225 Sheet Piling Specifications

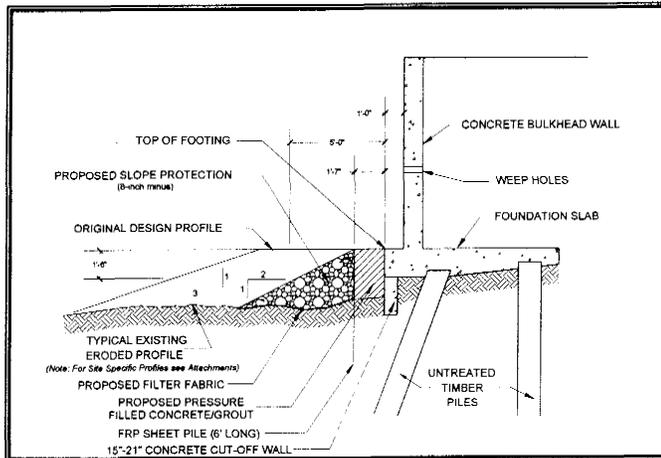


Figure 2 - Bulkhead Repair Detail Showing Sheet Piling Installation

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5-99-031-E4, 5-99-032-E4, 5-00-390-E4, 5-00-401-E4
Extension Request
Staff Report
Page 27

Letter to Meg Vaughn re: CDP Amendment, Page 10 of 10

August 17, 2005

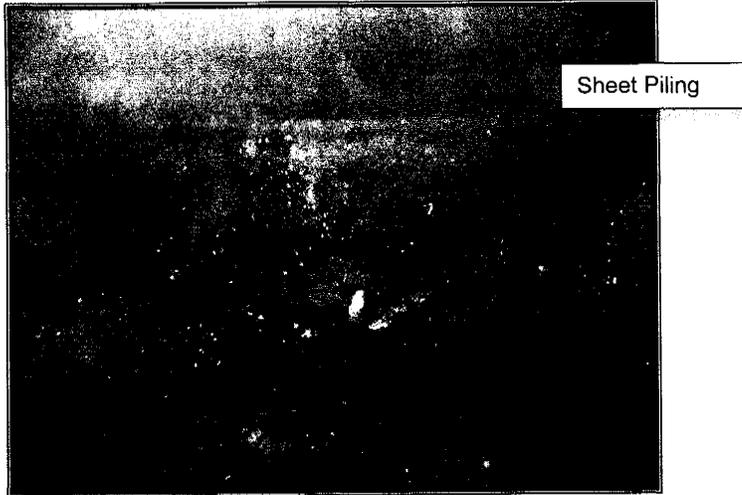


Figure 3 - Sheet Piling shown in a Bulkhead Repair completed in July 2003 at 16591 Carousel Lane. Photograph taken on October 6, 2003 by a Tetra Tech diver.

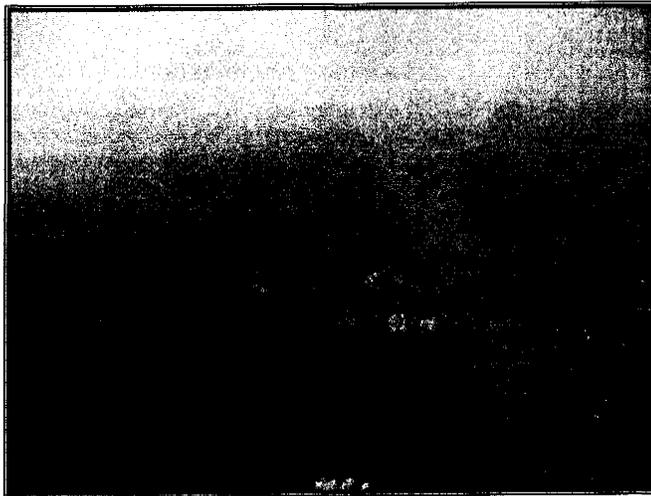


Figure 4 - Sheet Piling & whaler shown in a Bulkhead Repair completed in June 1998 at 16581 Carousel Lane. Photograph taken on October 6, 2003 by a Tetra Tech diver.

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10