THE BOARD OF DIRECTORS OF THE BROAD BEACH GEOLOGIC HAZARD ABATEMENT DISTRICT

Adopted this Resolution on July 12, 2020 by the following vote:

AYES: Karnø, Grossman, Kuba, Marine, Needleman

NOES: Ø

ABSENT: Ø

ABSTAIN: Ø

RESOLUTION NO. 2020/04

RESOLUTION: (A) ADOPTING NEW, REVISED AND RESTATED 2020 ENGINEER'S REPORT, (B) CANCELLING THE ASSESSMENT PROCESS STARTED BY RESOLUTION NO. 2020/01; (C) DECLARING THE INTENTION TO ORDER AN ASSESSMENT WITHIN THE TERRITORY OF THE BROAD BEACH GEOLOGIC HAZARD ABATEMENT DISTRICT ("BBGHAD"), AND (D) FIXING A HEARING FOR OCTOBER 25, 2020 TO CONSIDER THE PROPOSED ASSESSMENT AND ANY PROTESTS AGAINST THE PROPOSED ASSESSMENT.

WHEREAS, on September 12, 2011 the Malibu City Council adopted Resolution No. 11-41 approving and ordering the formation of the Broad Beach Geologic Hazard Abatement District ("BBGHAD") and appointing five landowners to serve as the initial Board of Directors of the BBGHAD (BBGHAD Board);

WHEREAS, the BBGHAD is: a) a political subdivision of the State of California, governed in accordance with GHAD Law (Pub. Res. Code §§ 26500 *et seq.*); and b) a legal entity separate and distinct from the City of Malibu, and the BBGHAD's operations are independent of the City of Malibu;

WHEREAS, on November 6, 2011, the BBGHAD Board approved the Plan of Control, the document that describes the duties and responsibilities of the BBGHAD;

WHEREAS, in order to pay for the cost and expenses of constructing and operating the improvements for the BBGHAD, as described in the Plan of Control, pursuant to Public Resources Code sections 26500 *et seq.*, it will be necessary to provide for a reliable source of funding;

WHEREAS, Public Resources Code sections 26587 and 26650 *et seq.* authorize, after a noticed public hearing, the levy and collection of an assessment pursuant to the Municipal Improvement Act of 1913, Streets & Highways Code sections 10000 et seq., upon specially benefited property within the GHAD to pay for the construction, improvement, maintenance and

operation of BBGHAD improvements (the "Project"). Article XIII(D) of the California Constitution identifies additional requirements for the levy and collection of assessments;

WHEREAS, on January 22, 2012, the BBGHAD Board held a public hearing and adopted Resolution No. 2012/01, which, among other points, declared the BBGHAD Board's intent to order a proposed assessment within the territory of the BBGHAD and fixed a hearing date of March 11, 2012 to consider the proposed assessment and any protests thereon; the assessment was based on the Engineer's Report dated January 18, 2012 and attached to Resolution No. 2012/01.

WHEREAS, on March 11, 2012, the BBGHAD Board held a public hearing and, among other actions, adopted Resolution Nos. 2012/03 (accepting the Statement of Assessment Ballots) and 2012/04 (confirming the assessment and authorizing the levy and collection of the assessment within the BBGHAD);

WHEREAS, the Assessment specified in Resolution Nos. 2012/03 and 2012/04 contemplated the BBGHAD's placement of significant sand nourishment throughout the BBGHAD's boundaries, including the western portion of the BBGHAD;

WHEREAS, in or about January 2015 and prior to the BBGHAD securing final permits to conduct the contemplated beach restoration, the BBGHAD learned of facts and permitting realities that a portion of the west end, west of 31380 Broad Beach Road, could not receive direct sand nourishment as part of the Project because the Project, as originally conceived, cannot achieve regulatory approval without changes to its design and without significant mitigation;

WHEREAS, on July 19, 2015, the BBGHAD Board held a public hearing and adopted Resolution No. 2015/03, which, among other points, declared the BBGHAD Board's intent to order a proposed assessment within the territory of the BBGHAD and fixed a hearing date of September 6, 2015 to consider the proposed assessment and any protests thereon ("2015 Assessment"); the 2015 Assessment is based on the Engineer's Report dated July 15, 2015 ("2015 Engineer's Report"), and attached to Resolution No. 2015/03.

WHEREAS, on or about September 6, 2015, the BBGHAD Board held a public hearing and, among other actions, adopted Resolution Nos. 2015/04 (accepting the Statement of Assessment Ballots) and 2015/05 (confirming and adopting the 2015 Assessment and authorizing the levy and collection of the assessment within the BBGHAD);

WHEREAS, the Assessment specified in Resolution Nos. 2015/04 and 2015/05 contemplated the BBGHAD's placement of significant sand nourishment east of 31380 Broad Beach Road, and no direct sand placement west of this address;

WHEREAS, since the adoption of the 2015 Assessment, the BBGHAD has continued to obtain certain permits and pursue other permits necessary to implement the Project; during this permitting period, the BBGHAD staff has concurrently finalized commercial arrangements for, among other items, sand source, sand transportation to Project area, and actual construction of the Project;

WHEREAS, due to added Project costs imposed by the various permits for the implementation of the Project, the BBGHAD staff determined that such costs exceeded those contemplated in the 2015 Assessment and 2015 Engineer's Report;

WHEREAS, on July 23, 2017, the BBGHAD Board held a public hearing and adopted Resolution No. 2017/05, which, among other points, declared the BBGHAD Board's intent to order a proposed assessment within the territory of the BBGHAD and fixed a hearing date to consider the proposed assessment and any protests thereon ("2017 Assessment"); the 2017 Assessment is based on the Engineer's Report dated June 22, 2017 ("2017 Engineer's Report"), and attached as Exhibit 1 to Resolution No. 2017/05.

WHEREAS, on or about September 10, 2017, the BBGHAD Board held a public hearing and, among other actions, adopted Resolution No. 2017/08 (accepting the Statement of Assessment Ballots) and on or about November 12, 2017, adopted Resolution No. 2017/09 (confirming and adopting the 2017 Assessment and authorizing the levy and collection of the assessment within the BBGHAD);

WHEREAS, following the implementation of the 2017 Assessment, owners of four (4) BBGHAD-assessed parcels filed litigation challenging the 2017 Assessment, Mark Magidson, Trustee of the Magidson Revocable Trust of 1987 (2006 Restatement), and Malibu-Broad Beach S-1, LLC a California Limited Liability Company through its Manager Mark Magidson; Alexander Haagen III, as Managing Member of 30956 BB, LLC and BB Malibu Place LLC; Mike Schwab; Cheryl Schwab; Andrew Leigh; Barbara Leigh v. Broad Beach Geologic Hazard Abatement District; Board of Directors of the Broad Beach Geologic Hazard Abatement District, Los Angeles County Superior Court Case No. BS170769 ("Reef Group Action"), and the BBGHAD subsequently filed litigation seeking the Court's validation of the 2017 Assessment, Broad Beach Geologic Hazard Abatement District v. All Persons Interested in the Validity of Resolution No. 2017/09 of the BBGHAD Board, LASC Case No. BC 684646 ("Validation Action"). The Court consolidated the Reef Group Action and the Validation Action for trial;

WHEREAS, on or about September 17, 2019, the Court issued its Order Granting Writ Claim and Order Denying Validation ("Order") granting certain of the relief requested by the property owners in the Reef Group Action and denying the Validation Action;

WHEREAS, on or about January 22, 2020, the Court supplemented its Statement of Decision connection with the Reef Group Action and the Validation Action;

WHEREAS, the Reef Group subsequently filed and served its Proposed Order Granting Petition for Writ of Mandate in the Reef Group Action and its Proposed Judgement in the Validation Action; the BBGHAD filed objections to both the Proposed Order Granting Petition for Writ of Mandate and the Proposed Judgement;

WHEREAS, the Court subsequently issued its Order Granting Petition for Writ of Mandate in the Reef Group Action and entered Judgment in the Validation action; the BBGHAD has since filed a Notice of Appeal, appealing both the Order Granting Petition for Writ of Mandate in the Reef Group Action and the Judgment in the Validation Action;

WHEREAS, the BBGHAD also filed in the trial court a Motion for Stay of Enforcement of the Judgment ("Motion for Stay");

WHEREAS, on April 14, 2020, the Reef Group appeared in Court seeking an Ex Parte Order to Show Cause re Contempt against the BBGHAD, claiming that the Judgment in the Validation Action enjoins the BBGHAD from all actions except pursuing a CDP amendment;

WHEREAS, the Court denied the ex parte relief, and ruled that: a) no evidence supports a finding of contempt against the BBGHAD, b) the Court signed the wrong order and never intended to prevent the BBGHAD from holding a vote on a new assessment or moving forward with the Project in any other way, and c) the parties can further argue their respective positions at the hearing on the BBGHAD's Motion for Stay;

WHEREAS, on June 24, 2020, the Court held a hearing on the Motion for Stay, but has not yet issued its ruling;

WHEREAS, among other principles, the BBGHAD Board seeks to ensure that the BBGHAD: a) complies with all legal requirements, including those specified in the Order and Statement of Decision, b) levies and collects an Assessment commensurate with, and no greater than, the special benefits received by each and every real property owner within the BBGHAD; and c) treats each and every BBGHAD property owner in a fair, just, and equitable manner;

WHEREAS, to these ends, the BBGHAD adopted Resolution No. 2019/07 on or about December 22, 2019 and circulated a new DRAFT Engineer's Report soliciting public comment;

WHEREAS, the BBGHAD has received various written questions and comments on the new DRAFT Engineer's Report and, where it deemed appropriate, revised the new, proposed Engineer's Report accordingly;

WHEREAS, in or about February 2020, Resolution No. 2020/01 declared, pursuant to Streets & Highways Code section 10200 and Public Resources Code section 26651, the Board's intention to: a) order a new assessment, b) adopt and notify all interested parties of the availability of a new Engineer's Report ("2020 Engineer's Report"), and c) fix a hearing for no earlier than April 1, 2020 to consider the proposed assessment and any protests;

WHEREAS, the COVID-19 pandemic has adversely affected Los Angeles County and, in or about March 2019, the Los Angeles County Board of Supervisors issued its initial "Stay at Home" order, which, among other things, restricted and limited the gathering of persons and required the closure of non-essential shops, malls, children's playgrounds, and non-essential retail businesses in an effort to stem and slow the spread of COVID-19 in the region;

WHEREAS, the BBGHAD Board desires, if possible, for the BBGHAD community to provide in-person input on the proposed 2020 Engineer's Report and, through Resolution No. 2020/02, continued the public hearing on the 2020 Engineer's Report, its proposed assessment and any protests to August 2, 2020;

WHEREAS, various state and county "Stay at Home" orders remain in place for all of Los Angeles County and it appears impossible for the BBGHAD community to meet in-person

to consider the 2020 Engineer's Report, its proposed assessment and any protests on August 2, 2020;

WHEREAS, the BBGHAD has received significant public comment on the 2020 Engineer's Report and other documents prepared and shared with the BBGHAD community pursuant to the assessment process started by Resolution No. 2020/01;

WHEREAS, in response to public comment, the BBGHAD staff and Assessment Engineers have prepared a Revised and Restated 2020 Engineer's Report (**Exhibit 1**) and revised assessment documents for the BBGHAD community to consider;

WHEREAS, this action is exempt from the provisions of the California Environmental Quality Act (Pub. Res. Code §§ 21000 *et seq.*) in accordance with Public Resources Code sections 21080(b)(4) [mitigation of emergencies] and 26559 [GHAD services].

The Board of Directors of the BBGHAD HEREBY RESOLVES THAT:

1. The BBGHAD Board hereby cancels the assessment process initiated by Resolution No. 2020/01.

2. The BBGHAD Board declares its intention, consistent with the requirements of Article XIII D of the California Constitution, Public Resources Code sections 26587 and 26650 *et seq.*, Streets & Highways Code sections 10000 et seq., and Government Code section 53750 *et. seq.*, to order that the cost and expenses of constructing, improving, maintaining implementing, and operating any BBGHAD improvements be assessed against those parcels within the BBGHAD as identified in the attached Revised and Restated 2020 Engineer's Report and specifically identified in Exhibit F (Assessment Diagram) that are specially benefited by the BBGHAD improvements and that those improvements, maintenance, implementation and operations be thereafter conducted.

2. The BBGHAD Board further declares its intention to assess against those parcels shown on the Assessment Diagram for 2020 and for subsequent years, all or part of the amounts specified in the Revised and Restated 2020 Engineer's Report.

3. Notwithstanding Paragraph 2 above, the BBGHAD Board shall not order this proposed assessment if a majority protest exists as defined in Section 4(e) of Article XIII D of the California Constitution.

4. Each of the parcels identified on the Assessment Diagram will receive a particular and distinct special benefit in the form of BBGHAD improvements and services. These special benefits are described in detail in the Plan of Control dated November 3, 2011 and the Revised and Restated 2020 Engineer's Report. The special benefits from the improvements include protection from: erosion due to wave action, flooding from sea level rise and storms, tsunamis, and wave action to private property improvements within the BBGHAD and such other benefits as are described in the Plan of Control and the Revised and Restated 2020 Engineer's Report. The improvements will also specially benefit private property within the BBGHAD by, inter alia, increasing the performance and longevity of existing shoreline protective devices within the BBGHAD and providing protection for the natural bluffs at the BBGHAD's west end. Adding

sand to the seaward side of existing shoreline protective devices (revetment, caissons, and seawalls) will better balance the soil pressures that act upon the landward side of the device and adding sand to a beach fronting a device that has been denuded of sand will move the wave-breaking impact area seaward and away from the protective device. The wider beach will reduce environmental loading on the protective device structures.

5. Consistent with the Order, Statement of Decision, and all other applicable authorities, the Revised and Restated 2020 Engineer's Report separates and quantifies the general benefits and special benefits created by the Project, refines the BBGHAD's apportionment of the special benefits created by the Project among the assessed parcels, specifies that the BBGHAD will levy the assessment on the County of Los Angeles ("County") for the vertical public accessways owned by the County within the BBGHAD, explains how the BBGHAD can build the Project as permitted or amended (accounting for the present opposition from some BBGHAD property owners), and outlines the currently known relevant facts affecting the proposed assessment and a potential amendment of permits for the Project.

6. The BBGHAD Board has reviewed and considered the Revised and Restated 2020 Engineer's Report. The BBGHAD Board directs the BBGHAD Manager to incorporate comments, if any, as directed by the Board at its meeting on July 12, 2020 to the Revised and Restated 2020 Engineer's Report and to attach a final Revised and Restated 2020 Engineer's Report to the Notice of Adoption of Resolution by the Board of the Directors of the Broad Beach Geologic Hazard Abatement District ("Notice"). The final Revised and Restated 2020 Engineer's Report shall substantiate that the amount of the proposed assessment on each parcel is proportional to, and no greater than, the special benefits conferred on that parcel. As so amended, the Revised and Restated 2020 Engineer's Report is hereby approved.

7. No later than five (5) business days after the adoption of this Resolution, the BBGHAD Board directs the BBGHAD Clerk to mail the Notice (substantially in the same form as **Exhibit 3**) and Boundary Map (**Exhibit 2**) to each owner of real property (as shown on the last equalized property tax roll of the County) within the BBGHAD as shown on the Assessment Diagram. A colored custom sealable return envelope, Ballot, and Notice and the Revised and Restated 2020 Engineer's Report shall be included with the Notice and mailed to each property owner in the BBGHAD boundaries in conformity with Government Code § 53753.

8. The BBGHAD Board will conduct a public hearing on October 25, 2020 at 9:00 a.m. at **30237 Morning View Drive, Room 3, Malibu, CA 90265** or, if federal, state, county, or local law(s) prevent meeting in person, by Zoom or other similar video platform, to consider the proposed assessment and any protests against the proposed assessment.

9. The following sub-paragraphs provide the procedures for returning and tabulating the ballots:

a. A copy of the related Notice, a sealable Ballot and return envelope (all in a distinct color), and the Revised and Restated 2020 Engineer's Report will be sent to each of the property owners within the BBGHAD. On the face of the envelope mailed to each property owner, the statement "OFFICIAL BALLOT ENCLOSED" shall be set forth in 16-point bold type. Property owners may complete and mail or hand-deliver completed ballots to the

BBGHAD Clerk, c/o Elkins Kalt Weintraub Reuben Gartside LLP, 10345 W. Olympic Blvd., Los Angeles, CA 90064, or may submit completed ballots at the public hearing on October 25, 2020. If the pandemic requires the protest hearing to be conducted by videoconference, BBGHAD will make arrangements to accept in-person delivery of protests at the public hearing site identified in paragraph 8 above. The Ballot may be withdrawn or changed at any time prior to the conclusion of the public testimony on the proposed assessment at the public hearing.

b. Proposed assessment Ballots shall remain sealed until the tabulation of the Ballots commences at the conclusion of the public hearing on October 25, 2020. Immediately after the public hearing on the proposed assessment, the BBGHAD Clerk (or Election Official) shall tabulate the ballots. In tabulating the ballots, the ballots shall be weighted according to the proportional financial obligation of the affected property. Here, the proportional financial obligation of each affected parcel is governed by a formula that has been derived by the BBGHAD's Assessment Engineers which estimates the special benefit conveyed by the Project. The formula includes several factors, which are weighted based on their relative effect on special benefit. Special benefit is derived considering the following factors, and weighting has been applied to each factor to reflect its relative importance. These factors are supported by the Coastal Engineering Appendix (Exhibit C to the Revised and Restated 2020 Engineer's Report) with respect to analysis of shore protection components, including sand placement, revetment, seawall, and bluff features, and from real estate appraisals and market analyses as well as publicly available property value assessments. After considering all evidence available to the Assessment Engineer, including analyses of coastal engineering processes, the Court's Order and Statement of Decision, the Assessment Engineer applied professional judgment to establish the values and formula specified at pages 12-15 of the Revised and Restated 2020 Engineer's Report.

c. Only those parcel owners who submit valid ballots on the 2020 Assessment will have their votes counted; and the votes will be weighted in accordance with the formula specified at pages 12-15 of the Revised and Restated 2020 Engineer's Report.

d. At the hearing, the BBGHAD Board shall consider any objections or protests to the proposed assessment and certify the tabulation of the ballots. The BBGHAD Board shall not impose the proposed assessment if a majority protest exists at the October 25, 2020 consideration of this matter. A majority protest exists if, upon conclusion of the hearing, weighted ballots submitted in opposition to the proposed assessment exceed the weighted ballots submitted in favor of the proposed assessment.

e. Inquiries regarding the proposed assessment may be made by mail or telephone to the BBGHAD Clerk, Heike Fuchs, c/o Elkins Kalt Weintraub Reuben Gartside LLP, 10345 W. Olympic Blvd., Los Angeles, CA 90064, phone (310) 345-2268. All public comments on the Revised and Restated 2020 Engineer's Report or proposed assessment must be: 1) in writing, and 2) received at the address in this paragraph 9e by no later than the close of business on October 16, 2020 or personally delivered to the address in paragraph 8 on October 25, 2020 before the close of the hearing.

10. Following the public hearing, the BBGHAD Board shall consider the adoption of the canvas of votes for the BBGHAD.

11. Upon authorization of the proposed assessment, the BBGHAD Board shall levy an authorized assessment on each parcel in 2020 (unless the BBGHAD Board determines to levy an assessment of $0 in that year) and subsequent years.

12. The following sub-paragraphs provide procedures for contesting an error in the calculation of the 2020 Assessment due to misapplication of the formula specified in the Revised and Restated 2020 Engineer's Report or its application to data that is erroneous or changed. The failure to comply with these procedures shall constitute a failure to exhaust administrative remedies.

a. The person aggrieved shall submit a written request ("Request") for review by the Assessment Engineer (the BBGHAD Manager) within 15 days of the annual approval of the assessment. The Request shall provide all evidence the person aggrieved wishes the District to consider. A Request made more than 15 days after the annual approval of the assessment will be considered by the Assessment Engineer, but corrections made in response to such a Request will be implemented in the following fiscal year and subsequent years.

b. Upon receipt of a Request, the Assessment Engineer will consider the grounds for correction, and if warranted, make the correction and report it to the Board.

c. If the Assessment Engineer determines that a correction is not warranted, he or she shall provide written notice of that determination to the person aggrieved.

d. Within 15 days of written notice of the Assessment Engineer's determination that a correction is not warranted, the person aggrieved may submit a written appeal to the Board, and the Board shall appoint a hearing officer to review the matter and render a recommendation for Board action.

e. At the direction of the Board, the hearing officer shall prepare a written decision on the Request and provide it to the person aggrieved by personal service or certified mail. Such decision shall constitute the final action of the BBGHAD, subject to judicial review pursuant to Code of Civil Procedure section 1094.5.

13. This Resolution shall become effective immediately upon its passage and adoption.

DATED: July 12, 2020

NORTON KARNO, Chair

I, Heike Fuchs, Clerk of the Broad Beach Geologic Hazard Abatement District, hereby certify that the foregoing resolution was duly adopted by the Board of Directors of the District at a regular meeting held on the 12th day of July 2020 by the following vote:

AYES: Karno, Grossman, Needleman, Marine, Kuba

NOES: -/-

ABSENT: -/-

ABSTAIN: -/-

ATTEST:

Heike Fuchs
Clerk of the BBGHAD Board

EXHIBIT 1 to RESOLUTION No. 2020/04

2020 REVISED AND RESTATED ENGINEER'S REPORT

ENGEO
Expect Excellence

REVISED AND RESTATED 2020 ENGINEER'S REPORT

for

BROAD BEACH GEOLOGIC HAZARD ABATEMENT DISTRICT
MALIBU, CALIFORNIA
July 12, 2020

TABLE OF CONTENTS

ENGINEER'S REPORT

GEOLOGIC HAZARD ABATEMENT DISTRICT – BROAD BEACH

(Pursuant to the Public Resources Code of the State of California, Section 26500 et seq.)

CERTIFICATION OF FILING

This report is presented at the direction of the Broad Beach GHAD (BBGHAD) Board of Directors. The BBGHAD is intended to provide construction, monitoring, and maintenance of improvements related to geologic hazard management within the BBGHAD and to levy and collect assessments in order to perform its activities.

The improvements, which are the subject of this report, are defined as any activity necessary or incidental to the prevention, mitigation, abatement, or control of a geologic hazard, construction, maintenance, repair, or operation of improvement; or the issuance and servicing of bonds issued to finance any of the foregoing (Pub. Resources Code § 26505).

This report consists of eight parts, as follows:

The undersigned respectfully submits the enclosed Engineer's Report.

Date: July 12, 2020 By: ENGEO Incorporated

_____, GE
Uri Eliahu

I HEREBY CERTIFY that the enclosed Engineer's Report was filed on

the _____ day of _____.

_____
Clerk of the Board
Broad Beach Geologic Hazard Abatement District
Malibu, California

I HEREBY CERTIFY that the enclosed Engineer's Report was approved and confirmed by the

BBGHAD Board on the _____ day of _____.

_____
Chairman of the Board
Broad Beach Geologic Hazard Abatement District
Malibu, California

APPROVED _____

ENGINEER'S REPORT
for
BROAD BEACH GEOLOGIC HAZARD ABATEMENT DISTRICT
for the
ESTABLISHMENT OF AN ASSESSMENT LIMIT

I. INTRODUCTION

The Broad Beach Geologic Hazard Abatement District (BBGHAD) was formed by the Malibu City Council on September 12, 2011, pursuant to Resolution No. 11-41 under the authority of the California Public Resources Code, Division 17, Section 26500 et seq.

II. BACKGROUND

On November 6, 2011, pursuant to Resolution No. 2011/03, the BBGHAD Board of Directors approved the Broad Beach Plan of Control (BBGHAD Plan of Control) to allow the BBGHAD to permanently monitor and maintain BBGHAD improvements. The establishment of a real-property-related assessment to fund the BBGHAD responsibilities is described in this Engineer's Report. A previous Engineer's Report was prepared for the BBGHAD, dated January 18, 2012, and was adopted by the BBGHAD Board of Directors pursuant to Resolution No. 2012/02. In response to permitting requirements, an additional Engineer's Report was prepared dated July 15, 2015, and adopted by the BBGHAD Board of Directors pursuant to Resolution No. 2015/03. A subsequent Engineer's Report was prepared dated June 22, 2017, and Addendum dated November 9, 2017, and adopted by the BBGHAD Board of Directors pursuant to Resolution No. 2017/09. The purpose of the Engineer's Report is to update and Replace the Engineer's Report dated June 2017, Addendum dated November 9, 2017, and associated assessment.

III. GEOLOGIC HAZARD ABATEMENT DISTRICT BOUNDARIES

The legal description and boundaries for the BBGHAD are attached hereto and incorporated as Exhibits A and B.

IV. SERVICE LEVELS

The BBGHAD's activities are set forth in the Plan of Control and include certain activities necessary or incidental to the prevention, mitigation, abatement, or control of geologic hazards, including construction, retention, repair, or operation of any improvement, and the issuance and servicing of debt or bonds issued to finance any of the foregoing.

The BBGHAD provides for the administration and review of facilities within the budgeted limits, including the following services:

1. Oversight of BBGHAD operations.

2. In conjunction with the County Assessor's Office, setting the annual levying of assessments on the property tax roll.

3. Engagement of technical professionals to perform the monitoring duties as described in the BBGHAD Plan of Control and as required by various governmental agencies.

4. Performance of BBGHAD construction activities in accordance with the BBGHAD Plan of Control. These activities include, but are not limited to, the following.
   - Beach nourishment and sculpting
   - Construction/restoration of dunes and related natural habitat
   - Relocation of revetment structure
   - Beach drainage improvements

5. Performance of BBGHAD preservation activities in accordance with the BBGHAD Plan of Control. These activities include, but are not limited to, the following.
   - Inspection of revetment structures
   - Inspection and preservation of restored dunes
   - Monitoring of accumulated erosion and beach recession

6. Preparation of annual BBGHAD budgets.

V. SITE HISTORY

The Broad Beach area is located at the base of the Santa Monica Mountains and adjacent to Santa Monica Bay in Malibu, western Los Angeles County, California, extending from Point Lechuza on the west to Zuma Beach on the east. Although beach width can vary seasonally as well as from year to year, Broad Beach has been consistently narrowing in width since the early 1970s. The historically wide beach has gradually narrowed due to an imbalance in the sediment budget, i.e., more sand has left the beach system over the past 40 years than entered it. Since the mid-1970s, Broad Beach has lost an average of 20,000 cubic yards per year. This rate accelerated between 2004 and 2009 to approximately 35,000 cubic yards per year. As reported by Moffatt & Nichol, the Engineer of Record for the proposed improvements, Broad Beach is a very narrow ribbon of sand visible primarily at low tide but inundated at moderate to high tide (Moffatt & Nichol, 2019 (Exhibit C)).

In general, very little, if any, dry beach exists at higher tide levels. Various portions of the beach have been subjected to emergency repair/protective measures in years past due to storms and related erosion events. Temporary armoring (including sandbags) from earlier emergency repairs became increasingly exposed with time, and was subsequently removed or augmented with more robust shoreline protection. An emergency rock revetment was installed seaward of 84 Broad Beach parcels in 2010 to protect the private properties (Moffatt & Nichol, 2019).

Because of the general and continuing narrowing of the beach, private improvements, including homes, are threatened by high tides and continuing wave action. In order to reduce the risk of damage and/or destruction of these improvements, a beach and dune restoration program will be implemented.

Beaches essentially act as coastal storm barriers. A beach's size, shape, and sand volume help determine how well the beach can protect a developed area during a storm. The various elements of a beach, including vegetated dunes, the flat portion of the dry sand beach, and offshore sand bars, offer a level of natural protection against coastal storms by absorbing and dissipating the energy of breaking waves, either seaward on an offshore bar or directly on the beach itself. To

restore the energy-dissipation components to the beach, additional protective measures will be implemented. The profile and geometry of the contemplated beach restoration project ("Project") have been designed for the protection of private improvements within the BBGHAD (Moffatt & Nichol, 2019).

VI. DESCRIPTION OF THE IMPROVEMENTS TO BE IMPLEMENTED BY THE BBGHAD

A. Beach Nourishment

The BBGHAD-maintained improvements are described in the BBGHAD Plan of Control. In general, these improvements include the following:

- Sand Nourishment and Beach Replenishment – Placing beach material to replenish Broad Beach with "dry" sand between the dune system and shoreline.

- Revetment – Relocating the eastern 1,600-foot reach and burying the full revetment in the landward edge of the widened, nourished beach. The cost of relocation and burying of the existing revetment will be borne by the affected landowners and will not be paid by GHAD assessments. The private land on which the relocated revetment and sand dunes will be constructed as part of the Project is an in-kind donation by these property owners. "After-the-fact" permitting has been completed to classify the revetment as a permanent feature. The BBGHAD must comply with all applicable "prior-to-issuance" conditions and the various agencies must activate their previously issued permits, to the extent not already activated. Imported beach quality material would be placed over the existing revetment to create a restored dune.

- Beach Material Sourcing and Transport – Sourcing beach compatible sand material.

- Dune Building and Restoration – Building a reservoir of sand and restoring dune habitat with native plant species.

Protection of the beach, dunes, structures, and infrastructure will require nourishment of the beach and restoration of historic dunes and/or improvement of existing dunes. Beach nourishment and sculpting will restore the width of the beach and provide a protective barrier for structures and properties, as well as inward stretches of the beach. The habitat restoration, incorporating native vegetation, will reduce erosion of the dune and beach face. When completed, these improvements will repair existing damage and reduce future inundation- and erosion-related damage from storm surges, wave run-up, and overtopping, as described below.

The Project will include approximately 300,000 cubic yards of sand nourishment, which will provide approximately 70 feet of dry sand beach seaward of the seaward toe of the restored dune system. Like most beach nourishment projects, the beach will gradually lose sand. Studies have indicated that Broad Beach has been losing sand at a rate of approximately 35,000 cubic yards per year. Thus, while the sand will deplete at different rates depending on weather, tides, and many other factors, a 300,000-cubic-yard initial nourishment, coupled with permitted backpassing and interim nourishments, should last for the 5-year interval prior to the next major re-nourishment event (Moffatt & Nichol, 2019).

The permitted sand sources for the Project are a group of local commercial quarries in the Moorpark/Simi Valley area whose sand has been tested and approved by the California Coastal Commission. The BBGHAD is exploring alternate sand sources, including ocean delivery of sand from other areas of southern California or Mexico, but none of these potential sand sources has yet been permitted; accordingly, this report assumes sand delivery as presently permitted.

B. Monitoring and Sand Backpassing

A proactive beach monitoring plan is critical to the success of the Project. An important element of the Project is the implementation of a sand backpassing program. Since the beach is not anticipated to erode at the same rate along its length, periodic re-distribution of the sand to "even out" the resource will be implemented.

The BBGHAD shall be responsible for the monitoring of the restored beach and dunes. The BBGHAD's monitoring responsibilities include prevention, abatement, and control of erosion hazards, as well as vegetation control within the Project area.

The BBGHAD's general preservation responsibilities will include:

- Inspection of revetment structures.
- Inspection and maintenance of restored dunes.
- Monitoring of accumulated erosion and beach recession.
- Monitoring of Project impacts in accordance with governmental oversight.

Specifics regarding the beach monitoring and backpassing operations are presented in Exhibit C.

Small-scale interim renourishments will occur in accordance with objective triggers as described in Exhibit C "interim renourishment milestone." Beach widths measured from various transects, supplemented with surveyed beach profile data, will be analyzed to determine when this interim renourishment milestone is met.

Prior to the scheduled renourishment of up to 300,000 cubic yards at or around year 5, and planned subsequent 300,000-cubic-yard renourishments at years 10 and 15, the need may arise for the placement of additional sand along Broad Beach to maintain Project objectives. Small-scale renourishments are proposed as an adaptive management action when beach width along the western portion of Broad Beach has narrowed to the point where seasonal fluctuations in beach width could result in revetment exposure and limited lateral beach access. Additional details of planned renourishments and interim renourishments are provided in Exhibit C.

VII. ASSESSMENT METHOD AND BENEFIT

A. Special Benefit and Proportionality

The improvements described in this document will confer some or all of the following special benefits to the assessed parcels:

1. Protection from erosion due to wave action.
2. Protection from flooding associated with storms.
3. Protection from sea-level rise.

4. Access and use of the restored beach.
5. Consequential protection of properties to the west of the beach improvements to the extent of natural sand movement and deposition.

The BBGHAD improvements described in Section VI are distributed within the BBGHAD boundaries. Implementation and protection of these improvements provide a special benefit to all real property assessed within the BBGHAD. We identify the benefits of the project the BBGHAD is pursuing and intends to build and do not consider alternative methods to abate erosion of the beach or provide similar benefits to the public and assessed parcels. Similarly, we do not consider hypothetical arguments regarding further relocation of the revetment or alternative projects; our analysis is based on the best projections available to us of the effects of the project BBGHAD is pursuing and the marginal (i.e., additional) benefits the project will provide property owners and the public generally. Nor does this analysis distinguish assessed parcels not used strictly for residential purposes from those used as recreational facilities for private club members, as any benefits the project provides owners of non-residential parcels are not meaningfully different from those provided to owners of residential parcels.

As a means of protection from erosion, flooding from sea level rise and storms, tsunamis, and wave action, the proposed beach improvements will provide protection to private property improvements, such as structures and existing septic systems/leach fields, within the BBGHAD, including homes and the Malibu West Beach Club and, therefore, will provide a special benefit to property owners within the BBGHAD. The special benefit is derived from the placement of sand to create a beach and permitting to allow continued presence of the revetment, an approximately 1,600-foot portion of which (on the eastern end of the revetment) will be relocated landward as specified by the Coastal Development Permit (CDP 4-15-0390 is incorporated by this reference and can be viewed at http://www.bbghad.com/project-documents/11-ccc-notice-of-intent-to-issue-permit/) for the Project. The presence of privately built and maintained seawalls at some of the BBGHAD parcels at the western end of the Project area diminishes their need for sand and, therefore, proportionally reduces the special benefit derived by a parcel protected by a seawall, but those parcels nevertheless receive some special benefit. Also, the presence of natural bluffs upon which several parcels are located diminishes the special benefit derived in these locations much in the way that a seawall does; again, without eliminating all special benefit to those parcels from the Project. The amount of sand placement may be represented as constructed beach area. The dimensions of the beach include the frontage of the beach, which is measured parallel to the shoreline, and the width of beach created, which is measured perpendicular to the shoreline. The depth (i.e., thickness) of sand placed at a particular location acts to refine the elevation at a particular location, and variation in depth is relatively minimal. The thickness of sand placement is incidental and is not considered with respect to the special benefit derived from the Project because the necessary loss of precision is small, and the reduced complexity is helpful. In short, this report uses sand area, not sand volume as a measure of the special benefit of the Project to the properties it protects

Properties to the west of 31380 Broad Beach Road will not receive direct sand placement and will therefore receive a diminished special benefit, and assessments are reduced accordingly. The presence of a seawall/bluff at some of these properties provides protection to respective properties where they exist, lessening the need for sand, further reducing the special benefit in these select locations. It does not eliminate special benefit; however, because those bluffs and seawalls are themselves subject to erosion and damage by the forces of the ocean and the Project protects them. Still further, those parcels will enjoy access to the restored beach.

As permitting, partial relocation, and maintenance of the rock revetment from 30760 to 31350 Broad Beach Road are part of the beach improvement Project, the revetment does provide a special benefit, and parcel owners benefiting from its presence will be assessed in accordance with the special benefit they derive from the Project's contribution to permitting and maintaining it. These parcels receive a greater proportion of the benefit of the Project by virtue of its permitting continued presence of the privately constructed revetment which protects most, but not all parcels in the assessment district.

Property owners derive special benefit in proportion to a variety of factors related to the protection of real estate and improvements, including the area of sand placement and the continued lawful presence of a revetment. Although areas of sand placement may differ from time to time on each parcel, the dynamic nature of beach erosion, subsequent sand transport, the anticipated backpassing, and interim sand nourishment activities render the environment within the BBGHAD district boundaries as a semi-closed, discrete system in which special benefit is provided along the coastal property line for the benefit of coastal properties and is therefore derived based on proportional beach width (i.e., sand area), as well as the continued lawful presence of a revetment. The propensity to erode is based on coastal exposure; thus, protection from erosion is also based on coastal exposure, width of beach, presence of the revetment, and presence of the bluff and seawalls. Therefore, owners with greater beach width and revetment derive greater special benefit than owners with lesser beach width or absence of a revetment and still less benefit is derived by west-end parcels protected by their location on the bluff or by privately permitted and funded seawalls. Moffatt & Nichol finds that the proposed improvements and activities equalize the special benefit derived by properties within the BBGHAD based on beach width (i.e., sand area) and a revetment per assessed parcel, with reduced special benefit to properties west of 31380 Broad Beach Road to account for the bluff and seawalls.

Although seawalls are protective devices that reduce the need for sand placement, properties protected by seawalls will benefit from the migration of sand, which reduces wave energy on the seawalls, which are themselves fallible structures. As described by representatives of Moffatt & Nichol, the proposed beach nourishment Project will directly benefit the performance and longevity of existing seawalls within the BBGHAD district in two important ways. First, the beach nourishment would add soil to the seaward side of an existing seawall, thereby acting to better balance the soil pressures that act upon the landward side of the wall. Second, adding sand to a beach fronting a seawall that has been denuded of sand would move the wave-breaking impact area seaward and away from the seawall. The wider beach would allow wave energy to dissipate more gradually on the sloping sand beach, thereby reducing hydrodynamic wave loading on the seawall and extending its life and utility to its owner.

Additionally, in consideration of the fact that numerous parcels (from 30760 to 31350 Broad Beach Road) are behind the rock revetment and relocation, permitting and maintenance of a portion of the revetment is part of the Project, parcel owners derive special benefit from its presence. The GHAD has borne costs associated with permitting for the permanent siting of the revetment, although its construction was, and its relocation is to be, privately funded. Additionally, the presence of revetment poses unique maintenance challenges. Sand used to cover the revetment to maintain dunes likely would require more frequent maintenance, as compared to dunes consisting solely of sand, in order to preserve sand facing and maintain habitat and/or beach access. Project permits generally require that the BBGHAD maintain sand coverage of the revetment within objectively triggered sand nourishment limits specified in the CDP.

As protection from erosion, flooding, and sea-level rise are considered special benefits, it is also important to include the value of the protection and preservation of the real property itself. Based on a review of a publicly available property assessment data from the Los Angeles County Assessor, the Project will protect real estate worth approximately $982 million. Additionally, Peregrine Realty Partners, Inc., appraised properties within the GHAD to determine the value of land to be donated for the dune footprint, revetment, and conditional lateral public access areas. A fair market value of $330 per square foot was determined for land in the district. The analysis was performed for 84 properties protected by the revetment; these constitute an area of 36.24 acres. Using the fair market value this area, a land value for the 84 properties is estimated as $521 million. Extrapolating to the total number of parcels in the district, this FMV would result in a total value of $744 million. Taking the average of the two market value estimates, this would result in an estimated value of $863 million. This preservation of valuable real estate is a special benefit that is conveyed to property owners within BBGHAD, as without the Project, assessed parcel owners would lose their structures and real estate.

The presence of the restored beach will provide recreational opportunities to owners of real property within the district. This includes beach directly adjacent to an owner's respective parcel, as well as parcels along the frontage of the beach within the district. Even though the Project provides access via publicly accessible stairways, direct access to the beach from adjacent private properties provides a special benefit to those owners within the Project distinct from the benefits shared with the public, as these owners need not share their stairways to access the beach with the public, and they need not find parking near, or transportation to, these stairways to use them. The special benefit is also demonstrated by the premium real estate market value associated with these beachfront properties because of their direct access to the beach.

Enhanced views and aesthetics provided by the Project have been considered in the benefit calculations. A view analysis was performed to study the special benefit conveyed to owners of assessed parcels and general benefit conveyed to others from the enhanced views the Project will create. Upon review and scrutiny of the view analysis and related market value analysis of the contributory effect of enhanced view and aesthetics, it was determined to be difficult to measure and value the enhanced views and aesthetics, and any attempt to value the benefits created would be too imprecise to include here. Further, the benefits from enhanced views and aesthetics are redundant with and captured by other special-benefit factors, including the recreational value. As a result, enhanced views and aesthetics were not considered a separate benefit.

As the appraisal demonstrates, the presence of a dune creates a neutral special benefit condition. The presence of the dune provides protection benefit to respective properties where the dune is located; however, the presence of the dune reduces the utility of the underlying land. As such, the net effect is to convey no addition to or reduction of special benefit.

B. General Benefit

The Project does convey general benefit to owners of properties outside of the district and to other members of the general public. We must also distinguish between the public benefit necessary to allow permitting of the Project and the "general benefit" contemplated by Article XIII D of the California Constitution. Like most assessments, special benefits conferred by the improvements may create general benefits (i.e., an improved beach area that the public may view and use).

The general benefits associated with recreational and environmental benefits have been identified as being conveyed to members of the public who do not own real property within the district. These include the following.

- The availability to access and use the beach.
- The restoration of historic dune habitat for native flora and fauna, which creates additional public-trust resources.
- Provision of a sand source to downcoast public beaches, through which wave action will induce migration and deposition of sand to nearby beaches.
- Protection of ocean water from wastewater intrusion that could result from damaged/degraded septic systems/leachfields.
- The expansion of sandy beach habitat and upper intertidal habitat.

Previous engineer's reports for the Project also noted protection of County access stairway parcels and aesthetic benefits as general benefits of the project. Aesthetic benefits are no longer treated as general benefits for the reasons they are excluded from special benefit stated above. This report includes the County parcels among those to be assessed for the special benefit the Project confers.

The additional beach area created by the improvements contemplated here provides a general benefit within the contemplation of Article XIII D of the California Constitution. The presence of the restored beach will provide recreational opportunities to members of the public who do not own real property within the district, including visitors, non-property-owning tenants within the district, and owners of property outside of the district boundaries. This includes uniform, expanded public access to a dry sand beach. Restoration of the beach and landward relocation of the revetment allows access seaward of the revetment and landward of the mean high tide line. The revetment will be covered to create dune habitat for native flora and fauna. Ongoing monitoring maintenance and monitoring activities triggered by objective monitoring milestones will act to preserve the beach and access. A comprehensive monitoring program will be implemented during and between construction (i.e., nourishment) activities, allowing for adaptive management approaches for the beach and dune system, if necessary. Further, two parcels owned by Los Angeles County provide public access to the beach. Although Los Angeles County will be assessed as a parcel owner within the district and will receive special benefits in the form of protection of those parcels and their improvements, the presence and protection of these parcels will maintain public access to the beach and, therefore, will result in a general benefit conveyed to the public.

The general benefit conveyed to the public has been estimated in a 2013 analysis prepared to estimate the recreational benefit of the Project[1]. With respect to the general benefit of public beach access and related recreational opportunities, the analysis estimated attendance and considered public access to Broad Beach, as well as similar estimates for Zuma Beach, located to the east of Broad Beach. The study noted that Broad Beach is transportation-accessible by car, with parking available on Broad Beach Road. Zuma Beach is transportation-accessible by public bus as well as by car, with parking available in a fee parking lot or along Pacific Coast Highway.

[1] King, P. G., *An Analysis of the Recreational Benefits Due to a Proposed Nourishment Project at Broad Beach, Malibu*. September 22, 2013.

Pedestrians may access Broad Beach via the two Los Angeles County-owned access walkways. Noting minimal amenities available at Broad Beach compared to public amenities available at Zuma Beach, the study estimated annual attendance of 10,000 visits at Broad Beach and 2 million visits at Zuma Beach, respectively. The study calculated the present value (PV) of 20 years' worth of recreational benefit of the project to be $124,237,016; of this, a value of $630,079 was assigned to Broad Beach, while the remaining $123,000,000+ was assigned to Zuma Beach. The recreational value conveyed to Zuma Beach was attributed to the natural movement of sand from Broad Beach to Zuma Beach resulting from the Project.

The King Report measures the benefit of the Project in wide public policy terms, including the kinds of diffuse social and economic benefits and general enhancements, including environmental protections (e.g., preservation of water quality, beach quality, beach aesthetics, habitat preservation) of property value that do not constitute special benefit under the California Constitution. These can be viewed as not entirely general benefits of the project within the meaning of the California Constitution either, as general enhancement of economic activity in the Malibu region may not constitute either general or special benefit in constitutional terms. Nevertheless, this report uses the total benefits measured by the King Report as a measure of general benefit to add an element of conservatism to its analysis of the special benefit to assessed property owners.

It should be noted that the California Coastal Commission and the State Lands Commission both explicitly conditioned their approvals of the contemplated improvements on the creation of additional beach area accessible to the public, as required by the statutes under which they act[2]. This can be understood as the price the BBGHAD must pay to use public resources (such as state tidelands) to achieve its purpose to protect private property. Thus, although the additional beach area may be publicly accessible, it is a legally compelled portion of the Project required to achieve the special benefit to property owners; without additional beach area, the Coastal Commission and State Lands Commission would not permit the Project to achieve the special benefit. These are project costs properly funded by assessments just as permitting fees and costs to lease tidelands are. The beneficiaries of the Project are not entitled to free use of State tidelands and other public assets. For this additional reason, this report's treatment of that beach access as general benefit overstates the general benefits of the Project, and understates special benefit to assessed parcel owners. It adds an additional degree of conservatism to this report's analysis of assessable special benefits.

The cost to confer the general benefit is accounted for by several non-assessment funding sources for the Project. The cost of revetment relocation, estimated at approximately $1.6 million, as presented in Exhibit C, will be borne by the private landowners who own property on which portions of the revetment will be located. Additionally, these homeowners will contribute land underlying the revetment and dunes, construction access, conditional lateral access (under what have been referred to as "springing licenses"); the land donated for the dune footprint, revetment, and conditional lateral public access areas is valued at $15.75 million. These funding sources reduce the portion of the Project cost to be funded by assessments to the portion of that cost attributed to special benefit. They fund the portion of the Project that confers general benefit realized by the public in the form of use of the enhanced beach. The other special benefits of this

[2] A letter to the State Lands Commission from Project Counsel dated 2/8/2016 was not intended to identify general benefits under Proposition 218, but instead was prepared as part of lease negotiations with the State Lands Commission, which does not require Proposition 218 compliance.

Project identified above accrue only to the assessed parcels and have no general benefit component — protection of real property from destruction by an encroaching ocean is a benefit that is necessarily enjoyed by the owner of that property and not others for they alone control the use and enjoyment of property and can alone monetize that value by sale or lease of the land and its improvements.

Therefore, the non-assessment costs of revetment relocation ($1.6 million), borne by the affected homeowners, and the value of the underlying land for the proposed revetment and dune reconstruction ($15.75 million) provide a total contribution of $17.35 million. As the general benefit (approximately $124 million) is considered approximately 15 percent the special benefit conveyed by the Project, approximately 15 percent of the project must be funded by non-assessment sources. Incorporating Project expenses and debt repayments, 15 percent of the Project budget is approximately $13.7 million, and is less than the non-assessment funding available to cover $17.35 million. The surplus non-assessment adds still another degree of conservatism to this report's estimate of the special benefits for which benefited parcels may be assessed.

C. Assessment Method

To allocate assessment in proportion to special benefit conferred on assessed parcels, a formula has been derived that estimates the special benefit conveyed by the Project. The formula includes several factors, which are weighted based on their relative effect on special benefit. Special benefit is derived considering the following factors, and weighting has been applied to each factor to note its relative importance as compared to other factors. These factors are supported by the Coastal Engineering Appendix (Exhibit C) with respect to analysis of shore protection components, including sand placement, revetment, seawall, and bluff features, and from real estate appraisals and market analyses as well as publicly available property value assessments, for consideration of other values. After considering all evidence available to us, including analyses of coastal engineering processes, we applied our professional judgment to the factor values regarding the relative efficacy of protective devices and projections of the effects of the Project:

$$A_i = R \times \frac{B_i \times F_i}{\sum_{i=1}^{n}(B_i \times F_i)}$$

A_i = Assessment at Parcel i
R = Total annual assessment-based revenue required to support the GHAD budget
B_i = Aggregated Weighting Factor at Parcel i
F_i = Beach Frontage at Parcel i

$\sum_{i=1}^{n}(B_i \times F_i)$= Summation of product of Aggregated Weighting Factor at Parcel i and Beach Frontage at Parcel i for Parcels i to n

$$B_i = \left[\left(8 \times {}^{W_i}/_{W_{max}}\right) + (1.2 \times c_i) - (6 \times d_i) - (4 \times e_i) + g_i + h_i\right] \times 100$$

Sand Placement Factor:
w_i = Average projected 5-year Restored Beach Width at Parcel i
w_{max} = Maximum Average projected 5-year Restored Beach Width within n Parcels

Revetment Factor:
c_i = 1 if parcel i has a revetment; 0 if parcel i does not have a revetment

Seawall Factor:
d_i = 1 if parcel i has a seawall; 0 if parcel i does not have a seawall

Bluff Factor:
e_i = 1 if parcel i has a bluff (without a seawall); 0 if parcel i does not have a bluff

Recreation Factor:
g_i = 1.8 if parcel i is on a bluff without a seawall; 2 if parcel i is not on a bluff or is on a bluff with a seawall

Parcel Development Factor:
h_i = 1 if parcel i has a habitable structure; 0.7 if parcel i does not have a habitable structure but has improvements; 0.5 if parcel i is vacant

- Sand Placement – The placement of beach sand material provides special benefit in direct proportion to the area of sand placed; as discussed throughout this document, width is defined as the beach dimension perpendicular to the shoreline, frontage is the dimension along the coast, and sand area is the product of the two (w x l = a). However, as the assessment will be imposed by foot-frontage, sand area can be expressed in terms of just width initially. As discussed in the Coastal Engineering Appendix (Exhibit C), the sand placement provides the significant majority of the shore protection benefit of the Project and will restore the lost shoreline, which will provide shoreline restoration program that provides erosion control protection to properties (including bluffs) and existing improvements, including homes, ancillary structures, septic systems, and other improvements (including seawalls). The beach dissipates wave energy, mitigating the potential for future property damage and reconstruction that could result from further beach erosion/destruction. The sand placement will directly mitigate a decades-long trend of shoreline erosion that has reached a critical point in which residential structures and onsite wastewater treatment systems (OWTS or septic systems) are threatened by coastal erosion and flooding. Sand placement is considered the most important factor and has been assigned a weighting factor of 8 (measured on a scale of 1 to 10).

- Revetment – The continued lawful presence of a revetment from 30760 to 31350 Broad Beach Road provides a special benefit to parcel owners on which it is located. The revetment provides protection. However, the presence of a revetment adds additional cost, both in terms of more expensive maintenance of overlying sand/dune and permitting and regulatory costs associated with its presence. It also burdens the land on which it is located, reducing the land's utility to its owner. As presented in Coastal Engineering Appendix (Exhibit C), an analysis of the additional shore protection benefit received by those parcels behind the Project revetment over a full 5-year beach nourishment cycle is approximately 15 percent, implying that while the beach nourishment provides the significant majority of the shore protection benefit of the Project even to parcels protected by the revetment, the relative additional shore protection benefit accrued by parcels with revetment is approximately 15 percent. This is because, over the life of the Project, replenished beach sand is expected to absorb 85 percent of wave energy and the revetment just 15 percent. Given this net positive benefit conveyed, but relatively lower level of benefit compared to sand placement, the revetment has been

assigned a weighting factor of 15 percent of the sand placement weighting factor (8), or a weighting factor of 1.2.

- Hardened Protection (e.g., Seawall or Bluff Locations) – Existing seawalls and other shoreline protective devices west of 31346 Broad Beach Road are not part of the Project. The presence of seawalls lessens the need for protective sand to the parcels which they protect and, as a result, reduces the Project's special benefit to these parcels. Several parcels are located on natural bluffs. These, too, lessen the special benefit conveyed to parcel owners; however, unlike engineered seawalls, bluffs are natural geologic units are subject to erosion and other mass wasting processes, and the degree to which special benefit is reduced is not as great as that of parcels with engineered seawalls. Engineered seawalls, too, have design limits and lives and benefit from protection from wave energy. Because of the reduction of the special benefit, the presence of a seawall has a negative weighting factor of -6 (a negative value indicating reduced special benefit) and a natural bluff has a negative weighting factor of -4.

- Recreation – The restoration of the beach will also provide recreational benefits to parcel owners within the district. As shown in the 2013 analysis of recreational benefits of the Project, discussed above, the presence of a beach provides unique access for beachfront recreation opportunities through the restoration of a dry, sandy beach, access to the shoreline for water sports, and other leisure pursuits, such as walking/hiking, sunbathing, etc. The King Report cited a recreational benefit of approximately $630,000 for Broad Beach. However, it cited limited amenities available and identified limited access options. Property owners will have access to amenities provided by their private residences/improvements that members of the general public do not, and have direct access to the beach from their residences. As a result, the homeowners have a significantly higher recreational value than that cited by the King Report, and although not as valuable as the placement of sand to protect of valuable real property and improvements; the unique, enhanced recreation component has been assigned a weighting factor of 2. Because of some limitations in access, parcels with bluffs (without the presence of a seawall) are assigned a weighting factor of 1.8.

- Parcel Development – Special benefit derived is also proportional to the nature of development that may be present at a given parcel that the Project will protect from erosion. As an example, greater benefit is derived for parcels on which residential structures are present as compared to parcels where accessory structures or improvements, such as tennis courts or cabanas, which in turn derive greater benefit than vacant lots. The presence of a habitable structure is assigned a value of 1, while a parcel improved with accessory structures/improvements is assigned a value of 0.7. Vacant lots have been assigned a value of 0.5.

- Dune Building and Restoration – As discussed, the appraisal report opines that the presence of a dune creates a neutral special benefit condition, and the net effect is to convey no addition to, or reduction of, special benefit because a dune provides both greater protection from wave action and natural habitat, but reduced utility of the land on which the dune is located. Because of the neutral contribution, it has not been included as a factor in the special benefit calculation.

Lots will be assessed based on the formula, with each factor being normalized (i.e., expressed on a common scale) based on maximum values of each factor. The weighted values described above related to shore protection have been computed to reflect the relative importance of each

factor in the judgment of the BBGHAD Manager and Assessment Engineer (ENGEO) and the BBGHAD Coastal Engineer (Moffatt & Nichol), then the resulting fractional value of the total assessment is assigned to each parcel on a pro-rata basis based on respective length, F_i, of their respective beach frontages. An assessment level is determined for each lot based on these factors. In overview, a parcel improved by a structure, receiving sand placement, and protected by the revetment will derive the greatest special benefit and, therefore, is assessed the largest amount per foot of frontage. A vacant parcel protected by a bluff or seawall will derive the least special benefit and is therefore assessed the smallest amount per foot of frontage. Other parcels will range between these extremes.

Assessments were calculated based on the best data available as of the date of this report. BBGHAD will enact an administrative procedure to allow owners of assessed parcels to apply annually for adjustments if necessary to reflect any errors in the data on which this report relies or such changed circumstances as removal or addition of habitable structures on an assessed parcel[3].

VIII. ASSESSMENT LIMIT - BUDGET

A financial analysis was performed to provide a framework for an operating budget for the on-going abatement, mitigation, prevention, and control of geologic hazards within the BBGHAD boundaries. In preparation of the budget, several factors were considered including:

- Proposed Improvements
- Elements Requiring Preservation

Based on the estimated expenses for on-going operations and the allowance for one future beach re-nourishment event (5 years after the initial re-nourishment), a budget was prepared for the purpose of estimating initial assessment levels (Exhibit G). The budget is based on cost estimates provided at the time of preparation of this Engineer's Report with respect to materials, labor, and related costs within a reasonably foreseeable timeline of anticipated Project commencement. Because of uncertainty related to the dates on which the BBGHAD will obtain required Project permits and land access rights, and subsequently begin construction, the Project costs and related assessment have been adjusted to allow for a potential delay of the issuance of necessary permits and/or the commencement of Project construction in fall 2023.

The assessments on a per-parcel basis have been established in the professional judgment of the BBGHAD Manager and Assessment Engineer (ENGEO) and the BBGHAD Coastal Engineer, Moffatt & Nichol. Further details are provided in Exhibit C. Inherently, the determination of the assessment assigned to parcels is based on a qualitative analysis of several factors discussed in this document. During this determination, a confirming quantitative assessment was concurrently

[3] At the time the revetment was constructed in 2009/10, the owner of 30822 Broad Beach Road elected not to install the revetment seaward of the subject parcels. As a result, no revetment exists seaward of the home at 30822 Broad Beach Road. The CDP for the Project requires the installation of a revetment seaward of 30822 Broad Beach Road at a specific location in accordance with the CDP. Therefore, until this revetment section is completed, the assessment formula has been applied to the subject property in its current state, without a revetment. If and when a revetment is installed seaward of the subject property, the assessment formula shall be re-calculated to reflect the presence of the revetment and the assessment and levy at this property shall be changed at the first possible opportunity following such re-calculation.

performed. However, the quantitative assessment must be qualified: it is not to be interpreted as a statement of precision; rather, it was performed to clarify and facilitate validation of the qualitative analysis. In the end, assessment allocations are expressions of professional judgment; they are not scientific fact.

The budget described above is based on the assumption there will be unanimous consent among parcel owners within the BBGHAD to proceed with the Project or the BBGHAD will be successful in amending the Permit to build an amended Project around those revetment owners who do not consent. Either unanimous owner consent, or a successful permit amendment, is a requirement of the Project's CDP from the California Coastal Commission for Project commencement and to allow construction access to private land and to maintain dunes and revetments there. If consent is not granted by the 11 owners of the 14 revetment parcels who have yet to grant it for the CDP-required License Agreement or viable alternative, an alternative budget has been prepared that assumes additional costs should eminent domain actions be necessary. This alternative budget scenario is also presented in Exhibit G. These greater costs may not be incurred and do not alter the relative allocation of special benefit from the Project as they make the Project possible but do not change the benefits that flow from its construction and maintenance. The protection against wave energy is the same regardless of how BBGHAD obtained the right to construct and maintain Project improvements on a given parcel.

Moreover, the BBGHAD believes it will be successful in implementing the Project, or an amended Project, even if the holdouts continue to refuse to sign the License Agreement required by the CDP, because: (1) the California Coastal Commission will allow the BBGHAD to pursue an amended Project that does not require consent of all parcel owners; or (2) BBGHAD will use eminent domain to condemn and take the necessary interests.

The staffs of the BBGHAD and California Coastal Commission have met multiple times since the holdout BBGHAD property owners announced their intention to withhold the consent required under the current CDP. The California Coastal Commission staff has stated and BBGHAD believes that, even if the holdouts continue to oppose the Project, the agency will allow the BBGHAD to implement the Project through a CDP amendment accounting for the holdouts in the following ways:

a. According to California Coastal Commission staff, revetment owners not signing the License Agreement will lose their right to maintain the revetment seaward of their homes, ultimately resulting in a total of seven (7) gaps in the revetment based on those parcel owners who have not yet granted consent. Any "edge" effects of these seven gaps would be mitigated by the use of coarser-grained sand as compared to native beach sand (as permitted by the CDP) to extend beach fill longevity and sand backpassing to extend beach fill life and recycle sand to where it may be needed. Moreover, the CDP allows for yearly, as-needed interim nourishments (between the "major" nourishments permitted every 5 years)[4];

[4] Aerial photographs of the existing 120-foot revetment gap at 30822 Broad Beach Road taken over the past 9 years show that it took over 2.5 years and possibly up to 4.5 years for significant edge effects to develop. This time-based study of beach performance in Project footprint demonstrates that the BBGHAD will have ample time to implement remedial measures to the restore beach prior to development of significant edge effects.

b. In circumstances of extreme beach erosion and/or BBGHAD inability to remediate timely loss of portions of the beach–fronting revetment, the BBGHAD will implement effective and low-impact flank protection measures to eliminate gap edge effects and their potential negative impact on quality of adjacent property shore protection (such as the temporary use of geotextile bags, "shorebags", etc.);

c. The BBGHAD would facilitate public access in all weather and beach conditions, including:

1. **For parcel owners who have not yet signed the License Agreement, but who have recorded lateral access easements** (30870 and 31122 Broad Beach Road):

   With the Project implemented with a fully nourished beach, full beach access would exist seaward of the restored dune system.

   With the Project implemented with a partially eroded beach, public beach access would exist seaward of 2010 mean high tide line (MHTL) and, landward of the 2010 MHTL, within a 25-foot zone in the dune field with no access landward of the boundary specified in the subject, recorded lateral access easement.

   With the Project implemented with a completely eroded beach, no public access would exist landward of the boundary specified in the subject, recorded lateral access easement.

2. **For parcel owners who have not yet signed the License Agreement, but who have not recorded lateral access easements** (30810, 30822, 30838, 30866, 30908, 30956, 30962, 31118, and 31138 Broad Beach Road):

   With the Project implemented with a fully nourished beach, full beach access would exist seaward of the restored dune system.

   With the Project implemented with a partially eroded beach, public beach access would exist seaward of 2010 MHTL with no public access landward of the 2010 MHTL.

   With the Project implemented with a completely eroded beach, no public access would exist landward of the 2010 MHTL.

d. The BBGHAD has shown its proposed Project amendments will not lessen or eliminate the intended effects of the Project and CDP:

1. Gaps in the revetment will affect neither dry beach width nor the CDP's requirements for triggering renourishment.

2. The current CDP requires the BBGHAD to either backpass or renourish the beach if dry beach width at Profile 411 measures 50 feet or less (backpassing trigger) or 30 feet or less (small- or large-scale nourishment trigger). These provisions would not be amended.

3. This dry beach width lies predominantly seaward of the restored dune system, meaning gaps in the revetment will not affect the Project or the benefits it creates.

4. The CDP's Dune Restoration Plan would not be amended. The Plan includes remediation and adaptive management framework, and identifies renourishment and reseeding actions to rebuild dunes impacted by erosion.

5. Implementation of "living shoreline" elements in accordance with CDP Special Condition 1(A)(1) allows for minor modifications to the revetment design to ensure structural stability. The "living shoreline" design will still conform closely to the existing and remaining revetment if the Project is amended.

In addition to the measures stated above, the BBGHAD may also pursue "Use Agreements" from those revetment owners who refuse to sign the License Agreement. A "Use Agreement" would allow the BBGHAD to use the holdout owner's real property as necessary to implement the Project (such as placing sand and/or dune materials on private property seaward of the 2010 MHTL), but such owner would maintain his/her rights to not sign the License Agreement.

Thus, this proposed CDP amendment does not change the benefits identified, quantified, and separated in this report because the measures specified above will not lessen or eliminate the intended effects of the CDP or change the identification and quantification of benefits the Project will create described in this Report.

Regarding the potential impact of assessed parcel owners' decision to not comply with the License Agreement on the resulting project shore protection benefit, while they will forego the special benefit accrued from the revetment (as it will not be permitted and lawful and the Coastal Commission staff states it will require its removal from those parcels), they will still accrue their full beach nourishment shore protection benefit. Even if the parcel owner does not allow construction access or sand placement on his/her property, identified as area landward of the 2010 mean high tide line, natural forcing of waves and tides will, in short order, spread the sand to the same approximate dimensions in gained beach width as the adjacent participating properties.

The hold-out parcels will not receive the benefit of continued lawful presence of the revetment and will receive reduced special benefits from the project (no rocks), but all assessed parcel owners (including these holdouts) will experience reduced Project costs as the extent of the Project will be reduced. For example, the proposed amendment accounts for and minimizes "edge" effects and the schedule and volume of the planned sand nourishments and renourishments mitigate the effect on assessed parcel owners of the removal of revetment rocks from the hold-out parcels. Moreover, the holdouts can eliminate edge effects by choosing to sign the License Agreement and some can be expected to do so when given the alternative of exposing valuable real estate to the ocean. The BBGHAD thus does not believe eminent domain will be required.

If the California Coastal Commission does not allow BBGHAD to amend the Project and requires the BBGHAD to use eminent domain to acquire the necessary interests in the hold-out parcels, the BBGHAD Board will consider reversing its 2012 resolution that it will not use eminent domain and then pursue eminent domain actions to acquire the necessary interests. Condemnation of the interests and the likely ensuing litigation will cost approximately $4,000,000 (see Exhibit G). Alternatively, the BBGHAD could delay the initial implementation of the Project, but maintain all necessary permits, until the then-applicable assessment generates sufficient funds to undertake the required condemnation actions. The cost of eminent domain proceeding is included here in the interest of full disclosure to property owners. No amount is budgeted to acquire the interests

in issue because the appraisal data shown above show the market assigns no value to the access rights required by the springing license agreement because the benefits to property offset the burdens the agreement imposes; indeed, nearly all protected property owners have donated the springing license agreement at no cost to the Project. The BBGHAD sees no need to spend eminent domain litigation funds in the short term and hopes to avoid doing so over the longer term. Should resources greater than the assessment be required to accomplish the project because the reasonable predictions made here prove overly optimistic, the BBGHAD will propose an amended assessment and allow assessed property owners to determine whether to provide the additional resources necessary to achieve the Project to protect their homes and parcels from the ocean.

In the event that the assessment described in this document is not approved by vote of the property owners within the BBGHAD, the earlier assessments will remain in place. The Assessment Diagram is shown in Exhibit F. The proposed initial assessment level will be adjusted annually to reflect the percentage change in the Los Angeles metropolitan area Consumers Price Index (CPI) for All Urban Consumers, as the BBGHAD Board previously approved. The assessment limit will be adjusted annually using an initial date of April 2020 for the CPI. Each subsequent annual adjustment will be calculated using the 12-month period from April to April. The assessment shall be levied by the BBGHAD following the authorization of the assessment. Thus, the five-year assessment amounts are the initial assessments stated in Exhibit G adjusted for inflation for each of the next four years. The legal maxima on the assessments are those same amounts, but adjusted for inflation over the life of the assessment.

EXHIBIT A

Legal Description

EXHIBIT "A"
LEGAL DESCRIPTION

IN THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, BEING THAT PORTION OF THE RANCHO TOPANGA MALIBU SEQUIT, AS CONFIRMED TO MATTHEW KELLER BY PATENT, RECORDED IN BOOK 1, PAGE 407 ET SEQ. OF PATENTS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE NORTHERLY PROLONGATION OF THE EASTERLY TRACT LINE OF TRACT NO. 12314, RECORDED IN BOOK 232, PAGES 23 AND 24, OF MAPS, IN THE OFFICE OF SAID COUNTY RECORDER WITH THE SOUTHERLY LINE OF THAT 60-FOOT STRIP OF LAND DEEDED TO SAID COUNTY OF LOS ANGELES, BY DEEDS RECORDED IN BOOK 21735, PAGE 135 AND IN BOOK 21722, PAGE 190 OF OFFICIAL RECORDS IN THE OFFICE OF SAID COUNTY RECORDER;

THENCE WESTERLY ALONG SAID SOUTHERLY LINE PARALLEL WITH THE CENTERLINE OF BROAD BEACH ROAD THE FOLLOWING 4 COURSES:

1. NORTH 55°10'30" WEST 693.12 FEET TO THE BEGINNING OF A CURVE TANGENT WITH SAID LINE, CONCAVE SOUTHERLY, AND HAVING A RADIUS OF 1980.00 FEET;
2. WESTERLY 290.86 FEET ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 08°25'00" TO THE BEGINNING OF A LINE TANGENT WITH SAID CURVE;
3. NORTH 63°35'30" WEST 530.42 FEET;
4. NORTH 64°54'00 WEST 625.20 FEET TO THE INTERSECTION OF THE NORTHERLY PROLONGATION OF THE WESTERLY TRACT LINE OF SAID TRACT NO. 12314 WITH THE SOUTHERLY LINE OF SAID 60-FOOT STRIP OF LAND;

THENCE ALONG SAID SOUTHERLY LINE NORTH 64°54'00" WEST 107.00 FEET TO THE NORTHEASTERLY CORNER OF TRACT NO. 12909, RECORDED IN BOOK 263, PAGES 37 AND 38, OF MAPS, IN THE OFFICE OF SAID COUNTY RECORDER;

THENCE ALONG THE NORTHERLY LINES OF SAID TRACT NO. 12909 THE FOLLOWING 5 COURSES:

1. NORTH 64°54'00" WEST 307.62 FEET TO THE BEGINNING OF A CURVE TANGENT WITH SAID LINE, CONCAVE SOUTHERLY, AND HAVING A RADIUS OF 1974.15 FEET;
2. WESTERLY ALONG SAID CURVE 199.27 FEET THROUGH A CENTRAL ANGLE OF 05°47'00" TO THE BEGINNING OF A LINE TANGENT WITH SAID CURVE;
3. NORTH 70°41'00" WEST 672.67 FEET TO THE BEGINNING OF A CURVE TANGENT WITH SAID LINE, CONCAVE SOUTHWESTERLY, AND HAVING A RADIUS OF 2980.00 FEET;
4. WESTERLY ALONG SAID CURVE 615.90 FEET THROUGH A CENTRAL ANGLE OF 11°50'30" TO THE BEGINNING OF A LINE TANGENT WITH SAID CURVE;
5. NORTH 82°31'30 WEST 615.67 FEET TO THE NORTHEASTERLY CORNER OF TRACT NO. 31986, RECORDED IN BOOK 1081, PAGES 78 AND 79 OF MAPS, IN THE OFFICE OF SAID COUNTY RECORDER;

THENCE ALONG THE NORTHERLY LINES OF SAID TRACT NO. 31986 NORTH 82°31'30" WEST 118.84 FEET TO THE NORTHWESTERLY CORNER OF SAID TRACT NO. 31986;

THENCE ALONG SAID SOUTHERLY LINE NORTH 82°31'30" WEST 105.00 FEET TO THE NORTHEASTERLY CORNER OF TRACT NO. 32003, RECORDED IN BOOK 1081, PAGES 28 AND 29, OF MAPS, IN THE OFFICE OF SAID COUNTY RECORDER;

THENCE ALONG THE NORTHERLY LINES OF SAID TRACT NO. 32003 NORTH 82°31'30" WEST 300.02 FEET TO THE NORTHEASTERLY CORNER OF TRACT NO. 25166, RECORDED IN BOOK 695, PAGES 29 THROUGH 31, OF MAPS, IN THE OFFICE OF SAID COUNTY RECORDER;

THENCE ALONG THE EASTERLY LINE OF SAID TRACT NO. 25166 SOUTH 07°28'30" WEST 65.06 FEET TO THE NORTHEASTERLY CORNER OF LOT 16 OF SAID TRACT NO. 25166;

THENCE ALONG THE NORTHERLY LINES OF SAID LOT 16 THE FOLLOWING 2 COURSES:

1. NORTH 84°58'01" WEST 131.25 FEET;
2. SOUTH 76°12'50" WEST 31.00 FEET TO THE EASTERLY END OF THE CENTERLINE OF VICTORIA POINT ROAD (A PRIVATE ROAD) PER SAID TRACT NO. 25166;

THENCE ALONG SAID VICTORIA POINT ROAD CENTERLINE THE FOLLOWING 5 COURSES:

1. NORTH 17°26'00" WEST 11.00 FEET;
2. SOUTH 72°34'00" WEST 105.92 FEET TO THE BEGINNING OF A CURVE TANGENT WITH SAID LINE, CONCAVE SOUTHEASTERLY, AND HAVING A RADIUS OF 1000.00 FEET;
3. SOUTHWESTERLY ALONG SAID CURVE 134.68 FEET THROUGH A CENTRAL ANGLE OF 07°43'00" TO THE BEGINNING OF A LINE TANGENT WITH SAID CURVE;
4. SOUTH 64°51'00" WEST 68.42 FEET TO THE BEGINNING OF A CURVE TANGENT WITH SAID LINE, CONCAVE NORTHWESTERLY, AND HAVING A RADIUS OF 100.00 FEET;

5. SOUTHWESTERLY ALONG SAID CURVE 51.65 FEET THROUGH A CENTRAL ANGLE OF 29°35'30" TO THE MOST NORTHWESTERLY CORNER OF LOT 7 OF SAID TRACT NO. 25166;

THENCE ALONG THE WESTERLY LINES OF SAID LOT 7 THE FOLLOWING 3 COURSES:

1. SOUTH 04°26'30' WEST 110.00 FEET;
2. SOUTH 56°26'55" WEST 59.24 FEET;
3. SOUTH 32°46'52" EAST 15.00 FEET TO THE MOST WESTERLY CORNER OF LOT 6 OF SAID TRACT NO. 25166;

THENCE ALONG THE SOUTHWESTERLY LINES OF SAID LOT 6 THE FOLLOWING 3 COURSES:

1. SOUTH 32°46'52" EAST 12.00 FEET;
2. NORTH 57°13'08" EAST 16.36 FEET;
3. SOUTH 40°20'10" EAST TO THE MEAN HIGH TIDE LINE OF THE PACIFIC OCEAN;

THENCE NORTHERLY, NORTHEASTERLY, AND EASTERLY ALONG THE MEAN HIGH TIDE LINE OF THE PACIFIC OCEAN AND ALONG THE SOUTHERLY LINES OF THE LAND DESCRIBED IN THE FOLLOWING TRACTS AND DEEDS:

1. SAID TRACT NO. 25166;
2. SAID TRACT NO. 32003;
3. SAID TRACT NO. 31986;
4. SAID TRACT NO. 12909;
5. GRANT DEED 00-0644320 RECORDED APRIL 28, 2000 IN THE OFFICE OF SAID COUNTY RECORDER;
6. GRANT DEED 04-0646973 RECORDED MARCH 18, 2004 IN THE OFFICE OF SAID COUNTY RECORDER;
7. SAID TRACT NO. 12314;
8. GRANT DEED 20072854217 RECORDED DECEMBER 28, 2007 IN THE OFFICE OF SAID COUNTY RECORDER;
9. GRANT DEED 96-1557431 RECORDED SEPTEMBER 23, 1996 IN THE OFFICE OF SAID COUNTY RECORDER;
10. GRANT DEED 3411 RECORDED APRIL 03, 1967 IN THE OFFICE OF SAID COUNTY RECORDER;
11. GRANT DEED 20080278549 RECORDED FEBRUARY 02, 2008 IN THE OFFICE OF SAID COUNTY RECORDER;
12. GRANT DEED 3527 RECORDED DECEMBER 30, 1958 IN THE OFFICE OF SAID COUNTY RECORDER;
13. GRANT DEED 05-1153695 RECORDED MAY 17, 2005 IN THE OFFICE OF SAID COUNTY RECORDER;
14. GRANT DEED 20080934875 RECORDED MAY 28, 2008 IN THE OFFICE OF SAID COUNTY RECORDER;
15. GRANT DEED 20091411424 RECORDED SEPTEMBER 16, 2009 IN THE OFFICE OF SAID COUNTY RECORDER;
16. GRANT DEED 99-2390992 RECORDED DECEMBER 29, 1999 IN THE OFFICE OF SAID COUNTY RECORDER TO THE EASTERLY LINE OF THE LAND DESCRIBED IN SAID GRANT DEED 99-2390992;

THENCE ALONG SAID EASTERLY LINE OF THE LAND DESCRIBED IN SAID GRANT DEED 99-2390992 NORTH 36°37'30" EAST TO A NON TANGENT CURVE CONCAVE NORTHEASTERLY, AND HAVING A RADIUS OF 10,050.00 FEET, SAID CURVE ALSO BEING THE SOUTHERLY LINE OF THE 100 FOOT WIDE STRIP OF LAND (PACIFIC COAST HIGHWAY) CONVEYED TO THE STATE OF CALIFORNIA BY THE DEED RECORDED IN BOOK 20716 PAGE 385, OF OFFICIAL RECORDS;

THENCE WESTERLY ALONG SAID SOUTHERLY LINE OF THE 100 FOOT WIDE STRIP OF LAND THE FOLLOWING 2 COURSES:

1. NORTHWESTERLY ALONG SAID CURVE 208.29 FEET THROUGH A CENTRAL ANGLE OF 01°11'15";
2. NORTH 48°39'15" WEST 228.77 FEET TO THE INTERSECTION OF THE NORTHERLY PROLONGATION OF THE EASTERLY LINE OF THE LAND DESCRIBED IN SAID GRANT DEED 3411 WITH THE SAID SOUTHERLY LINE OF THE 100 FOOT WIDE STRIP OF LAND;

THENCE ALONG SAID NORTHERLY PROLONGATION OF THE EASTERLY LINE OF THE LAND DESCRIBED IN SAID GRANT DEED 3411 SOUTH 34°49'30" EAST 10.07 FEET TO THE NORTHEASTERLY CORNER OF THE LAND DESCRIBED IN SAID GRANT DEED 3411;

THENCE ALONG THE NORTHERLY LINE OF THE LAND DESCRIBED IN SAID GRANT DEED 3411 NORTH 48°39'15" WEST TO THE NORTHWESTERLY CORNER OF THE LAND DESCRIBED IN SAID GRANT DEED 3411;

THENCE ALONG THE WESTERLY LINE OF THE LAND DESCRIBED IN SAID GRANT DEED 3411 SOUTH 34°49'30" WEST 32.91 FEET TO THE SAID SOUTHERLY LINE OF THE 60-FOOT STRIP OF LAND PARALLEL WITH BROAD BEACH ROAD;

THENCE ALONG THE SAID SOUTHERLY LINE OF THE 60-FOOT STRIP OF LAND PARALLEL WITH THE CENTERLINE OF BROAD BEACH ROAD NORTH 55°10'30" WEST 121.95 FEET TO THE **POINT OF BEGINNING**.

AS SHOWN ON THE ATTACHED EXHIBIT "B" AND BY THIS REFERENCE MADE A PART HEREOF.

SUBJECT TO ALL COVENANTS, RIGHTS, RIGHTS-OF-WAY, AND EASEMENTS OF RECORD, IF ANY.

THIS REAL PROPERTY DESCRIPTION HAS BEEN PREPARED BY ME, OR UNDER MY DIRECTION, IN CONFORMANCE WITH THE PROFESSIONAL LAND SURVEYOR'S ACT.

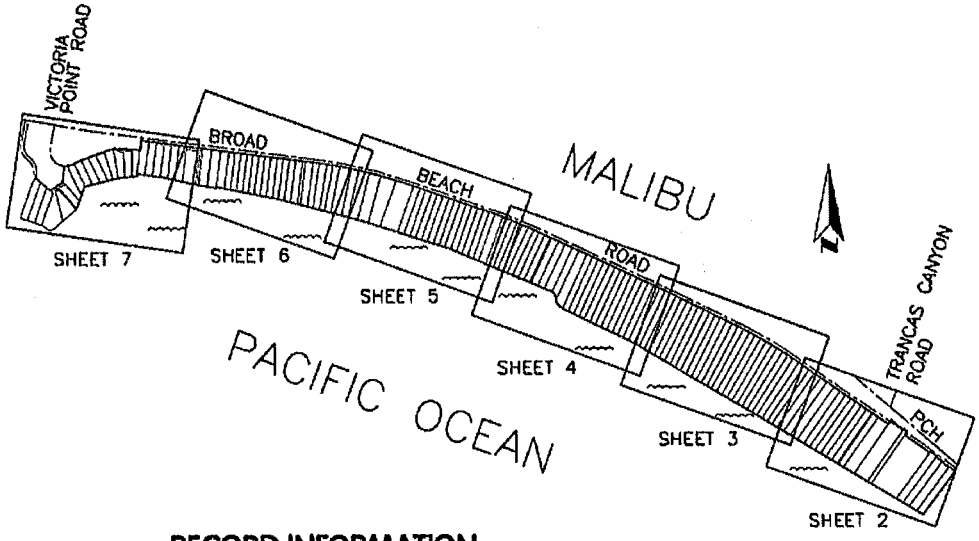
FINAL ELECTRONIC COPY 3/15/11
RICHARD C. MAHER, PLS 7564 DATE
THIS DOCUMENT IS PRELIMINARY UNLESS SIGNED

KDM MERIDIAN, INC.
(949) 768-0731

EXHIBIT B

BBGHAD Boundary

03/14/11	EXHIBIT "B" PLOT TO ACCOMPANY LEGAL DESCRIPTION	SHEET 1 OF 7



RECORD INFORMATION

THE CENTERLINES, RIGHTS-OF-WAY, AND PROPERTY LINES SHOWN HERON ARE BASED ON THE FOLLOWING RECORD MAPS AS FILED IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER:

TRACT NO. 12314	BOOK 232	PAGES 23-24
TRACT NO. 12909	BOOK 263	PAGES 37-38
TRACT NO. 31986	BOOK 1081	PAGES 78-79
TRACT NO. 32003	BOOK 1081	PAGES 28-29
TRACT NO. 25166	BOOK 695	PAGES 29-31
RECORD OF SURVEY	BOOK 76	PAGES 20-21
F.M. 11698-1		PAGES A1-A8
F.M. 11260-2		PAGES A1-A13

DEEDS REFERENCED AS XX-XXXXXXX INDICATE RECORDED INSTRUMENT NUMBER IN THE LOS ANGELES COUNTY RECORDERS OFFICE.

(1) 60-FOOT STRIP OF LAND DESCRIBED IN DEEDS RECORDED IN BOOK 21735, PAGE 135 AND BOOK 21722, PAGE 190, FILED IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER

LINE TABLE

LINE	BEARING	DISTANCE
L1	S07°28'30"W	65.06'
L2	N84°58'01"W	131.25'
L3	S76°12'50"W	31.00'
L4	N17°26'00"W	11.00'
L5	S72°34'00"W	105.92'
L6	S64°51'00"W	68.42'
L7	S04°26'30"W	110.00'
L8	S56°26'55"W	59.24'
L9	S32°46'52"E	27.00'
L10	N57°13'08"E	16.36'
L11	S34°49'30"W	10.07'
L12	N48°39'15"W	100.66'
L13	S34°49'30"W	32.91'
L14	N55°10'30"W	121.95'

CURVE TABLE

CURVE	DELTA ANGLE	ARC LENGTH	RADIUS
C1	7°43'00"	134.68'	1000.00'
C2	29°35'30"	51.65'	100.00'

LEGEND

P.O.B. POINT OF BEGINNING
℄ CENTERLINE

PREPARED BY:

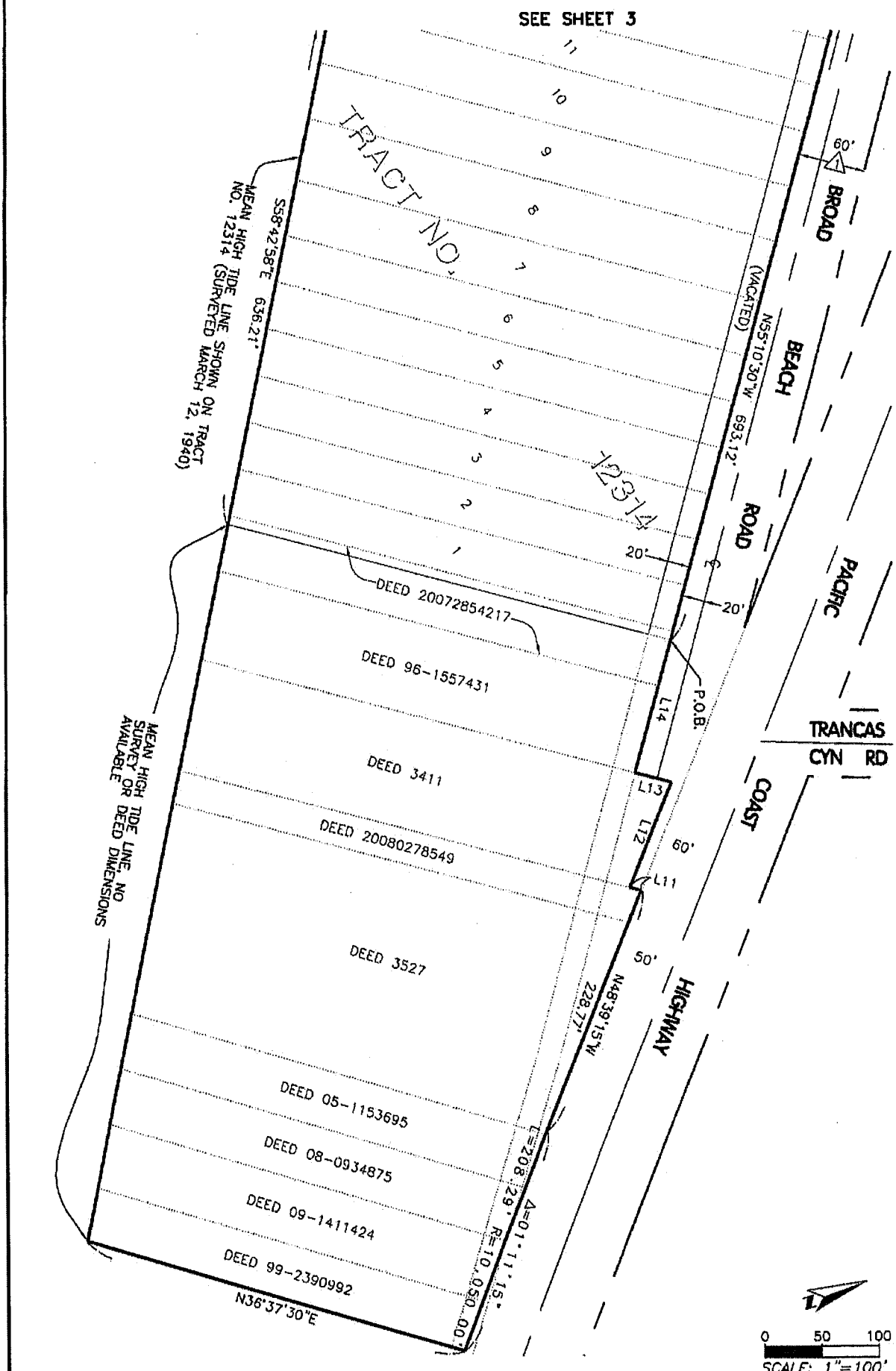
3/14/11

RICHARD C. MAHER, PLS 7564 DATE
THIS DOCUMENT IS PRELIMINARY UNLESS SIGNED

LICENSED LAND SURVEYOR
RICHARD C. MAHER
No. 7564
STATE OF CALIFORNIA

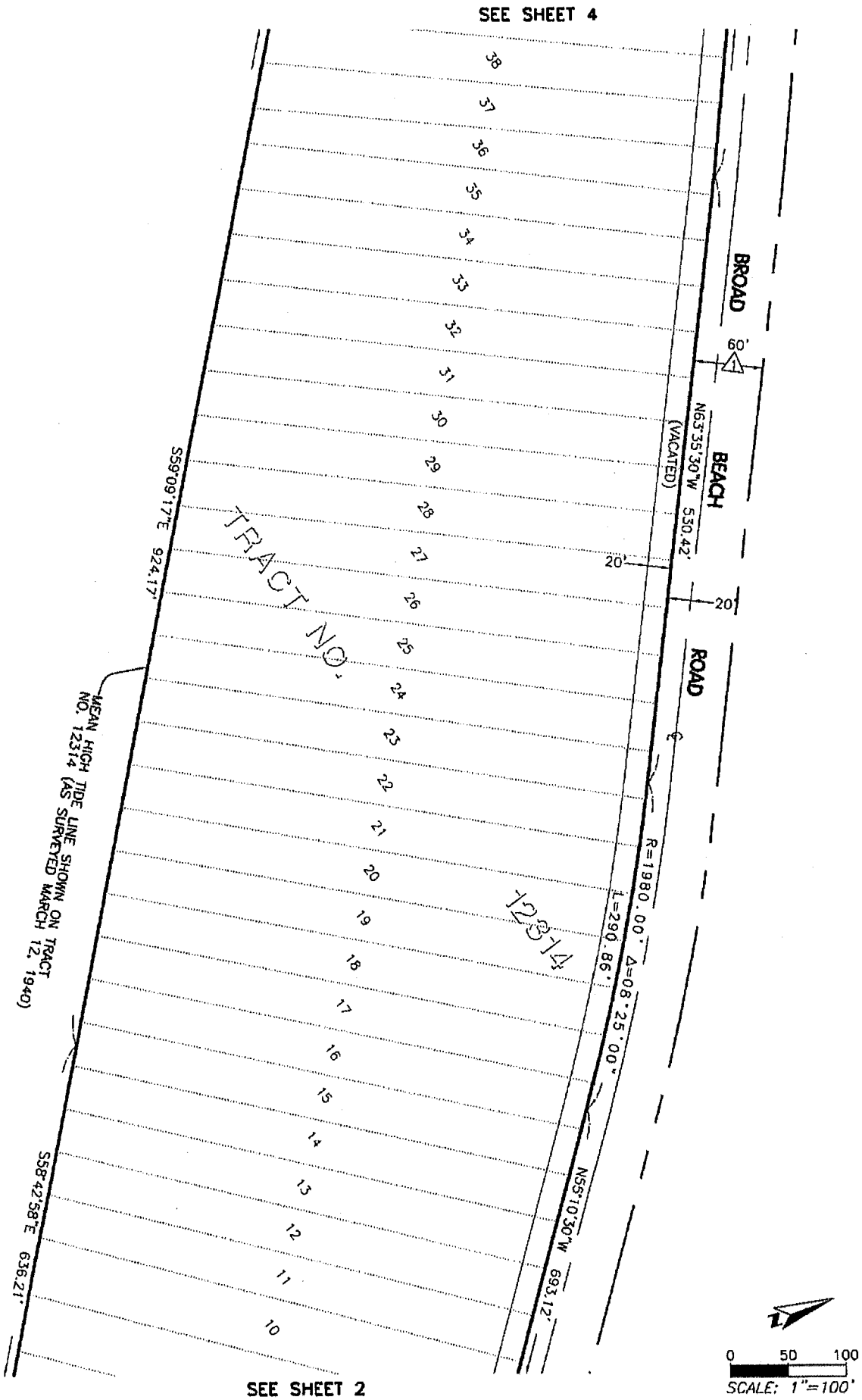
KDM MERIDIAN, INC. (949)768-0731

03/14/11	EXHIBIT "B" PLAT TO ACCOMPANY LEGAL DESCRIPTION	SHEET 2 OF 7

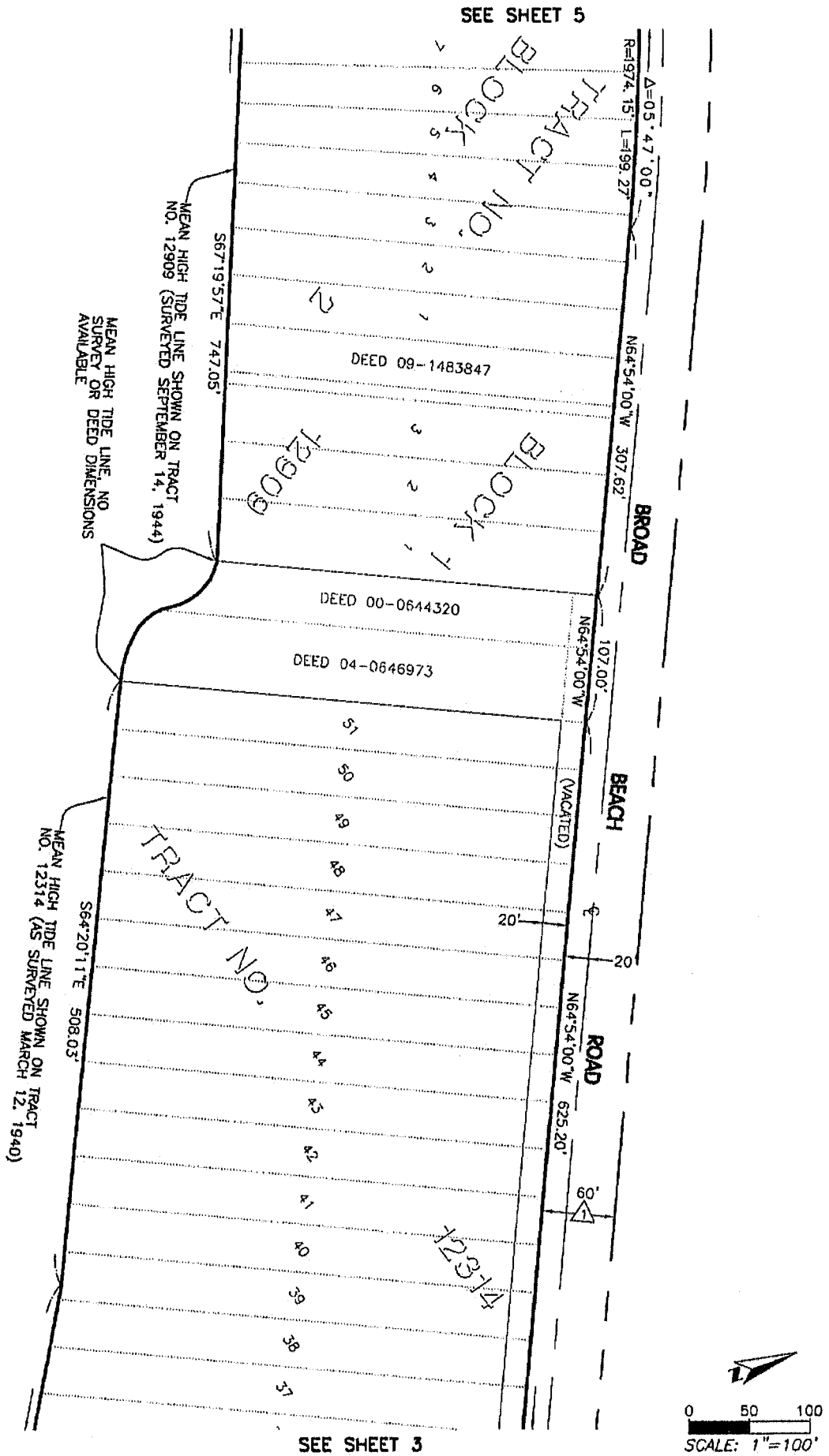


KDM MERIDIAN, INC.	(949)768-0731

03/14/11	EXHIBIT "B" PLAT TO ACCOMPANY LEGAL DESCRIPTION	SHEET 3 OF 7



03/14/11	EXHIBIT "B" PLAT TO ACCOMPANY LEGAL DESCRIPTION	SHEET 4 OF 7



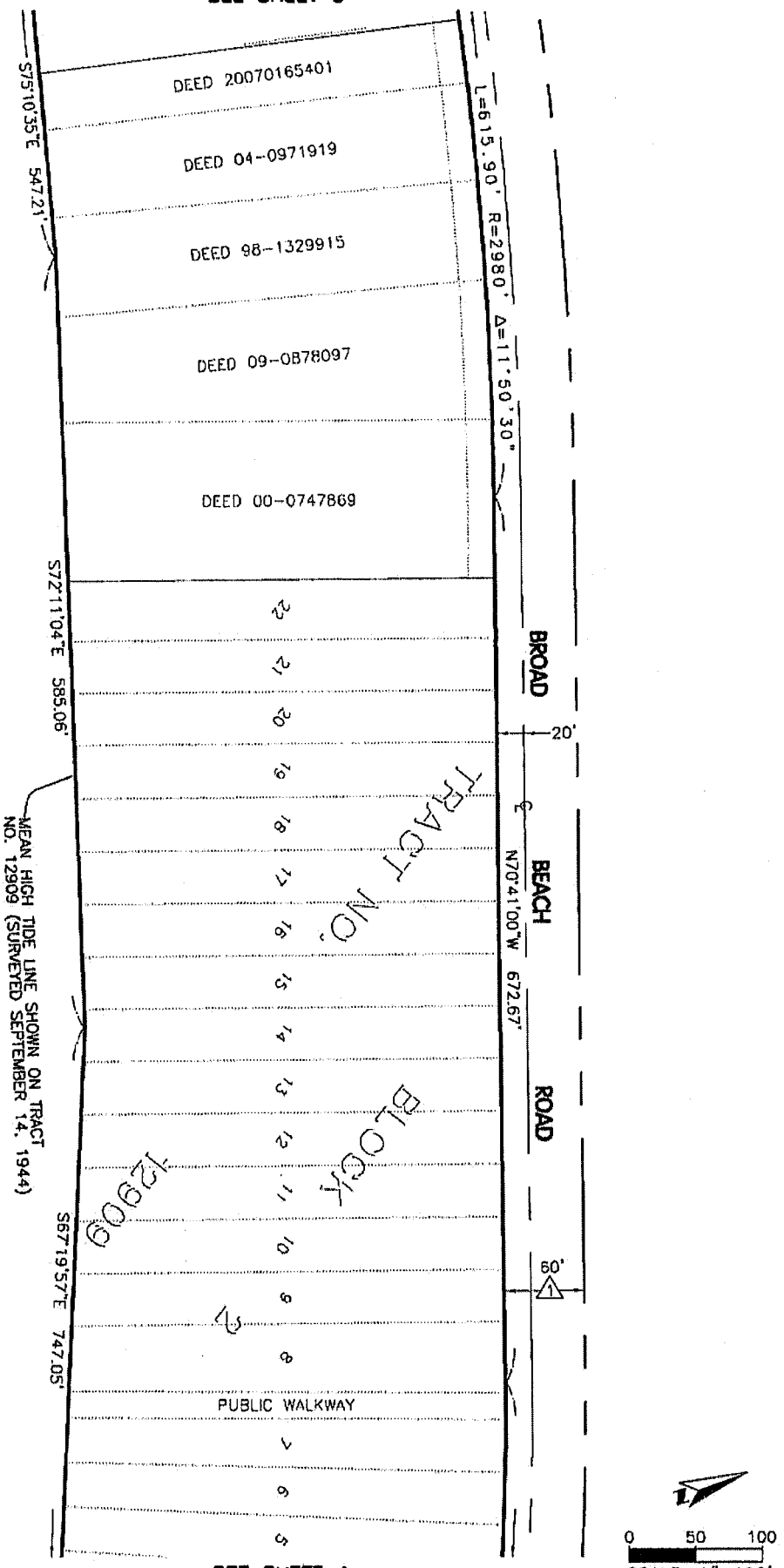
KDM MERIDIAN, INC.	(949)768-0731

03/14/11

EXHIBIT "B"

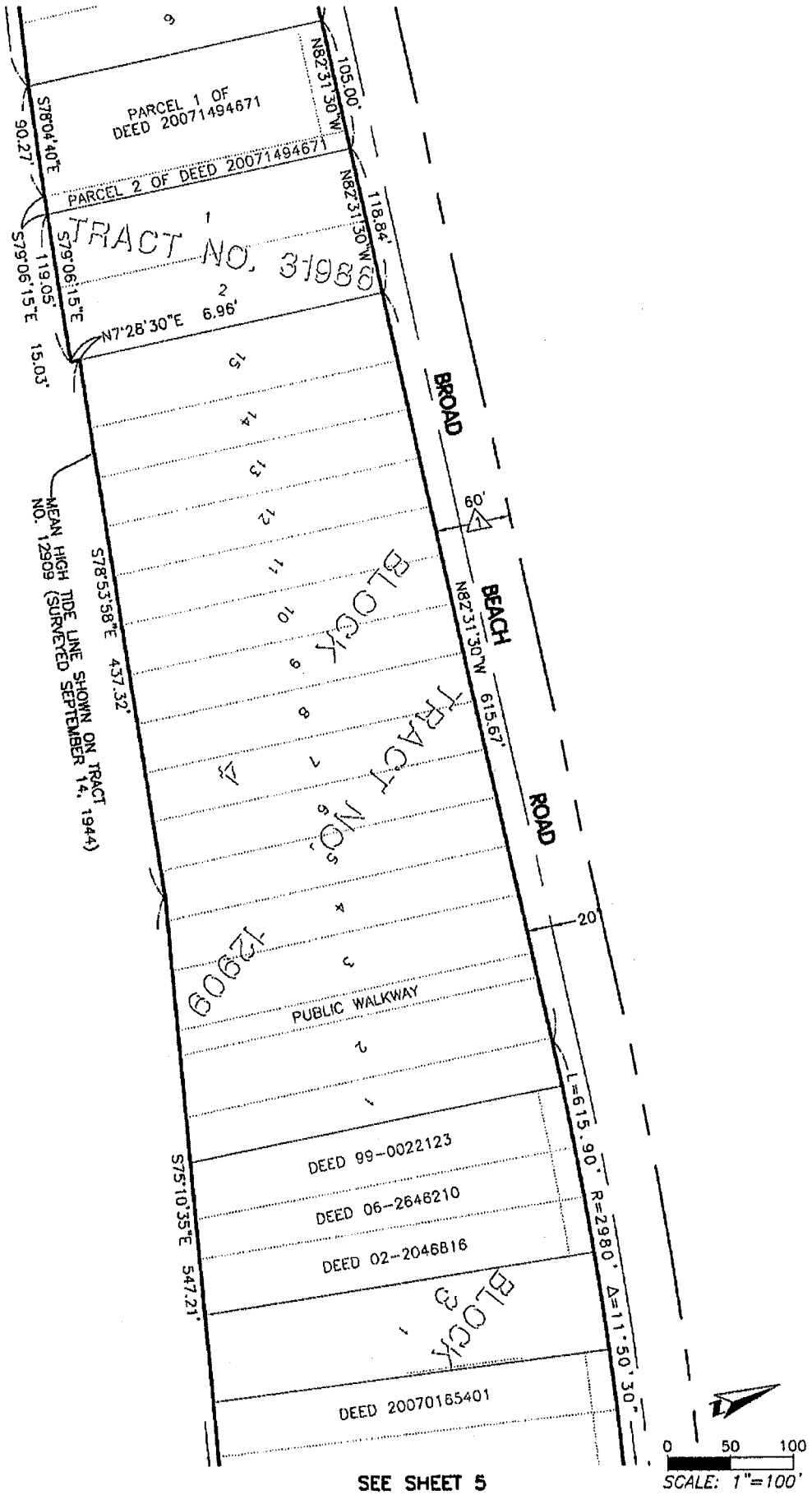
PLAT TO ACCOMPANY LEGAL DESCRIPTION

SEE SHEET 6

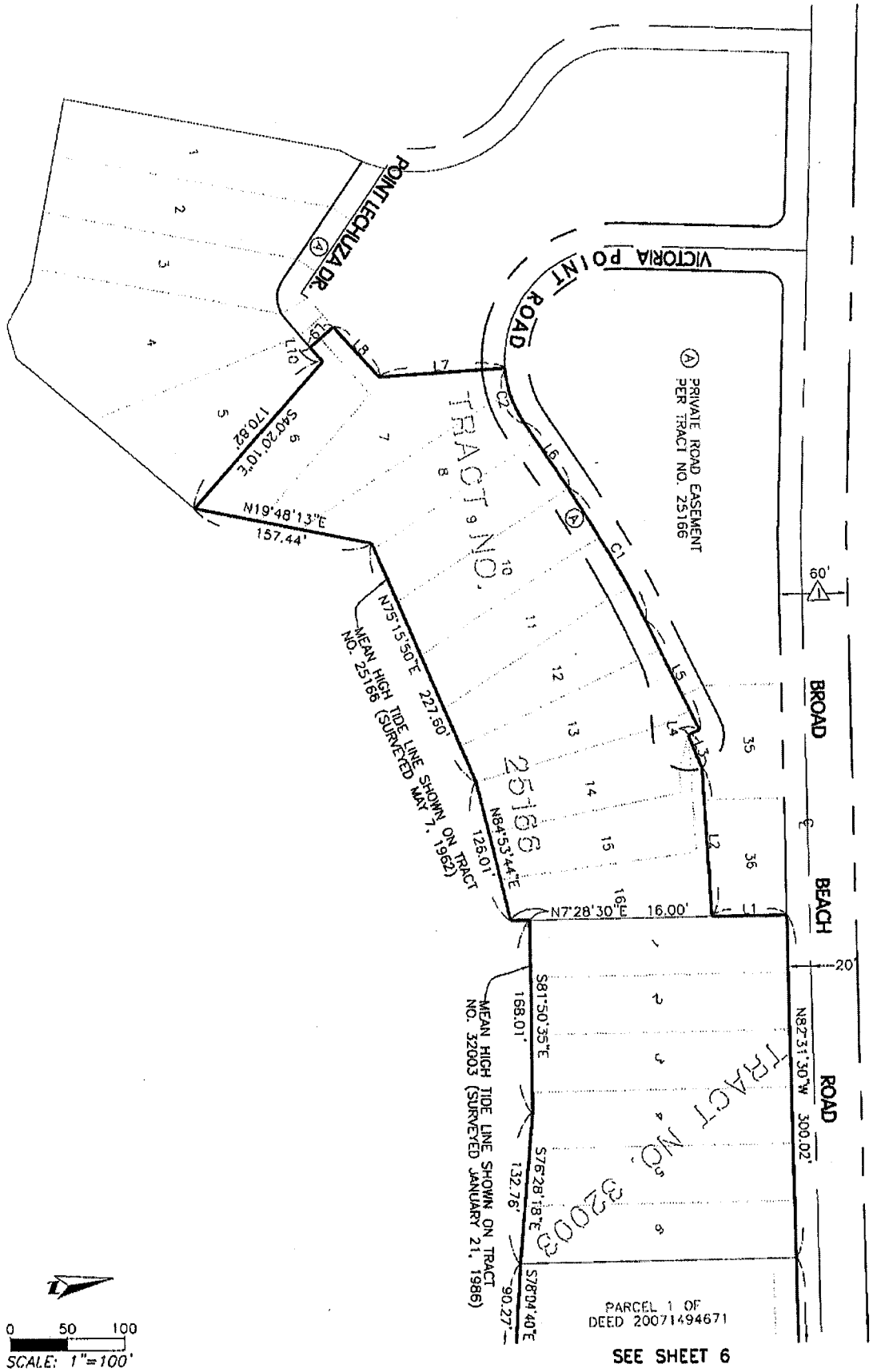


SEE SHEET 4

03/14/11	EXHIBIT "B" PLAT TO ACCOMPANY LEGAL DESCRIPTION	SHEET 6 OF 7



03/14/11	EXHIBIT "B"	SHEET 7 OF 7
	PLAT TO ACCOMPANY LEGAL DESCRIPTION	



KDM MERIDIAN, INC.	(949)768-0731

EXHIBIT C

Moffatt & Nichol
Coastal Engineering Appendix to the Broad Beach Geologic Hazard Abatement District Engineer's Report

Moffatt & Nichol
Response Document

Broad Beach Restoration Project
Coastal Engineering Appendix
To the Broad Beach
Geologic Hazard Abatement District
Engineers Report
2020 Update

Prepared for:
BROAD BEACH GEOLOGIC HAZARD ABATEMENT DISTRICT

Prepared by:
MOFFATT & NICHOL
4225 E. Conant Street
Long Beach, California 90808

February 2020
M&N File 6935-04

Table of Contents

Table of Tables

Table of Photos

Table of Figures

1. Summary of Project Revisions and Project Overview

The Broad Beach Geologic Hazard Abatement District ("BBGHAD") was formed in September 2011 with the intent of implementing and maintaining a beach and dune restoration project ("Project") at Broad Beach in western Malibu, CA. The resulting assessment was based on the Engineer's Report prepared by Engeo, Inc. in January 2012. Subsequent to its formation, the BBGHAD has received significant input from state, federal, and regional regulatory agencies, including the California Coastal Commission ("CCC"), the California State Lands Commission ("CSLC"), the Army Corps of Engineers, and their respective consulting agencies and members of the public regarding various aspects of the proposed Broad Beach beach and dune restoration project (Project). To date, the CCC and CSLC have issued required permits (and lease) to the BBGHAD. The BBGHAD has subsequently received all of the permits necessary to implement the Project from state, regional, and federal agencies such as the Regional Water Control Board, Army Corps of Engineers, and California Department of Transportation ("CalTrans").

1.1 Project Revisions for 2020 Assessment Update

Owners of some assessed parcels challenged the validity of the 2017 assessment. Based on the trial court's comments regarding their challenges, the BBGHAD Board invited its assessment engineers to revisit the assessment methodology. While we believe the 2017 assessment accurately identifies the special benefits the project will provide and their apportionment among the assessed parcels, we revisit that analysis to further refine it in light of the trial court's comments. Issues related to the coastal engineering aspects of the assessment deal with proportionality of assessments to special benefits the Project confers on assessed real property, and are summarized as follows:

- The benefits and related assessment for west end properties which do not receive direct sand placement from the project should be revisited. Further, these properties either have pre-existing shoreline protective devices or are located on a bluff, precluding the need for the revetment which is also a part of the project for 80 of the 120 parcels.

- Those parcels east of the revetment do not receive the same special shore protection benefits as those behind the revetment. Even though the 80 properties paid for the revetment construction without project funding, the project will extend its temporary permit and maintain it and will therefore incur direct and indirect project costs to be funded, in part, by assessment revenues.

In addition to the assessment revisions directed by the trial court decision, as of the preparation date of this report, not all the 80 properties protected by the revetment have complied with the License Agreement requirement of Sections 13-14 of Coastal Development Permit (CDP) No. 4-015-390. According to California Coastal Commission staff, revetment owners not signing the License Agreement will lose their right to maintain the revetment seaward of their homes, ultimately resulting in a total of seven (7) gaps in the revetment. Any "edge" effects of these seven gaps would be mitigated by the use of coarser-grained sand as compared to native beach sand (as permitted by the CDP) to extend beach fill longevity and sand backpassing to extend beach fill life and recycle sand to where it may be needed. Moreover, the CDP allows for yearly, as-needed interim nourishments (between the "major" nourishments permitted every 5 years). In circumstances of extreme beach erosion and/or BBGHAD inability to remediate loss of beach fronting revetment in a timely manner, the BBGHAD will implement effective and low-impact flank protection measures to eliminate gap edge effects and their potential

negative impact on quality of adjacent property shore protection (such as the temporary use of geotextile bags, "shorebags", etc.).

Regarding the potential impact of an assessed parcel owner's decision to not comply with the License Agreement on the resulting project shore protection benefit, while they will forego the special benefit accrued from the revetment, they will still accrue their full beach nourishment shore protection benefit. Even if the parcel owner does not allow construction access or sand placement on their property, identified as area landward of the 2010 mean high tide line, natural forcing of waves and tides will in short order spread the sand to the same approximate dimensions in gained beach width as the adjacent participating properties.

1.2 Project Overview

The Project goals remain unchanged, and they include restoring a sandy beach over the Project length intended to provide the natural shore protection inherent with sand beaches, coupled with the recreational benefits. Ancillary to the shore protection and recreational benefits afforded the BBGHAD, the Project will also provide public access benefits and enhanced intertidal habitat value which are necessary elements of the Project entitlement.

The Project's rock revetment, seaward of 80 BBGHAD residences from 30760 - 31350 Broad Beach Road, provides a last line of defense against coastal flooding and structural damage to structures, including onsite wastewater treatment systems (OWTSs), in the event that the sandy beach erodes away. Both economics and concerns for environmental impacts preclude the placement of sufficient sand volume to provide the necessary protection of structures at an acceptable level of risk without the revetment in place. As described in Section 1.1, the CCC will require removal of sections of the revetment-fronting parcels not signing the License Agreement as part of the anticipated amendment to the CDP. Issues related to the impacts of the additional revetment gaps on the overall shoreline protection benefit of the revetment will be addressed as part of the amendment to the CDP. At this time, it appears the coastal engineering analyses indicating that the revetment with the added gaps can still provide adequate shoreline protection in instances of shoreline erosion and revetment exposure is sufficiently compelling to gain approval by the CCC.

In an effort to meet the Project goals described above, and do so in accordance with applicable GHAD law, the BBGHAD proposes to implement revised "backpassing" from wider reaches of the beach to narrower reaches of the beach subject to objective triggers, with the frequency not to exceed one time per year. Further, if insufficient sand volume exists for backpassing, the BBGHAD intends to implement additional smaller scale interim nourishments ("Interim Nourishments") to supplement the proposed Major Nourishments in an effort to maintain sufficient sand beach over the Project length and bury any exposed portion of the rock revetment. The frequency and volume of these Interim Nourishments will be determined by additional objective renourishment triggers, and subject to availability of BBGHAD funding.

According to permits received to date, the BBGHAD may use Major Nourishments every 5 years, backpassing according to objective triggers, and Interim Nourishments to maintain sand on the beach in every year in which a Major Nourishment will not occur. This amount of direct nourishment exceeds the recent average annual sand loss at Broad Beach of 35,000 cubic yards.

The BBGHAD intends to implement adaptive management techniques for the Project based on detailed, real-time monitoring during the Project's duration in accordance with the CCC-directed Science Advisory Panel ("SAP"). The BBGHAD intends to utilize this adaptive management approach throughout the Project lifespan.

The BBGHAD's Coastal Development Permit ("CDP") issued by the CCC (CDP# 4-15-0390) requires a landward relocation of approximately 1,600 linear feet of the eastern portion of the revetment to the line of the existing septic systems with the approximate provision of a minimal, 15-foot setback between the seaward limit of the leach fields and the landward edge of the rock revetment. The BBGHAD has analyzed this CCC proposal and further consulted with the CCC and other permitting agencies. The BBGHAD has agreed to relocate the eastern portion of the emergency revetment in accordance with the CDP.

The applicable setback requirement between the wave uprush line and the existing OWTS leach fields constitutes a key factor in the revetment relocation. Based on the BBGHAD's commitment to maintaining beach width in front of the revetment for the permit duration, the risk of wave overtopping and leach field inundation posed by the worst-case scenario has been sufficiently lowered to justify reducing the setback of the revetment pullback's wave uprush line from the existing leach fields. Given the BBGHAD's ultimate desire to transition member properties to updated wastewater treatment systems, the increased risk of leach field damage due to increased proximity of the wave uprush line may be acceptable given the anticipated relatively short leach field lifespan of up to 10-15 years. This pullback also creates sufficient land area seaward of the relocated revetment to more than offset the total amount of area the existing emergency revetment is claimed to encroach (0.85 acres) on public land as asserted by the CSLC according to its January 2010 survey.

This Coastal Engineering Appendix to the BBGHAD Engineers Report is organized as follows:

- Section 2: Problem Description including the basis for the BBGHAD formation;
- Section 3: Project Background including regional setting, existing development on Broad Beach and characteristics of public access;
- Section 4: Coastal Processes which provides a technical description of the geological conditions creating the project need;
- Section 5: Detailed description of the revised project;
- Section 6: Described the revised assessment basis for shore protection benefits; and
- Section 7: Summary of project benefits for BBGHAD members.

2. Problem Description

Broad Beach is located in the northwest portion of the County of Los Angeles within the City of Malibu, California. The project area is comprised of the shoreline area fronting approximately 119 residences and a beach club, spanning approximately from Lechuza Point to Trancas Creek.

2.1 Beach Erosion and Loss of Related Shore Protection

Development along Broad Beach began in the 1930s, consisting of small beach cottages. Given the limited infrastructure available, septic systems and leach fields were typically installed close to the sand dunes seaward of the residences. As construction continued and the site was further developed, most leach fields remained. Most lots were developed by the late 1980s. During this period, the beach remained considerably wider than it is today, especially through the early 1970s. The width of Broad Beach reached a peak in 1970 at a yearly average of 60 feet landward of the present mean high tide line (MHTL). Aerial photographs from 1972 (Photo 2-1) provide a clear illustration of a very large sand volume on the beach. Presently, Broad Beach is a very narrow ribbon of sand visible primarily at low tide, but inundated at high tide (Photo 2-2).

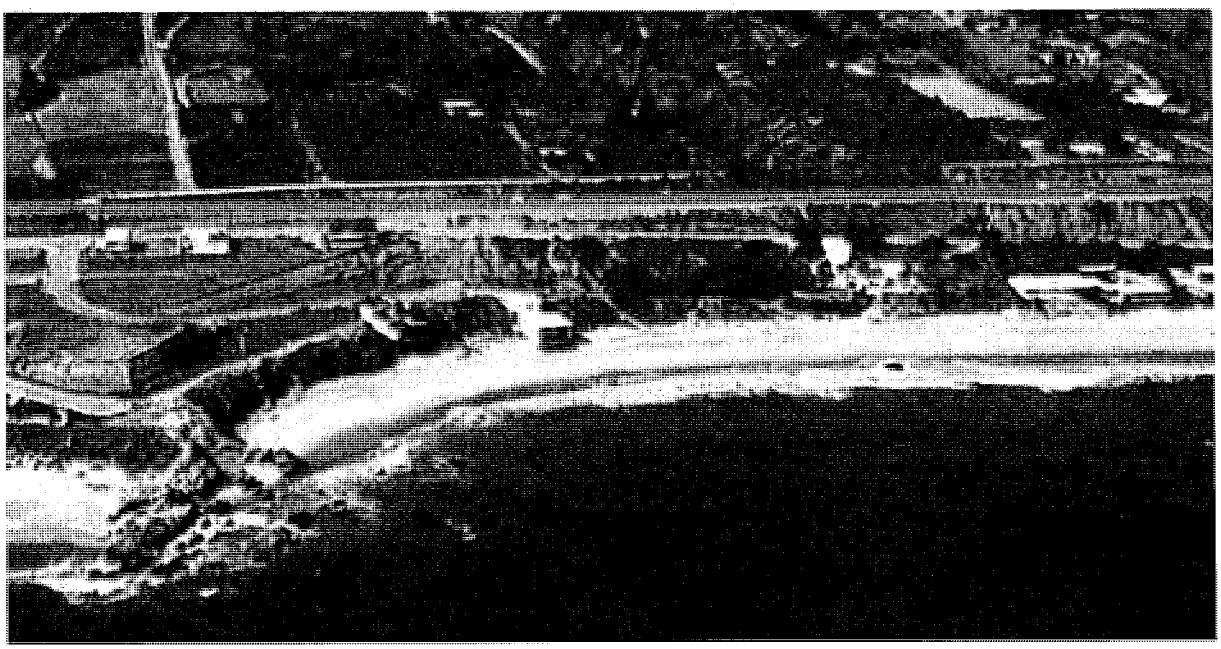


Photo 2-1. 1972 Aerial Photo (California Coastal Records, 2009)

Photo 2-2. 2009 Aerial Photo (California Coastal Records, 2009)

Several recent studies of the coastal region encompassing Broad Beach have identified a trend of continued erosion without any significant recovery in beach width since the early 1970s. The beach is narrowing because of a negative sand balance due either to a reduction in sand supply entering around Lechuza Point, or a change in the magnitude and/or direction of the wave energy that increases the amount of sand leaving the Broad Beach. Between 1974 and 2009, approximately 600,000 cubic yards (cy) of sand was lost at Broad Beach, a majority of which has moved east to Zuma Beach. Studies conclude that this trend of erosion appears to have accelerated in the last two decades. El Niño storm seasons within the last decade have exacerbated the shoreline recession resulting in structural damage and further beach erosion.

The 1997-1998 El Niño storms caused considerable shoreline erosion and related storm wave damage along the California coastline. Many Broad Beach homes were threatened, causing many homeowners to construct temporary sand bag revetments to protect residential structures and leach fields. One residence suffered significant structural damage. During one particularly severe storm in early February 1998, with sand bags already in place, the active beach scarp retreated more than 30 feet in the course of two days.

The 2007/2008 winter season, though milder than the 1997-1998 winter, also resulted in significant retreat of the beach. Many of the homeowners responded with construction of more substantial sand bag revetments, which were authorized through emergency Coastal Development Permits issued by the City of Malibu. Examples of these revetments are shown in Photo 2-3 and Photo 2-4. In addition, timber protective devices, concrete seawalls, and rock revetments were constructed at various residences along the west end of Broad Beach. Waves and higher tides run up to the foot of historically wide dunes along the east end of Broad Beach. The prognosis for the condition of Broad Beach without beach restoration activities is very poor, given the erosional trends and lack of remaining beach. The visual quality of the beach has been seriously impacted by the unsightly temporary sand bagging and emergency shore protection measures. In addition, opportunities for lateral access and recreation along the beach are severely limited.

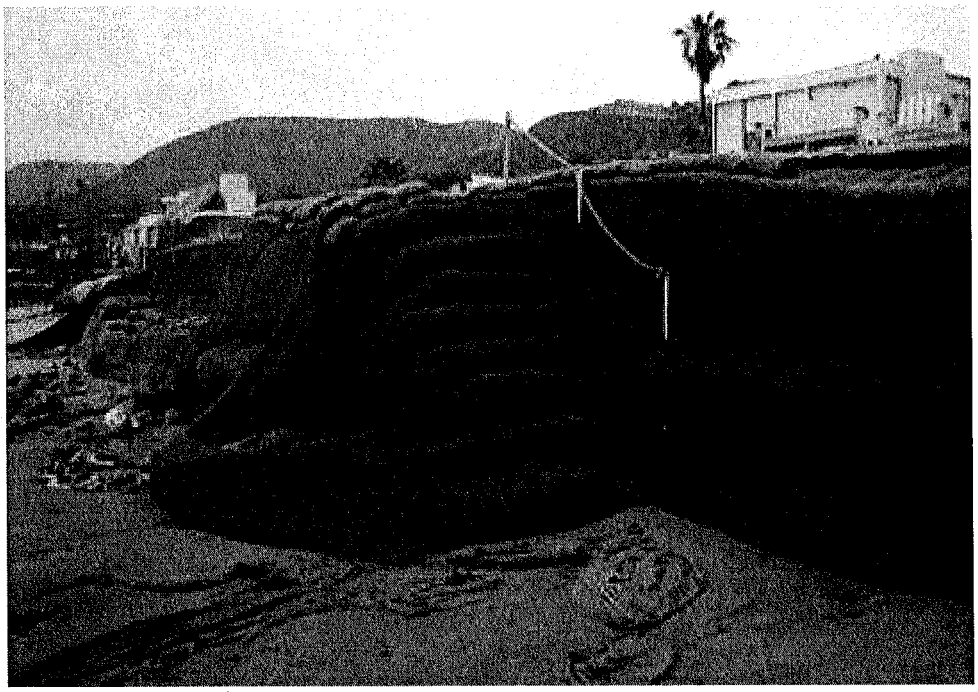


Photo 2-3. Temporary Sandbag Revetment (May 2009)

Photo 2-4. Temporary Sandbag Revetment (December 2009)

2.2 Homeowners' Actions

The Trancas Property Owner's Association (TPOA), representing most of the property owners along the Broad Beach shoreline, elected to take action in early 2009 to develop a long-term solution to protect against shoreline erosion and reduce the threat to private property. During preparation of the initial planning studies for the restoration of Broad Beach, a large El Niño winter was forecast for the 2009/2010 winter season. In December 2009, there was a significant narrowing of the beach due to storm wave

attack resulting in widespread failure of the existing temporary emergency sandbag revetments, especially at the west end of the beach. Photo 2-5 illustrates the eroded shoreline condition near the west end of Broad Beach; Photo 2-6 shows conditions toward the east. It became evident that these temporary structures would not provide sufficient shore protection for the upcoming winter. Acute and significant erosion was proceeding, resulting in significant loss of dune habitat and threatening of residential structures. Undermining and failure of several approved OWTSs was also imminent without immediate action. Combined with the prediction of moderate to severe El Niño conditions for the upcoming winter, the need for immediate emergency action became apparent. As a result, the TPOA sought and obtained an Emergency Coastal Development Permit (ECDP) to implement an interim shore protection measure to halt the critical erosion until the longer-term project is in place.

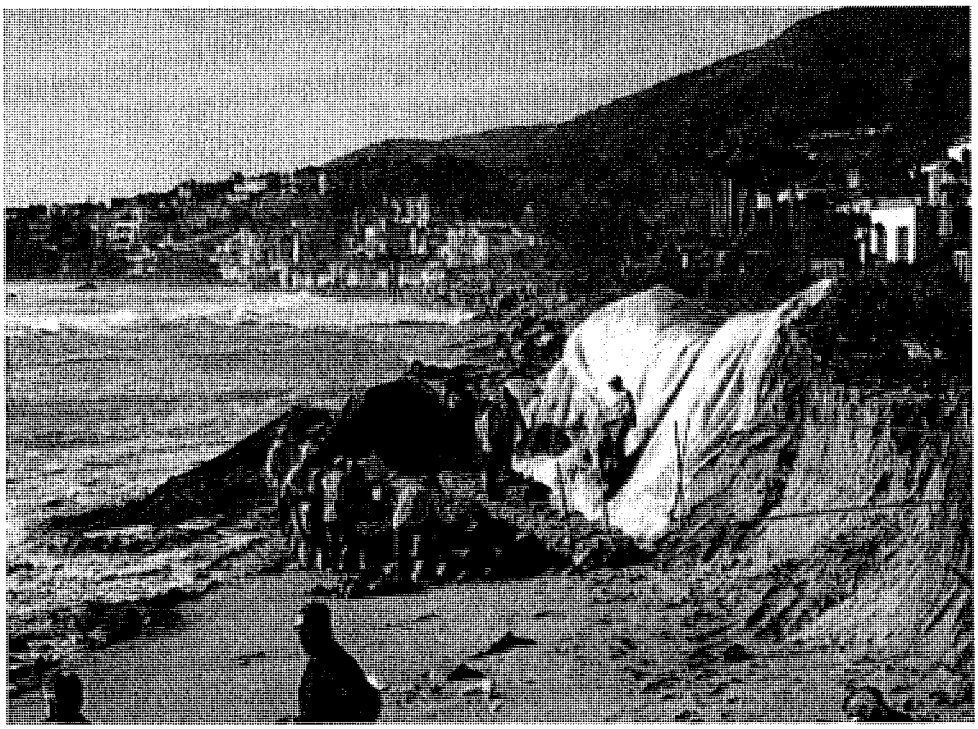


Photo 2-5. Severe Erosion and Dune Damage at West Broad Beach (January 2010)

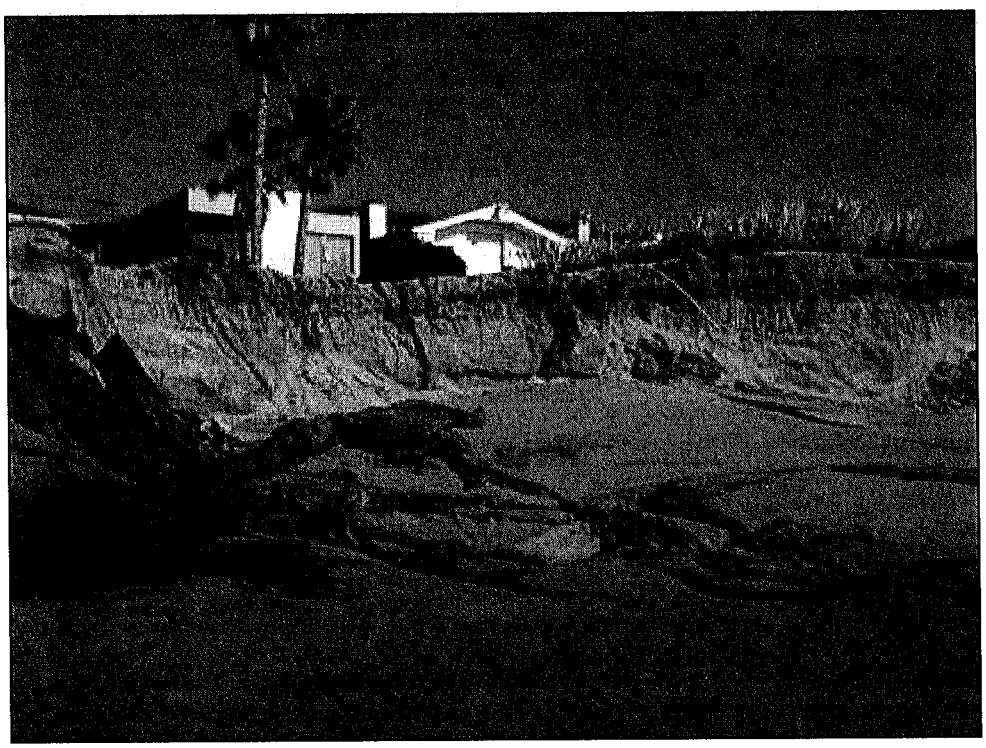


Photo 2-6. Temporary Sandbag Revetment Failure and Dune Damage (January 2010)

Under the emergency situation, a temporary rock revetment was considered the minimum action necessary, and the least environmentally damaging alternative. The temporary rock revetment design was developed to stabilize the shoreline against further erosion for the 2009/2010 El Niño season. Other temporary revetment alternatives consisting of geotextile bags were clearly failing to provide reliable shore protection and could, at best, provide only a false sense of security. In addition to their lack of hydraulic stability, failed geo-bag (sandbag) systems were a source of debris and litter on the beach.

The TPOA's consultants developed the temporary rock revetment design to provide the minimum necessary protection while allowing for rapid construction. Specific elements of the temporary revetment include:

- Filter fabric to eliminate loss of dune material through voids in the stone matrix;
- Reduced armor size (1/2 to 2 ton) stone to allow for faster construction using readily available, stockpiled stone;
- Reduced revetment volume to allow for faster construction and lateral beach access; and
- Shallower toe elevation for improved constructability.

The TPOA obtained an Emergency CDP and other necessary approvals for the temporary revetment in late 2009 and early 2010. The following photographs show the completed revetment that extends from Trancas Creek for about 4,100 feet west, terminating just past the western public access point for Broad Beach. The CDP supersedes the Emergency CDP.

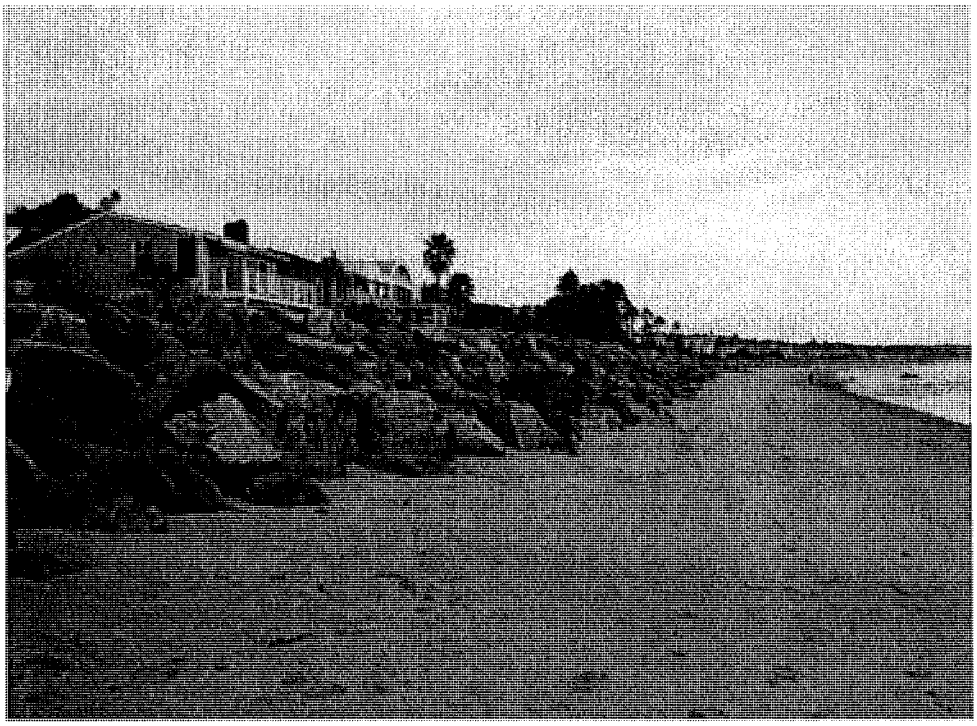


Photo 2-7. Emergency Revetment (February 2010)

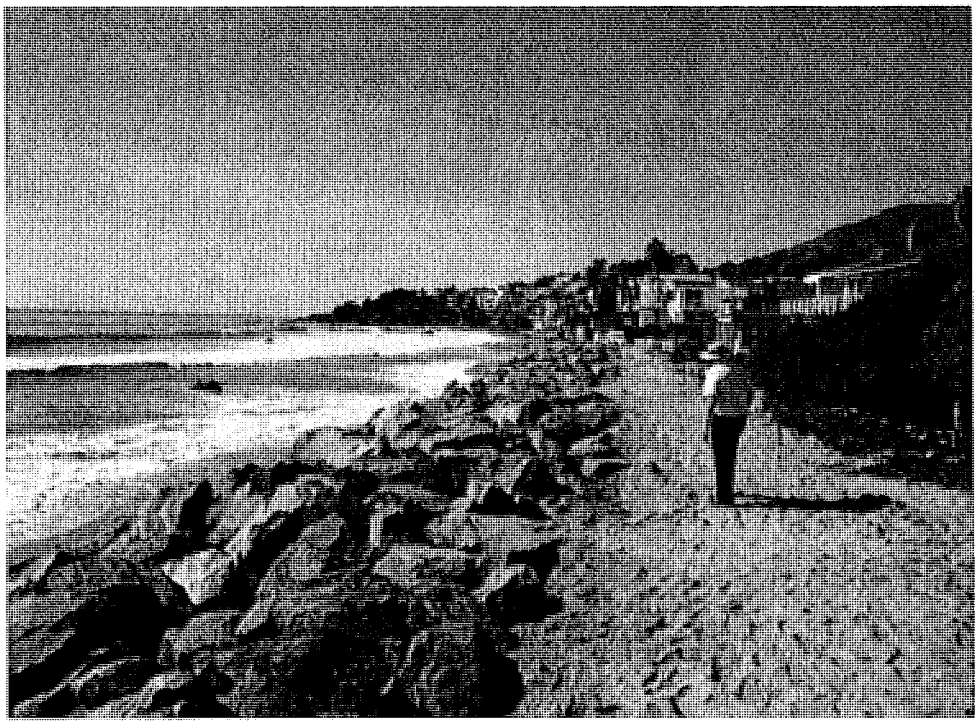


Photo 2-8. Emergency Revetment (February 2010)

3. Project Background

3.1 Regional Coastal Setting

The Southern California coast is a complex, tectonically-active region and is characterized as a collision coast wherein the Pacific Ocean plate subducts on contact with the North American plate. From a geologic time perspective, the process manifests itself in the form of narrow offshore shelves cut by submarine canyons, uplifted by coastal mountains and coastal erosion.

Broad Beach exemplifies a typical Southern California stretch of coastline, comprising a sandy beach backed by coastal bluffs. Broad Beach is located at the western (upcoast) end of a 4-mile-long, hook-shaped beach between the Point Lechuza and Point Dume as shown in Figure 3-1.

With a total length of just over one mile, Broad Beach is bounded by Point Lechuza to the west and Trancas Creek to the east. Zuma Beach and Point Dume State Beach make up the remainder of the hook-shaped beach. This hook-shaped beach is referred to as the Zuma Littoral Subcell (ZLS) throughout this report. Broad Beach and the ZLS lie within the Modern Malibu Littoral Cell (MMLC) shown in Figure 3-2. The MMLC is bounded by Port Hueneme to the north and Marina Del Rey to the south.

Littoral cells are essentially self-contained beach compartments bounded by geographic features such as headlands or submarine canyons that limit the movement of sand between cells. Each compartment consists of sand sources (such as rivers, streams, and coastal bluff erosion), sand sinks (such as coastal dunes and submarine canyons), and beaches which provide pathways for wave-driven sand movement within a littoral cell.

The south-southwest facing MMLC coastline is directly exposed to swells generated in the southern hemisphere. These swells approach Malibu from the southwest, south, and southeast, but the great decay distances typically result in waves of low heights and long periods. Despite sheltering from the Channel Islands, the Broad Beach area is exposed to North Pacific swell through the Santa Barbara Channel. North Pacific generated swells are the most energetic source of waves in the region and the north-westerly approach angle results in a pre-dominant longshore sand transport direction from the west to east in the MMLC.

Due to the wave climate and pre-dominant longshore sand transport direction, Broad Beach and the ZLS depend on sand delivered from upcoast sources, including fluvial discharges from coastal watersheds of the Santa Monica Mountains and erosion of coastal bluffs. Mugu Submarine Canyon captures almost all of the longshore sand supply and represents the upcoast limit of potential sand sources for the ZLS.

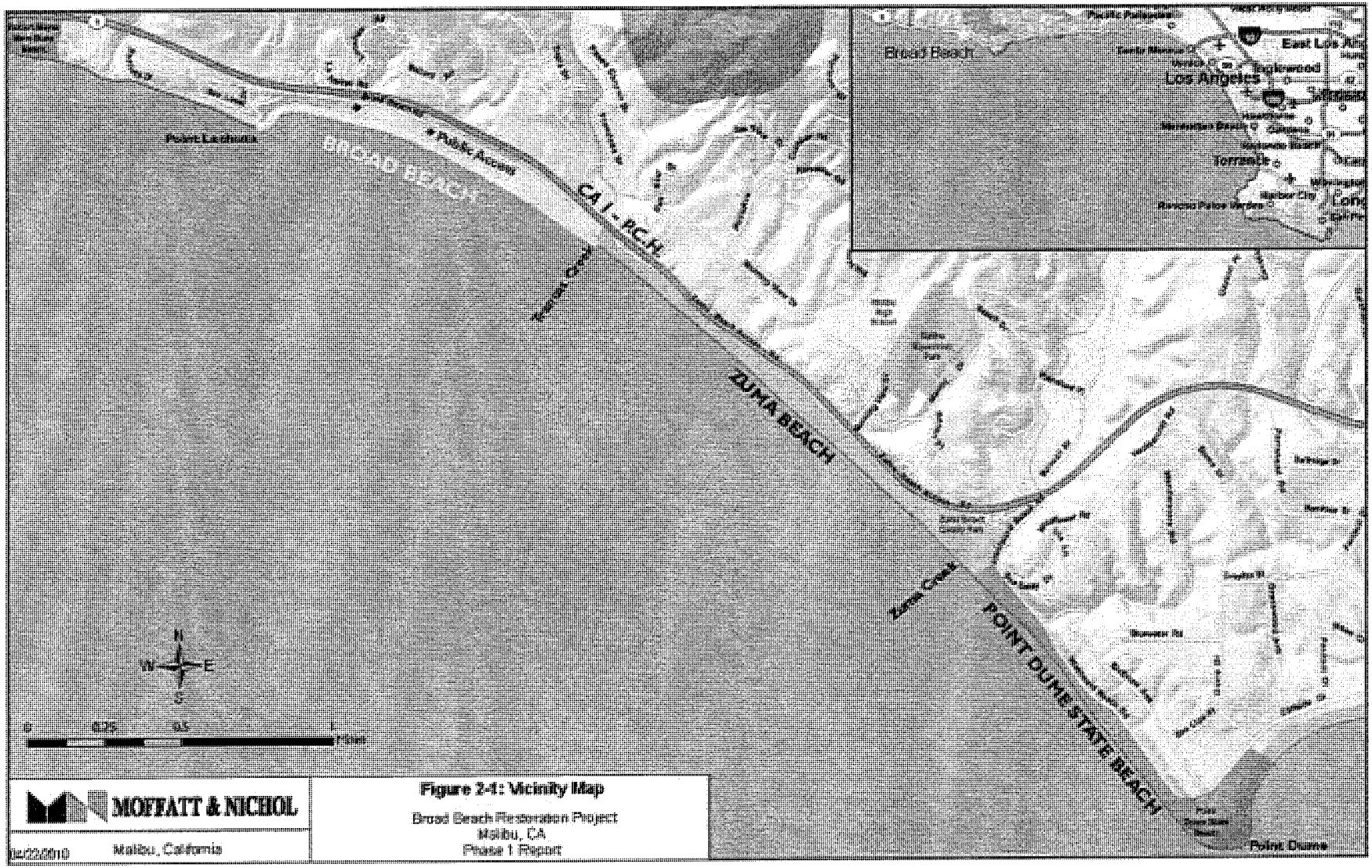


Figure 3-1. Vicinity Map

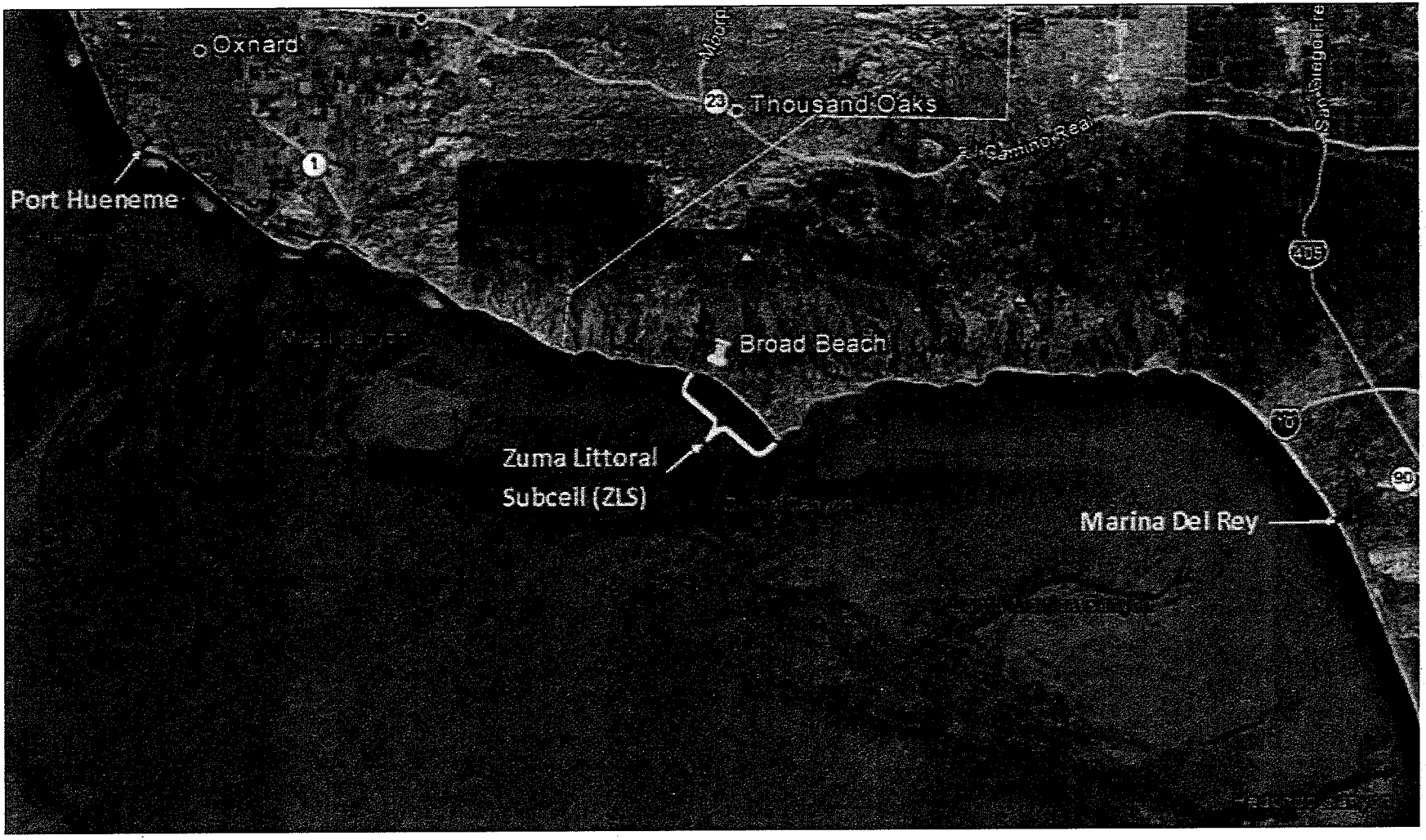


Figure 3-2. Location Map, Modern Malibu Littoral Cell (MMLC)

3.2 Existing Broad Beach Coastal Development

The coastal community of Broad Beach is currently protected by a temporary rock revetment fronting most properties west of the Malibu West Beach Club and east of 31350 Broad Beach Road. Shore protective devices west of this address consist of multiple devices for single or multiple lots. These measures include rock revetments, concrete vertical seawalls, and timber seawalls. Several properties do not have any shore protective structure in-place and some are supported by piles which are currently exposed.

3.3 Public Access

Parking is available at Zuma Beach immediately to the east, as well as parallel parking along Broad Beach Road. Los Angeles County operates a series of connected public parking lots along the approximately 4 mile stretch of Zuma beach. The westernmost lot, Lot 12, can be used to access Broad Beach on foot. However, much of that lot is occupied by surf camp and other vendor vehicles during summer months. Parallel parking exists along the northern side of Broad Beach Road for almost the entire length of Broad Beach.

Vertical access to Broad Beach is provided in two locations at 31344 and 31200 Broad Beach Road via approximately 20' wide parcels owned by Los Angeles County. A component of the emergency revetment project was the improvement of vertical public access paths otherwise operated and maintained by Los Angeles County Department of Beaches and Harbors. A concrete walkway and steps to the beach were constructed over the temporary revetment to maintain vertical access at these locations. These vertical public access paths will be incorporated into the proposed Project. Those parcels benefit from the project and will be assessed in proportionate to that benefit to fund it.

The eroded shoreline along Broad Beach has significantly limited the recreational beach area and lateral access. There is essentially no dry beach available along most of the beach and during even moderate high tides of 3-4 feet, most of the beach is submerged, with waves breaking directly on the temporary revetment.

In addition to existing physical limitations, lateral access along Broad Beach is affected by a complicated mix of public land, Offers to Dedicate (OTDs) public lateral access easements and private property. Land seaward of the mean high tide line (MHTL) is considered public land. The existing easements along Broad Beach vary from one property to the next according to the contents of the actual recorded grants and, in some areas, may influence lateral access available to the public. Some recorded grants provide for a designated "buffer" seaward from authorized development on a property and the portion available for public access. The buffer typically varies from 5 feet to 50 feet wide along Broad Beach.

4. Coastal Processes

This section describes general coastal processes relevant to the selection and design of solutions to the coastal erosion problems at Broad Beach. These processes include sand movement, tide levels, sea level rise, and wave climate. This section also includes a discussion of the historical shoreline changes at Broad Beach which assist in understanding potential sand loss rates for beach nourishment solutions.

4.1 Water Levels

Water levels are in a constant state of fluctuation subject to short term changes due to tides and storm surge and long-term changes associated with sea level rise. Water levels and elevations on land throughout this study are referenced to the Mean Lower Low Water (MLLW) datum. MLLW, as shown in Table 4-1, is approximately 2.8 feet below mean sea level averaged over the most recent tidal epoch. The following sections discuss the processes that influence water levels, with a focus on those causing elevated water levels that are most often responsible for coastal-related flooding and damage.

4.1.1 Tides

The tides at Broad Beach are classified as mixed semidiurnal (two unequal highs and lows per day). Tide characteristics from the Los Angeles tide gage nearest the project site are shown in Table 4-1. These are based on the most recent (1983-2001) tidal epoch.

Table 4-1. Water Levels at Broad Beach, Based on LA Outer Harbor Tide Station (NOAA/NOS, 2008)

Water Level	Elevation to MLLW Vertical Datum
Extreme High (Observed January 27, 1983)	+7.8 feet
Mean Higher High Water (MHHW)	+5.5 feet
Mean High Water (MHW)	+4.7 feet
Mean Sea Level (MSL), 1983-2001 Epoch	+2.8 feet
National Geodetic Vertical Datum -1929 (NGVD29)	+2.6 feet
Mean Low Water (MLW)	+0.9 feet
North American Vertical Datum – 1988 (NAVD88)	+0.2 feet
Mean Lower Low Water (MLLW)	0.0 feet
Extreme Low (Observed December 17, 1933)	-2.7 feet

4.1.2 Storm Effects

In Southern California, the highest tides of the year typically occur in the winter months. Wave overtopping and wave-related coastal damage often occurs when an extremely high tide coincides with high storm waves. A statistical analysis of extreme water elevations was developed based on recorded annual extreme high-water elevations obtained from the National Ocean Service for the outer Los Angeles Harbor reference tide station. Water elevation records were available from 1923 to 2002. Table 4-2 shows the annual extreme high-water elevation versus recurrence interval. The extreme still water levels combined with sea level rise projections provide the basis for estimating a design water depth for coastal engineering analyses.

Table 4-2. Extreme Water Levels versus Recurrence Interval

Recurrence Interval (Years)	Extreme Still Water Elevation (Feet, MLLW)
5	7.4
10	7.6
25	7.7
50	7.9
100	8.0

4.1.3 Long-Term Sea-Level Rise

Sea levels are projected to rise in coming decades as a result of increased global temperatures associated with climate change. When discussing sea level rise (SLR) (and when reviewing SLR projections), it is important to distinguish the differences between global and local SLR rates. Global SLR rates discount local effects such as tectonics (i.e., land uplift/subsidence), water temperatures, and wind stress patterns that can act to subdue or amplify the global SLR rates. Local (or relative) SLR refers to the observed changes in sea level relative to the shoreline in a specific region and takes into account these local factors.

Global climate and oceanographic processes are complex and dynamic, and so modeling efforts and predictions are periodically updated to reflect any changes in scientific knowledge. On a global level, the most recent predictions come from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) released in 2013 (IPCC, 2013). The AR5 projections for SLR were 50% higher than the IPCC Fourth Assessment Report (AR4), released in 2007, due to the addition of updated information on ice sheet dynamics. At the state level, the CCC recommends using the best available SLR science, which is expected to be updated approximately every 5 years.

The State of California Ocean Protection Council (OPC) Science Advisory Taskforce recently compiled the best available SLR science relevant to California in their report *Rising Seas in California* (Griggs et al., 2017). This report was then used to update the OPC California State SLR Guidance in 2018 (California Ocean Protection Council, 2018). The 2018 OPC SLR Guidance is now referenced as the best available science throughout updated CCC SLR policy guidance documents.

The 2018 OPC guidance includes SLR projections for multiple emissions scenarios and uses a probabilistic approach based on Kopp et al., 2014 to generate a range of projections at a given time-horizon for 12 tide gauges along the California coast. The projections for the Los Angeles tide gauge under a high-emissions scenario are referenced in this section (OPC, 2018). CCC SLR policy guidance recommends using projections associated with a high-emissions future given that worldwide emissions are currently following the high emissions trajectory.

CCC SLR guidance defines the likely range of SLR at a given time horizon as the central 66% of projections, or all projections bounded by the 17th and 83rd percentiles, based on methods from Kopp et al., 2014. The upper end of the likely range, or 83rd percentile of projections, is recommended by the CCC for use in low risk-aversion situations in which impacts from SLR greater than this amount would be insignificant or easily mitigated. The state recommends this high-risk tolerance or low risk-aversion condition also be used when considering resources where the consequences of SLR are limited in scale and scope, with minimum

disruption and low impact on communities, infrastructure, or natural systems. At a given time-horizon there is a 17% chance that SLR will meet or exceed low risk-aversion values based on current guidance.

For medium-high risk-aversion situations, the use of more conservative, or lower probability, SLR projections is recommended by the OPC Guidance. At a given time-horizon there is a 0.5% chance that SLR meets or exceeds these levels, making them appropriate for use on projects where damage from coastal hazards would carry a higher consequence or in cases where the ability to adapt is limited, such as when dealing with residential and commercial structures. 2018 OPC probabilistic SLR projections under a high emissions scenario are detailed in Table 4.3.

Table 4-3: Probabilistic SLR Projections for Los Angeles (Source: OPC, 2018)

Time Horizon	Median *50% probability SLR meets or exceeds*	Likely Range *66% probability SLR is between*	1-in-20 Chance *5% probability SLR meets or exceeds*	1-in-200 Chance *0.5% probability SLR meets or exceeds*
2030	0.3ft	0.2ft – 0.5ft	0.6ft	0.7ft
2050	0.7ft	0.5ft – 1.0ft	1.2ft	1.8ft
2100	2.2ft	1.3ft – 3.2ft	4.1ft	6.7ft

The potential impacts of sea-level rise on the beach and dune system are difficult to quantify with any certainty. If the beach were treated as a simple sloped structure with a 30:1 (horizontal to vertical) slope, then the waterline could move landward by as much as 21 feet by the year 2030 and 54 feet by 2050. However, since the beach is dynamic, it has the ability to respond to water level changes and the results are rarely linear. In addition, current dunes at Broad Beach further complicate the situation. It is clear, however, that sea-level rise places the landside structures at additional and increasing levels of risk, and should be considered a fundamental part of any design solution.

4.2 Waves

Wave climate is the primary force for generating alongshore sediment transport and is, therefore, a critical element of any study aiming to evaluate and quantify sediment transport rates and associated change in beach sand volume and shoreline position. This section provides a summary of the wave climate along Broad Beach and discusses the wave data sources used to evaluate the regional and local historic beach performance.

4.2.1 Wave Exposure

The southern exposure of Malibu and the proximity of the Channel Islands offshore limit the direction from which potentially destructive storm waves can impinge upon the area. The islands serve to create wave exposure windows, dissipating and reflecting wave energy and thereby modifying the wave conditions along the mainland shoreline. Upcoast shoreline features also serve to create wave exposure windows and refract waves before they reach the Malibu area. Wave exposure windows for the Malibu shoreline are illustrated Figure 4-1.

In general, there are three main types of waves which occur along the southern California coast and which could occur through the Malibu wave exposure windows: North Pacific swell, southern swell, and seas generated locally. The North Pacific swell events are the most significant source of extreme waves in the region. The Broad Beach area is exposed to North Pacific swell through the Santa Barbara Channel. Swell from winter storms in the southern hemisphere reach California during the months of May through

October. These swells approach Malibu from the southwest, south, and southeast, but are partially blocked by the Channel Islands. Additionally, the great decay distances result in waves of low heights and long periods.

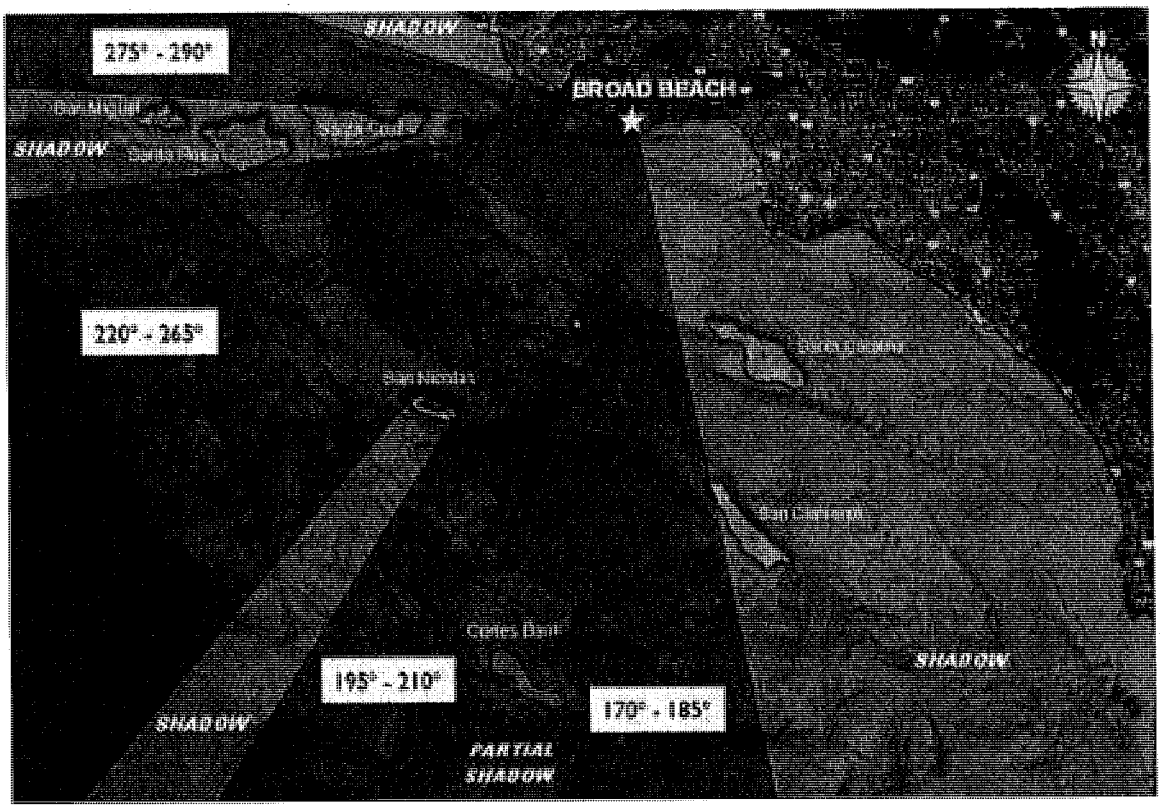


Figure 4-1. Wave Exposure Windows at Broad Beach

Wave direction affects how the sand moves along the shoreline. Waves that travel through the Santa Barbara Channel to Malibu from the west (North Pacific swell waves) are especially effective at moving sand alongshore from west to east. South swells arriving nearly straight onto the shore of Malibu are more effective at moving sand in a cross-shore direction, either offshore to deeper water or onshore from deeper water.

Scripps Institution of Oceanography operates and maintains ocean monitoring stations through the Coastal Data Information Program (CDIP). The closest CDIP monitoring station to Broad Beach is CDIP Buoy 102 offshore of Point Dume in 365-meter water depth. The significant wave heights and wave periods based on wave direction at this buoy are shown in Figure 4-2 and Figure 4-3, respectively.

Flick and O'Reilly (2008) studied wave exposure at Broad Beach based on the closest NOAA wave buoy (Buoy 46025, approximately 33 miles northwest of Catalina Island). Their study presented wave transformation coefficients that can determine the relative wave height at Broad Beach as a function of the offshore wave period and direction of wave travel. The study showed that Broad Beach is vulnerable to a broad swath of southerly and south-westerly approaching waves (from 170 degrees to about 240 degrees) where the refraction coefficients are close to 1 (high) or ever larger in a few instances. Wave exposure falls off rapidly for essentially all wave periods for approach directions north of about 260 degrees.

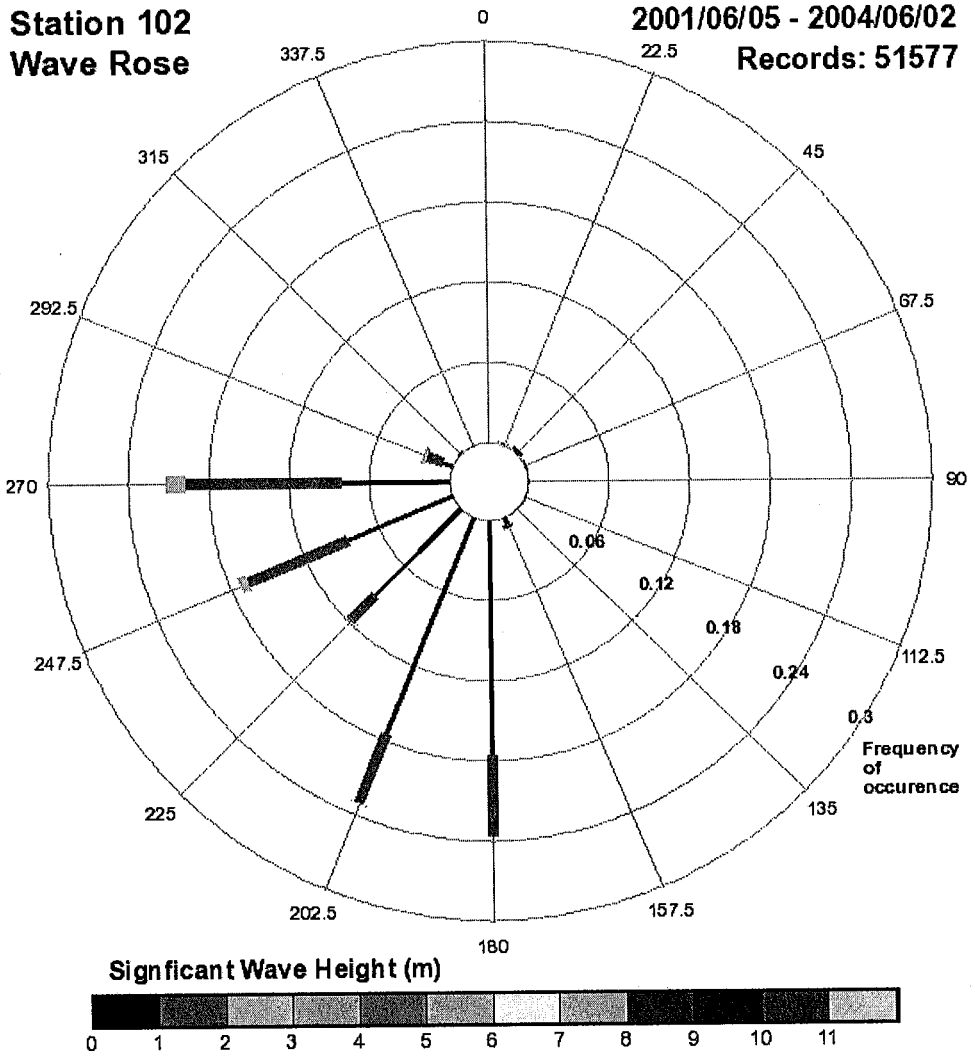


Figure 4-2. Significant Wave Height (Wave Rose) Offshore of Point Dume (CDIP, 2010)

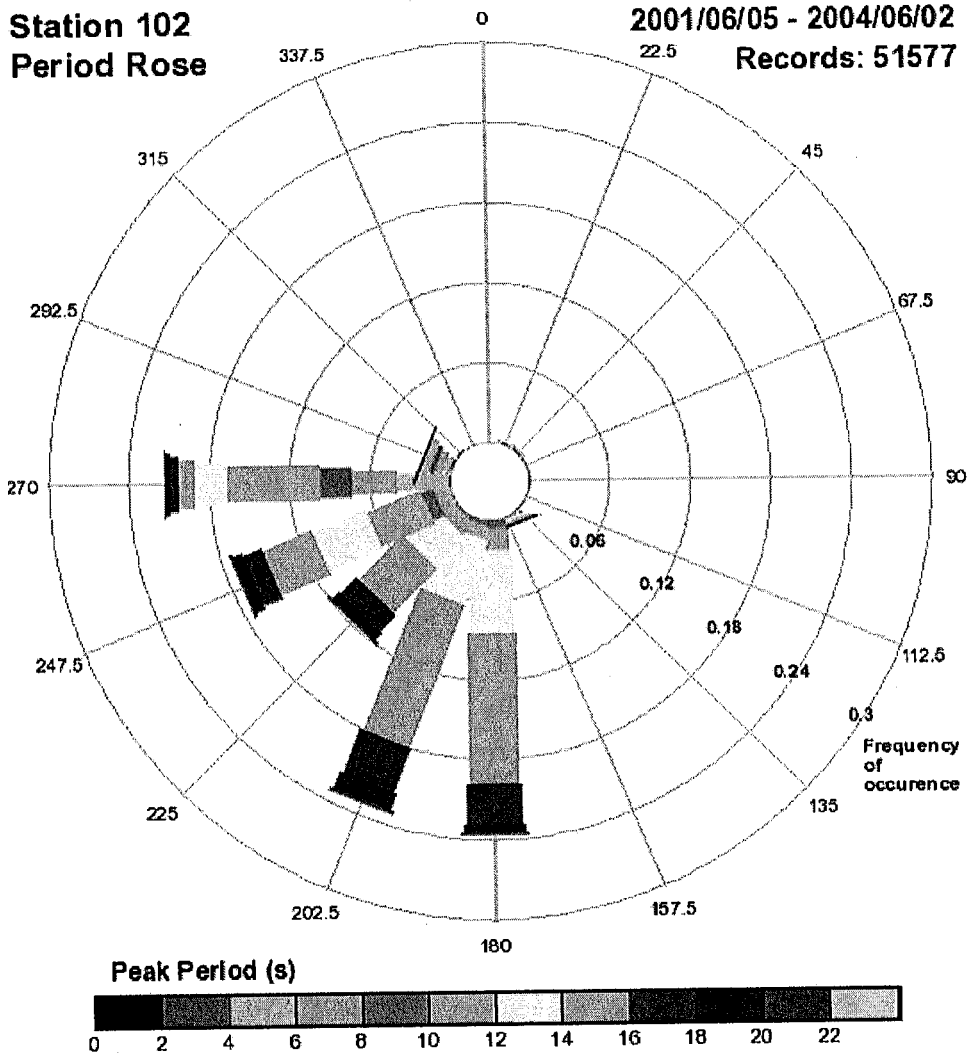


Figure 4-3. Peak Wave Period (Period Rose) Offshore of Point Dume (CDIP, 2010)

4.2.2 Extreme Waves

Flick and O'Reilly (2008) also noted a number of extraordinary large wave events in the NOAA wave buoy records. These include the maximum measured wave height of about 26 feet on January 19, 1988 and several other wave-storm events exceeding 20 feet. Based on the NOAA wave buoy data from 1982 to 2001, the mean monthly wave heights varied by only 50% or so (range of 3.3 to 5 feet), whereas the seasonal variation in the extreme wave heights varied by a factor of four (from ~6.5 feet in July to 26 feet in January). Extreme wave heights drop substantially to about 13 feet by April and May each year, and stay that way on average through October.

El Niño conditions cause increased storminess and have historically increased the frequency and intensity of higher local waves, increasing the severity of beach erosion and coastal flooding. El Niño conditions occur on average every 2-5 years, and usually last about 12 months. Strong El Niños occur less frequently

and come in many different varieties, with no two ever the same (Flick, 2009). Whether and how waves from any particular El Niño winter affect southern California is largely determined by the tracks storms take as they travel from their generation regions in the western Pacific off Asia toward the Eastern Pacific and North America. These tracks are determined by the path of the mid-latitude jet stream, which depends on the relative positions of the North Pacific high-pressure system and the Aleutian low. About two-thirds of El Niños are associated with strong winter storm activity in southern California. (Flick, 2009)

El Niños have occurred most recently in 1982-83, 1986-87, 1991-92, 1994-95 and 1997-98, 2002-03, 2006-2007, 2009-10, and 2015-16. The 1997-98 was the strongest on record and it developed more rapidly than any El Niño of the past 40 years. The 1982-83 El Niño is also considered to be one of the most major recent storm events and caused considerable damage along the coast of California. The most recent 2015-16 El Niño exhibited winter wave energy that equaled or exceeded measured historical maxima along the US West Coast (Barnard, et al, 2017).

4.2.3 Design Wave for Shoreline Structures

The critical design case for shallow water shoreline structures is when wave breaking takes place in front of the structure (CEM 2003). The maximum height of waves which can break upon a shoreline structure is limited by the water depth fronting the structure. The water depth varies over time based on tide levels and will increase with future sea level rise. This analysis is based on this maximum depth-limited breaking wave height, which is defined as the "design wave height". Deep water waves exceeding the design wave height will break offshore and dissipate much of their energy before they reach the shoreline structure.

A statistical evaluation of extreme high-water elevations was developed based on the recorded annual extreme high-water elevations obtained from the NOAA/NOS LA Outer Harbor reference tide station (Table 4-3). The effect of future relative sea level rise must also be included in the determination of the design water depth.

The extreme scour elevation is also required to determine the design water depth at the toe of any potential shore protection device. Due to the variability of the sand elevations from seasonal changes and storm events, it is difficult to predict the depth of scour with great accuracy. But, based on experience in Southern California, a scour depth of 0 feet MLLW is appropriate to reduce undermining. Therefore, scour depth at the toe of the structure is estimated to reach the mean lower low water elevation.

Based on the probabilistic extreme high-water elevations, sea level rise, and assumed scour elevation, a range of potential design water depths was calculated, i.e. the low end of the range was calculated based on a 5-year recurrence, high-water elevation with a low rate sea level rise. A high-end estimate was calculated based on a 100-year recurrence high water elevation with the highest rate sea level rise.

Factors other than water depth affecting the maximum wave height include the incident wave period and nearshore beach slope. Longer period waves will result in higher design breaking waves (USACE 1984). A design wave period, T, of 16 seconds was selected as the design period to obtain the subject breaking wave height, as this represents the average of the most frequently occurring storm-generated swell in this region. Based on available beach profiles in the Broad Beach area, nearshore slopes ranged from approximately 25:1 (horizontal:vertical) to 30:1.

Estimates of breaking-wave heights were developed using methods described in the *Shore Protection Manual* (USACE 1984) and *Coastal Engineering Manual* (USACE 2003), for the range of potential design water depths. The results (range of potential breaking wave heights) are shown in Table 4-3.

Table 4-3. Broad Beach Breaking Wave Heights Range

Probabilistic Still Water Elevation Based on LA Harbor Tide Gage Statistics		Probabilistic Sea Level Rise by 2050 (Feet)		Design Water Level (Feet, MLLW)	Maximum Scour Depth (Feet, MLLW)	Design Water Depth (Feet)	Breaking Wave Height (Feet)
Recurrence Interval (Years)	Elevation (Feet, MLLW)						
5	7.4	Low Rate	0.2	7.6	0.0	7.6	8.3
25	7.7	Likely High Rate	1.0	8.7	0.0	8.7	9.6
100	8.0	Highest Rate	4.3	12.3	0.0	12.3	13.3

These large breaking wave heights are indicative of the relatively steep nearshore profile fronting Broad Beach and the significant estimates of future sea level rise.

4.3 Sediment Transport Rate Analysis

The preceding sections summarize existing and available data used to describe historic and recent shoreline locations, wave climate and its role in shoreline dynamics, water level variations, and projected future sea level rise that can affect wave conditions and shoreline location. This section draws upon this information and other data sources to conduct detailed analysis to quantify historic shoreline changes and sediment transport rates which constitute the key parameters in the development of a long-term shoreline restoration project.

The average Broad Beach sand volume changes relative to an arbitrary base are presented in Figure 4-4 through Figure 4-6, and include the associated trendlines. Figure 4-4 shows the full 63-year data record. Figure 4-5 illustrates the trend over the past 41 years during which the beach was generally erosive. Figure 4-6 shows the most recent five-year time period. By reviewing the changes in volumes, as well as rates of change in volume, trends in the sediment transport regime can be assessed. The earliest switch from rise to fall in the volume of the littoral sediment lens appears to have occurred in the late 1960s and 1970s. The peak was followed by a progressive loss until the present.

The trendlines indicate the following:

- Figure 4-5: 1968-2009, 41 years of data - 20,000 cubic yards per year (cyy) loss.
- Figure 4-6: 2004-2009, 5 years of data - 35,000 cyy loss.

These trends indicate a continuing pattern of erosion since the 1970s and acceleration of erosional trends.

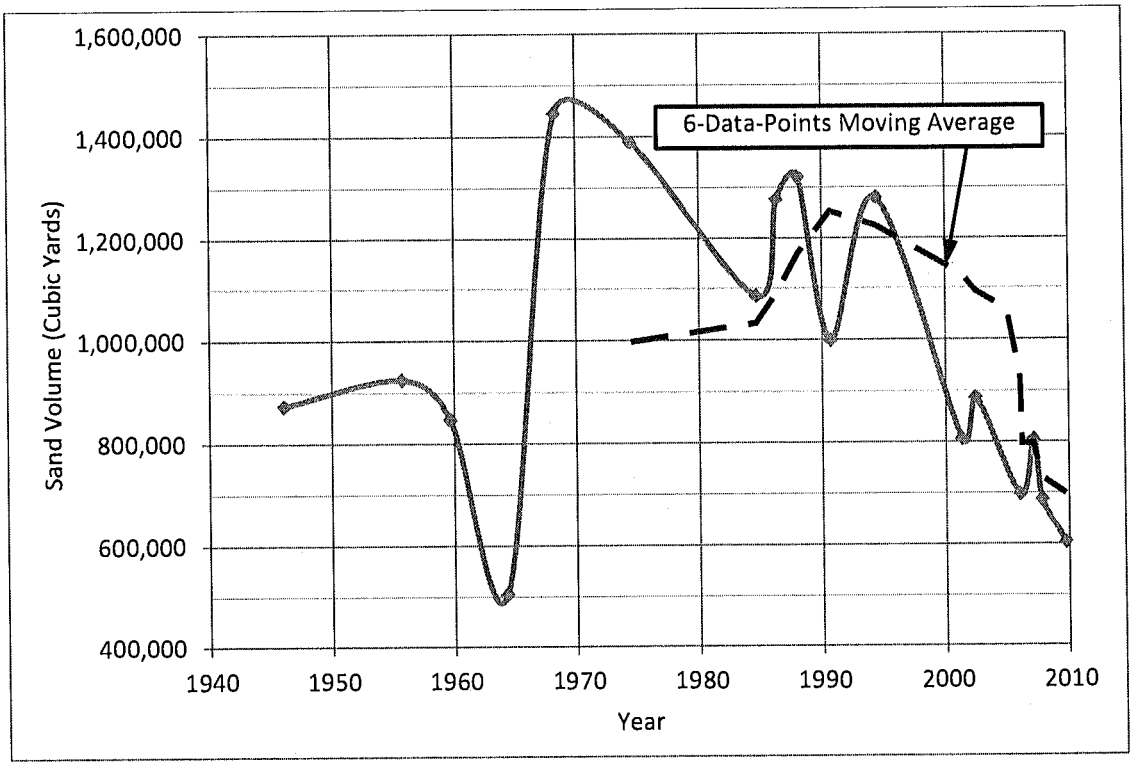


Figure 4-4. Volumetric Changes, 1946-2009

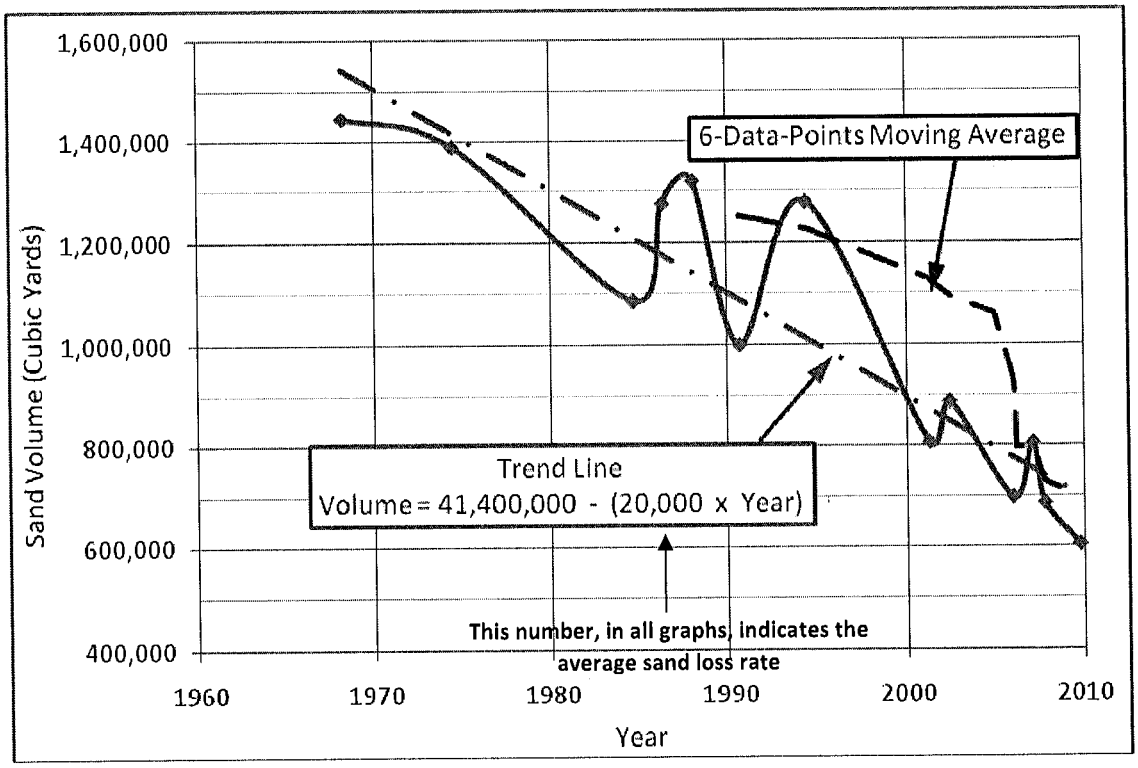


Figure 4-5. Volumetric Changes, 1968-2009

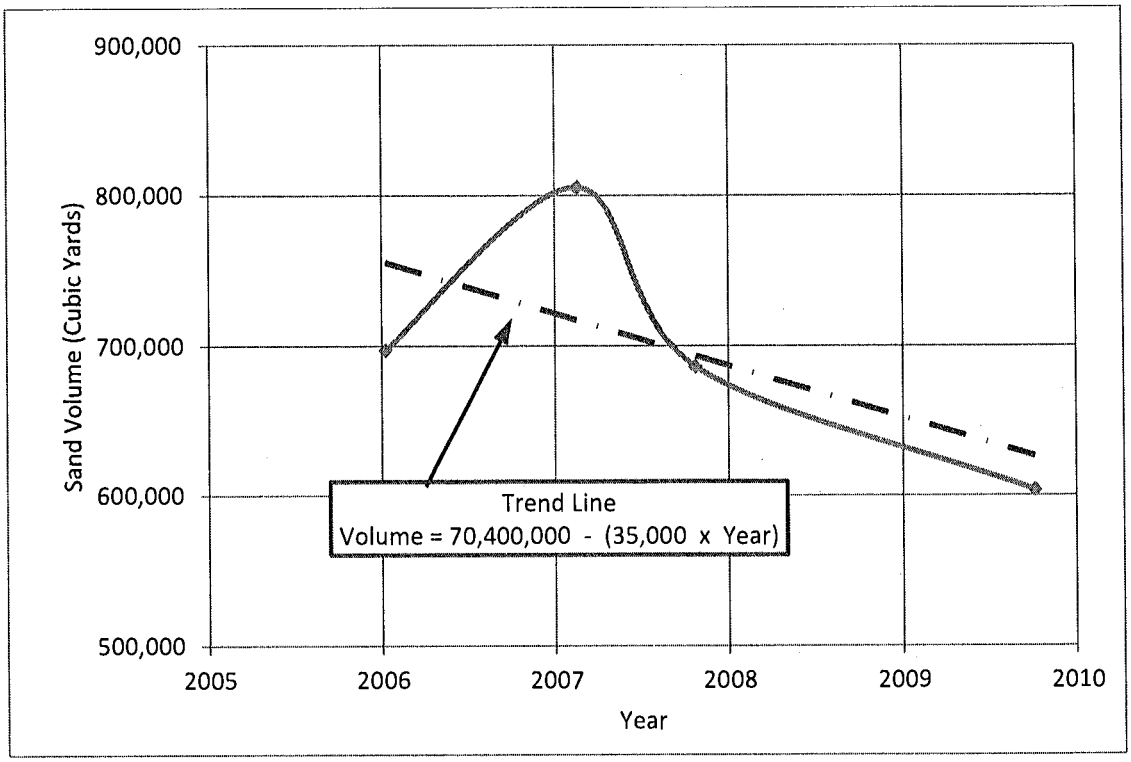


Figure 4-6. Volumetric Changes, 2006-2009

Since 2009, Coastal Frontiers Corporation has conducted seasonal beach profile measurements for the BBGHAD. Additional beach profile data is also available from the US Army Corps of Engineers dating back to 2002. This data is very useful to understand changes in shoreline position and sand volume over time.

In its 2017 Annual Report (Coastal Frontiers Corporation, 2018), Coastal Frontiers found a distinct change in the trend beginning in Spring 2014. Over the entire period of record (Spring 2002 to Fall 2017) the long-term trend shows a loss of 13,000 cy/yr. However, area-wide shorezone volume changes are markedly different when represented by the following two evaluation periods: Spring 2002 to Spring 2014 (-29,000 cy/yr) and Spring 2017 to Fall 2017 (+27,000 cy/yr). While the former value generally corroborates the preceding estimate of a 35,000 cubic yard loss per year from 2006-09, the latter short term gain in beach sand volume is a positive indication that the shoreline is not continuously in an erosive condition, therein giving great confidence in the efficacy of the beach nourishment project.

The latest beach profile survey data is available thru Fall 2018 (Coastal Frontiers Corporation, 2019); however, no annual report was prepared for 2018 due to the BBGHAD's desire to minimize Project-related costs pending litigation over its assessment funding. An evaluation of mean sea level (MSL) beach widths indicated an average width of 124 feet, which is the widest condition observed since commencement of the current monitoring program in Fall 2009. Note that the MSL beach width measures out to a mid-tide elevation, dry-beach widths are narrower.

4.4 Summary

Sand loss estimates were developed based on the sum of two components of sand loss: (1) the current "natural" loss rate projected into the future, and (2) the additional loss due to beach widening (beach nourishment).

Between 1974 and 2009, Broad Beach lost approximately 600,000 cy of sand. On average, the shoreline moved 65 feet further inland. The greatest recession occurred close to Lechuza Point and tapered off toward Trancas Creek. Once the sand budget turned negative in 1974, the Broad Beach loss rate increased thereafter by approximately 900 cy per year. By 2009, the natural sand loss rate was about 35,000 cubic yards per year at Broad Beach.

Measurements of shoreline change have been conducted on the site since 2009. From 2009 thru 2014, the shoreline volume losses were estimated at 29,000 cubic yards per year, consistent with sand budget estimates. However, since 2014, the shoreline at Broad Beach gained sand. The potential causes for this shift are unclear at this time . It is a positive sign that the beach is not continuously erosive, thereby further supporting the outlook of success for the proposed beach nourishment project.

5. Description of Proposed Project

This section provides a summary of the proposed project. Any modifications to either the project or the assessment subsequent to the 2017 Engineers Report and assessment are presented in Section 6 for clarity.

5.1 Project Objectives

The Broad Beach Restoration Project seeks to design, permit, and implement a long-term shoreline restoration program that provides erosion control and property protection, with ancillary benefits of improved recreation and public access opportunities, and environmental stewardship. The need for this project results from a decades-long trend of shoreline erosion that has recently accelerated and reached a critical point in which residential structures and onsite wastewater treatment systems are threatened by coastal erosion and flooding. The major objectives of the proposed Project include:

- Protect existing homes, structures and other improvements including septic systems along Broad Beach from coastal erosion;
- Create and maintain a wide sandy beach backed by a restored dune system similar to that which historically occurred along this reach of coastline; and
- Develop a cost-effective long-term plan for maintaining shore protection along Broad Beach.

5.2 Key Elements of Project

The Project, as proposed, would implement a shoreline protection plan along Broad Beach for at least 20 years, consisting of:

- Beach nourishment to recreate both a dry sand beach and a restored dune system;
- At least 20 years of dune restoration;
- At least 20 years of sand backpassing designed to prolong nourishment; and
- Permitting the partially relocated 2010 rock revetment as a permanent structure buried under both the beach nourishment and dune.

The BBGHAD proposes to conduct the following in accordance with the CDP:

1. Major Nourishments every five (5) years – initially in year 0; placement 2 would occur approximately 5 years later. The performance of the Project would be monitored regularly, assessed every 5 years, modified as required and upon permitting by all agencies.

2. Subject to permitting, another two Major Nourishments would be conducted in approximately year 10 and approximately year 15 as needed in accordance with objective triggers.

3. The BBGHAD also proposes to conduct smaller-scale backpassing from wider reaches of the beach to narrower reaches of the beach according to certain objective triggers, with the frequency not expected to exceed one time per year. In the event that insufficient sand volume exists for backpassing, the BBGHAD intends to complete Interim Nourishments to maintain a sufficient sand beach over the Project length to bury any exposed rock revetment and maintain a minimum width of sandy beach. The frequency and volume of such nourishments will be determined by the CDP in accordance with additional objective renourishment triggers.

5.3 Beach and Dune Design

The total Project area of new dunes, beach berm and beach face would cover up to 24.3 acres. The height of the proposed sand dunes would be typical of the existing dunes at the east end of the Project, approximately 20 feet higher than MLLW. MLLW is the average of the lower of the two low tides that occur each day. The top of the relocated emergency rock revetment would be buried beneath at least 2, and up to 5, feet of sand. Depending on location, the profile of the new dry sand beach berm would be roughly 12 to 15 feet above MLLW or existing low-tide, winter sand levels. The new post-construction dry-sand beach berm would extend seaward of the dunes by approximately 60 to 75 feet. At its widest point, the combined new beach and dune system would extend for 240 feet seaward from approximately the top of the relocated revetment to the surf zone on the face of the beach berm.

Due to predicted impacts, the proposed Project under Alternative 4C has been revised not only to avoid direct placement of beach and dune building material on sensitive habitat including rocky intertidal habitat, rocky outcrops, offshore reef, and associated surf grass habitat, but also, at the CCC's request, to avoid the "boulder field" centered seaward of approximately 31418 Broad Beach Road. As a result, direct placement of beach and dune building material will end at 31380 Broad Beach Road. A plan view of Alternative 4C placement is provided in Figure 5-1 and typical sections shown in Figure 5-2.

In accordance with the CDP, the revised dune restoration plan includes construction of foredunes and establishment of appropriate native foredune vegetation. Foredunes will be created on top of, landward, and seaward of the existing or relocated rock revetment. Overall dune design will consist of a dune system with individual dunes hillocks of similar size, shape, and distribution as reference dunes at Ormond Beach, Pt. Mugu Naval Air Station, McGrath State Beach, and San Buenaventura State Beach.

The new foredune habitat will be seeded with native species typical of southern foredune plant communities. In general, the seed mix will contain low-growing perennial southern foredune plants such as red sand verbena, pink sand verbena, beach saltbush, beach evening primrose, and beach morning glory. The dune restoration area will be constructed to form hillocks shaped to resemble naturally occurring dune features and will use a combination of sand from Broad Beach and approved imported sand from the sources listed in Section 5.4. Three distinct sand treatment areas will be implemented using different combinations of sand from these sources, which are described below.

Dune hillocks will be placed on the top, seaward slope, and landward slope of the dune footprint and in general, the hillocks will be circular in shape. The diameter, shape, and height of the dune hillocks were designed based on the range of sizes and heights found at Ormond Beach. The dune hillocks will be placed in a semi-random configuration and re-arranged slightly to facilitate the vertical private and public access paths, as well as storm drain outfalls. The height of the overall dune restoration area will range from 12 to 20.5 feet MLLW, reflecting the typical heights of the remnant dunes that currently exist at Broad Beach.

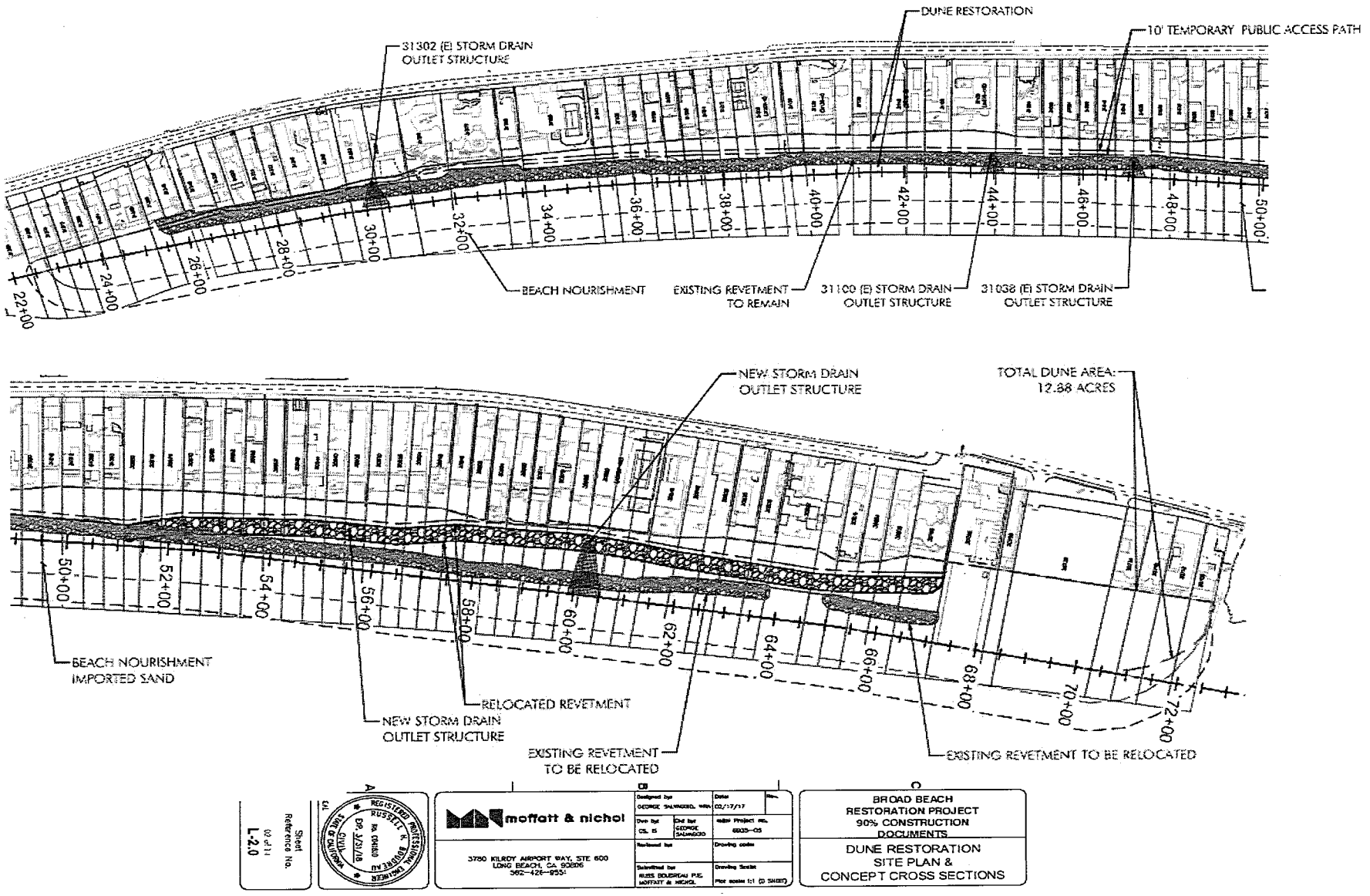


Figure 5-1. Plan View of Alternative 4C

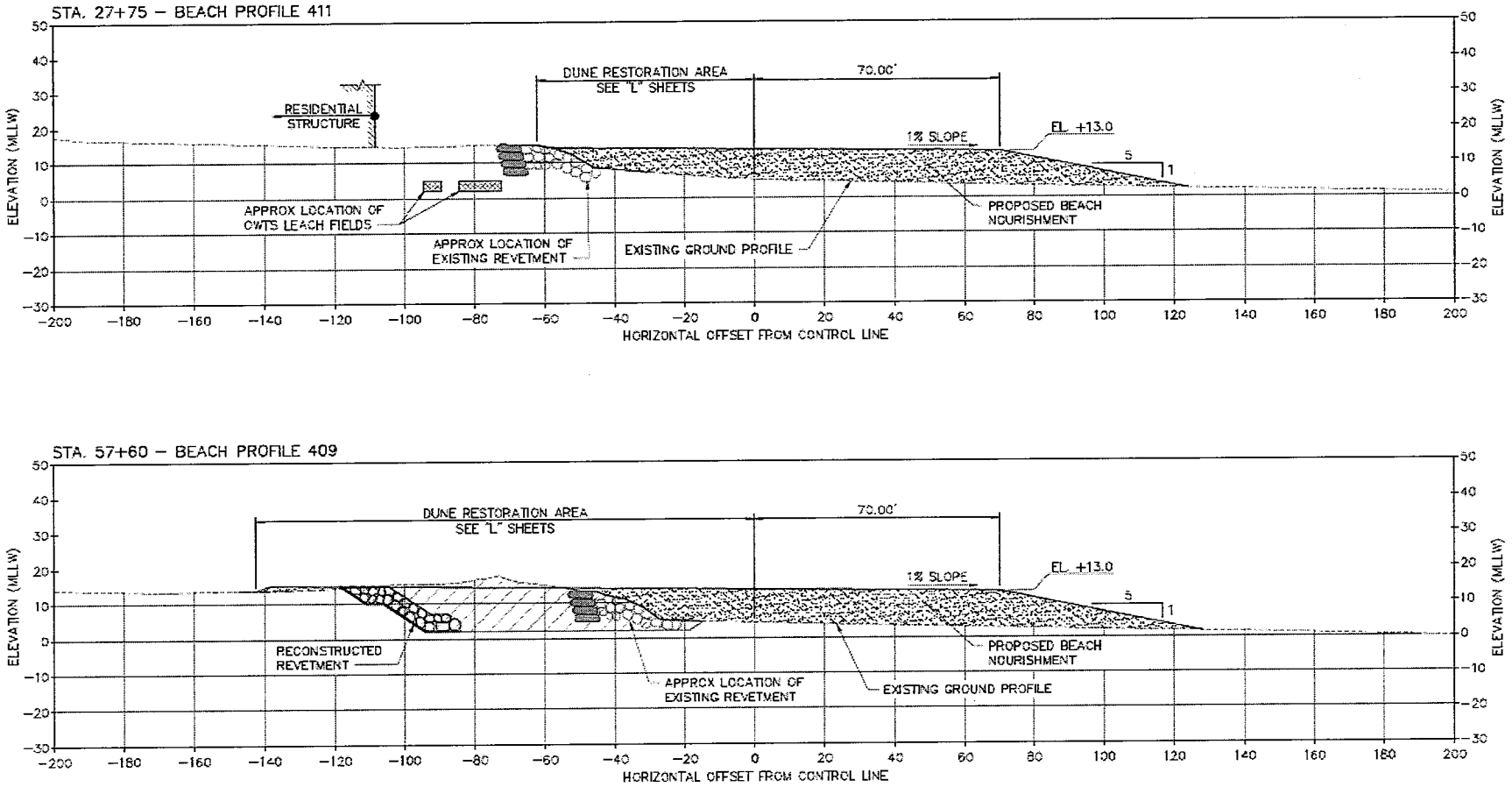


Figure 5-2. Alternative 4C, Typical Sections

The BBGHAD proposes to place dune hillocks throughout the dune restoration area except for the following locations:

- In front of the stormwater outfalls where the dune field will be blown out from annual winter storm water discharge;
- Along the private access paths, the Beach Club access path, and the vertical public access paths;
- Within 10 feet of the CCC development stringline where septic fields occur.

It is expected that the dune hillocks will be reshaped quickly by Aeolian processes and will develop more natural shapes that conform to the prevailing wind direction.

Three sand treatments will be used within the dune restoration area. The three sand treatments will allow for the comparison of the effects of sand grain size on vegetation establishment and Aeolian transport of sand related to dune and beach rebuilding. The sand treatments will be composed of the native Broad Beach sand and the imported sand. The three sand treatments will include: 100% Broad Beach sand, 100% imported sand, and a 2-foot-thick cap of Broad Beach sand over the imported sand. These sand treatments will allow for the comparison of the effects of sand grain size on vegetation establishment and Aeolian transport of sand as it relates to the ability of the dunes to rebuild by natural processes. The performance of all three sand treatments will be compared to the reference sites as part of the monitoring program.

The designated dune habitat is located between 30708 Pacific Coast Highway and 31380 Broad Beach Road and would fully mitigate impacts to existing dunes at a 3:1 ratio. The BBGHAD proposes the footprint east of 31380 Broad Beach Road and ending at 31020 Broad Beach Road to have a combined dune and dry sand beach berm approximately 125 feet wide and a beach berm face constructed at a 5:1 slope extending seaward for an additional, approximate distance of 60 feet where it intersects the existing beach. The BBGHAD proposes the beach berm in this area at 12 feet above MLLW. Between 30980 Broad Beach Road and 30760 Broad Beach Road, where the revetment relocation landward will occur in accordance with CCC direction, the dune area is proposed to widen and range from approximately 75 feet to approximately 150 feet in width. The CCC-required dune footprint will result in the landward toe of the dune extending up to 50 feet landward of the relocated revetment and the seaward toe up to 100 feet seaward of the revetment with dune elevations at roughly 15 to 20 feet above existing MLLW to cover the existing revetment. The BBGHAD designed the proposed dune area to replicate the existing dunes at the eastern end of the beach and former dunes at the site. Figure 5-3 shows representative dune areas in cross section.

In areas where the constructed dune abuts existing dune on the landward side, the BBGHAD's proposal would meet or exceed the elevation of the existing dune to protect existing dune habitat. In areas where the constructed dune abuts lower lying non-dune private properties, to meet the CCC required dune footprint the BBGHAD proposes the dune to slope landward for 10 to 30 feet in generally a 5:1 slope (although slope varies based on existing topography). In the locations within the Project area with no rock revetment, the BBGHAD contemplates that the constructed dune system would likely be lower and tapered to integrate with conditions at each adjacent property.

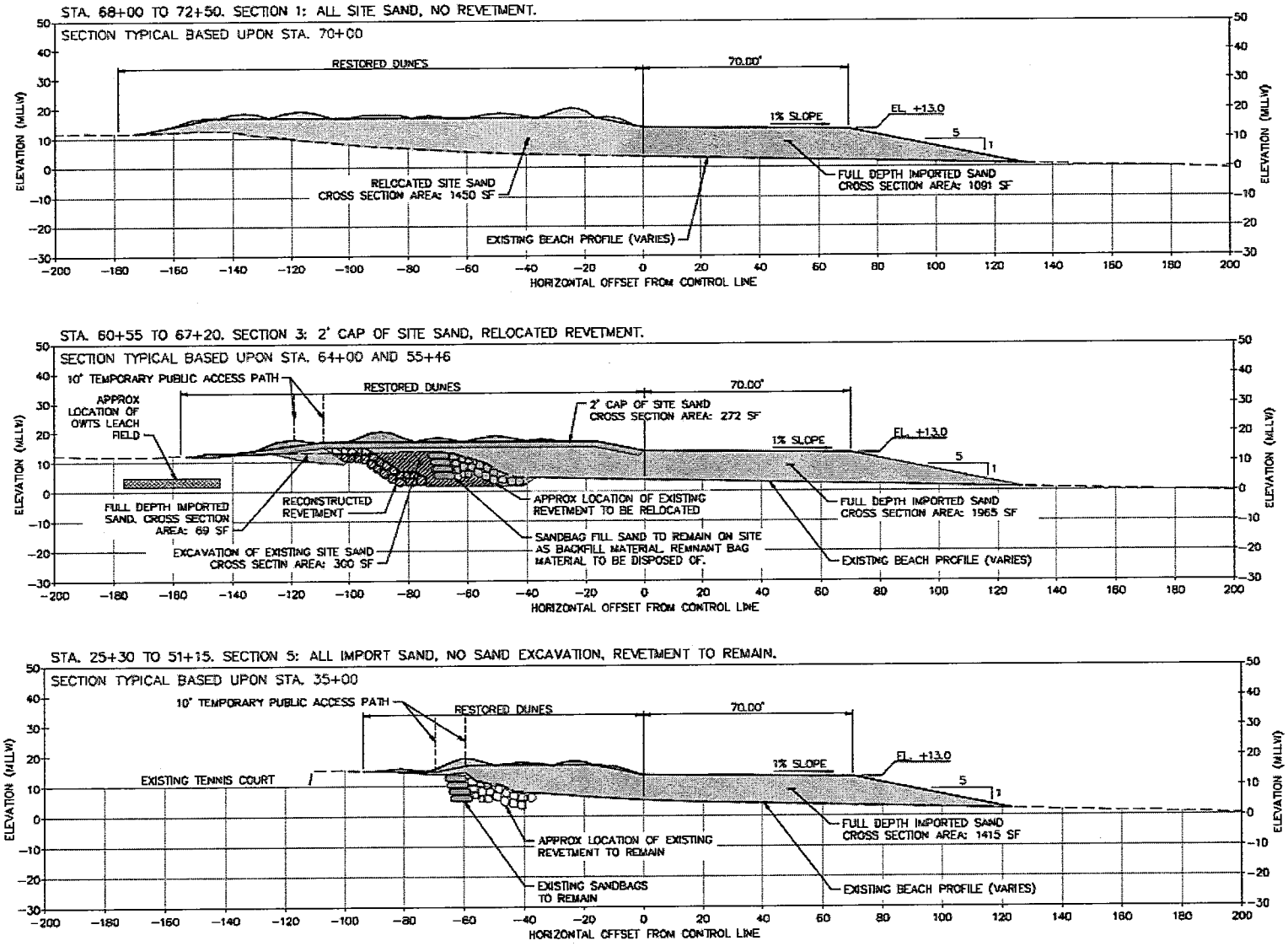


Figure 5-3. Cross Section of Dune Habitat Areas showing Three Treatment Areas

Source: WRA 2017

5.4 Sand Sources for Beach Nourishment and Dune Restoration

The permitted sand sources for the Project are a group of local commercial quarries in the Moorpark/Simi Valley area whose sand has been tested and approved by the California Coastal Commission. The BBGHAD is exploring alternative sand sources, including ocean delivery of sand from other areas of southern California or Mexico, but none of these potential sand sources have been permitted.

The permitted sand sources for the proposed Project are inland quarry material, suitable for dune and beach-quality sand (see Figure 5-4). Since 2010, the BBGHAD has expended significant time and effort investigating offshore, harbor-area, and former river bed sand sources for beach nourishment and dune building material. For example, with oversight from the primary permitting authorities, the BBGHAD conducted extensive benthic, chemistry, grain size, and other analyses on sand approximately 40-50 feet below the water surface approximately one third mile offshore Dockweiler State Beach in Los Angeles. Subsequently, the BBGHAD discovered that the City of Los Angeles owned the subject offshore sand and was not interested in selling it to the BBGHAD. The BBGHAD also investigated other sand in Ventura Harbor and in Calleguas Creek in Ventura County, but these sands could not meet chemical compatibility requirements with native Broad Beach material or other governmental agency requirements.

In short, all of the alternative sand sources were discovered to either have material which was deemed incompatible with the Project's goals, presented insurmountable hurdles in securing authorization or, in the example of the offshore Trancas site, was located in a marine protected area with restrictions on allowable offshore activities.

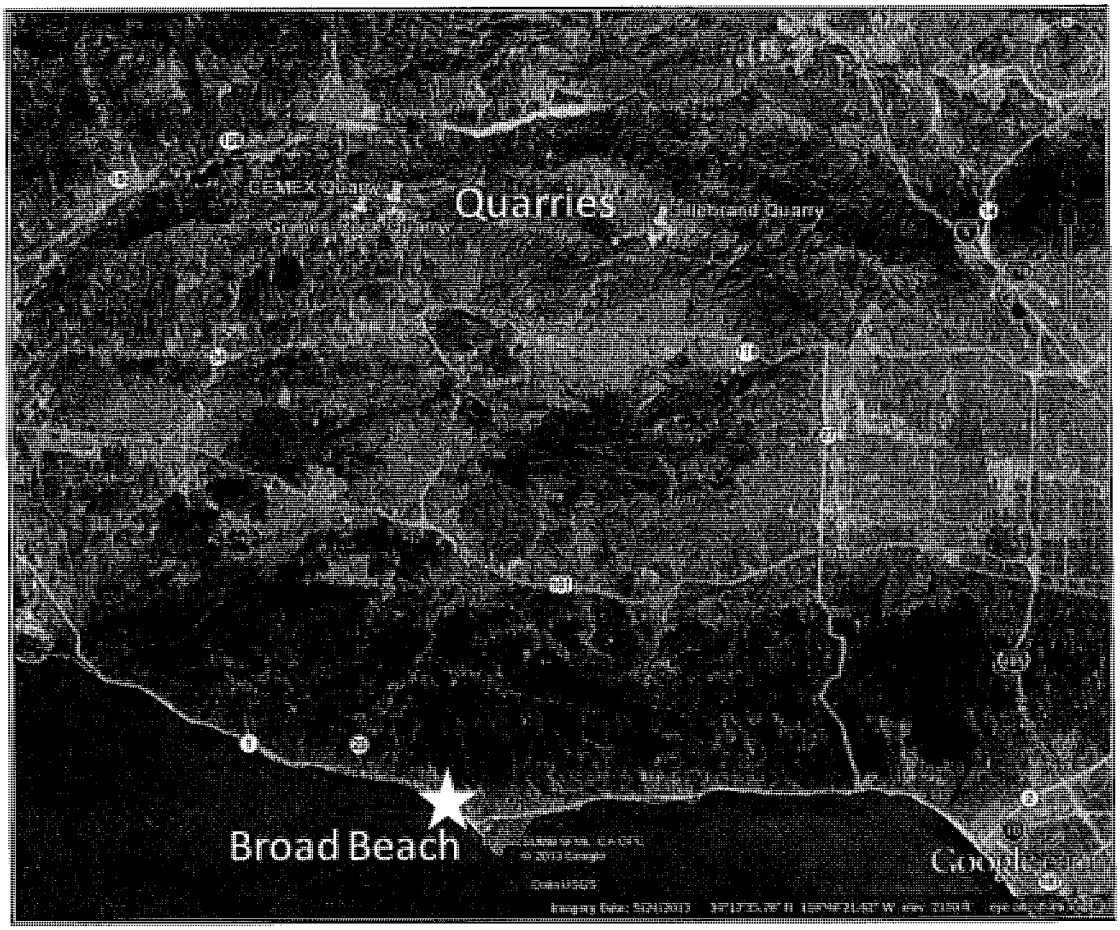


Figure 5-4. Broad Beach Restoration Project - Sand Source Area

Sand for beach nourishment should be of medium-grain size, coarser than the fine-medium grain size present on the existing beach in order to better resist erosion and maximize dry beach width.

The proposed source for medium-grain sand are private local commercial quarries (CEMEX, Grimes Rock, and P.W. Gillibrand, collectively, "Local Inland Sources") in the Moorpark/Simi area of the Ventura County, 20-25 miles north of the Project site by air and 40-45 miles north of the Project site by truck. The BBGHAD proposes to transport the quarry material via truck to the Broad Beach site and distribute it by heavy equipment including large (40-ton capacity) off-road trucks, bulldozers and scrapers to create the final beach and dune templates. Front-end loaders are proposed to be used to move sand as needed. The stockpiled materials originate from a sandstone geologic formation believed to be a former seabed, i.e. marine sedimentary rock. Two quarries, Grimes Rock and CEMEX, possess the capacity to provide the quantity of sand required for the Project (300,000 cubic yards of material per Major Nourishment). A third quarry, P.W. Gillibrand, can supplement the Project if the other quarries cannot meet the capacity needed to serve the Project, and can significantly expand operations, if needed, to potentially supply the Project with all of the material. The material is continually excavated, stockpiled, and removed as part of ongoing quarry and aggregate sales operations.

Figure 5-5 shows the geologic setting of the quarries and indicates that sandstone is the sediment source. Large strata of sandstone are typically formed in pre-historic marine environments, suggesting that these

materials are former seabed. Sand sieve test results show the material to be 92.5% sand and 7.5% silts and clays, which is generally compatible with the beach. The median diameter of the quarry material is larger than the current beach, but this fact is a positive attribute for beach nourishment material, as the fill material will reside on the beach longer and prolong Project benefits. The San Diego Association of Governments used beach fill material coarser than native material in both 2001 and 2012 to maximize the San Diego area project's life, and to maximize the width of the new beach berm. Coarser sand resides higher on the beach profile and typically results in a wider recreational beach berm area than finer sand.

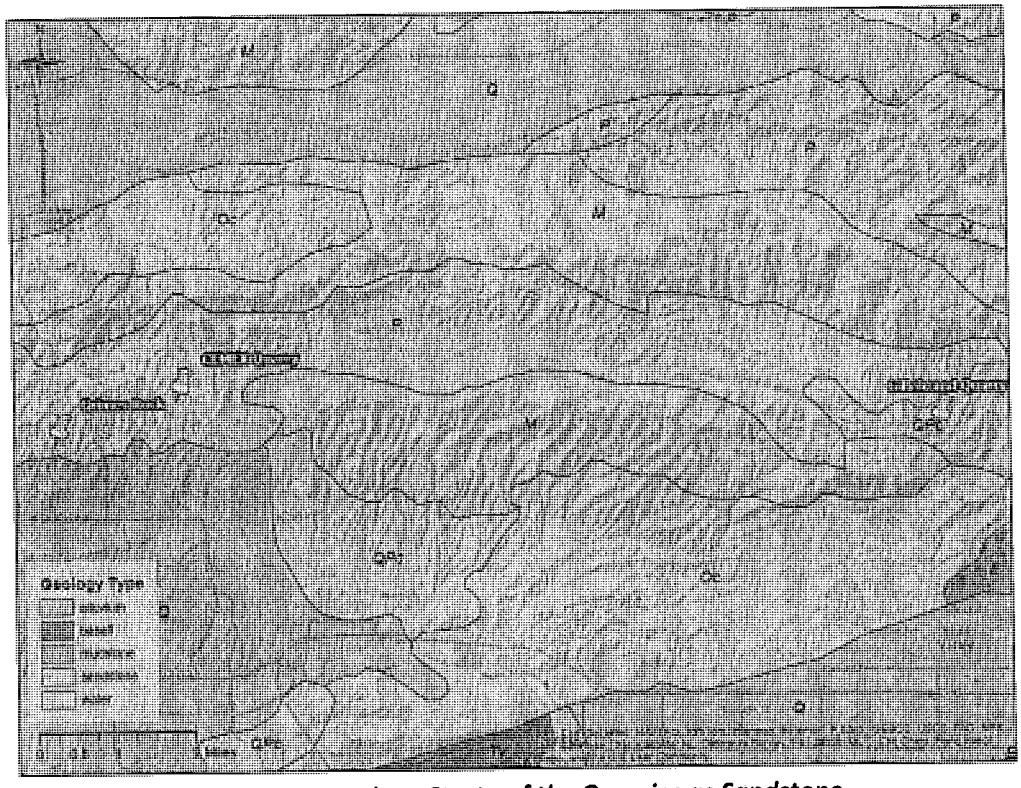


Figure 5-5. Geology Strata of the Quarries as Sandstone
Note: The Blue Polygon Represents the Sandstone Deposit.

In response to CCC requirements, the median grain size or d50 of the quarry material selected for beach and dune creation will be between 0.24 mm and 0.60 mm.

Photographs of the existing sand stockpiles at each quarry are provided below. These stockpiles are continually reworked, turned over, removed, and replaced for commercial purposes, so the sand is well mixed and homogeneous throughout the piles.

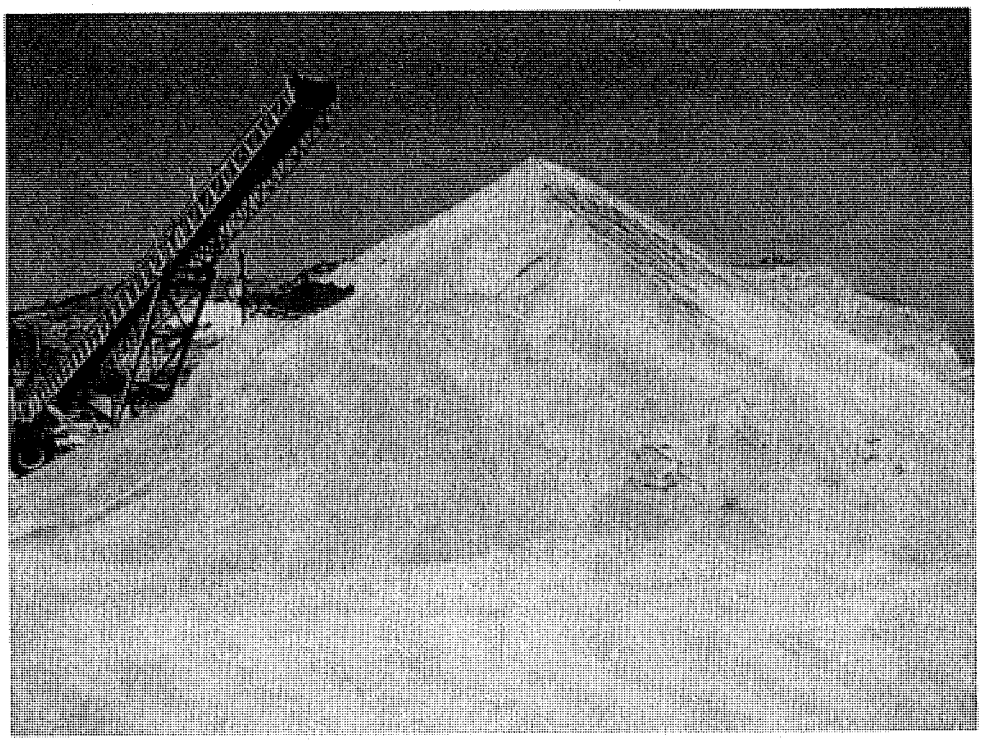


Photo 5-1. Sand Stockpile at the Grimes Rock Quarry

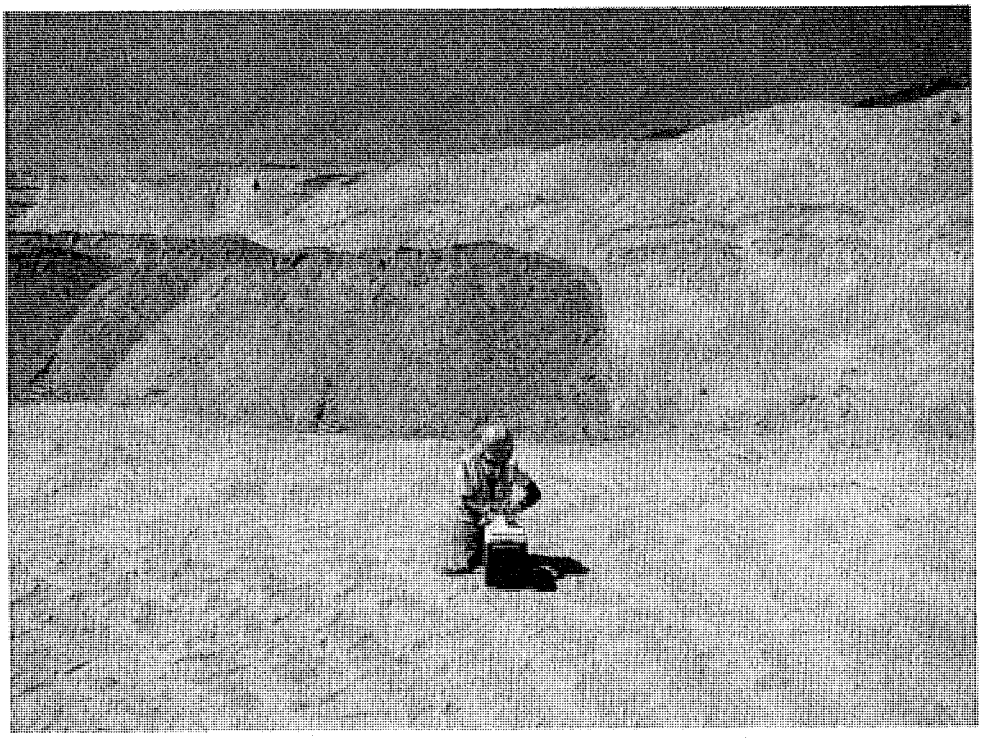


Photo 5-2. Sand Stockpile at the CEMEX Quarry

The beach and dune material would be excavated from one or more of the listed quarries and would be trucked in 14-cubic-yard-capacity, bottom-dump trucks.

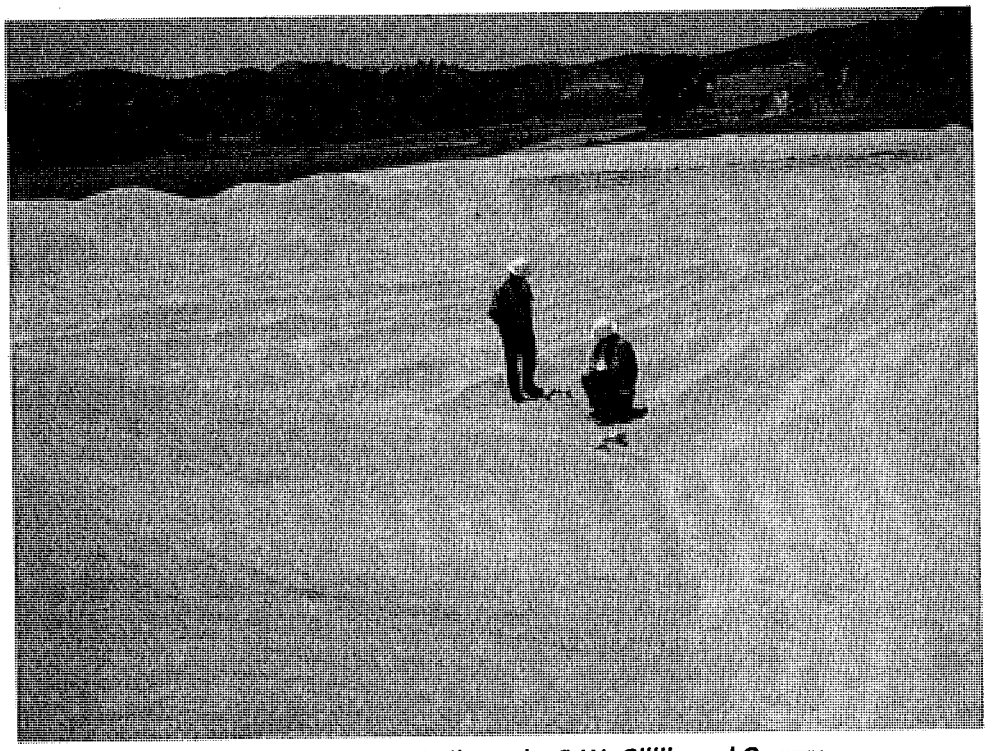


Photo 5-3. Sand Stockpile at the P.W. Gillibrand Quarry

5.5 Dune Habitat Restoration

In accordance with governmental agency direction and permitting, the proposed dune restoration Project includes measures to restore native coastal dune habitats through planting of appropriate native dune vegetation, potentially restoring all such areas to their current ESHA designations and protections consistent with the City of Malibu's LCP/LUP. The BBGHAD proposes native habitat restoration to include planting species such as beach verbena, dune primrose and other characteristic species found in this community. The BBGHAD proposes to assume responsibility for the construction, planting, and maintenance of the restored dune system (BBGHAD Resolution No. 2012/06). A program of initial removal of non-native invasive species such as iceplant (Hottentot fig), pampas grass, myoporum, and European dune grass from areas within and adjacent to the restored dunes would be initiated.

As proposed, signs would be posted to demarcate sensitive dune habitats (e.g. "Habitat Restoration in Progress: Please Keep out of Dune Restoration Areas"). No public access will be permitted on the dunes. By their nature, dunes are an attraction for those who desire to climb up and on top of them. Doing so will reduce the size of the dunes, weaken their structure, adversely affect burgeoning plant life, and create added risk of trespassing into protected ESHA and residential areas. Further, protocols would be implemented for long-term maintenance of restored habitats, including possible use of irrigation if required as an adaptive management measure, ongoing invasive species/weed control and maintenance of signs and access control measures. Private vertical access paths will be created from residences and extend through the dune restoration area to provide access to and from the beach. In general, there will be one shared private access path between adjacent single lots and one private access path for residences that span two or more adjacent lots. The private access paths will be limited to a width of 3 feet and will consist of sand only. The paths will be formed by strategically locating dune troughs and are expected to

be maintained by normal foot traffic. Private vertical access paths will be demarcated by symbolic post and cable fencing.

Paths from the residences, the Malibu West Beach Club, and the County-owned vertical access points to the new dry sand beach will provide access for those who have historically used such pathways and also protect newly established and restored dune habitat from random passage to the beach. A conceptual rendering of the dune field looking seaward is shown in Figure 5-6.

Figure 5-6. Conceptual Rendering of Dune Restoration
Source: Moffatt & Nichol 2017

5.6 Private Property and Public Lateral Access

Currently, public lateral access along Broad Beach is limited to times of low and moderate tides. Public access landward of the MHTL is also affected by uneven distribution of Access and Recreational Use Easements (AREs) for lateral access, which are recorded on approximately 35% of the private parcels along Broad Beach. These AREs typically extend inland on private property between 10 and 25 feet above the MHTL. However, in some areas, the existing revetment now overlies these AREs. Nonetheless, segments of the revetment that overlie existing AREs that have been accepted and recorded by CSLC and various agencies on private land would remain in place with lateral public beach access proposed to be accommodated on the new, wide, sandy beach.

In recognition of the ancillary public benefits from the Project and in further recognition that existing lateral easements: (a) cover a relatively small portion of the beach; (b) are inconsistent with one another and create uncertainty and confusion; and (c) are of limited value given the absence of a sandy beach under current beach conditions, all existing lateral access OTDs, AREs, and all currently existing lateral access easements are proposed to be suspended for the duration of the Project in accordance with Project specifications and the maintenance of same.

The BBGHAD has proposed to governmental agencies that, for the duration of the Project, the October 2009 survey may serve as the public/private seaward boundary, subject to Project-specific restrictions on access to the restored dunes. To the extent that any restored dune area lies seaward of the October 2009 MHTL (i.e., on public property), the individual BBGHAD property owners would be granted, through appropriate legal means, unrestricted access to the public property seaward of their properties from the 2009 MHTL to the seaward toe of the restored dunes — subject to the use restrictions specified in Project permits. A cross-section of the restored dune and proposed private dune access and public beach dedication is shown in Figure 5-7.

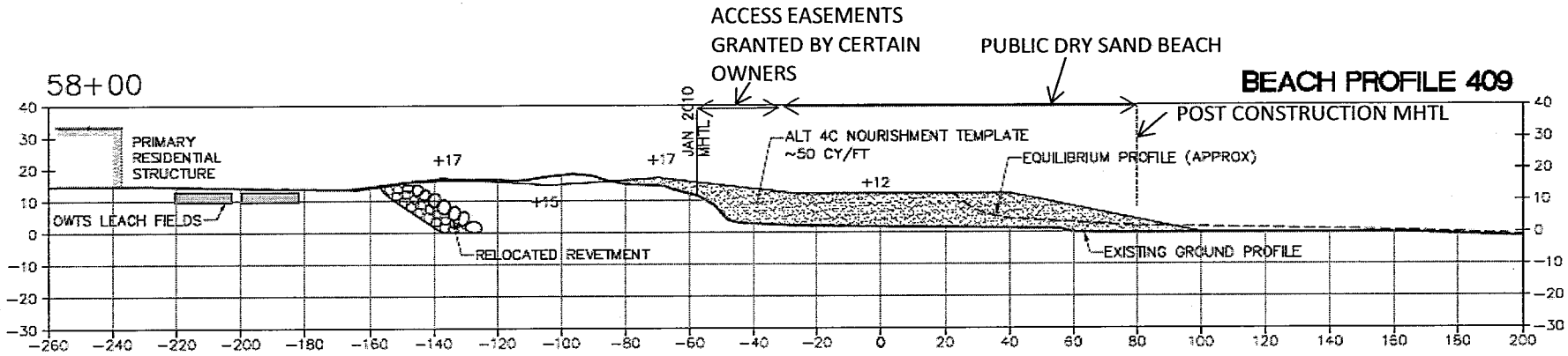


Figure 5-7. Conceptual Cross-Section of Restored Dune and Beach with Existing Offers to Dedicate and Public Beach Area

5.7 Equilibrium of the Beach After Nourishment

For a beach nourishment project, sand is initially placed high on the upper portion of the beach profile above the mean lower low tide area. This is done to expand the level beach berm area for immediate benefit, to retain the sand for as long as possible, and to facilitate construction. The constructed beach immediately incurs change by waves and tides that distributes the sand both offshore and alongshore. As sand redistributes, the nourishment project typically experiences a process of equilibration to a more natural condition of berm width and profile slope that depends on sand grain size and wave energy (the "equilibrium beach profile"). As proposed, the Project is expected to function in a similar manner.

For the Project, the equilibrium beach profile was estimated using several different methods. Essentially, the estimates show that approximately one-quarter to one-half of the width of the beach berm may be lost within approximately one season after construction (depending on conditions and nourishment sand quality), and the slope of the beach flattens (Figure 5-8) as the material deposits slightly farther into the nearshore.

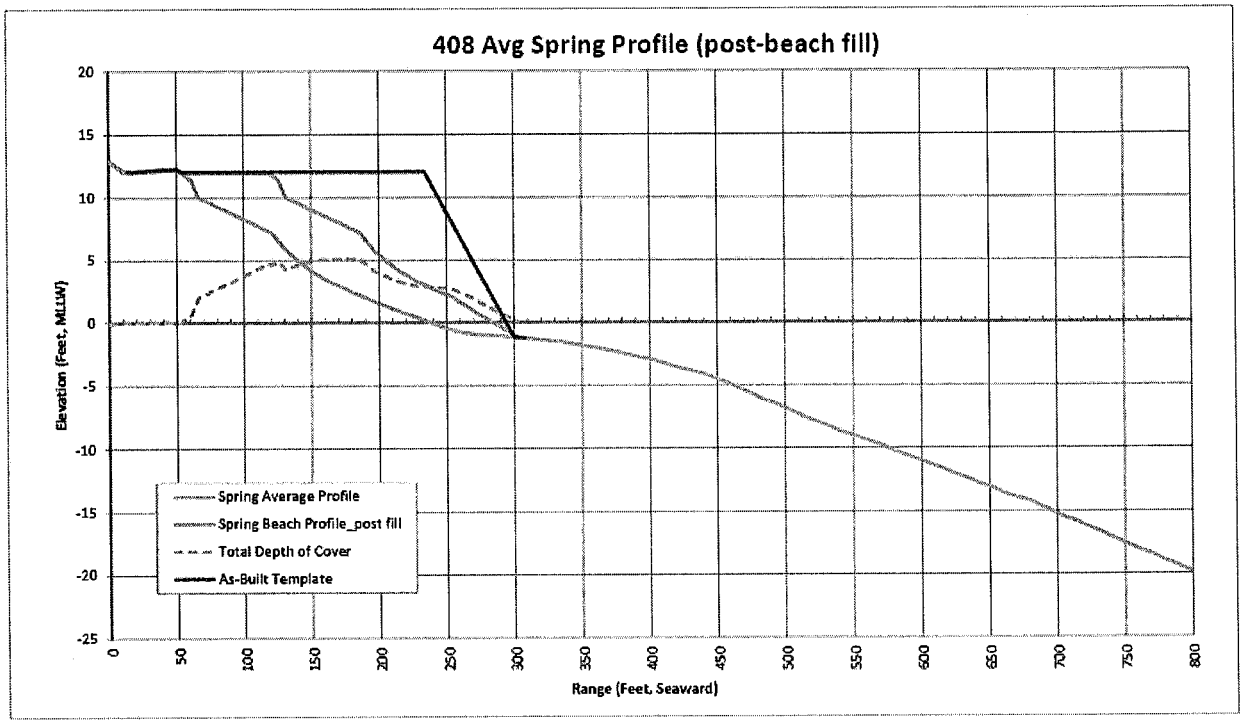


Figure 5-8. Example of Equilibrium Beach Profile for Alternative 4C

5.8 Beach Fill Performance Monitoring

The performance of the beach fill is anticipated to be monitored by a dual program comprising long term beach profile surveys as directed by the CDP and the CSLC, augmented by more frequent measurements of the dry-beach berm width. Each program is described as follows:

5.8.1 Long-Term Beach-Profile Monitoring

In order to determine the performance of the nourishment Project and monitor the effect of coastal erosion on sand loss on the beach in accordance with direction from governmental agencies, the Applicant

proposes to perform long-term beach-profile monitoring. This monitoring would be intended to identify and assess coastal erosion and the potential need to initiate backpassing or other proposed nourishment activities to offset such erosion. This monitoring is proposed to include:

1. Measurement points: Monthly measurement (systematically at the same time of each month) of the dry sand beach width (similar to that Los Angeles County presently performs at Zuma Beach) from the seaward toe of the restored sand dune system to the seaward edge of dry sand "towel area" at nine measurement-point profiles specified below and shown on Figure 5-9. The measurement can be done with a tape measure or roll tape, or other suitable low-technology device.

    a) 408 (east end – 30756 Broad Beach Road)
    b) 409 (east-central reach – 30916 Broad Beach Road)
    c) 410 (central reach – 31108 Broad Beach Road)
    d) 411 (west-central reach – 31324 Broad Beach Road)
    e) 411.7* (west-central A reach – 31438 Broad Beach Road)
    f) 411.9* (west-central B reach – 31460 Broad Beach Road)
    g) 412 (west end – 31506/31504 Victoria Point Road)
    h) 412.3* (west end A – 31520 Victoria Point Road)
    i) 412.5* (west end B– 31536/31532 Victoria Point Road)

    (These transects were first surveyed in spring 2013 and were added at the request of the California Coastal Commission per its filing status letter dated February 8, 2013.)*

2. Semi-annual (spring and fall) full beach profile measurements out to the closure depth (approximate ocean water depth of 40 feet).
3. Estimation of the rate and trend of beach width change and sand volume change at each of the measurement points for one year prior to construction and continually after construction for 10 years.
4. Zuma Beach Width: A total of seven beach profiles will be surveyed every six (6) months to quantify total sand volume and width changes within the littoral mini-cell between Lechuza Point and Point Dume.

5.8.2 Beach Berm Width Measurements

The BBGHAD has proposed to take more frequent measurements of the beach berm width along Broad Beach to supplement the surveyed beach profiles. As proposed, the measurements would be taken from fixed benchmarks (storm drain outfalls) at the back of the beach to the wetted bound line to provide an approximation of the dry beach width above the mean high-water line. This measurement yields data of the dry beach width over time and space. The U.S. Army Corps of Engineers (USACE) performs these types of measurements along Orange County (called "Clancy measurements"). These measurements are quite useful because they are frequent (monthly) and can capture impacts from storm events.

The proposed storm drain outfall structures to be constructed at four locations along the revetment will provide visible and fixed benchmarks ideal for regular beach width measurements. The storm drain outfall structures would be located near profiles 411 (west), 410 (central) and 409 (east) and would provide useful data to supplement the surveyed beach profiles. These three locations would also provide a good

indicator of the remaining beach width in front of the revetment at the west, central and east ends of the Project.

In addition to measured beach widths from three benchmarks, the BBGHAD proposes to use a handheld GPS unit to record the horizontal position of the wetted bound line along Broad Beach. This would provide a continuous line from Trancas Creek to Point Lechuza that could be displayed on Project drawings to provide an estimated beach width along the entire Project. The beach widths measured from the benchmarks could then be used to verify and correct coordinates from the handheld GPS unit.

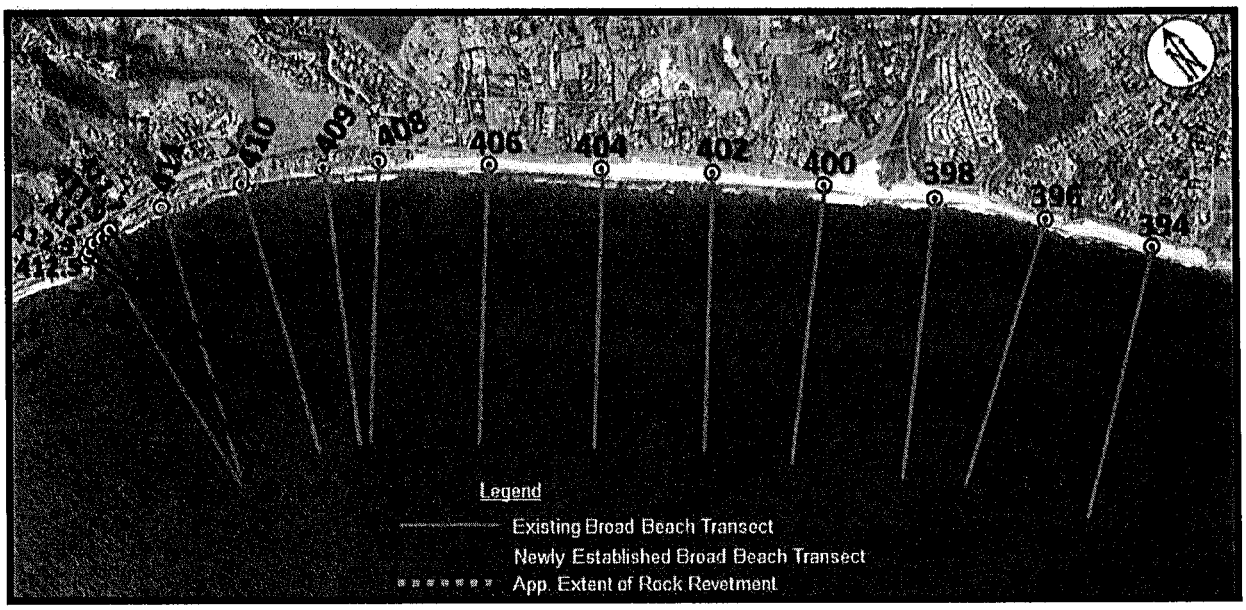


Figure 5-9. Transects for Beach Profiling at Broad Beach and Zuma
Source: Coastal Frontiers 2013

5.9 Adaptive Management Actions

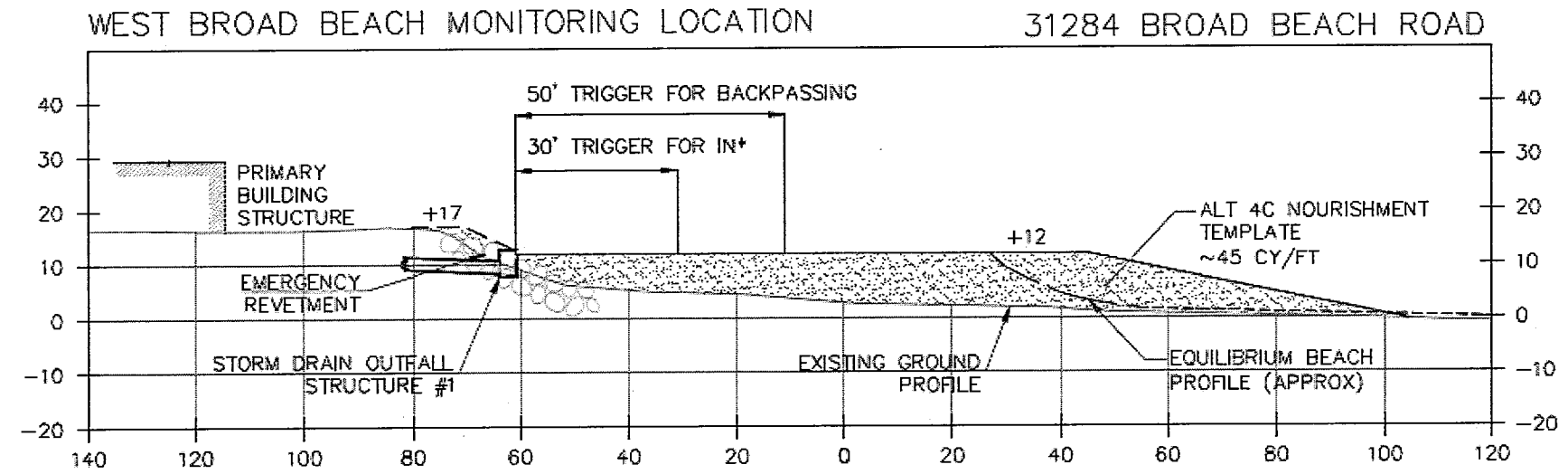
Based on information obtained from the beach profile and beach width monitoring program, and in accordance with direction from the Science Advisory Panel (SAP), the BBGHAD will determine if site conditions trigger the need to undertake certain beach management actions. These will identify when beach erosion is reaching a point that threatens Project benefits including protection of private property and recreation, with careful attention to also maintaining public access seaward of the revetment. The triggers are crafted to permit sufficient time to implement management actions to maintain these benefits. The BBGHAD proposes these management actions to maintain a widened beach in an adaptive manner prior to the Major Nourishments at approximately 5-year intervals. In the event of a severe coastal storm wave event, or series of events, which strip the beach of sand, and subject to monitoring results and BBGHAD finances, the BBGHAD may seek the permitting and/or CCC Executive Officer order necessary to conduct Major Nourishments more often than every five (5) years in addition to or in lieu of Interim Nourishments as described below.

Among other potential measures directed by the SAP, adaptive management actions should include: (1) short-term backpassing events meant to prolong the life of the beach nourishment and equalize the benefits of the Project among the homeowners within the BBGHAD, and (2) Interim Nourishments of up

to 75,000 cubic yards (subject to availability of additional BBGHAD funding). The management actions would be triggered when the beach width data meets the criteria listed below and illustrated in Figure 5-10.

1. **Backpassing,** as proposed, would be triggered when the average dry beach width fronting the western revetment near Transect 411 is approximately 50 feet or less for 3 consecutive months. Beach widths measured from the storm drain outfall structure near Transect 411 (31284 Broad Beach Road), supplemented with surveyed beach profile data at profile 411, would be analyzed to determine when this trigger is met. As proposed by the BBGHAD, if trigger measurements are met in the spring, then the 3-consecutive-month window would be 'tolled' or suspended for the summer months (i.e. from Memorial Day to Labor Day) as no construction or backpassing activities can occur on the beach during that time under CDP terms.

2. **Interim Nourishments**, as proposed, would be triggered when the average dry beach width fronting the western revetment near Transect 411 is approximately 30 feet or less for 6 consecutive months and is recorded by two (2) consecutive full-beach-profile surveys and insufficient beach width exists to provide 10,000 cubic yards of backpassing sand from the eastern end of Broad Beach. Beach widths measured from the storm drain outfall structure near Transect 411 (31284 Broad Beach Road), supplemented with surveyed beach-profile data at profile 411, would be analyzed to determine when this trigger is met. Should trigger measurements be met in the spring, then the 3-consecutive-month window would be 'tolled' or suspended for the summer months (i.e. from Memorial Day to Labor Day) as no construction or backpassing activities can occur on the beach during that time under CDP terms.



* IN = INTERIM NOURISHMENT

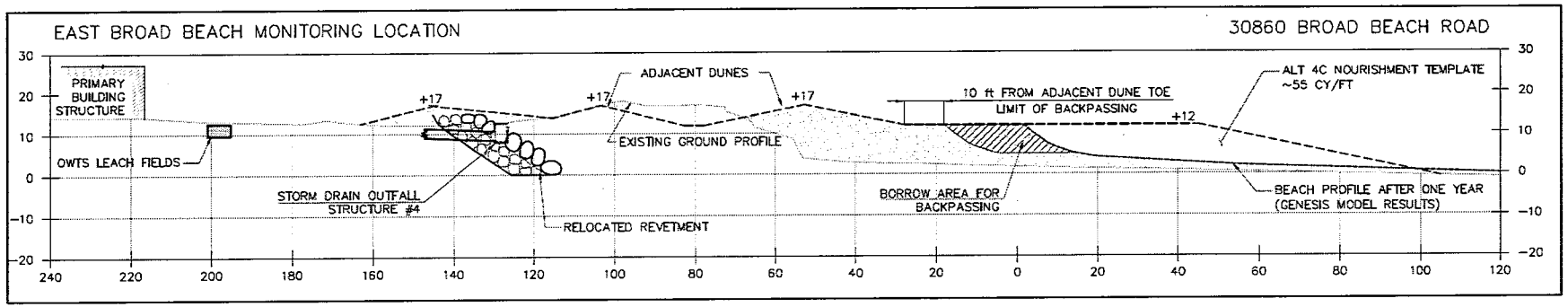


Figure 5-10. Adaptive Management Triggers

5.9.1 Backpassing

Photo 5-4. Sand Backpassing in Long Beach, CA

As proposed, backpassing would involve the use of heavy equipment (e.g., scrapers, bulldozers) to excavate sand from the downdrift "sand rich" segment of Broad Beach (anticipated to be the eastern reach) and its transport back updrift to the eroding reach of Broad Beach (anticipated to be the western reach of the Alternative 4C footprint). Backpassing is proposed to extend the practical lifetime of this beach nourishment project by recycling sand back updrift within the littoral cell and delay the need for major beach renourishment. Backpassing is less expensive than small-scale nourishment from either (i) onshore sources via trucking, due to high unit cost or (ii) from offshore dredging, due to equipment mobilization costs.

The objective backpassing triggers are intended to maintain a balanced benefit of the beach nourishment to the maximum extent practical, and to maintain dry sand beach seaward of the revetment. As part of the overall Adaptive Management Plan (AMP), these triggers will assist in identifying when beach erosion reaches a point that threatens Project benefits (e.g., protection of private property, lateral access, recreation) and to permit sufficient time to implement management actions to maintain these benefits. The triggers are meant to be used in combination with on-site observations, beach-width measurements, profile monitoring, and an understanding of historical and projected future trends. The BBGHAD proposes to re-evaluate the triggers frequently due to the large variability in potential shoreline change rates.

The concept of sand backpassing was incorporated into the Project when the intended nourishment volume was 600,000 cubic yards. With that volume and resulting beach widths, backpassing was proposed as an effective measure to extend the life of the nourishment by pushing sand from the downdrift, wider portion of the beach and transporting it west to the updrift and narrower reaches. With the Major Nourishment volume reduced to 300,000 cubic yards, the opportunities for effective backpassing of sufficient sand surplus at the downdrift end of the Project may be limited after the first one to two years after Major Nourishments.

Since the net direction of sand movement (littoral drift) is to the east, it is anticipated that the predominant backpassing operation will be from east (surplus) to west (deficit). The resulting action would backpass sand using mechanical equipment (scrapers and bulldozers) from the wide reach of beach (surplus area) to widen the narrow reach (deficit area) of beach.

The anticipated borrow area will extend from Transect 410, near the center of Broad Beach, toward the east for a distance of about 3,000 feet. Along this reach sand will be backpassed from the dry beach (above Mean High Water) while maintaining a 10-foot buffer from the dune restoration area. The sand volume available for backpassing operations within the borrow area will depend on the actual dispersion of the initial beach fill. Modeling results indicate there could be up to 25,000 cubic yards available within this borrow area for the first backpassing operation expected to occur about 1 year after the initial beach fill. A schematic plan and typical section of the borrow area are shown in Figure 5-11 for the first backpassing event. Subsequent events will involve backpassing volumes of 15,000 cubic yards or less. Some undisturbed contiguous stretches between the dune habitat and the nearshore will be retained during any single backpassing event.

The anticipated maximum placement area for backpassed sand will be 500 feet on the west side of Transect 411 and 1,500 feet east of Transect 411 i.e. a total linear length of 2,000 feet between 31108 and 31380 Broad Beach Road. Backpassed sand will be placed up to an elevation of +12 feet, MLLW and within the limits of the original beach fill template. The first backpassing event, expected to occur about 1 year after the initial fill, would increase the beach width by about 40 feet within the placement reach. A schematic plan and typical section of the placement area are shown in Figure 5-12 for the first backpassing event.

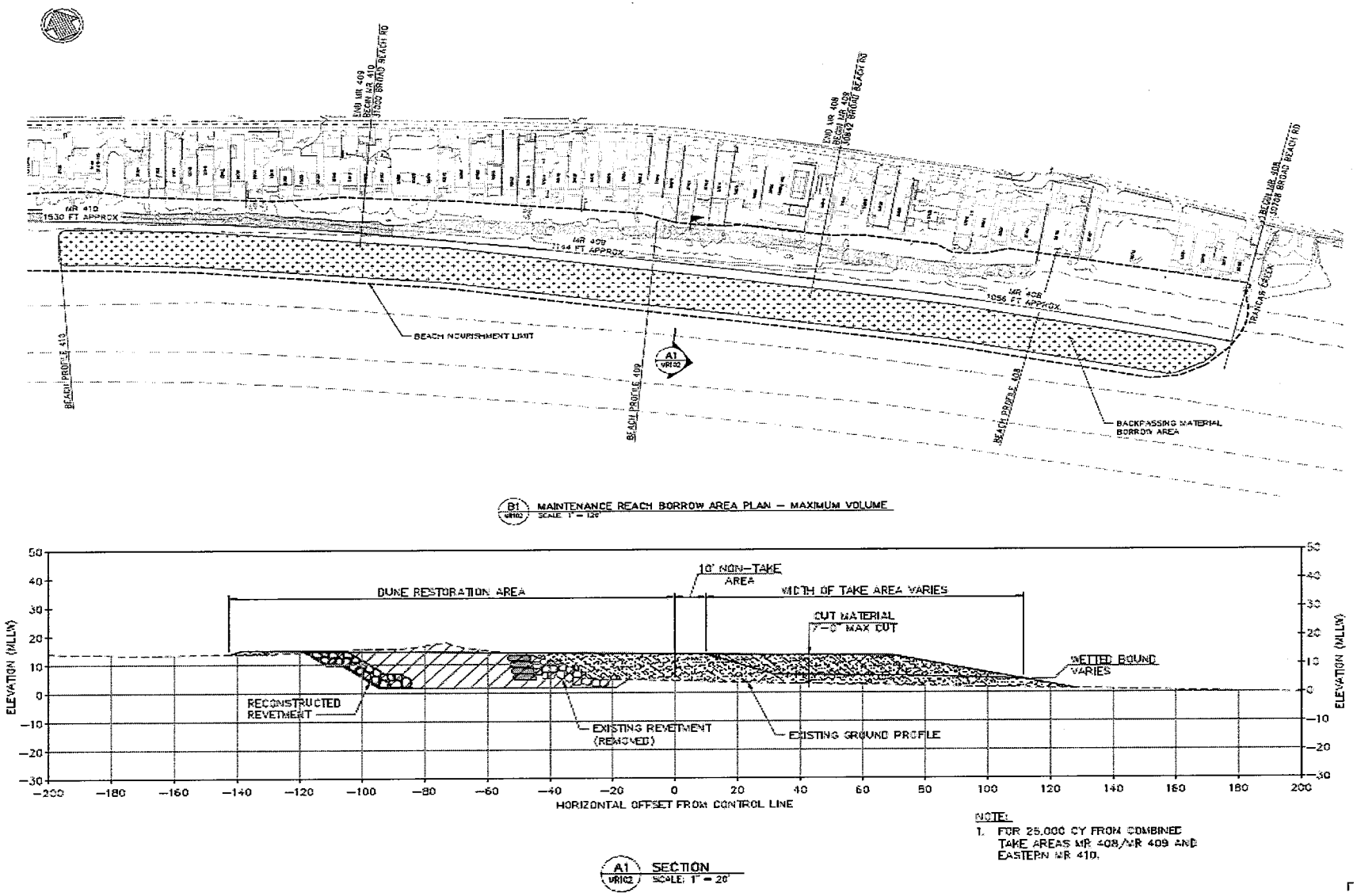


Figure 5-11. Schematic of Borrow Area for Alternative 4C Year 1 Backpassing Operation (25,000 cy)

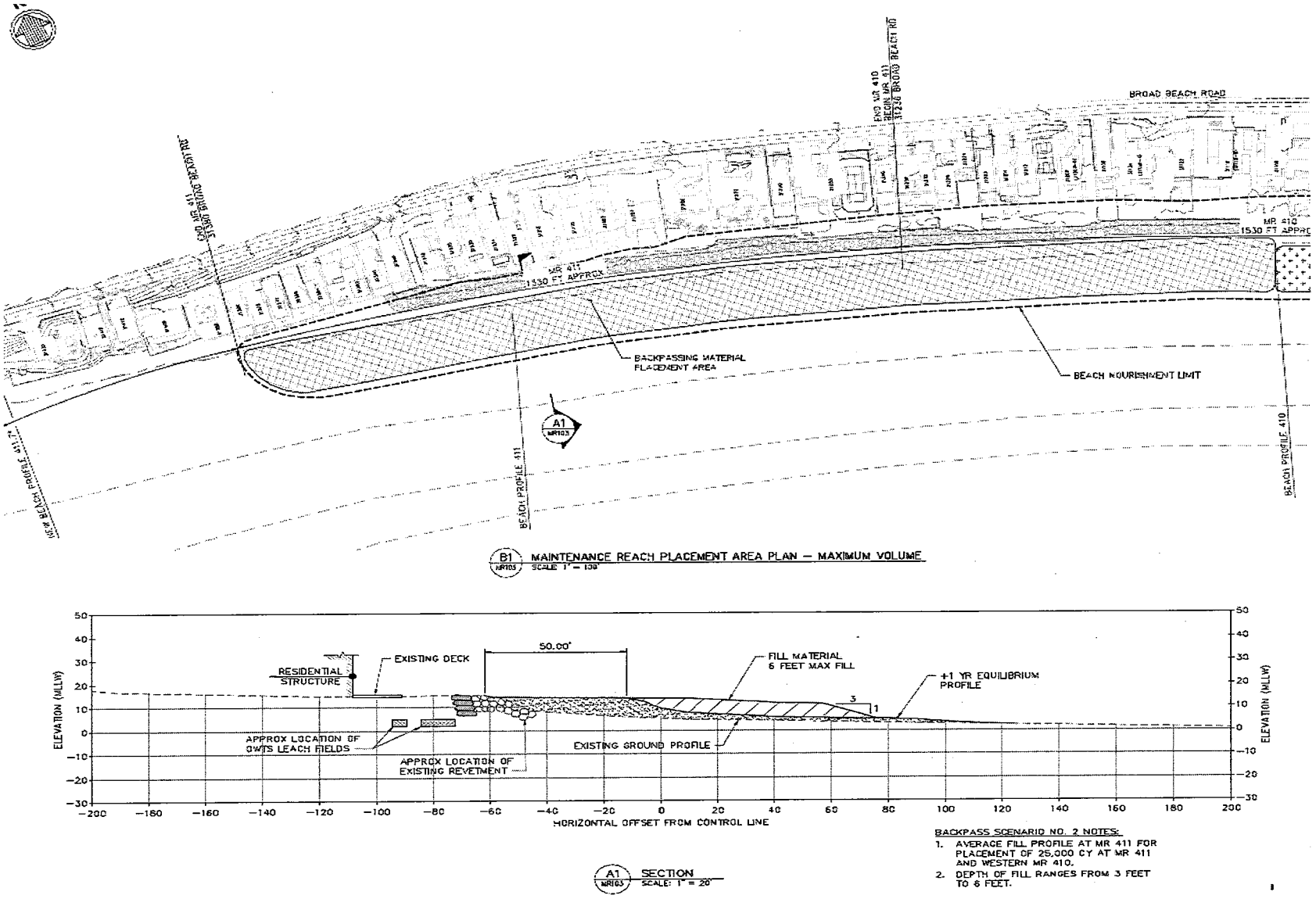
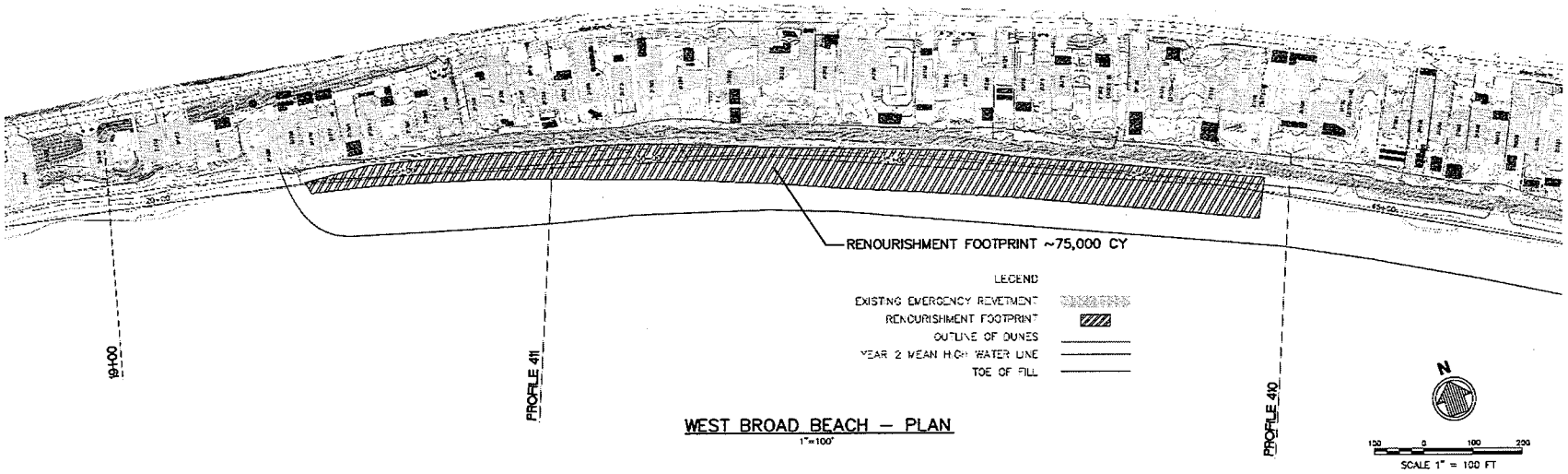


Figure 5-12. Schematic of Placement Area for Alternative 4C Year 1 Backpassing Operation (25,000 cy)

5.9.2 Interim Nourishments

Prior to the scheduled Major Nourishments after the initial sand placement, the need may arise for the placement of additional sand along Broad Beach to maintain Project objectives. Interim Nourishments, at the discretion of the BBGHAD and subject to BBGHAD finances, are proposed as an adaptive management action when beach width along the western portion of Broad Beach has narrowed to the point where seasonal fluctuations in beach width could result in revetment exposure and limited lateral beach access.

When the beach width trigger is reached and backpassing is not feasible, up to 75,000 cubic yards of Interim Nourishment sand (of same specification as original nourishment) would be obtained from an approved sand borrow site and deposited on Broad Beach. This volume will provide approximately 50 feet of dry beach width over a 2,000-foot reach of assumed sand deficit area. The sand source for these renourishments would be the same as for the initial nourishment, unless the applicable agencies approve other borrow sites and all details for construction described in the Project description would apply. A schematic plan and typical section of an Interim Nourishment is shown in Figure 5-13.



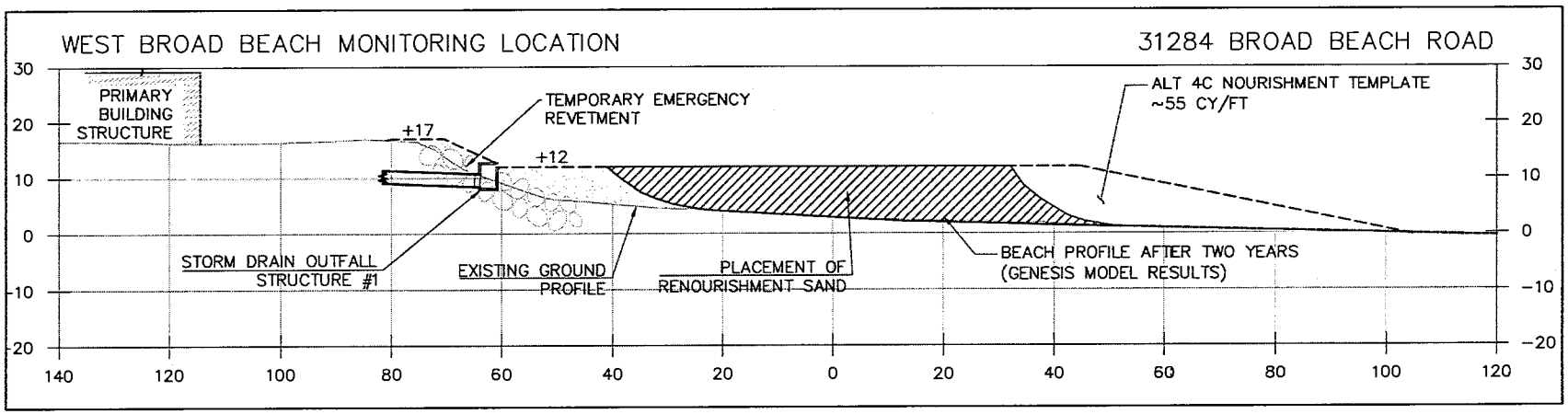


Figure 5-13. Schematic of Placement Area for Alternative 4C Interim Nourishment

5.10 Partial Revetment Relocation

As part of the long-term strategy for protection of structures, including septic systems, from coastal erosion, the CDP approves the rock revetment constructed in 2010, and requires the movement of the eastern 1,600-foot portion of the revetment, from 30980 to 30760 Broad Beach Road, landward of its current location. Similar to the initial construction of the emergency revetment, the cost of relocating the revetment will be borne by the individual homeowners and not a part of the GHAD assessment. The revetment relocation cost is estimated at approximately $1,500 per linear foot.

5.11 Project Construction

As proposed, initial construction for the proposed Project would involve the following sequence of events – some of the tasks may occur concurrently:

- Transporting the sand via truck from inland quarries.
- An estimated 21,500 truck trips would be required to transport the sand for the initial nourishment of 300,000 cubic yards from the Local Inland Sources.
- Redistributing the sand as needed with earthmoving equipment, such as bulldozers, and grading the beach fills to required dimensions; and
- Annual redistribution of the sand from the wide reach of the beach to the narrow reach using heavy equipment such as scrapers and bull dozers.

Note that if an alternative sand source is permitted in the future, the construction methods and sequencing may vary from this description.

5.11.1 Initial Project Construction Schedule

Initial and subsequent Major Nourishment construction activity is estimated to extend over approximately eight (8) months. The window of time when an eight-month Project may occur should extend from approximately September 15 to May 15 of the years of construction. The beach nourishment portion of the Project is anticipated to require approximately four (4) months, with physical construction of the dunes requiring another month. Planting, fencing and signage within the dunes are planned to require another 30 days. Most activities (earthmoving and dune planting) within the Project area would occur between 7 a.m. and 6 p.m. Specifically for inland material, hauling may require 70 working days at five days per week. The BBGHAD has proposed a 14-hour daily trucking schedule beginning at 7 a.m. and ending at 9 p.m. The only construction activities proposed to occur between 6 p.m. and 9 p.m. would be trucking on PCH and stockpiling activities at the Zuma parking lot and on the stockpile areas. No construction activities are proposed to occur west of Trancas Creek between 6 p.m. and 9 p.m. As proposed, the BBGHAD estimates that trucking activities would be completed after 14 weeks.

5.11.2 Construction Staging Area and Equipment

During the construction phase of the Project, the BBGHAD has proposed staging of construction equipment and materials at the western most parking lot of Zuma Beach. Additional temporary staging areas for storage or stockpile of sand may also be established on the beach immediately west of the Zuma Beach parking lot, while maintaining a 100-foot buffer from the Trancas Lagoon. Construction vehicles and equipment are planned to access the site via Pacific Coast Highway into the Zuma Beach parking lot. From the parking lot, equipment would travel down to the wet sand beach and along the beach in front of Trancas Creek and onto Broad Beach. The personnel requirements for the Project would include 12

workers during daytime construction hours (7 a.m. to 9 p.m.). Equipment anticipated to be necessary for construction activities associated with the proposed Project is summarized in Table 5-1 and construction staging and stockpile areas are shown in Figure 5-14.

Table 5-1. Preliminary List of Construction Equipment for the Broad Beach Restoration Project

Support Equipment	Vehicles
Contractor's mobile office (1)	Excavators (3)
Generators (estimated 2)	D-9 Bulldozers (2)
Portable restrooms (3)	Fuel truck (1, not stationed at site); Service truck (1)
Lighting (2 stands)	Delivery trucks (estimated 20)
"Grizzly" (hopper/conveyor system)(3)	Front-End Loaders (3)
Backhoes (3)	Full-size pick-up trucks (2)
Bob-cats (4)	Scrapers (3)
Plant delivery trucks for dunes (20)	Off-road 40-ton Dump Truck (7)

The BBGHAD has proposed that fuel trucks would travel to the staging area at Zuma Beach parking lot every morning to fuel Project equipment. Service trucks providing lubricant and oils for Project equipment would visit the staging area weekly for maintenance. All fueling and/or maintenance of Project equipment would be restricted to the Zuma Beach parking lot and staging area as CSLC policies strictly prohibit this type of activity occurring on or near tidelands. Disturbed areas of the parking lot would be repaved as needed after Project completion.

5.11.3 Construction Procedures

Best Management Practices

The BBGHAD has proposed the implementation of Best Management Practices (BMPs) throughout the construction phase of the proposed Project. As the proponent, the BBGHAD or its contractors would implement site-specific construction mitigation plans, including a traffic minimization plan and equipment refueling plan.

Beach Building

Beaches would be formed by placement of sand from the trucks. Sand would be graded and spread along the beach to the dimensions of the beach fill plan using two bulldozers.

Figure** 5-14. **Construction Staging & Stockpile Areas For Alternative 4C Project

Dune Building and Restoration

According to the BBGHAD's proposal, the dune would most likely be formed by deposition of sand from the trucking deliveries using loaders and backhoes. Sand would be graded and spread over the existing revetment on the east and up against existing foundations and seawalls in the west using smaller bulldozers. Existing large-diameter storm drains which currently terminate at the revetment would be protected with a new concrete weir box structure and integrated into the revetment. These drains would issue under the dune and through the beach by percolation. Following sand placement and planting of approved native dune flora, public access would be through existing vertical accessways owned and operated by Los Angeles County and private access to the area would be channeled through pathways to ensure protection of the restored dune habitat.

Transportation from Local Inland Sources

As proposed, trucks hauling sand from the Local Inland Sources and other construction equipment to the Broad Beach site would access the construction staging area located at the western end of the Zuma Beach parking lot via a new temporary driveway opposite Guernsey Drive on Pacific Coast Highway (PCH), and

exit the lot via the existing driveway connection to PCH. Trucks would travel southeasterly on PCH and enter the new access driveway on PCH opposite from Guernsey Drive. Although a detailed truck access plan has not yet been prepared, trucks would enter the west end of the Zuma Beach parking lot by turning right from PCH into the new driveway and queue in the parking lot to dump their sand onto grizzlies. After unloading, trucks would exit by heading to the existing driveway at the north end of the Zuma lot and turning left out of the driveway across PCH.[1] This left turn would need to be controlled with a temporary traffic signal as this volume and frequency of trucks could not safely cross the highway without such control. Employees would enter/exit the site via the main gate at the Zuma Beach County Park located east of the site.

The BBGHAD estimates a total of 21,500 loaded truck round trips for the transport of each 300,000 cubic yards of sand between the Local Inland Sources and Broad Beach sites assuming use of 14 cubic yard capacity trucks. It is anticipated that the haul route from the local inland sand source locations to the Broad Beach Project site will be one of those shown, with the possibility of an alternate route approved by any required municipality(ies) in Ventura County. in Figure 5-15.

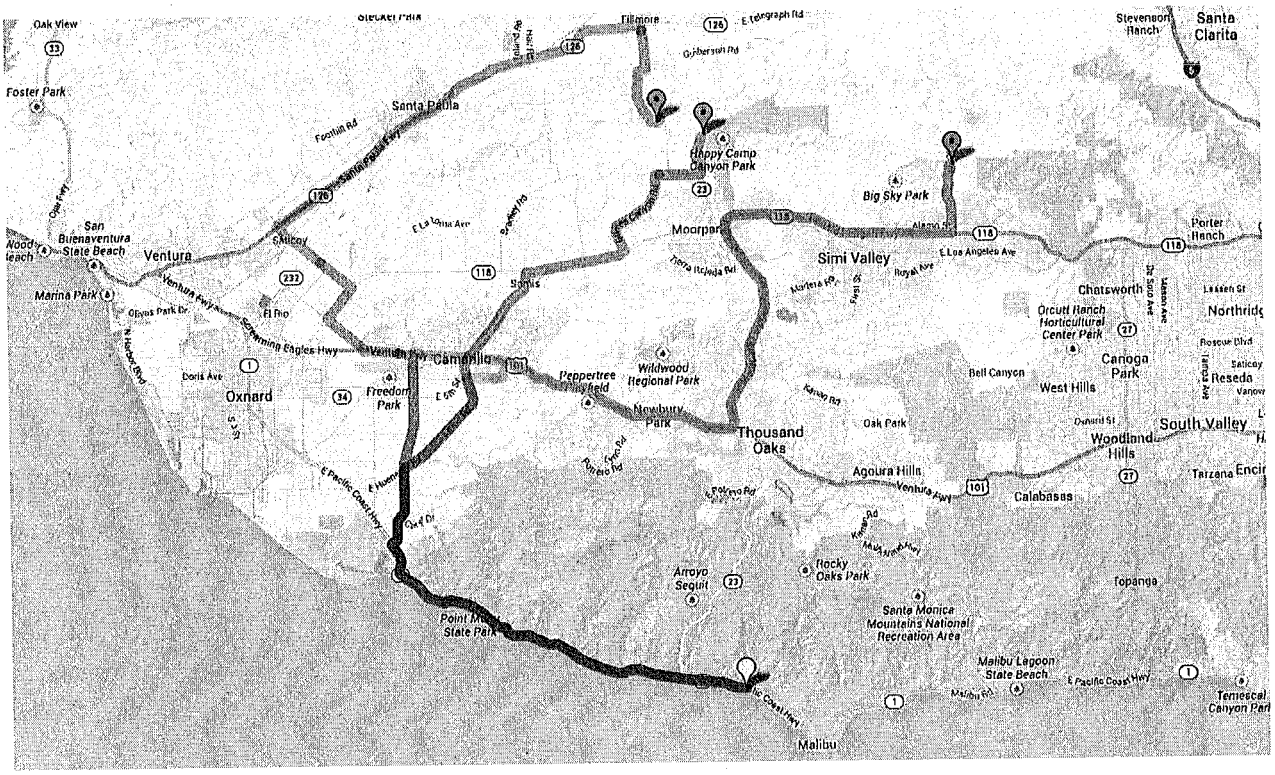


Figure 5-15. Proposed Haul Routes from Local Inland Sand Sources

Trucks would enter the parking lot, drive over a low "grizzly" (hopper and conveyor belt system) that will transport the sand into a stockpile on the beach. Front-end loaders will then load large 40-ton capacity off-road trucks and/or 30 CY scrapers that will drive the material down the beach and drop it within the

[1] Several access options were considered; however, the size of trucks prohibits using the PCH/Busch Drive underpass 1.5 miles south of the site. Traversing local neighborhoods was also considered and rejected due to local traffic impacts.

target placement area. Bulldozers would then shape the placement area into the desired beach fill template. Dunes would be built in a similar way with front-end loaders moving sand dropped along the toe of the revetment up into the dune template, with small dozers or "bobcats" forming the dunes into their final templates.

Public Access During Construction

As proposed, public access during nourishment and dune restoration activities would be maintained to the maximum extent possible. At least two weeks prior to commencing nourishment operations, signs notifying the public of the dates of nourishment operations would be posted at the public access points and at other highly visible locations along the beach. Public lateral access to Broad Beach would be restricted during working hours (7 a.m. to 6 p.m., Monday through Friday) due to the equipment traffic associated with the beach nourishment activities. The Zuma Parking Lot 12 and the beach area at the stockpile will be closed to the public during sand delivery hours of 7 a.m. to 9 p.m. On weekends and holidays, the BBGHAD has proposed that the beach would remain open for public access. As work progresses, public access to portions of the beach would be allowed during nourishment operations to the extent possible with implementation of a construction vehicle traffic management plan. For example, as beach placement is completed at the western end of the Project, this area would become available for public use. The areas of active work (e.g., access routes and areas where earthmoving equipment is being used, etc.) would be clearly delineated with access controlled by the contractor.

Backpassing Activities

Each backpassing operation would require approximately up to three weeks to complete, dependent on the amount of sand to be moved, and would include five personnel, one bulldozer, three scrapers, and a supervisor/foreman vehicle. Standard earthmoving BMPs would be used to reduce impacts from these operations.

The contractor would establish a haul route along the seaward edge of the beach, maximizing the distance between the work and residences. The contractor would establish fencing or signs to control public access to the work site. Access points through the work zone would be continuously manned by construction monitors. Sand backpassing implementation would be expected to commence in the fall season and is estimated to occur over a one-and-a-half to three-week (7 to 15 working day) period. The equipment would typically operate on a 12-hour basis between 7 a.m. and 7 p.m., and approximately 5,000 cubic yards per day would be moved.

Backpassing would utilize the west end of Zuma Beach's parking lot for a staging area, as described for beach nourishment. Up to 1.5 acres would be required. Ingress and egress for the construction equipment to the staging area would be via existing driveways off Pacific Coast Highway; access to the beach would be via the existing curb cut at the parking lot's west end. As proposed, the staging area would accommodate construction, materials, parking of support vehicles, and assembly of construction crews. The site would be fenced off and equipment will be stored overnight. This site was previously used for the 2010 emergency rock revetment Project.

6. Updated Benefits Assessment

Based upon guidance from the Order and, subsequently, the trial court's Statement of Decision, the BBGHAD Board requested an updated Engineer's Report to revisit the distribution of project benefits. Issues related to the coastal engineering aspects of the assessment deal with proportionality of each parcel's assessment to its share of the special benefits afforded by the Project, and are summarized as follows:

- The benefits and related assessment for west end properties which do not receive direct sand placement from the project should be revisited. Further, these properties either have pre-existing shoreline protective devices or are located on a bluff, precluding the need for the revetment which is also a part of the project for 80 of the 120 residences.

- Those residences east of the revetment do not receive the same special shore protection benefits as those behind the revetment. Even though the 80 properties paid for the revetment construction and will donate land and for its placement and fund its relocation without project funding, permitting and maintaining it are part of the project and BBGHAD will incur direct and indirect project costs due to it.

In order to meet these goals, the first step is to quantify the distribution of added beach width from the project by parcel location. This analysis includes areas of direct sand placement as well as the west end where sand transport modeling predicts project sand placed to the east will be transported westward. This analysis is presented in Section 6.1.

Section 6.2 evaluates the added shore protection benefit of the project revetment relative to the shore protection benefit provided by the added beach width. The focus of this analysis is to quantify the relative protection benefit of the revetment to each parcel.

6.1 Distribution of Average Gain in Beach Width

In order to further apportion the cost assessment to special benefit, results of the GENESIS Shoreline Evolution Model were used to evaluate the performance of the Project over a full 5-year beach nourishment cycle and to investigate beach width gained at each parcel within the Project. Based on the GENESIS model results, the amount of beach width added at a given location was averaged over the full nourishment cycle (five years) to provide a predictive measure of project benefits upon which a more refined benefit-based assessment can be developed.

6.1.1 GENESIS Model Application for Assessment of Added Beach Width Benefits

The Generalized Model for Simulating Shoreline Change (GENESIS) has been applied throughout the Project to predict the performance of a broad range of beach nourishment alternatives, including the approved Project Alternative 4C. Detailed discussion of the model selection, calibration, verification, and application is presented in *Coastal Engineering Report – Exhibit L to CDP Application 4-12-043* (Moffatt & Nichol, 2013). The predicted performance of the beach nourishment aspect of the Project has been subject to close scrutiny by the resource agencies, including the required modifications of the Project to avoid Project-related impacts to shallow water rocky habitat at the west end of Broad Beach.

GENESIS remains the appropriate model to use when seeking to predict the performance of beach nourishment projects over long time scales. There are more sophisticated 2D and 3D models capable of

modeling shoreline change in response to a single storm event (duration of 2-3 days), but these models are not capable of simulating the evolution of a beach nourishment project over a period of 5-10 years, as required for this Project. The United States Army Corps of Engineers' *Coastal Engineering Manual* (USACE, 2003) recommends use of GENESIS during detailed and final engineering phases of a beach nourishment project. The Manual does not distinguish between large-scale and more site-specific projects, but does recommend use of the model for more complicated shoreline situations like that presented at Broad Beach by the presence of Lechuza Point. The size of the project is not a significant factor, but rather the complexities of a site. Complexities include bathymetric irregularities such as headlands, points, reefs, varying shoreline orientation (curving planform), etc.

The BBGHAD Engineer has successfully applied the GENESIS model as a tool to predict beach nourishment performance. In each instance, the evolution of the beach nourishment area over time was predicted for project performance, and the predicted shoreline response was translated into depths of sand cover over the beach profile to understand potential effects to resources. The post-construction performance of both SANDAG projects (2001 and 2012) and the Bolsa Chica project (2006) demonstrated general conformance with model predictions.

- Bolsa Chica Beach Fill (as part of the Bolsa Chica Wetlands Restoration Project) – Constructed in 2006 placing 250,000 cy of sand on the beach;
- SANDAG Regional Beach Sand Project I – Constructed in 2001 placing fills at multiple sites (12) that vary in volume from 100,000 cy to 450,000 cy along a 30-mile coast that varies in planform;
- SANDAG Regional Beach Sand Project II – Constructed in 2012 placing fills at multiple sites (8) that vary in volume from 100,000 cy to 450,000 cy along a 30-mile coast that varies in planform; and
- Goleta Beach Stabilization Project that proposed placement of 500,000 cy of fill and a shoreline sand retention structure.

GENESIS model predictions are based on a simplified numerical model with synthetic wave conditions applied. The actual amount of sand transported along the shoreline will depend on the ocean conditions (weather, waves, and water levels) during and after construction. Numerical modeling of shoreline morphology is inherently imprecise because of the complexity of coastal processes. The GENESIS model is intended to provide a generalized long-term trend in shoreline response. Short-term changes in shoreline positions may vary from these results due to the unpredictable and complicated coastal processes which influence Broad Beach and neighboring beaches. The results can be relied on for anticipating general areas of accretion or erosion at orders of magnitude over large scales and relative differences between proposed nourishment volumes and shapes, rather than in predicting very precise, site-specific increments of shoreline movement over very small scales. This report reflects the best science now available to predict how added sand will move within the project timescale and, thus, the best science the assessment engineers might rely on to structure the assessment.

6.1.2 Model Predictions of Average Gain in Beach Width

Figure 6-1 illustrates the results of the GENESIS Shoreline Evolution Model for the Project (Alternative 4C), comprising placement of 300,000 cy of initial beach fill, and assuming a single 75,000 cy interim

nourishment at Year 2 intended to keep the western portion of the revetment fully covered in sand. The model results yield two important trends: (1) a clear illustration the gradual transport of the sand toward the east over time; and (2) the west end properties outside the direct sand placement area still receive sand. Note that sand backpassing, which will tend to reduce the net transport toward the east and hold sand within the Project area longer, is not included in the model results since the backpassing volumes are small and difficult to predict on an annual basis. Nevertheless, backpassing provides real benefits to parcels on the west end.

Figure 6-2 presents the average beach width added by the project over the full project nourishment cycle, which is at Year 4.5 since Year 5 would include the next 300,000 full nourishment. The graph clearly illustrates the eastern residences garner greater relative beach width over the nourishment cycle.

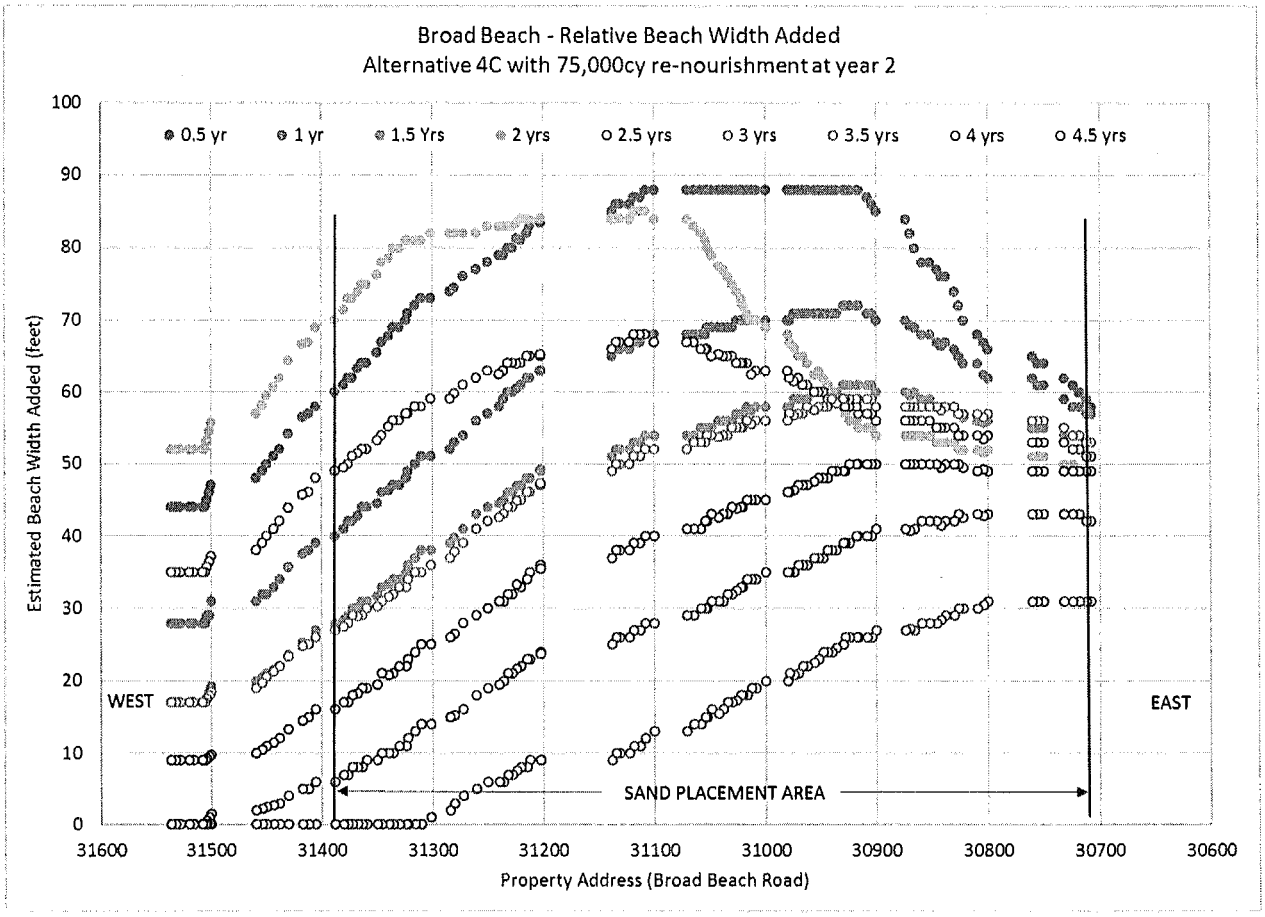


Figure 6-1. Shoreline Evolution Model Results - Beach Width Added by Address Over Time (Note: gaps in data points result from gaps in address numbers)

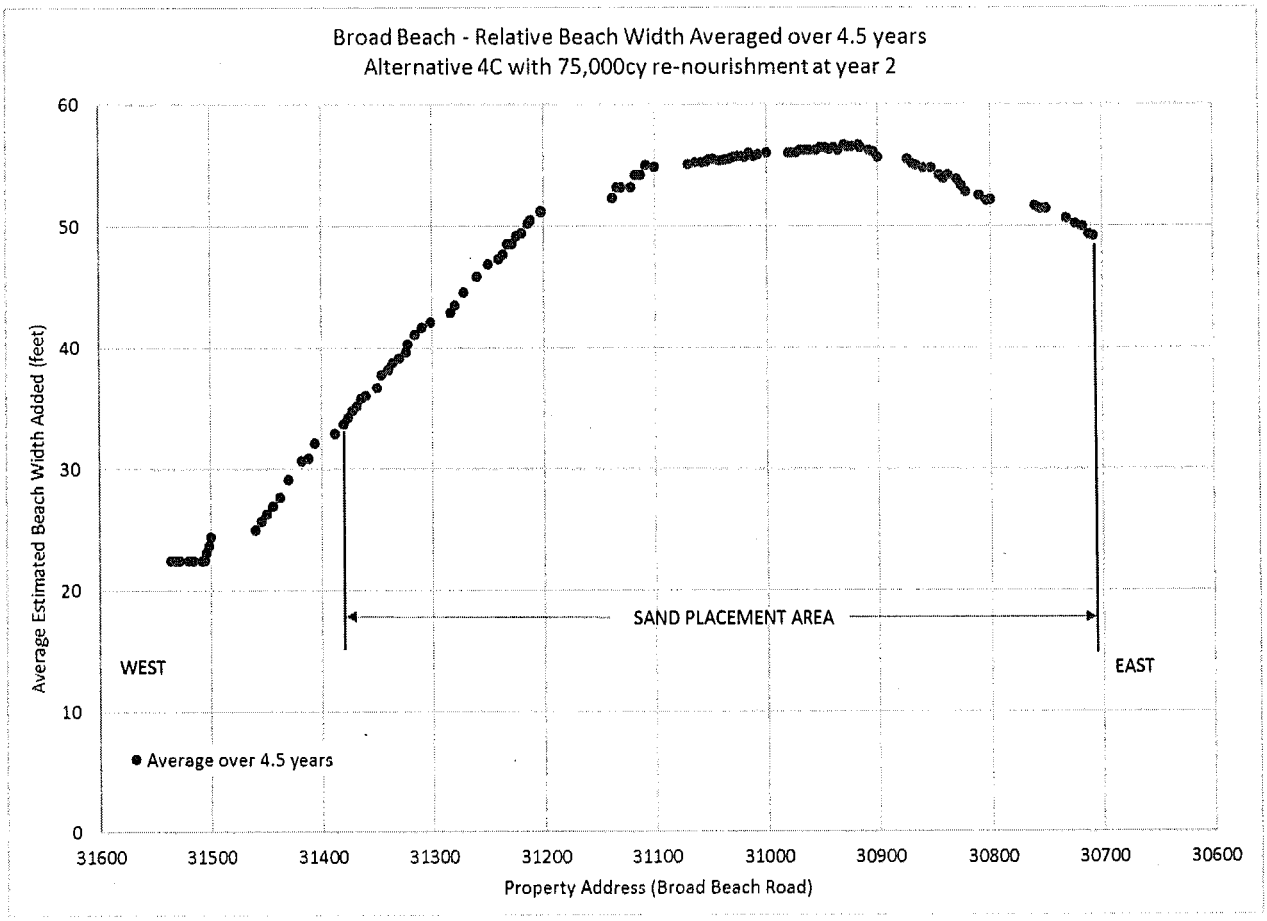


Figure 6-2. Average Relative Beach Width Added Over Full Nourishment Cycle by Address (Note: gaps in data points result from gaps in address numbers)

6.2 Discussion of Added Beach Width and Related Benefits at the West End

As can be seen in Figure 6-2, there is accretion of sand placed for the Project to the west of the direct sand placement area. As has been presented within this report, the western extent of the direct placement of beach nourishment sand is at 31380 Broad Beach Road. This reduction in the sand placement "footprint" was required to avoid impacts to sensitive nearshore habitat resources associated with both direct and indirect burial by fill sand. Direct impacts imply sand placed directly on sensitive habitat areas; indirect impacts result from westward and seaward migration of the initially placed fill. Both the analytical and numerical modeling tools used to predict movement of the beach fill material demonstrate that, while the majority of the sand is moved toward the east due to the prevailing wave direction, there will be transport of sand westward toward Lechuza Point as well, providing measurable dry sand beach and the related benefits of enhanced shore protection and recreational opportunities. Westward transport of sand is predicted to occur immediately during and following the beach fill due to the change in shoreline orientation caused by the initial fill itself. This simple concept is illustrated in Figure 6-3 below.

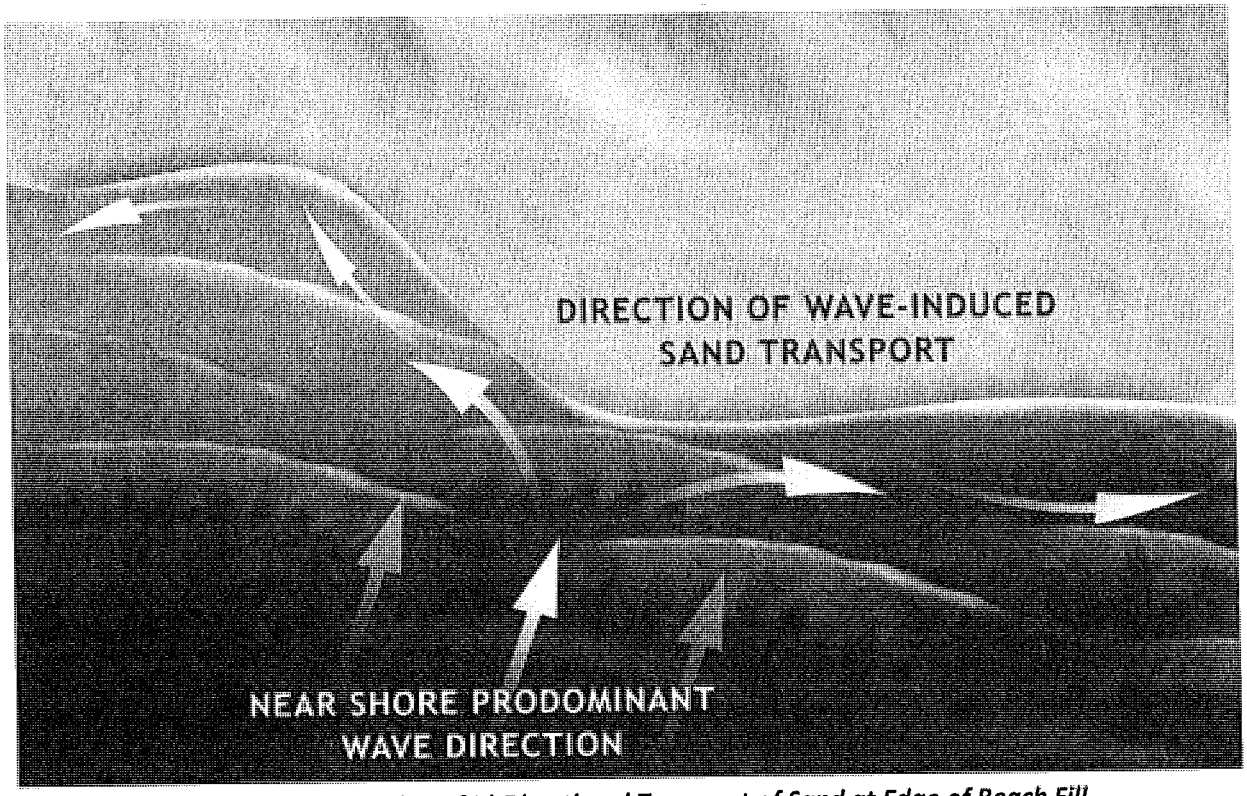


Figure 6-3. Illustration of Bi-Directional Transport of Sand at Edge of Beach Fill

The argument that the residences west of the direct fill placement area will not receive shore protection benefits from the beach nourishment is inaccurate. As shown in Figure 6-2, residences west of the direct sand placement area are predicted to receive an average of 20 to 30 feet of added beach width as a result of Project implementation. The BBGHAD consulting team has identified Project benefits to the west end residents as a part of the overall BBGHAD approval and permitting process. Among other points, many of the existing west end shoreline protective devices (SPDs), such as seawalls, are in various levels of repair/disrepair. These SPDs regularly require costly maintenance. Based on analysis of available data in 2014, there are 28 residential buildings along the west end of Broad Beach from Point Lechuza to 31346 Broad Beach Road, with a range of SPDs offering varying degrees of protection. Some residential structures are protected by a natural bluff, while others have engineered protection such as rock revetment, timber or concrete seawalls, or pile-supported foundations. While these structures offer protection from wave runup and overtopping, the structural stability of many seawalls may be compromised with continued shoreline erosion. For example, the exposed height of many structures increased by 4 to 5 feet from 2002 to 2004 due to lower sand levels along west Broad Beach. As the exposure height increases, the wave energy impacting these structures will also increase and could eventually compromise the stability of the structures.

The proposed beach nourishment project can directly benefit the performance and longevity of an existing seawall in two important ways. First, the beach nourishment is in effect adding soil to the seaward side of an existing seawall, thereby acting to better resist the soil pressures that act upon the landward side of the wall. Second, adding sand to a beach fronting a seawall that has been denuded of sand will move the wave breaking impact area seaward and away from directly impinging on the seawall. The wider beach

will allow wave energy to dissipate more gradually on the sloping sand beach, thereby reducing hydrodynamic loading on the seawall structure.

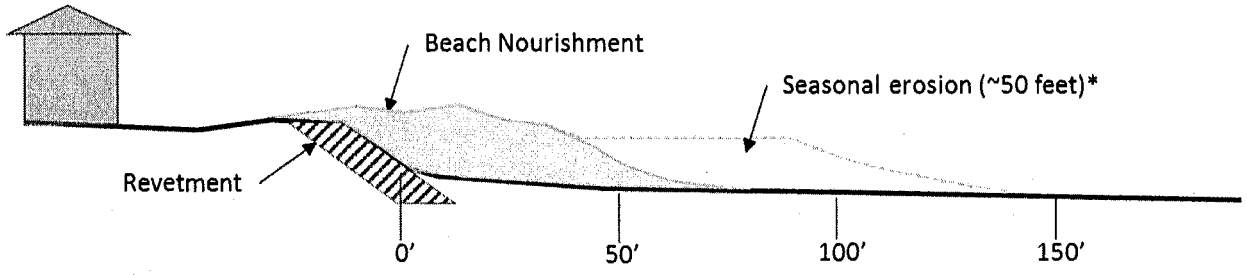
6.3 Relative Additional Benefit of Parcels with Project Revetment

As described in Section 2.3, the emergency rock revetment was constructed in response to significant shoreline erosion in Winter 2009/2010. The BBGHAD has pursued permanent permitting of the revetment as part of the Project to provide a last line of defense in the case of significant erosion of beach and dune material prior to re-nourishment. Hence, the revetment provides an additional shore protection benefit. This section provides a quantitative assessment of the benefit of the revetment relative to the shore protection benefit provided by beach width, and how these additional benefits are distributed along the project shoreline.

As part of the project entitlement process, M&N provided a quantitative analysis of the relative shore protection benefits of the beach and revetment. Specifically, as part of the Clean Water Act Section 404(b)(1) permit process, the US Army Corps of Engineers requested the following assessment of project alternatives as described in their Memorandum for Record dated October 19, 2015: *Percent damage prevented by the rock revetment and beach nourishment components (separate percentage for each component) for each alternative using wave run-up analysis, including description of analysis methodology and any assumptions made as part of analysis. If protection varies along different segments of the project for a given alternative, provide the percent damage prevented for each segment.*

This analysis is directly relevant to the question of proportionality posed by the Order, i.e. the shore protection benefit of the revetment relative to the beach nourishment. This information can inform the additional benefit gained by those parcels that are protected by the project revetment.

The first step in the analysis is to estimate the amount of wave energy dissipated by the beach, therefore representing the percentage of energy to which the revetment is not exposed. As the beach erodes, this protection provided by beach nourishment decreases and the revetment provides an increasing shore protection benefit. The percentage of protection provided by the beach is proportional to the beach width fronting the revetment. When the beach width exceeds 50 feet, it is assumed that the beach is 100% responsible for seasonal storm protection, as illustrated in Figure 6-4. For beach widths between 0 and 50 feet, the percentage of protection provided by the beach varies linearly from 0% to 100% - see Figure 6-5. Quantifying Beach vs Revetment Protection Benefit Ratios



*Based on CFC profile data and consistent with assumptions used in 404b alternatives analysis submitted to USACE (2015)

Figure 6-4. Storm Protection Provided by Beach and Revetment

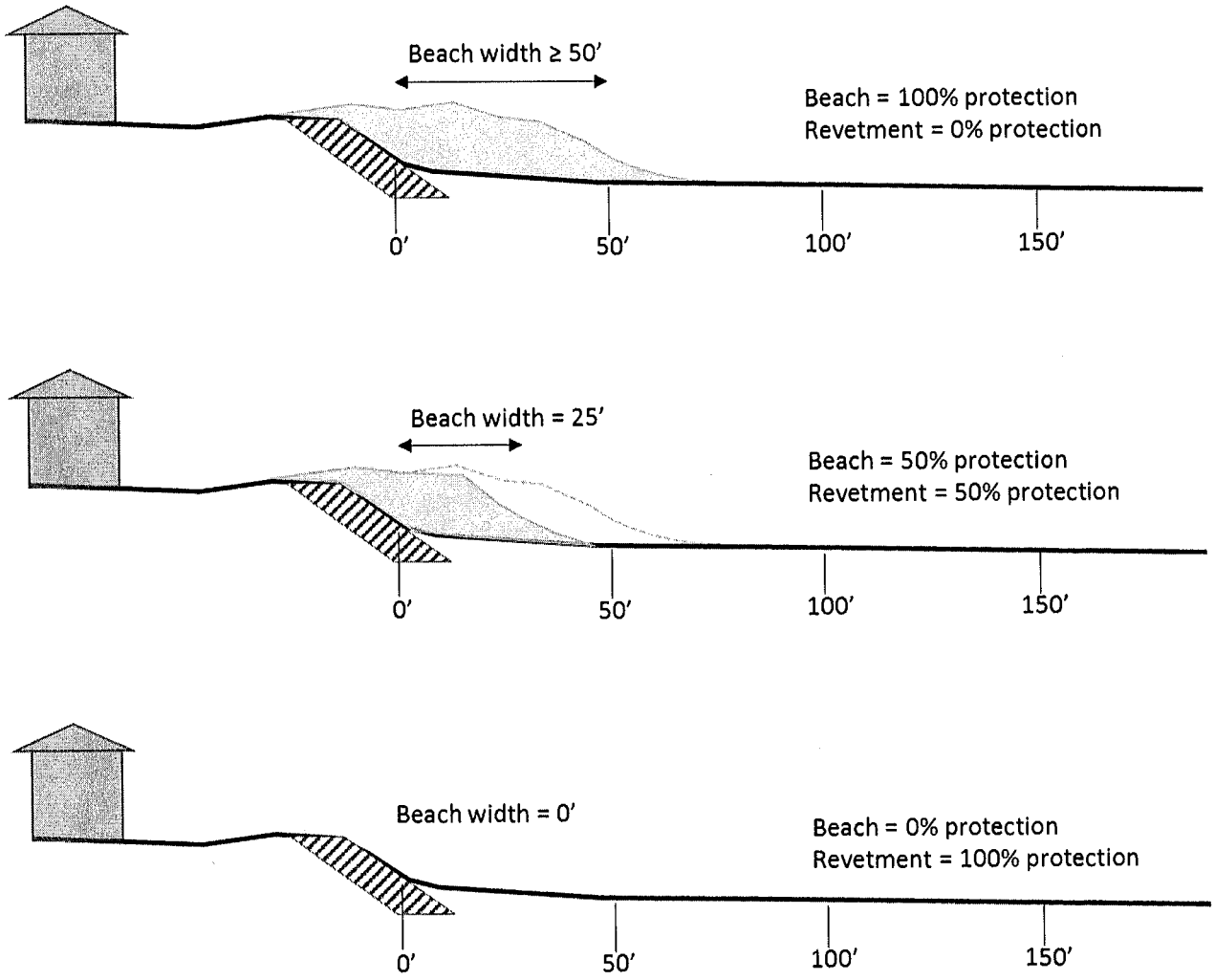


Figure 6-5. Quantifying Beach vs Revetment Protection Benefit Ratios

Since the revetment provides a last line of shoreline protection, it was assumed that it provides the remainder of storm protection benefit when the beach width is less than 50 feet. Also, since the beach width will vary over time and location, the relative shore protection benefit provided by the beach and revetment will also vary for these parameters.

Additional shore-protection benefit to those homes with the Project revetment over a full 5-year beach-nourishment cycle is approximately 15%, implying that while the beach nourishment provides the significant majority of the shore protection benefit of the project, the relative additional shore protection benefit accrued by homes with revetment is approximately 15%.

7. Summary Discussion of Project Benefits

Primarily, the Project seeks to provide the benefit of shoreline restoration and protection of coastal property from damages related to shoreline erosion and resulting direct exposure to high water-levels and storm waves. These benefits would be achieved by restoring the historically wide, sandy beach and dune system exemplified by Broad Beach of the early 1970s.

Implementation, maintenance, and protection of these improvements provide a special shore protection benefit to all property owners within the project area. Property owners derive special benefit based in direct proportion to their respective beach frontage and sand volume. Parcels with rock revetment constructed as part of the project also derive additional special short protection benefit ancillary to the beach sand nourishment.

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9. Appendix – Responses to BBGHAD Member Comments on Coastal Engineering Appendix

BROAD BEACH – M&N RESPONSES TO FACTOR EMAIL (17JAN20) REGARDING BEACH WIDTH ADDED ANALYSIS

On January 17, 2020, the BBGHAD received a letter from Max Factor ("January 17, 2020 Factor Letter"), which posed various questions regarding some of the analyses posed in the Coastal Engineering Appendix of the December 22, 2019 DRAFT Engineer's Report for the BBGHAD Project ("DRAFT ER"). The questions arrived after the close of the BBGHAD's public comment period for the DRAFT ER and did not call themselves or take the form of a Public Records Act Request under California law. The BBGHAD has no legal obligation to respond to the January 17, 2020 Factor Letter, but does so here as a courtesy and to strive for accuracy in the administrative record.

Below, we repeat each question received ("FACTOR QUESTION"), followed by the BBGHAD Coastal Engineer Response ("**BBGHAD COASTAL ENGINEER RESPONSE**").

FACTOR QUESTION:

To have a measurement of "beach width added" one must have made an assumption as to (i) the beginning point and (ii) the ending point from which the measurements are to be taken for the time periods reflected on the Figure 6-1 graph.

(i) With reference to Figure 6-1, what are the landward starting/commencement points used in the modeling for the addresses between 30700 on the east end and 31400 on the west end of Broad Beach?

BBGHAD COASTAL ENGINEER RESPONSE:

The BBGHAD Engineer used the GENESIS shoreline model to estimate "beach width added" along Broad Beach as a result of the proposed beach nourishment program. "Beach width added" was reported at 0.5-year intervals over a 5-year nourishment period in Figure 6-1. At each 0.5-year time interval, "beach width added" was measured as the distance between the initial shoreline and model predicted shoreline position along Broad Beach.

The initial shoreline is based on the January 2006 shoreline digitized from aerial imagery. This data was selected because good quality aerial imagery was available throughout the model domain and the shoreline position was representative of the sandy beach position prior to construction of the temporary sandbag/revetment structures in subsequent years. Since the model was used to predict shoreline/beach width change relative to the initial shoreline, the exact date and position of the initial shoreline are immaterial as long as the data is representative of the typical shoreline orientation throughout the model domain. Although the shoreline position is dynamic and has changed over time, the orientation along Broad Beach and Zuma Beach has been uniform. Therefore, the model-predicted "beach width added" results are valid.

FACTOR QUESTION: *Is it the "Control Line" where the dune plantings end?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Is it the toe of the current (i.e., temporarily permitted) rock revetment?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Is it the January 2010 Mean High Tide Line or one of the October 2009 Survey lines?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Is it the baseline as of January 2006 as of 2006 as determined by the CCC?*

BBGHAD COASTAL ENGINEER RESPONSE: January 2006 was used as the initial shoreline, as explained above, but was not determined by the CCC.

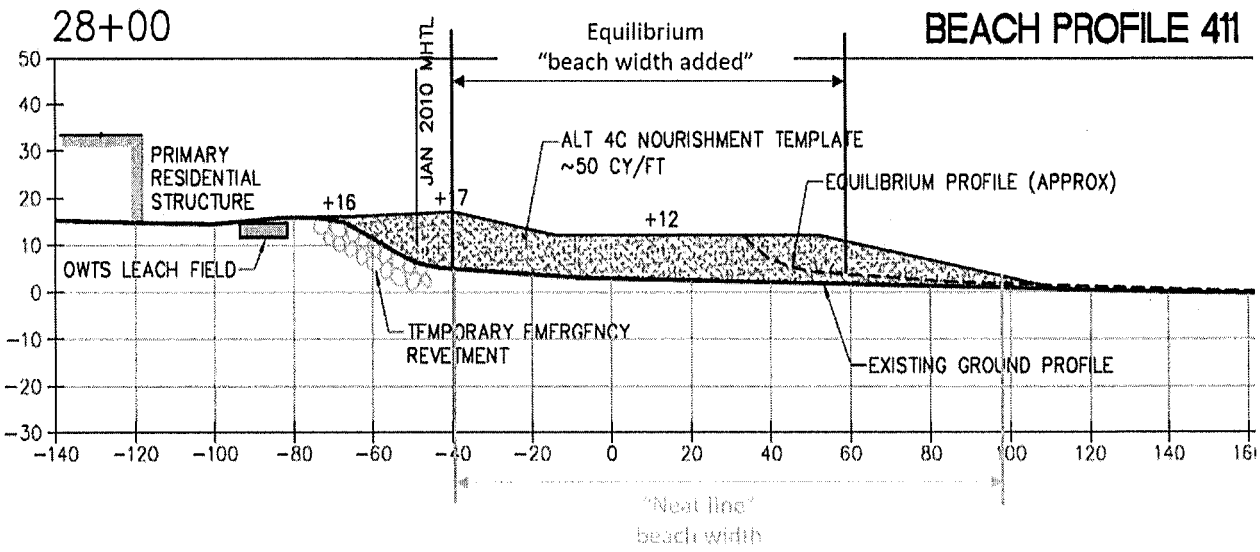
FACTOR QUESTION: *Or, is it some other designated location on Broad Beach that is not one of the foregoing?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *(ii) With reference to Figure 6-1, what are the seaward ending/completion points used in the modeling for the addresses between 30700 on the east end and 31400 on the west end of Broad Beach?*

BBGHAD COASTAL ENGINEER RESPONSE: The question is not completely clear or comprehensible. The response below is based on the assumption that "seaward ending/ completion points" refers to the amount of beach width added specified in the model and based on the nourishment template of Alternative 4C and shown on the 100% design drawings.

For each simulated nourishment event, an equilibrium "beach width added" is input where the nourishment occurs and over a specified placement duration. The equilibrium "beach width added" is less than the "neat line" width shown on the 100% design drawings because a portion of the sediment placed is assumed to disperse across the beach profile during and shortly after project completion. Based on the unit volume (cubic yards/linear foot of shoreline) proposed for Alternative 4C, the BBGHAD Engineer estimated the equilibrium "beach width added" to be about 100 feet, occurring over a placement duration of 4 months. The cross-section below illustrates the difference between the "neat line" width shown on the drawings with the equilibrium "beach width added" input used in the shoreline model.



The post beach nourishment shoreline is best illustrated by the "post fill" line shown on the SAR000031 graph. Sand placed during the approximately 4-month construction period will be exposed to waves, water levels, and currents -- which explains why the model predicted "post fill" line is not exactly 100 feet throughout the placement area. The "post fill" width varies from ~50 feet at each end of the project to ~110 feet at the center of the placement area.

All of the time intervals illustrated in Figure 6-1 are referenced to the "post fill" date. In other words, the beach width added at 0.5 years was based on model output 6 months after completion of the initial nourishment. At this time interval, beach width added varies from approximately 60 feet at each end of the project to approximately 88 feet in the central reach.

FACTOR QUESTION: *Is it the Mean Sea Level as of January 2010?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Is it the Mean Sea Level as of October 2009?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Is it the Mean Sea Level as of some other date subsequent to February 2015 (the date upon which Project 4C was first proposed)?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Is it the Mean Sea Level as of the "baseline date" of January 2006?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Is it the Mean Low Tide of January 2006?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Is it the Mean Low Tide of some other date subsequent to October 1, 2009?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Or, is it some other tide location and/or tide date on Broad Beach that is not one of the foregoing?*

BBGHAD COASTAL ENGINEER RESPONSE: The initial shoreline and model-predicted shoreline positions are representative of the mean high water shoreline at any given point during the model simulation.

FACTOR QUESTION: *Having a graph that purports to provide the "relative beach width added" from sand nourishment that does not provide the baseline parameters from which the calculations have been made precludes an analysis of whether the graph contains logically relevant and material information for the results of implementing Project 4C.*

Similarly, with reference to the graph that is entitled ALTERNATIVE 4C, REDUCED BEACH NOURISHMENT APPLIED EVERY FIVE YEARS GHAD PROJECT BEACH FILL PLACED OVER 4 MONTHS SHORELINE RESPONSE PREDICTED BY GENESIS and located on the BBGHAD website and designated in the Administrative Record as SAR 000031, the vertical axis is identified as "POST NOURISHMENT SHORELINE CHANGE (FT).

To understand the meaning and degree of relevancy of this graph, one must know the locations on Broad Beach represented on the vertical axis as "0" [ft].

Is it the January 2006 baseline?

BBGHAD COASTAL ENGINEER RESPONSE: Yes, the "0" mark on the vertical axis in this graphic is the same as the "0" mark in Figure 6-1. This baseline is representative of the initial shoreline, prior to placement of beach nourishment in the GENESIS shoreline model.

FACTOR QUESTION: *Is it the toe of the current (i.e., temporarily permitted) rock revetment?*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION: *Is it the Control Line? ...etc.*

BBGHAD COASTAL ENGINEER RESPONSE: No

FACTOR QUESTION/COMMENT: *Some conclusions are clear. Based upon the 100% PLAN set dated September 8, 2017, the "beach width added" calculations in both Figure 6-1 and in SAR000031 cannot be a measurement that commences with the most landward point of Project 4C sand deposition, nor can it be the location that commences with the most landward portion of the dune plantings.*

BBGHAD COASTAL ENGINEER RESPONSE: Correct, the "beach width added" calculations are not based on the landward most position of sand placement or dune planting. "Beach width added" provided in Figure 6-1 is based on the difference between the initial shoreline and the post-nourishment shoreline position, which varies with time and location throughout the 5-year model simulation.

FACTOR QUESTION/COMMENT: *Simply by looking at Transect 409 on the 100% Plans, the distance between the most landward portion of the sand nourishment and the end of the 70 foot wide elevated flat dry sand beach placement is approximately 160 feet without including the several additional feet of dry sand beach that slopes downward towards the Pacific Ocean from the +/- 15 foot above sea level height of the elevated flat portion of the sand deposition. At no time does either Figure 6-1 or SAR 000031 have "beach width added" calculations that approach the width of 160 + linear feet - even allowing for erosion at the rates described in the Shoreline Evolution Models that are part of the Administrative Record.*

BBGHAD COASTAL ENGINEER RESPONSE: Refer to design cross section provided above at beach profile 411 for an illustration of the "beach width added" for modeling purposes, which takes into account the equilibrium process and the "neat line" beach width used for design purposes to illustrate a specific volume of sand to be placed during construction.

FACTOR QUESTION/COMMENT: *For your convenience, I have attached two items that are currently on the BB-GHAD's website that may assist in clarifying the information we are requesting.*

Please advise as soon as practical, and hopefully at the BB-GHAD Board Meeting this Sunday, as to whether the BB-GHAD engineers are willing to share this requested information that is unquestionably available to them in order to prepare Figure 6-1 and to have prepared SAR 000031.

BROAD BEACH – M&N RESPONSES TO FACTOR COMMENT LETTER (13JAN20) ON DECEMBER 2020 DRAFT ENGINEER'S REPORT

Below, we repeat each question received ("FACTOR QUESTION"), followed by the BBGHAD Response ("**BBGHAD COASTAL ENGINEER RESPONSE**").

FACTOR QUESTION: **Under Item III. Discussion and Evaluation of the Special Benefits for Project 4C, Page 8, first full paragraph:** *For example, for the beachfront parcels fronted by the rock revetment, have the BBGHAD's engineers and appraisers differentiated between those parcels that are projected to receive the exceptional special benefit of a rock revetment that is of sufficient size and structural integrity to withstand a 100 year storm surge compared to the approximately 30 parcels landward of the projected relocated rock revetment that are to have much lesser geologic hazard abatement based upon the proposed relative lack of structural integrity of the relocated rock revetment that is to be based upon a "living shoreline design" as described in the Draft ENGEO Report at page 16?*

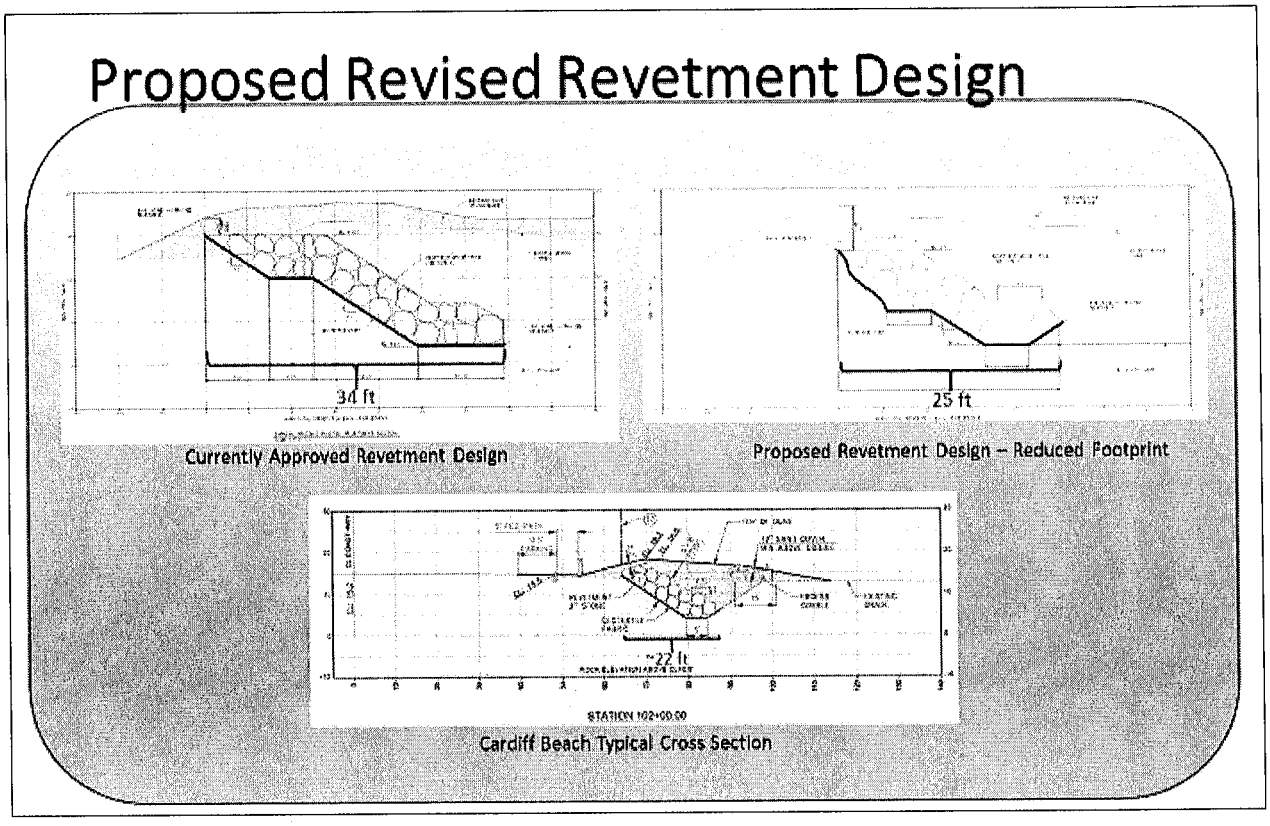
BBGHAD COASTAL ENGINEER RESPONSE: For some background, M&N proposed minor modifications to the pulled-back revetment section in response to a comment from the California Coastal Commission (CCC) Executive Director Jack Ainsworth during a meeting on November 29, 2018. During that meeting, Mr. Ainsworth suggested that anything the BBGHAD could do the make the project more like a "living shoreline" project would be considered favorably. He specifically mentioned the living shoreline project in Cardiff, CA. Since M&N served as the engineer of record for that project, we are very familiar with the details, and informed Mr. Ainsworth that the Cardiff living shoreline project design was based on the Broad Beach project design elements of a revetment buried under dunes. In a subsequent presentation to the CCC on May 13, 2019, M&N presented the following two slides relating to the living shoreline design modification:

Additional measure to further enhance environmental quality of amended project

- BBGHAD proposes to further reduce the footprint of the eastern 1,600 ft pulled back revetment to more closely match other recently approved "Living Shoreline" projects.
- CDP NOI Special Condition 1.A.(1) allowed *minor modifications to the revetment design to ensure structural stability*, which were included in the current design plans, resulting in a wider footprint revetment.
- Modified "Living Shoreline" design will still conform closely to the existing and remaining revetment to the west.

Per the third bullet in the slide above, the living shoreline design still conforms closely to the existing western portion of the revetment, which will not be relocated or modified. In fact, the revetment design

cross section matches the 2010 emergency revetment design used for locations without existing sandbags fronting the property.



The proposed living shoreline revetment design shown in the top right of the above slide closely matches the existing revetment design including crest elevation, toe elevation, footprint width, and armor stone size. The larger revetment section on the upper left was initially proposed to modify the existing revetment since the Coastal Development Permit allowed some *minor modifications to the revetment to ensure structural stability* (see first slide, bullet 2). However, based on the Executive Director's comments, it was decided to reduce the revetment section to essentially match the current revetment design.

Thus, our response to the comment is that the structural integrity of the pulled-back living shoreline revetment section and the existing revetment section to the west are the same (excluding the westernmost nine parcels, which have a more robust revetment design – justification for this difference has been addressed in earlier reports). Accordingly, we do not change any conclusions stated in the Coastal Engineering Appendix or any other M&N analysis because of the change to the pulled-back living shoreline revetment design.

FACTOR QUESTION: **Under Item III. Discussion and Evaluation of the Special Benefits for Project 4C, Page 8, second full paragraph:** *If not, what is the foundational information that justifies assessing parcels protected by the revetment as if each are more or less similarly protected when the very same engineers who designed a "portion of the original rock revetment" and the proposed "relocated rock revetment" have intentionally designed the proposed "relocated rock revetment" to have far less structural integrity than one that may withstand a 100 year storm?*

BBGHAD COASTAL ENGINEER RESPONSE: The relocated rock revetment will have equivalent structural integrity as the existing revetment to the west, excluding the westernmost nine parcels that have a more robust revetment cross section. Since the pulled back revetment section will be relocated landward, it stands to reason that it will be subject to less wave attack than the revetment section to the west.

M&N RESPONSES TO GEOSOILS REPORT DATED APRIL 14, 2020

The following summarizes our review of the GeoSoils Incorporated (GSI) letter report dated April 14, 2020 with the subject – *Updated Coastal Engineering Review and Analysis for Broad Beach Geologic Hazard Abatement District Documents, Malibu, California.* The 15-page letter report with multiple attachments is organized with the following headings:

- *Background*
- *Significant Project Change*
- *Cardiff Living Shoreline Project*
- *West End Comments*
- *Discussion*
- *Closing*

The following provides our responses to key comments and claims made by section.

BACKGROUND

GSI COMMENT: Page 2 - The report references USACE 1994 tables for storm-induced vertical scour and horizontal erosion within Reach 2, including vertical scour of 5 to7 feet (2- to 5-year return period storm event) and horizontal erosion of 60 to 120 ft (2- to 100 year return period storm event). The report states the total loss of beach since 1975 to be 1,125,000 cubic yards based on average annual erosion rates. The report also states that the M&N beach nourishment modeling should have been calibrated to reproduce this undisputed historical data.

BBGHAD COASTAL ENGINEER RESPONSE: M&N nourishment model (GENESIS) intended for simulating long-term shoreline evolution in response to beach fill over periods of 5 to 10 years. The model was not intended to simulate short-term and dynamic beach profile changes resulting from extreme storm events and cannot be calibrated to such events. The GENESIS model was calibrated to the observed long-term trends of shoreline erosion along Broad Beach as described in the Coastal Engineering Report (Exhibit L to CDP Application 4-12-043).

M&N also performed XBeach modeling to evaluate the short-term dynamic beach profiles changes that would occur in response to an extreme coastal event. This modeling effort is described in the Coastal Engineering Report and predicts horizontal erosion similar in magnitude as the USACE events. While these events can result in significant short-term beach losses, they are often accompanied by a seasonal recovery in the beach profile during periods of mild wave energy, typical during the summer months.

GSI COMMENT: Page 3 - The report states that the existing revetment has been in place for about 10 years and has provided the necessary protection. The report then states that *the height of the revetment is at or above +16 feet MLLW.*

BBGHAD COASTAL ENGINEER RESPONSE: This latter statement regarding the revetment height is incorrect. Per the Alternative 4C Project Description (M&N, 2015), *the revetment rises 12 to 15 feet above the average low tide elevation (mean lower low water, or MLLW) at this beach, with an average crest elevation of +13 feet MLLW.* This statement is corroborated by a revetment topographic condition survey conducted in 2015 (KDM, 2015).

GSI COMMENT: Page 3-4 - Report states - *In order to permit the revetment, dune restoration and beach nourishment were required by the California Coastal Commission (CCC).*

BBGHAD COASTAL ENGINEER RESPONSE: This statement and ensuing discussion in the GSI report is incorrect and completely mischaracterizes the overall intent and goals of the Project. The Broad Beach Restoration Project was initiated in July 2009. As described in the Executive Summary of the Phase 1 Report (M&N, 2010),

> *The ultimate objective of this restoration project is to design, permit, and implement a shoreline restoration program that balances erosion control, property protection, improved recreation and public access opportunities, aesthetics, and environmental stewardship.*

Results of a preliminary screening analysis identified three (3) alternatives as viable candidates for the long-term restoration of Broad Beach:

- Alternative 1 - Beach Nourishment and Dune Restoration with Buried Temporary Revetment
- Alternative 2 - Beach Nourishment and Dune Restoration with Buried Long-Term Revetment
- Alternative 3 - Alternative 1 or Alternative 2 Augmented with Sand Retention Reefs

As stated in Section 2.3 Emergency Shore Protection of that report:

> *During the preparation of the Phase I technical studies, observations of the Broad Beach shoreline indicated an unexpected significant narrowing of the beach in December 2009, resulting in widespread failure of the existing temporary emergency sandbag revetments, especially at the west end of the beach... It became evident that these temporary structures would not provide sufficient shore protection for the upcoming winter. Acute and significant erosion was proceeding, resulting in significant loss of dune habitat and threatening of residential structures. Undermining and failure of several approved 'On-Site Waste Water Treatment Systems' (OSTs) was also imminent without immediate action. Combined with the prediction of moderate to severe El Niño conditions for the upcoming winter, the need for immediate emergency action became apparent. As a result, the TPOA was forced to seek an Emergency Coastal Development Permit to implement an interim shore protection measure to halt the critical erosion until the longer term project is in place. An emergency temporary rock revetment was considered the minimum action necessary, and is the least environmentally damaging alternative.*

GSI COMMENT: Page 4 – Paragraphs 1 and 2 state that 100 feet or more of new beach could be removed every 2 years, and a nourished beach 10 feet above MHTL and 50 feet wide will only add 6 inches to the beach profile, extending out 100 feet to -30 feet MLLW with an unmeasurable impact on wave energy.

BBGHAD COASTAL ENGINEER RESONSE: Presumably these statements assume the nourished material is spread uniformly across the entire profile. This does not consider the effects of grain size. The proposed source material will be coarser than native sand and will likely stay higher on the beach profile for a longer time, offering a wider buffer for high tides and large swells. The effect of fill grain size on dry beach width added is described in detail in the Coastal Engineering Report (Exhibit L to CDP Application 4-12-043).

GSI COMMENT: Page 4 – Further misunderstanding or misrepresentation of Project purpose – Paragraph 3 states: "*The revetment serves the purpose and objective of the project... The BBGHAD has morphed the*

purpose of the project to restoring the sandy beach to provide natural shore protection and recreational benefits."

BBGHAD COASTAL ENGINEER RESPONSE: Incorrect statements. Per the previous response, as well as project information that has been widely shared with the homeowners throughout the project development process, the Project has considered beach nourishment with dune restoration as a primary objective from the outset.

GSI COMMENT: Page 4 – More from Paragraph 3 – *"Not only is the BBGHAD being required to restore a beach and dune where a beach and dune do now want to naturally exist..."*

BBGHAD COASTAL ENGINEER RESPONSE: Inaccurate statement. M&N and its team of subconsultants have clearly shown that a beach and dune system did naturally exist at Broad Beach until the 1970's, and long-time residents further corroborate that Broad Beach was, indeed, a broad beach. The purpose of the Project is to restore the former beach condition which has gradually diminished since the 1970's due to an apparent sediment deficit. This information is well-documented in numerous project technical reports.

GSI COMMENT: Page 4 – Paragraph 4 – States the revetment is providing shore protection of improvements (implying beach and dune would be ineffective in reducing hazard exposure of improvements).

BBGHAD COASTAL ENGINEER RESPONSE: The revetment alone is not designed to withstand a 100-year event, especially with continued erosion of the beach profile and regular wave attack. All the project elements (beach fill, dune and revetment) function together to provide a buffer against erosion, high tides and storm waves.

GSI COMMENT: Page 4 – Paragraph 5 - Estimated costs of revetment & seawall range from $3,500-6,000/ft and a project impact fee of $1,000/ft.

BBGHAD COASTAL ENGINEER RESPONSE: These estimates significantly underestimate the cost of mitigation for a "hard protection only" alternative. Most likely the California Coastal Commission (CCC) would require a structure along the stringline of primary residences, meaning all onsite wastewater treatment systems (OWTS or septic systems) need to be relocated which would be very costly and may not be feasible for some parcels. Furthermore, input from the Executive Director of the California Coastal Commission indicates the stated impact fee of about $1,000 per ft is a significant underestimate.

SIGNIFICANT PROJECT CHANGE

GSI COMMENT: Pages 5-7 – The GSI report presents an analysis showing increase in wave overtopping for a reduction in revetment crest. Statements imply the project includes lowering of the revetment from +15 ft MLLW to +13 ft MLLW.

BBGHAD COASTAL ENGINEER RESPONSE: M&N is unclear as to how the analysis presented is relevant to the Project. Lowering of the existing revetment is not proposed, only relocating it landward. As a point of clarification, the Coastal Development Permit (CDP) approved design plans show the pulled back revetment crest elevation to be raised higher than the existing (to +15 ft MLLW) given the guidance in the Special Conditions which allowed "minor modifications to the revetment to ensure structural stability." However, based on the CCC Executive Director's comments (M&N 2020, p.71), M&N decided to restore

the pulled back revetment design to better match the existing, in order to better represent a "living shoreline" project.

Hence, the relocated revetment will be similar to the existing revetment, which has an average crest elevation of about +13 ft MLLW. Since the emergency revetment crest is lower than typical for a permanent structure, the beach and dune system function to enhance the overall protection of the project. The beach dissipates wave energy and limits the height of breaking waves at the revetment. The dunes system, most of which is above and behind the revetment reaches elevations of +17-20 ft MLLW and will reduce the overtopping of the revetment in an extreme storm.

Finally, it is important to note that the existing revetment, with an average crest elevation of +13 ft MLLW has provided a good shore protection performance record for the past 10 years.

CARDIFF LIVING SHORELINE PROJECT

GSI COMMENT: Page 7 – GSI report cites that the Cardiff Living Shoreline (CLS) project is similar to the proposed Project and would be *"an excellent calibration of the predicted nourishment response for the BBGHAD."*

BBGHAD COASTAL ENGINEER RESPONSE: The two projects are similar in that they have the same general elements – a buried revetment covered with dunes and fronted by beach nourishment. However, the CLS project only includes the revetment and dune restoration project elements. The beach nourishment element was a part of the San Elijo Lagoon Restoration Project (SELRP).

Use of the CLS project as a proxy for Broad Beach predictions is of limited value, due to a significant difference between the two projects. The grain size used in the 300,000-cy nourishment for the CLS project was significantly finer than the native grain size material because it was dredged from lagoon deposits as part of the SELRP. Finer-than-native fill material results in less dry beach width added because more of the fill material is distributed to the submerged portion of the beach profile. For the BBGHAD Project, one of the key benefits of the approved sand sources is that the grain size is significantly coarser than native. This is one of the most important design parameters in beach fill design. Coarser-than-native sand will last much longer than sand that is finer than native, as demonstrated by the performance of the various beach fills performed for SANDAG as part of RBSP I and II (discussed in detail later in this document).

Statements made in the GSI report regarding the CLS modeling predictions versus monitoring performance are incorrect because they fail to distinguish between the modeling performed for this Project and the nourishment performed as part of the SELRP. The CLS modeling effort was solely for the living shoreline elements of the project which included a cobble berm, restored dune and revetment. The modeling results shown in the GSI report did not include any beach nourishment element because the volume and timing of the SELRP was uncertain when the modeling was performed. The purpose of the CLS XBeach modeling was to simulate the effects of an extreme event on the living shoreline project elements. Therefore, any comparison between the CLS model results and the performance of the SELRP nourishment compares apples and oranges.

GSI's focus seems to be on the performance of the SELRP nourishment and observed erosion during the December 2018 storm event. The performance of the SELRP nourishment at Cardiff is worth discussing provided the correct monitoring data are used to evaluate the fate of this beach fill. Coastal Frontiers

Corporation was tasked with monitoring the SELRP beach nourishment projects and their December 2019 monitoring report provides the best data to evaluate the performance of the 300,000-cy nourishment placed at Cardiff State Beach. The most recent CFC report is attached to this response document and the mean sea level (MSL) beach widths are described in the table below.

MSL Beach Widths at Cardiff Receiver Site based on Table C-1 (CFC, 2019)

Transect	MSL Beach Width (ft from landward limit of sand)				
	Feb 2018 (Pre-fill)	June 2018 (Post-fill)	October 2018	June 2019	October 2019
SD-0630	180	251	322	233	253
SD-0628	231	337	371	291	304
SD-0626	209	340	336	255	292
SD-0625	205	290	292	211	246

This table illustrates how the SELRP nourishment at Cardiff has resulted in about 67 feet of added beach width after approximately 1.5 years when compared to the pre-fill condition. The GSI report focuses on erosion during the December 2018 event but fails to describe the recovery in beach width that occurred over subsequent surveys, despite the fact this is clearly illustrated on the 10/25/2019 profiles in Figure 2 of the GSI report.

To summarize, the SELRP nourishment project has performed as expected and consistently with what would be expected from a fine-grained beach fill where the material is distributed more uniformly across the beach profile. The erosion which occurred during the 2018 storm event is part of the equilibrium process and typical of beach fill evolution. The beach recovered well during the summer months as illustrated by the June 2019 survey results and continues to provide benefits to Cardiff State Beach over 2 years since placement began. In fact, the American Shore and Beach Preservation Association (ASBPA) just announced Cardiff State Beach to be one of the nation's Best Restored Beaches for 2020 – see https://dredgewire.com/article/13355/2020-vision-for-our-coasts-asbpa-names-its-best-restored-beaches-for-2020.

GSI COMMENT: Page 12 – First paragraph states that the BBGHAD project analysis needs to focus on extreme events, not average conditions.

BBGHAD COASTAL ENGINEER RESPONSE: M&N performed similar XBEACH modeling of extreme events for the Broad Beach project. There is always a possibility of an extreme event causing significant erosion. However, the probability of a 100-year event in the first five years of the Project are relatively low. If such an event were to occur there would be significant erosion of the beach, but this erosion is the process by which storm wave energy is dissipated. If no beach fill or dunes were in place, the existing revetment would likely experience damage and significant overtopping during a 100-year event which would increase the risk of damage to improvements in the BBGHAD.

GSI COMMENT: Page 12 – Second paragraph claims that M&N did not apply the standard of coastal engineering practice for beach nourishment.

BBGHAD COASTAL ENGINEER RESPONSE: M&N employs one of the largest collections of coastal engineers, modelers and scientists of any firm in the United States. We are constantly evaluating and

applying new and improved numerical modeling techniques on projects around the world. However, simple "one-line" models such as GENESIS continue to be the most common tool applied to simulate long-term shoreline evolution of beach nourishment projects. While computing power continues to advance, we expect more sophisticated numerical models will become available in the future to better predict the performance of nourishment projects, but these advanced models have yet to be widely used or accepted.

GSI suggests the performance of past projects is a better indicator of the performance of Broad Beach. While performance of past projects is certainly useful, it is important to account for major design parameters such as fill grain size and volume placed per foot of shoreline. An ongoing federal project in San Clemente led by the USACE is an example of an approach to beach nourishment performance calibrated to the performance of past beach fills in Southern California.

The *San Clemente Shoreline Feasibility Study* is a federal project led by the USACE to implement a beach nourishment program to provide shoreline protection for the SCRRA railroad and other structures near the San Clemente Pier. A statistical model was developed by the USACE Los Angeles District to evaluate the life cycle costs over a 50-year project duration, which are largely based on the number of nourishments required to maintain a desired beach width. The proposed San Clemente project will involve an initial nourishment of 251,000 cubic yards along a 3,400-foot length of shoreline, similar in size to what is proposed for Broad Beach. The USACE statistical model used a Monte Carlo simulation to randomly select parameters for long-term and storm related erosion based on performance of the SANDAG Regional Beach Sand Project (RBSP) I beach fill project at Oceanside. M&N was the engineer for that project and applied the same modeling tools and approach as those applied on the Broad Beach Project.

Output from the statistical model indicated the most likely nourishment interval would be about 5.5 years, resulting in a total of 9 nourishment events over the 50-year project life. The statistical range in model output is illustrated in the histogram below with the number of fills ranging from a minimum of 5 to a maximum of 15. In other words, the statistical model results indicate each 251,000 cubic yard nourishment would last between 3.33 and 10 years depending on the random nature of shoreline erosion processes.

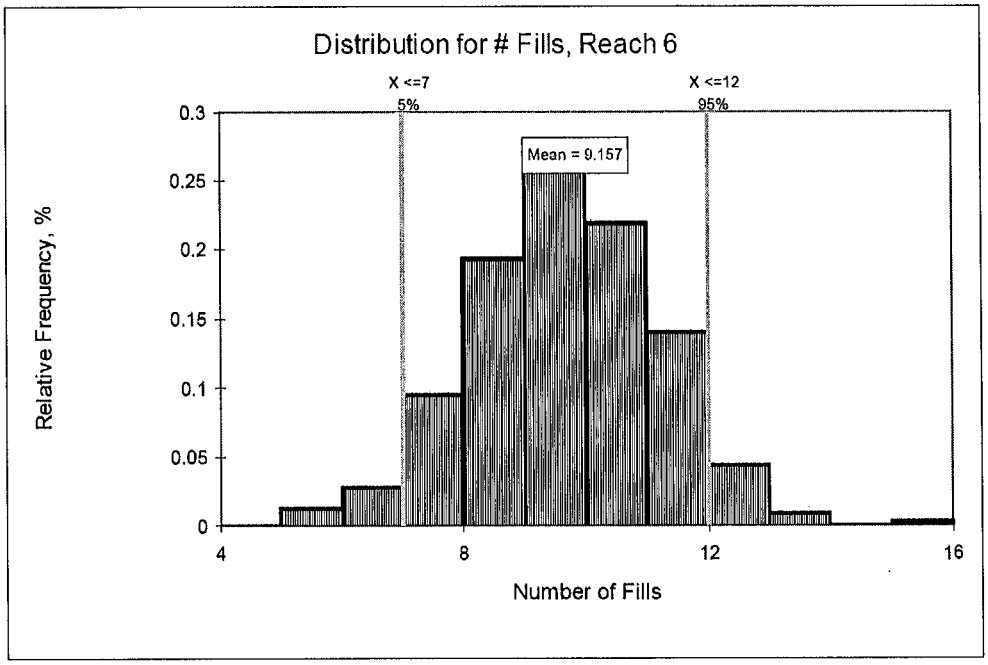


Figure 6-3 Model Output Histogram for Number of Fills Required for Reach 6

The statistical analysis applied by the USACE on the San Clemente Shoreline Feasibility Study provides a useful example of an alternative approach to predicting beach nourishment performance and the statistical uncertainties associated with such an effort. Given the scale of the San Clemente project and simplified regional assumptions for wave climate and erosion processes, the results are comparable to what would be expected if this analysis were applied to the BBGHAD Project. More details about this project and the modeling effort can be found here: https://www.govinfo.gov/app/details/CDOC-112hdoc143/context.

GSI COMMENT: Page 12 – Third paragraph states that the real shore protection for the existing improvements is the revetment, and further claims that M&N and ENGEO analyses use average beach width conditions to *"prove their assertions."* Finally, the paragraph closes with the following statement: *"The beach nourishment and dune construction are a condition of issuance of the permit. They are required to enhance the environment and provide a public beach."*

BBGHAD COASTAL ENGINEER RESPONSE: To reiterate earlier responses and clarifications, the overall purpose and goals of the BBGHAD Project were to include: (1) beach nourishment; (2) dune restoration; and (3) buried shore protection. The project did not add (1) and (2) to later permit (3).

WEST END COMMENTS

GSI COMMENT: Page 12-13 – Report states that any added beach width at the west end would not be of any special benefit to the homeowners, noting that the added beach width predictions for the west end are *"suspect at best and just unrealistic at worst."*

BBGHAD COASTAL ENGINEER RESPONSE: Due to fill grain size and other variations from the BBGHAD Project, the CLS project is not valid for direct comparison of westward sediment transport toward Lechuza Cove. History of monitoring data at Broad Beach shows significant westward transport and beach

accumulation at Lechuza Cove. This can be illustrated with photos and beach profiles measured since 2009 by Coastal Frontiers Corporation (CFC, 2018). More sand in the system would simply mean more accumulation of dry beach in Lechuza Cove. While GSI states shoreline protective devices are designed for wave impact forces and scour/abrasion on the structure, they are subject of periodic repair and replacement at significant cost. Any reduction of the frequency and/or severity of the wave attack and scour/abrasion on the structure resulting from additional beach width would clearly have a direct benefit.

DISCUSSION

GSI COMMENT: Page 13-14 – In this section of the GSI report, claims include shortcomings in modeling performance of the project and repeated statements about importance of revetment versus beach fill. GSI further asserts the revetment provides 80% of protection, beach provides 15% and ESHA dunes 5%. The text also states beach width added calculations should be referenced to 2020 shoreline (face of revetment, not 2006 shoreline)

BBGHAD COASTAL ENGINEER RESPONSE: Beach width added distances are measured from the simulated "initial shoreline" in GENESIS. The orientation of this shoreline was based on the 2006 shoreline, but the date of this shoreline is not important. This is simply the starting point for the shoreline evolution model. We understand the Broad Beach shoreline position is dynamic and changes on regular basis. However, the orientation generally remains the same.

CLOSING

GSI COMMENT: Page 14 – Report states that performance of shore protection is a good indicator of near-term performance, and that the BBGHAD revetment has performed as expected for the past 10 years.

BBGHAD COASTAL ENGINEER RESPONSE: This is an accurate statement except that GSI is under the apparent impression that the crest elevation is at or above +16 ft MLLW. It is not. It averages at about +13 ft MLLW, and the proposed project revetment will be the same either at the western reach which will remain as is, or the eastern pulled back reach, where it will also have the same crest elevation, just farther from the shoreline. The with-Project condition will have added beach width and dune volume to further reduce storm-induced wave overtopping and flooding.

M&N RESPONSES TO M. FACTOR EMAIL DATED APRIL 14, 2020

Comments are identified in the text number "one" through "twelve" plus an additional closing comment. The following provides responses to coastal engineering related comments. Mr. Factor's comments are copied from his letter and shown in italics.

FACTOR COMMENT: *One, the "Baseline" -- from which all "Beach Width Added" calculations in the Formula for the 4th Assessment are being made -- is located more than two acres seaward from the face of the current rock revetment and would be located more than four acres of beach sand seaward of the location of the relocated rock revetment. This results in a material erroneous input by ENGEO in calculating the Formula.*

It is an undisputed fact that the overwhelming majority of the initial 300,000 cubic yards of sand placement is to be placed immediately seaward from the face of the current rock revetment, as reflected in the September 2017 100% Plans by M&N. The Formula utilized by ENGEO to calculate the Special Benefits of sand nourishment is erroneously calculated from the 2006 Baseline, rather than from the seaward face of

the current rock revetment -- the location from which the greatest quantity of sand nourishment commences. To calculate the Formula's Beach Width Added measurement from the far more seaward 2006 Baseline, instead of from the specific location of the seaward face of the current rock revetment, is a mis-calculation of a key input value in the Formula that measures relative sand nourishment. In that the actual and the relative amount of Beach Width Added are a material element in the Formula for calculating the 4th Assessment (See page 13 of the ENGEO Report), the appropriate amount of Beach Width Added and relative Beach Width Added should be recalculated to correct this measurement error. Please see the M&N 100% Plans for Project 4C, the attached exhibit reflecting the location of the 2006 Baseline compared with the location of the 2009 MHTL (the approximate seaward face of the current rock revetment) and the attached diagram of the GHAD's estimate of how much additional sandy beach is exposed when the rock revetment is relocated.

BBGHAD COASTAL ENGINEER RESPONSE: Beach width added distances are measured from the simulated "initial shoreline" in GENESIS and are not referenced to the actual position of the 2006 shoreline. The orientation of the initial shoreline used in GENESIS was based on the 2006 shoreline, but the date of this shoreline and the precise coordinates of this starting shoreline are immaterial to the GENESIS results. This shoreline simply provides the starting point for the shoreline evolution model and a reference point for evaluating the potential effects of the project. We understand the Broad Beach shoreline position is dynamic and changes regularly. For this reason, GENESIS results are not provided relevant to the real-world position of the 2006 shoreline. Instead, the GENESIS results are normalized to the initial shoreline and reported in terms of beach width change relative to this shoreline.

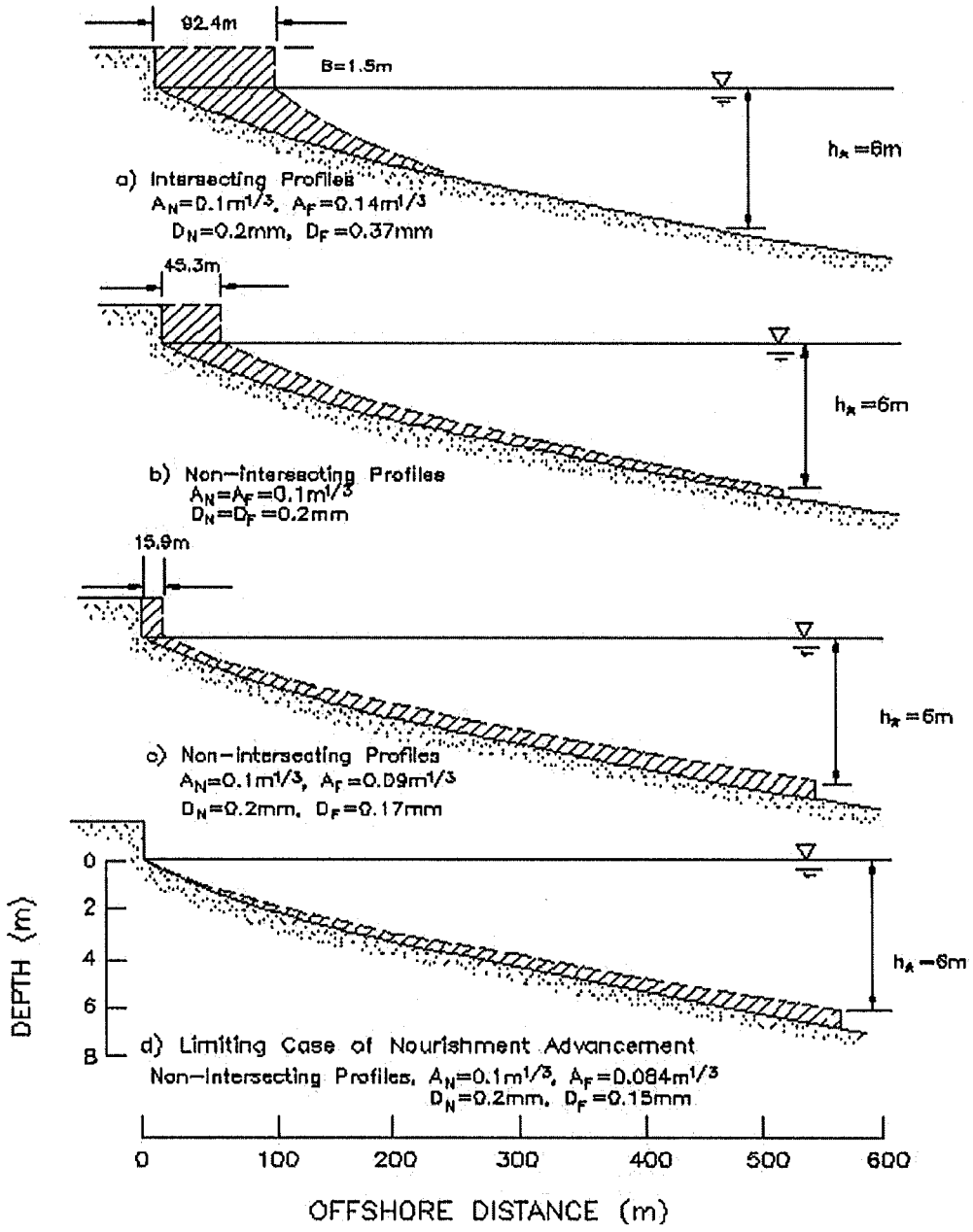
Although the actual shoreline position throughout the GENESIS model domain has continued to erode over the years, the orientation of the shoreline has not significantly changed. If the GENESIS model were run again using a different starting shoreline position, the results would not significantly change, provided they are normalized to the initial shoreline.

FACTOR COMMENT: *Two, when reviewing the projected increase in Beach Width Added for an Interim Nourishment of 75,000 cubic yards (a cubic yard is 27 square feet), it appears there is an erroneous calculation by the engineers who performed the analysis. Common sense calculations compared to the GENESIS Modeling used by M&N show an incremental difference of 75 to 90 feet. However, M&N's calculations at page 48 of their Engineering Appendix show just a 50 foot increase in beach width from an interim nourishment of over two million square feet (75,000 x 27 sq. ft. for each cubic yard equals 2,025,000 sq. ft.) of dry sand nourishment.*

BBGHAD COASTAL ENGINEER RESPONSE: A cubic yard is not equal to 27 square feet. A cubic yard is equal to 27 cubic feet. This volumetric unit of sediment does not directly transfer to a measurement of beach area. In order to convert a volume of sediment to an area of beach an assumption needs to be made for the depth of sand placement, or dispersion across the beach profile, depending on the calculation being performed.

A 75,000-cy interim nourishment is expected to result in an average beach width added of 50 feet along 2,000 feet of shoreline after the beach profile has reached equilibrium. Note, similar to the initial nourishment, the assumptions for beach width added rely on the use of coarser-than-native sediment which will remain higher on the beach profile. The figure on the following page is from the Coastal Engineering Manual (USACE, 2003) and illustrates how the median grain size of the fill material will have

a direct impact on the dry beach width formed. A sand source that is coarser than native material will form an intersecting profile and remain on the upper portion of the beach profile for a longer period.



FACTOR COMMENT: *Three, the ENGEO/M&N Report expressly states that in considering the dispersion of sand nourishment that the Report considered a significant amount of sand would be dispersed up coast because of the angle of the waves striking the 15 to 16 foot high peninsula of sand placed in the intertidal area seaward of Profile 410 and 411. An analysis of SAR 000031 to SAR 000404 demonstrates that -- according to M&N -- a significant amount of sand will strike the peninsula of sand nourishment from the Initial 300,000 cy sand placement and the interim 75,000 cy sand placement, and be sent up coast west of Lechuza Point, thereby increasing by several feet the public beach width at Lechuza Public Beach, immediately to the West of Lechuza Point. This "benefit" is not even mentioned (let alone quantified) by*

M&N anywhere in its Engineering Analysis, even though it is apparent from M&N's data analysis that Lechuza Public Beach will be a beneficiary of each Major and each Interim sand nourishment, at least according to M&N's GENESIS Modeling. Please see, attached hereto, the M&N's diagram of Project 4C sand dispersion with the handwritten calculations of GeoSoils, Inc. added for clarity.

BBGHAD COASTAL ENGINEER RESPONSE: Dispersion of sediment west of the initial placement area is expected for the reasons noted in the administrative record. The GENESIS shoreline model does not have the resolution or sophistication to accurately quantify the amount of sediment transport in Lechuza Cove or around the Lechuza Point headland and other smaller headlands and rocky outcroppings along the upcoast segment of the model domain. The numerous headlands and rocky outcroppings can only be simulated in GENESIS as groins (shore-perpendicular, rubble-mound structures) which provides a very rough approximation of how these natural features influence sediment transport.

The best information available on sediment transport patterns in the vicinity of Lechuza Point come from local and regional sediment transport studies, observations and monitoring data collected throughout the Project. All this information indicates the dominant sediment transport direction is toward the east, but occasional reversals in sediment transport do occur, especially during strong south swells typical of summer months. While it would not be a surprise to see sediment transport toward and possibly around Point Lechuza, estimating the amount and longevity of any sediment accumulation in these areas is beyond the prediction capability of the GENESIS model. Given that the dominant transport direction is eastward, any sediment accumulation near or around Lechuza Point would eventually be transported back along the Project area. Therefore, any general benefit provided by this potential sediment transport around Point Lechuza was deemed insignificant and did not warrant inclusion in the engineer's report.

FACTOR COMMENT: *Six, the proposed Living Shoreline creates significant risks of both over topping and of being undermined in its stability by the over topped water returning to the Pacific Ocean by sinking down into the sand landward of the Living Shoreline and disturbing the foundation of this smaller rock formation. The ENGEO Report and the M&N engineering analysis does not consider the risks of over topping the Living Shoreline as a result of diminishing the proposed size of the relocated portion of the rock revetment. M&N has recent experiences with the issues of over topping and of accelerated erosion compared to their modeling and should disclose this risk and the possible adverse consequences of over topping the Living Shoreline that replaces the formerly planned, higher and broader relocated rock revetment.*

BBGHAD COASTAL ENGINEER RESPONSE: See responses to GSI comments (GSI report pages 5-7)

Final additional comment from M. Factor letter of April 14, 2020:

FACTOR COMMENT: *Before spending well in excess of $125,000,000 or more on Project 4C over the next 20 years, I request that the GHAD Board ask Moffatt & Nichol to provide for independent review for each and every one of M&N's beach nourishment projects of over 250,000 cumulative yards of sand placement on Southern California beaches during the past 25 years. The review would include M&N projected modeling presented to the Coastal Commission and how reliable M&N's projected modeling actually has been compared to what actually occurred year in and year out over each year for each subsequent ten year period after the initial sand nourishment commenced. Then, make public - prior to any vote on the proposed 4th assessment - all of the data presented and the independent review so that the Board and parcel owners can craft a Project that will succeed based upon real life experience, rather than on*

hypothetical modeling. There is, after all, a reason that Bayesian statistics are often more reliable in long term oceanic engineering projects.

BBGHAD COASTAL ENGINEER RESPONSE: Moffatt & Nichol (M&N) has designed, analyzed and supported construction of several larger-scale beach nourishment efforts in southern California. The BBGHAD is being requested to provide information pertaining to the track record of predicted versus measured beach nourishment evolution for large projects of approximately 250,000 cubic yards or more. While there have been several nourishment projects in the region that meet that criterion, only two projects conducted by the San Diego Association of Governments (SANDAG) were modeled and later monitored for a relatively long time period to obtain data to compare predictions versus performance; these being Regional Beach Sand Project (RBSP) I and II. One other project was constructed in 2018 by the San Elijo Lagoon Conservancy that consisted of 300,000 cy of sand at Cardiff Beach and 146,000 cy of sand at Solana Beach. Hence only one full year of monitoring has occurred since its construction. While the monitoring period is limited, this project provides other information relevant to the project and is therefore discussed elsewhere in these responses.

The focus of this analysis is a comparison of model-predicted versus post-construction-measured beach widths at sites that received beach fill as part of the second RBSP, i.e. RBSP II, constructed by SANDAG in 2012. The RBSP II project nourished 8 beaches total, 7 in North County San Diego and 1 in South County. The 7 North County beach fills were analyzed, and their performance was predicted using the GENESIS model. Only North County beaches were modeled using GENESIS because that reach of coast is contiguous and within the same subcell of the larger Oceanside Littoral Cell. The remaining site is Imperial Beach which is located approximately 30 miles farther south from the North County coastal reach and within a different littoral cell. The purpose of the modeling was to identify whether impacts to sensitive marine biology would occur from the project.

Modeling of the North County beaches was done for average wave conditions and extended for a period of five years after beach fill construction. It was assumed for modelling purposes that the sand placement would occur all at once at each site. This was assumed in order to be conservative in the estimations of sand burial near sensitive resources. Similar assumptions were made for the Broad Beach project. It was also assumed because the contractor had not then determined the order of work, as this modeling occurred one year before project design and two years before construction.

The following table lists the beach fill sites and their respective quantities. Actual project nourishment quantities were lower than the originally proposed and permitted quantities. This was because the "Great Recession" occurred during the planning phase of the project when each City was asked to contribute its "fair share" to the budget. Two cities withdrew from the project entirely, while the remaining participating cities had difficulties financing their portions. Project quantities were reduced by approximately 12.5% to enable the project to move forward, remain cost-effective, and still provide significant benefit to the region.

RBSP II Project Sites and Planned Versus Actual Nourishment Quantities

Receiver Site	Alternative 1 (Modeled) (Cubic Yards)	RBSP II (Constructed) (Cubic Yards)
Oceanside	420,000	292,822
North Carlsbad	225,000	218,728
South Carlsbad North	158,000	140,763
South Carlsbad South	0	0
Batiquitos	118,000	106,052
Leucadia	117,000	0
Moonlight Beach	105,000	92,287
Cardiff	101,000	88,751
Solana Beach	146,000	142,430
Torrey Pines	245,000	0
Imperial Beach	120,000	450,140
TOTAL	**1,755,000**	**1,531,973**

The project objectives were to: 1) nourish the littoral cell to gradually widen beaches overall by increasing the volume in the littoral cell and to offset the existing deficit of sediment; and 2) prove that nourishment could occur without causing significant environmental impacts. Both RBSP I and RBSP II were pilot projects to demonstrate the performance of beach nourishment in San Diego County. SANDAG accomplished both objectives as proven by monitoring and as documented in academic studies done by Scripps Institution of Oceanography (Scripps). Also, SANDAG attempted to set expectations relatively low for the performance of the project to address concerns over relatively rapid sand loss at some of the receiver sites from the first RBSP (RBSP I) in 2001. The projects were not intended to create large and long-term sustained beach fills at the specific sand placement sites, but rather to feed the littoral cell incrementally with multiple sand placements along the coast and to promote dispersion of fill sand to the entire cell, thus widening more beaches throughout the entire system over time.

A major change in the project was made in RBSP II with the design goal of using "coarser than native" sand for nourishment. Criticism of the first project (RBSP I) in 2001 centered around rapid sand loss from placement sites. This was due to the relatively fine median grain size of 0.175 millimeters in diameter used from several offshore sand sources as compared to the average native beach sand median grain size of 0.190 mm in diameter. In addition, several project sites were constructed in the early Fall season and the first storms of the year arrived relatively early (near Thanksgiving) with high waves. These storm wave events caused the beach fill to rapidly disperse from certain placement sites (e.g., Torrey Pines State Beach) thus generating criticism and challenges of the use of public funds for the work. Therefore, RBSP

II focused on using sand that was closer to 0.59 mm in median grain size diameter for nourishment, as exists at several offshore borrow sites in the region.

Also, the timing of work was planned to be April through August. However, the contractor (Great Lakes Dredging and Dock Company, or Contractor) was delayed on the east coast through July and could not start construction until early September. The construction period was September through December 2012, with the order of work being Imperial Beach, followed by Oceanside, Cardiff, Moonlight Beach, South Carlsbad North, Solana Beach and North Carlsbad.

The project was modeled using the *Coastal Engineering Design and Analysis System* (CEDAS), published by Veri-Tech , Inc. (2008) that was developed for the U.S. Army Corps of Engineers Coastal Engineering Research Center at the Waterways Experiment Station (WES). CEDAS uses a numerical model called the "Generalized Model for Simulating Shoreline Change (GENESIS)" as a base program for shoreline movement modeling, along with 20 additional support and input/output programs. GENESIS is based on methods presented in the Shore Protection Manual (USACE 1984).

Numerical modeling is documented in the project Environmental Impact Report / Environment Assessment (EIR/EA) from 2011 as the Final Shoreline Morphology Study by M&N. Numerical modeling of shoreline morphology is inherently imperfect due to the complexity of coastal processes. GENESIS models only longshore sediment transport and assumes that cross-shore sediment movement is mainly seasonal and averages out over the long-term. GENESIS is intended to provide a generalized long-term trend in shoreline response from a specific action or actions. The results should be relied upon for anticipating general areas of accretion or erosion at orders of magnitude over large scales, rather than in predicting site-specific increments of shoreline movement over short durations. The focus of the modeling is on identifying trends of either erosion or accretion for planning purposes, rather than pin-point accuracy in beach width predictions.

GENESIS predicts the change in the position of the shoreline over time from additions or subtractions of sand while ocean waves work on the shore. The position of the shoreline was specified to be the mean sea level (MSL) elevation contour to coincide with annual monitoring of the beach done by SANDAG's consultant Coastal Frontiers Corporation (CFC) continually since 1996. The model was set up to mimic the existing variations in the shoreline with beaches and reefs, and to assume average wave conditions as typified using the prior 9 years (2000-2009) of wave data as measured in deep water off Torrey Pines Beach by the Coastal Data Information Program (CDIP) administered by the State of California and Scripps Institution of Oceanography. Sea level change was not considered due to the relative short live span of the beach fills (years) as compared to the long-term influence of sea level rise (multiple decades). The beach fills would be completely dispersed before sea level rise would occur.

Model results were expressed in a new position of the Mean Higher High Water (MHHW) shoreline which was translated into feet of beach widening or beach narrowing compared to the starting shoreline position. The starting shoreline position was the position of the MHHW shoreline from the 2008 LIDAR survey of the coast. The MHHW shoreline position was reported in M&N (2011) and is converted to approximate the Mean Sea Level (MSL) shoreline position in this letter to render it directly comparable to post construction monitoring results by CFC. MHHW is approximately 2.6 feet higher than MSL. With the slope of the upper beach being approximately 1:15, the difference in horizontal width between the two

datums is approximately 39 feet. Therefore, the MHHW shoreline position values predicted by M&N are increased by 39 feet in the matrix and graphics.

Data predictions are provided in tabular form of shoreline changes over time. Those data were simplified to be beach width changes in feet over time following sand placement, either positive for widening or negative for narrowing, at each sand placement location. The intent was to show whether the project widened beaches, how long the beaches remained wider, and if adjacent beaches experienced widening.

As the project was planned for construction in the Spring season, predictions were provided for each successive Spring season after sand placement. The Spring season beach is typically narrower than the Fall season beach, so beach widths in the Spring are considered conservatively narrow and should be under-estimates of beach widening. Model results were compared to monitoring results by CFC over the same timeframe after construction to provide an "apples to apples" comparison of predicted versus measured beach widths. In addition, monitoring for 5 years was performed for permitting. Modeling was also taken out to 5 years post-construction to show longevity. However, modeling and monitoring results are shown to be at intervals of 0.5 to 4.5 years post-project because the RBSP II project was built nearly 6 months later than planned due to contractor delays.

The following tables show the model-predicted beach widening and the measured actual beach widening from monitoring, respectively. Predictions were carried out for an assumed 5-year project lifespan as determined by monitoring results of RBSP I. Those measurements indicated that project beach fills were discernible at several placement locations for up to 5 years, after which the beach fills became entirely indiscernible.

Model-Predicted Beach Widths for Proposed SANDAG RBSP II Prior to Construction

Receiver Site (At the Widest Point in the Middle of the Fill Footprint)	**Constructed Beach Width (Feet)**	**Post-Project Beach Widths by Year (Feet)**				
		0.5 Year	**1.5 Year**	**2.5 Years**	**3.5 Years**	**4.5 Years**
Oceanside	200	94	79	79	79	79
North Carlsbad	135	79	79	74	74	74
South Carlsbad North	180	64	59	54	54	54
South Carlsbad South	0	59	59	54	54	54
Batiquitos Beach	180	64	54	49	44	34
Leucadia	120	59	59	59	59	54
Moonlight Beach	180	54	49	44	39	39
Cardiff	150	59	59	59	54	54
Solana Beach	70	69	64	64	64	59
Torrey Pines	160	94	89	84	79	79

Measured Beach Widths for Constructed SANDAG RBSP II After Construction

Receiver Site (At the Widest Point in the Middle of the Fill Footprint)	Constructed Beach Width (Feet)	Spring Post-Project Beach Widths by Year (Feet)				
		0.5 Year	1.5 Year	2.5 Years	3.5 Years	4.5 Years
Oceanside 0930	165	127	107	90	64	56
North Carlsbad 0865	198	164	142	160	133	130
South Carlsbad North 0775	151	101	78	123	77	78
South Carlsbad South 0760	0	135	102	95	103	88
Batiquitos Beach 0710	185	143	94	87	79	76
~~Leucadia 0690 – No Fill~~	~~120~~	107	100	84	71	73
Moonlight Beach 0670	225	209	169	151	145	156
Cardiff 0630	241	189	179	227	148	162
Solana Beach 0597	167	114	109	115	93	131
~~Torrey Pines 0520 – No Fill~~	~~160~~	103	93	132	84	91

Sand from RBSP II was placed at each North County site listed except for Leucadia and Torrey Pines Beaches, so those sites are lined-out as receiver sites in the second table. However, the beach widths are still included in the table to show widening or narrowing since they were influenced by other the beach fills. The constructed beach width represents the immediate post-construction condition, or the initial condition for modeling. Theoretically, the modeled volume was larger in volume than the actual RBSP II so it could be expected that beach widths would be greater for this scenario than that for the project as constructed. However, as shown in latter table, actual beach widths were consistently larger than the modeled beach widths over time.

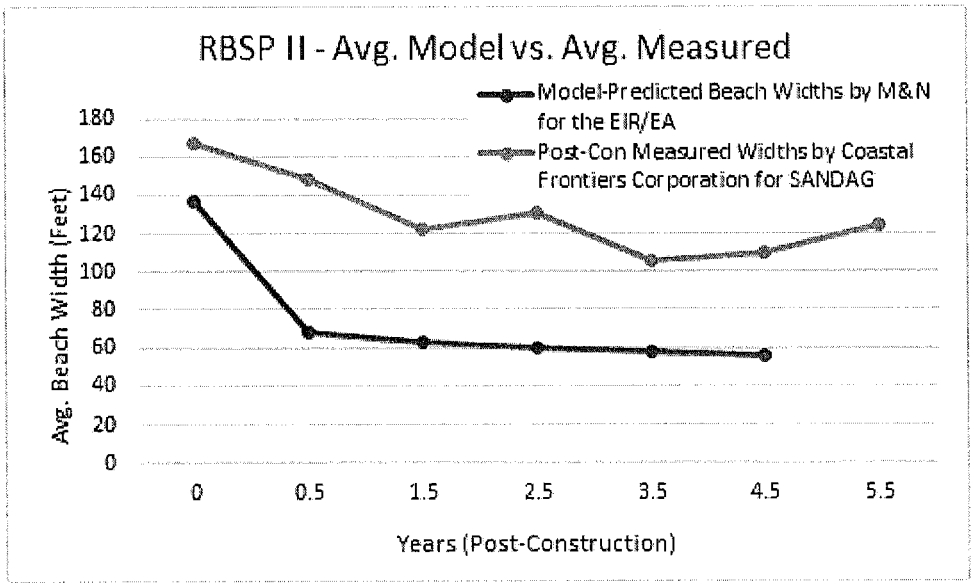
GENESIS under-predicted the performance of the RBSP II beach fills, but performed as well as can be expected for a simple approximation of very complex coastal processes. Predictions were for beaches to be short-lived with widening being no longer significant after 4.5 years. Measurements showed beaches to remain wider for the entire 4.5-year post-construction monitoring period. Modeling showed that beaches would narrow down to 34 minimum feet at five years post-construction, while measurements

showed beaches narrowing less and remaining a minimum of 56 feet wide at the narrowest placement site (Oceanside). The trends in modeled beach-width change matched well with the monitoring data although the actual beach widths and longevity were better than predicted. There will always be some discrepancy between modeled and predicted beach widths. In the case of RBSP II, the use of coarser-than-native fill material is one possible reason the GENESIS model under-predicted actual beach widths.

The project performed better than predicted, even with a reduction of sand volume by 12.5%, and represents a significant success. Potential reasons for this success are attributable to the large sand grain size used for the fills, and relatively low intensity storm seasons after construction for several years. A significant El Niño winter in 2016 is included in the data. That El Niño event was documented by CDIP and Scripps to have produced much higher wave energy than normal throughout the winter, and portions of the beach fills remained to a certain extent (Ludka et al, 2016). Scripps researchers presented results to a public meeting at SANDAG in September of 2019 and stated that the RBSP II project provided significant protection to certain shoreline reaches during the El Niño winter of 2016 that would not have otherwise existed.

The following figure shows the overall average project predicted beach widths compared to the average measured beach widths. Measured beach widths exceed predicted beach widths throughout the entire 5-year post-construction period. The same type of graphic for each placement site can be provided upon request.

Average Modeled Versus Measured Beach Widths for SANDAG RBSP II



RESPONSES TO GENERAL COMMENTS PROVIDED BY MULTIPLE COMMENT LETTERS

GENERAL COMMENT: Confirm wave uprush study in light of King's critique of Peregrine's total land loss assumption

BBGHAD COASTAL ENGINEER RESPONSE: A detailed summary of the No Project erosion and wave uprush limits was provided in Section 7 of the 2013 Coastal Engineering Report (Exhibit L to CDP Application 4-

12-043). This analysis was the basis for the land loss assumptions provided to Peregrine Realty Partners, Inc. under a No Project scenario. Economist Dr. King's critique is that the remaining portion of land "could and would be rebuilt along Broad Beach – provided they were protected." However, this opinion fails to account for the septic system infrastructure that would need to be relocated or converted to a centralized treatment system and that shoreline protection in this scenario could be permitted by the CCC.

GENERAL COMMENT: The following responds to another claim in the King Report that attendance estimate at Broad Beach should be increased from 8,000 (used in 2013 study) to 30,000-50,000 based on no additional information. Stated reasons for this increase are 1) improved beach access since the 1970s due to the Coastal Act and 2) Alternative 4c includes higher volumes of sand.

BBGHAD COASTAL ENGINEER RESPONSE: These reasons do not explain the 3-5x increase in annual beach attendance over the 2013 estimate. Improved access due to the Coastal Act was in effect in 2013 yet was not accounted for in King's attendance estimate at that time. The increase in volume for interim nourishments provides more flexibility to the project to maintain minimum beach width, but does not guarantee wider beaches over the Project duration. Elsewhere in the memo, King states the minimum beach width of 30 feet provides sufficient "carrying capacity" and a wider beach will not necessarily translate to higher attendance. This seems to conflict with the justification provided for higher attendance estimates.

The King memo (pg. 9) also states "Attendance estimates have not drastically changed since 2012, especially current estimates for Broad Beach as the lack of beach restricts public access to the site." This statement also conflicts with the 3-5x increase in attendance estimates from the 2013 study to the 2020 memo. One of the key factors limiting beach attendance at Broad Beach is the availability of parking along Broad Beach Road. Parking is only available on one side of the street and the number of spaces near the vertical access paths and available for beach goers is limited. Much of this parking is also used by residents and their visitors, further reducing availability to the general public looking for beach parking. Limited parking is most likely the main reason why maximum attendance estimates by locals and veteran Zuma Beach lifeguards are in the 100-150 range, even before the emergency revetment was constructed and the beach was much wider.

Furthermore, Dr. King's estimates for ecological value are based on a price per acre for restored dunes of $5.9 million based on other similar projects in California. The total project cost for the Cardiff Living Shoreline was $2.9 million and included a restored dune area of more than 4 acres. This is a more recent and relevant project which equates to a price per acre of $0.7M that would significantly reduce the ecological value estimated in the King memo.

GENERAL COMMENT: Relative benefits of revetment and sand placement

BBGHAD COASTAL ENGINEER RESPONSE: Shoreline erosion is the primary geologic hazard threatening homes and infrastructure along Broad Beach. As described in the Executive Summary of the Phase 1 Report (M&N, 2010),

> *The ultimate objective of this restoration project is to design, permit, and implement a shoreline restoration program that balances erosion control, property protection, improved recreation and public access opportunities, aesthetics, and environmental stewardship.*

Results of a preliminary screening analysis identified three alternatives as viable candidates for the long-term restoration of Broad Beach:

- Alternative 1 - Beach Nourishment and Dune Restoration with Buried Temporary Revetment
- Alternative 2 - Beach Nourishment and Dune Restoration with Buried Long-Term Revetment
- Alternative 3 - Alternative 1 or Alternative 2 Augmented with Sand Retention Reefs

The Project has always considered beach nourishment and dune restoration as necessary features to meet the Project objectives. All Project elements (beach nourishment, dune restoration and revetment) function together to provide a restored living shoreline project designed to meet objectives and provide an effective buffer against erosion, high tides and storm waves.

The temporary emergency revetment alone does not meet the objectives of the proposed Project and was not designed to withstand a 100-year event, especially with continued erosion of the beach profile and regular wave attack that would occur without a regular beach nourishment program. However, when coupled with a beach nourishment program and dune restoration project, the revetment does provide a "last line of defense" during an extreme event in which significant shoreline erosion would be expected.

As part of the Clean Water Act section 404(b)1 analysis and at the request of the USACE M&N was tasked with quantifying the level of protection provided by the beach nourishment and revetment elements of Alternative 4C. This analysis considered how the Project elements would offer protection for infrastructure under both seasonal and extreme storm conditions.

The seasonal storm analysis concluded that beach nourishment alone provided a sufficient buffer (>50 ft) against seasonal storm erosion for parcels east of 30978 Broad Beach Road, represented by beach profiles 408 and 409, for the entire 5-year nourishment interval. For the western reaches represented by profiles 410 (30980-31236 Broad Beach Road) and 411 (31240-31380 Broad Beach Road) the beach provided the majority of seasonal storm protection except for the end of the nourishment interval, at which beach width estimates fell below the 50 ft threshold and the revetment provided the remainder of protection. The analysis concluded that beach nourishment provided 100% of the seasonal storm protection for parcels east of 30978 Broad Beach Road, 88% of seasonal storm protection for the profile 410 reach and 75% of seasonal storm protection for the profile 411 reach.

The extreme storm analysis considered a scenario in which an extreme event occurs at the end of the nourishment interval (year 5) when limited beach width remains. This worst-case scenario, in which the revetment provides a "last line of defense," is the sole purpose of this project element. The analysis recognized that the emergency revetment is comprised of a reduced cross section, both in crest height and armor size, thereby less robust than a typical "engineered" revetment as it is intended to be fronted by a nourished beach.

If exposed to direct wave attack for a prolonged time, damage to the revetment would be expected in the form of settling and stone displacement, resulting in a lower crest elevation. For each year of complete exposure, the revetment crest was assumed to be lowered by 0.33 feet. This value was based on a comparison of 2011 and 2015 revetment surveys, and confirmed by Van der Meer stability equations (CIRIA, 2007), which indicated 5% damage for a 1-year wave event. The analysis evaluated the level of protection provided by the revetment along the four Project reaches described above and concluded the revetment would offer protection for all primary residences from significant overtopping (>10 liters/sec) but that some OWTS leach fields may experience damage under such an event.

This analysis illustrates the importance of how the nourished beach and revetment work in combination to achieve Project objectives and protect existing infrastructure along Broad Beach. Under typical seasonal storm conditions, the beach is expected to provide the majority of shore protection (>90%), but under extreme conditions the emergency revetment provides an essential role of limiting the landward extent of erosion and flooding. However, the emergency revetment is not designed to function alone and would not provide the same performance if not fronted by a nourished beach. The probability of a 100-year event in the first five years of the project is relatively low and is not a reasonable scenario on which to assess project benefits. If such an event were to occur there would be significant erosion of the beach, but this erosion is the process by which storm wave energy is dissipated. If no beach fill or dunes were in place the existing revetment would likely experience damage and significant overtopping during a 100-year event which would increase the risk of damage to improvements in the BBGHAD.

CITED REFERENCES

Coastal Frontiers Corporation, 2020. *SANDAG 2019 Regional Beach Monitoring Program – Annual Report*, June 2020.

Coastal Frontiers Corporation, 2019. *San Elijo Lagoon Restoration Project - Fall 2019 Full Beach Profile Survey*, December 18, 2019.

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KDM Meridian, 2015. Revetment Condition Survey – Trancas Property Owners Association, November 2015.

Ludka, B.C. et al 2016. *Mid-El Nino Erosion and Nourished and Unnourished Southern California Beaches*, Prepared by Scripps Institution of Oceanography, AGU Publications, May 14, 2016.

Moffatt & Nichol, 2020. *Coastal Engineering Appendix to the Broad Beach Geologic Hazard Abatement District Engineers Report*, February 2020.

Moffatt & Nichol, 2013, *Broad Beach Restoration Project – Coastal Engineering Report, Exhibit L to CDP Application 4-12-043*, October 2013.

Moffatt & Nichol, 2011. *Final Shoreline Morphology Study – San Diego Regional Beach Sand Project II*, May 2011.

Moffatt & Nichol, 2010. *Broad Beach Restoration Project – Phase 1 Report*, April 2010.

USACE, 2012. *The Final Report for the San Clemente Shoreline Feasibility Study*, 2012.

USACE, 2003. *Coastal Engineering Manual*, Department of the Army, U.S. Army Corps of Engineers.

USACE, 1984. *Shore Protection Manual*, Coastal Engineering Research Center, Department of the Army, Waterways Experiment Station, Corps of Engineers, 1984.

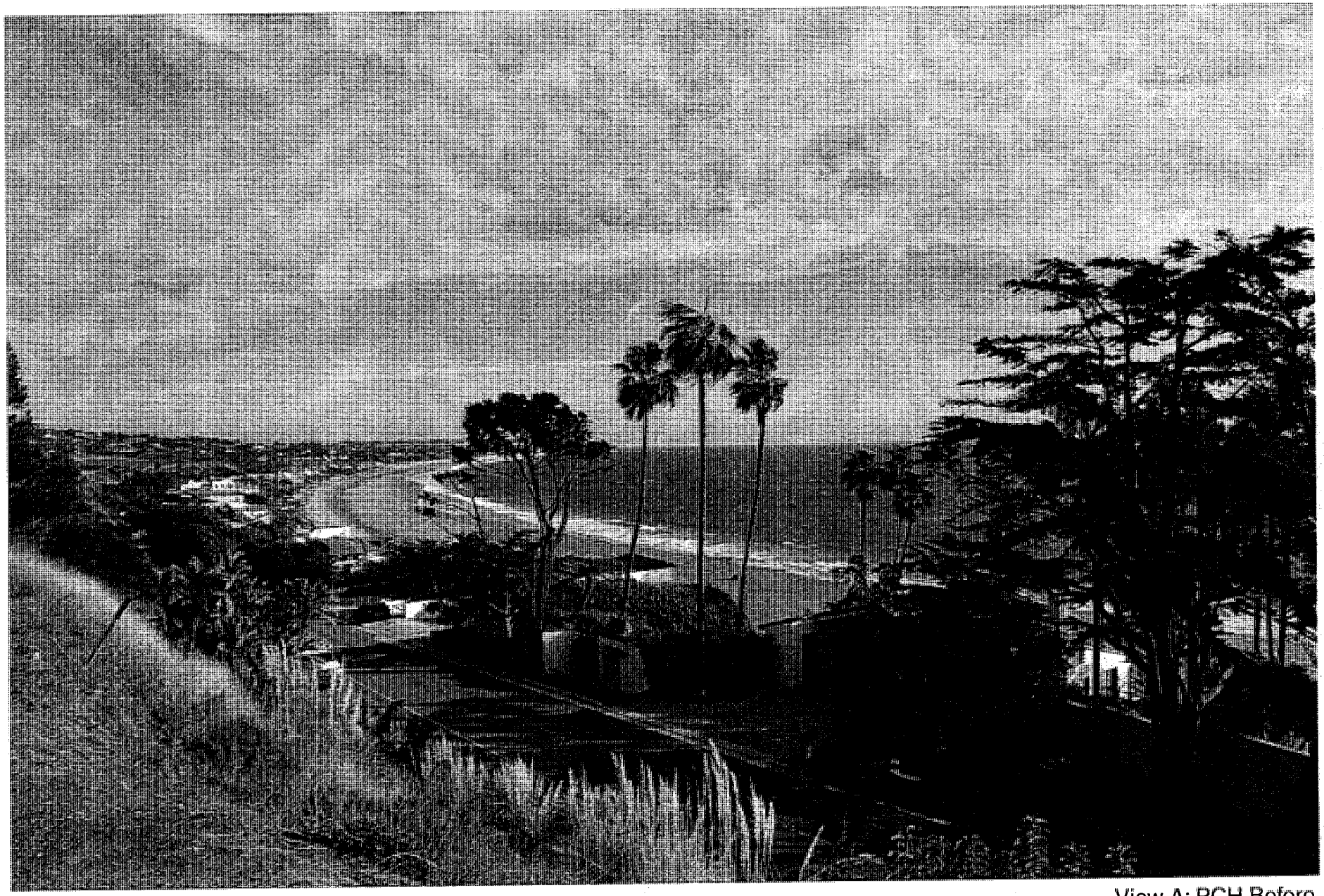
EXHIBIT D

View Assessment Report

Broad Beach Geological Hazard Assessment District Visual Simulation

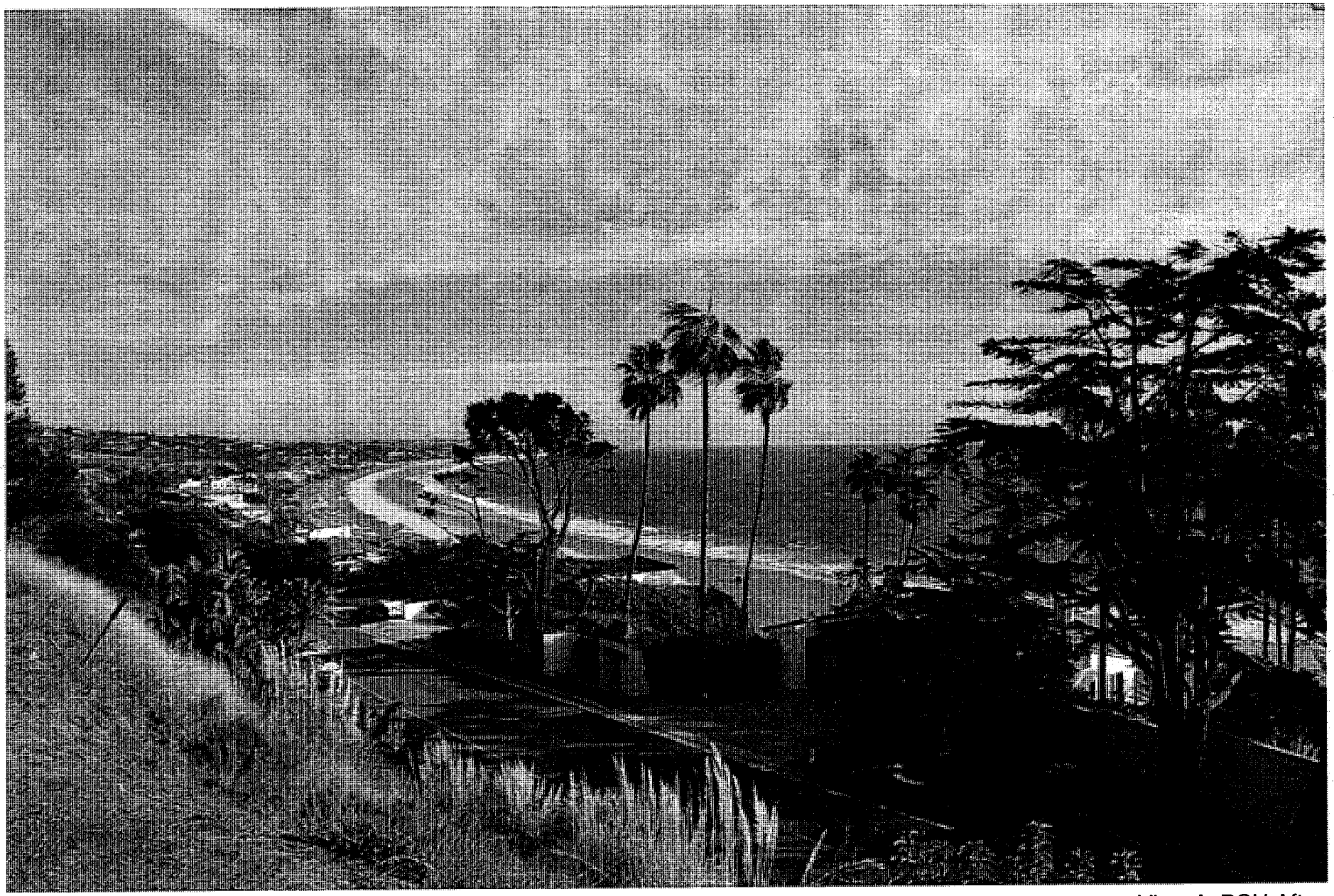
View Locations

Broad Beach Geological Hazard Assessment District Visual Simulation



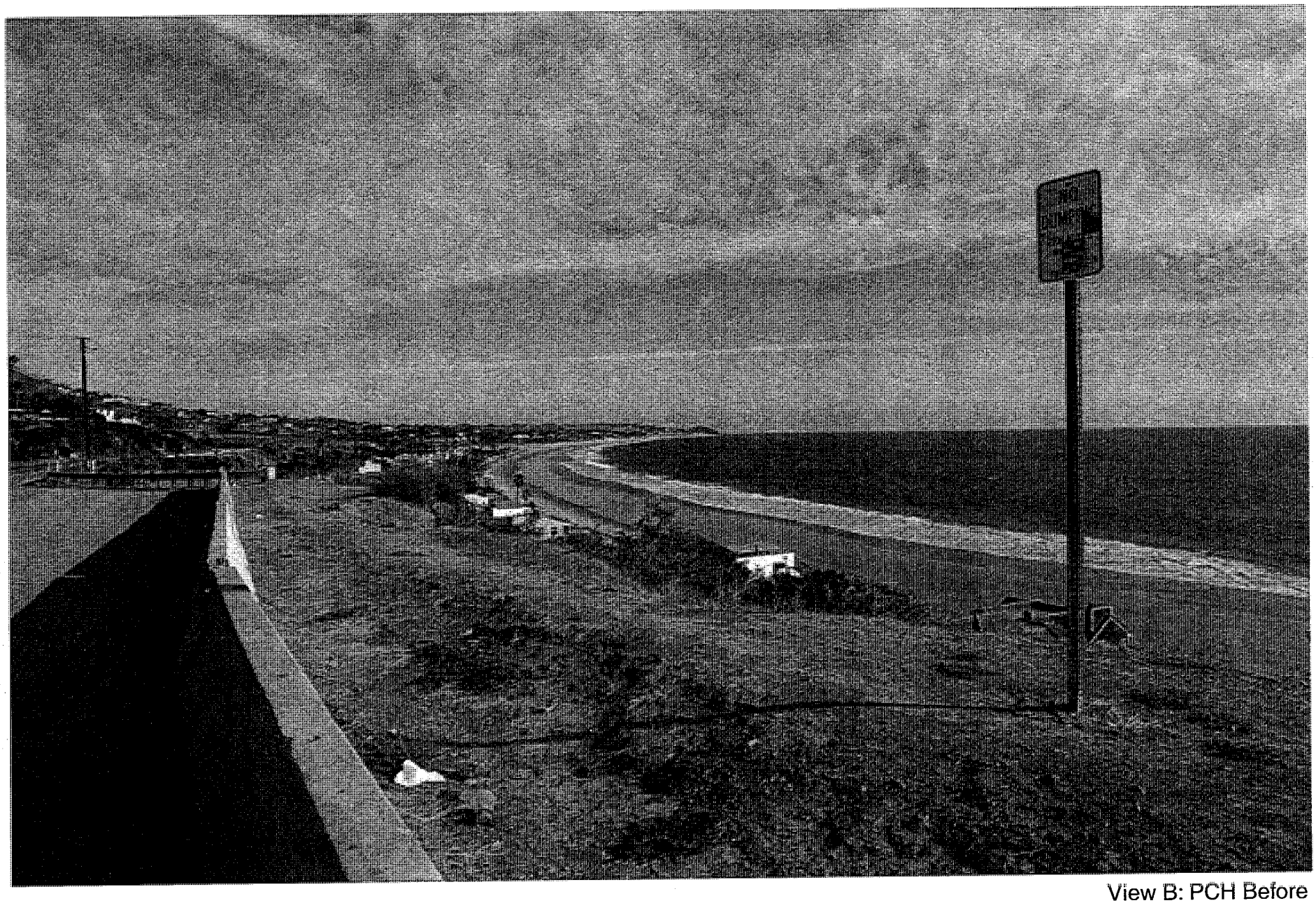
View A: PCH Before

Broad Beach Geological Hazard Assessment District Visual Simulation



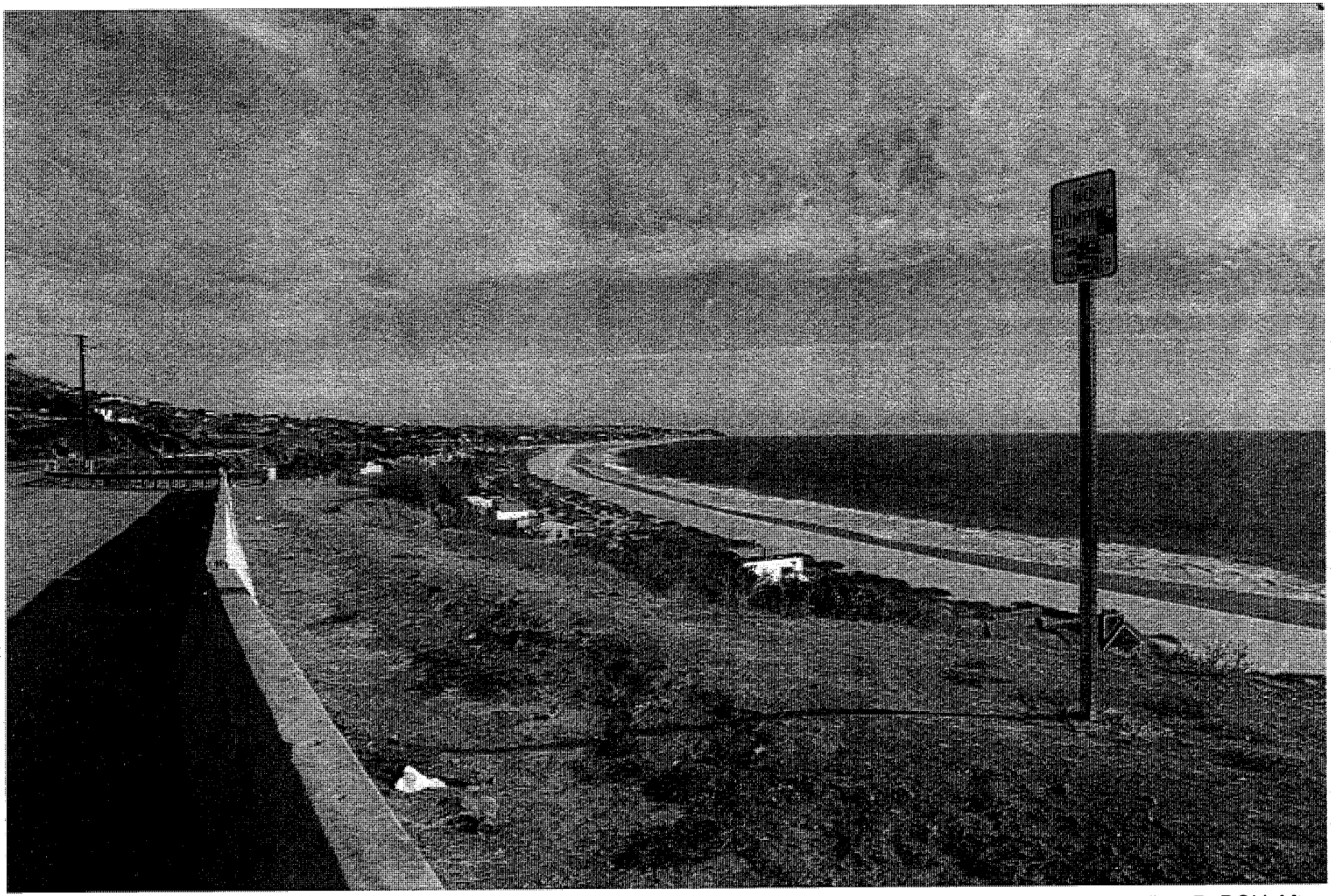
View A: PCH After

Broad Beach Geological Hazard Assessment District Visual Simulation



View B: PCH Before

Broad Beach Geological Hazard Assessment District Visual Simulation



View B: PCH After

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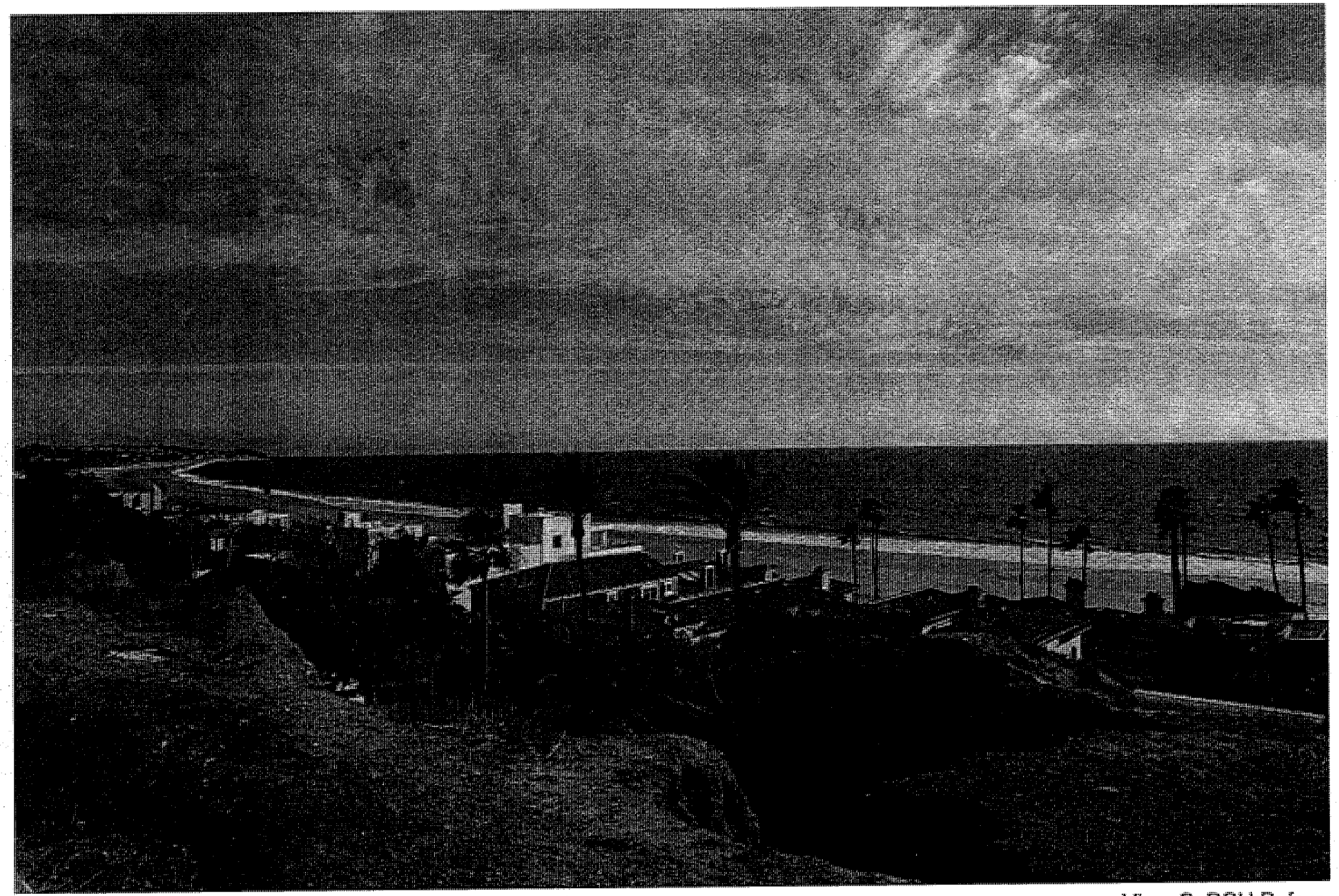
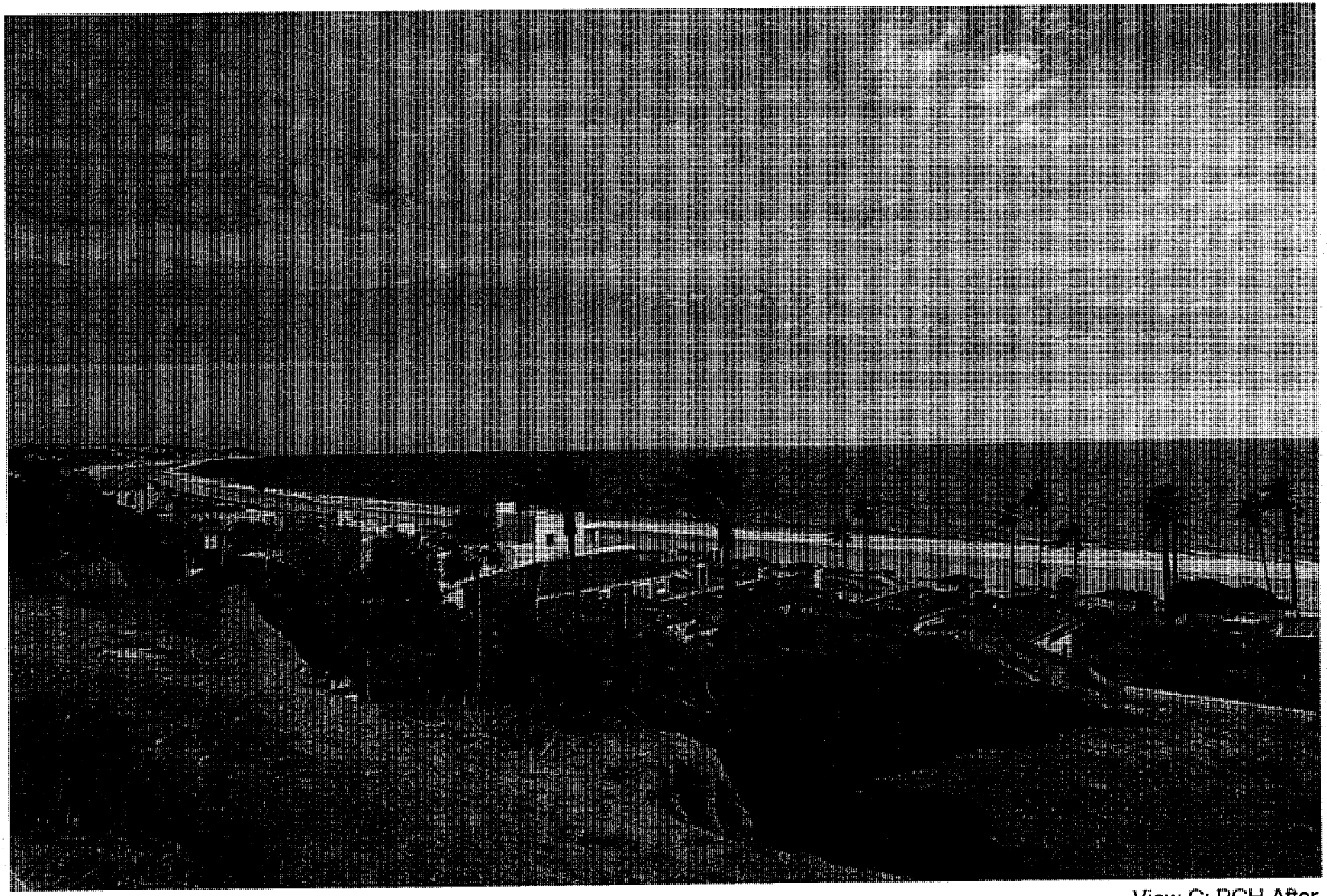


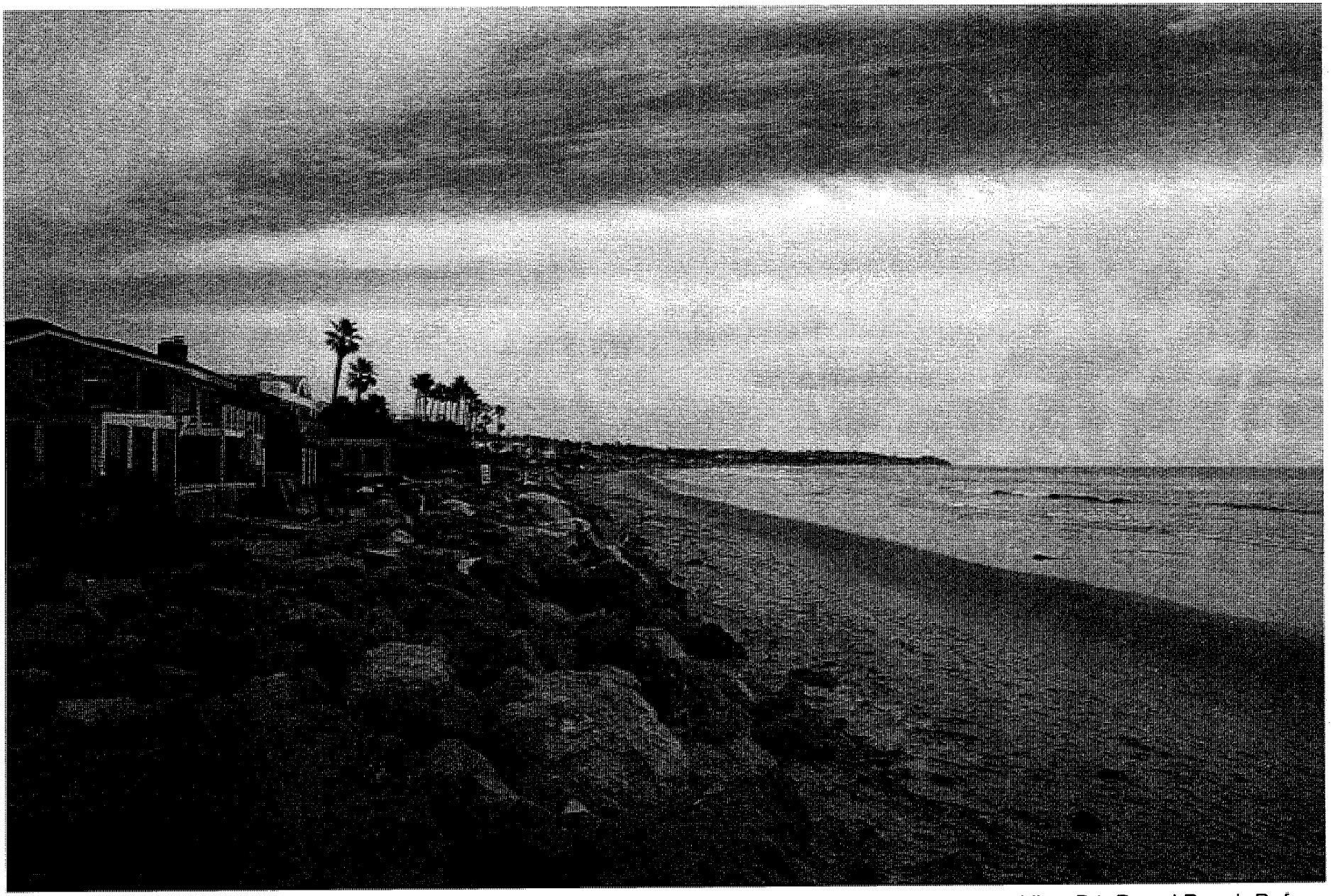
View C: PCH Before

Broad Beach Geological Hazard Assessment District Visual Simulation



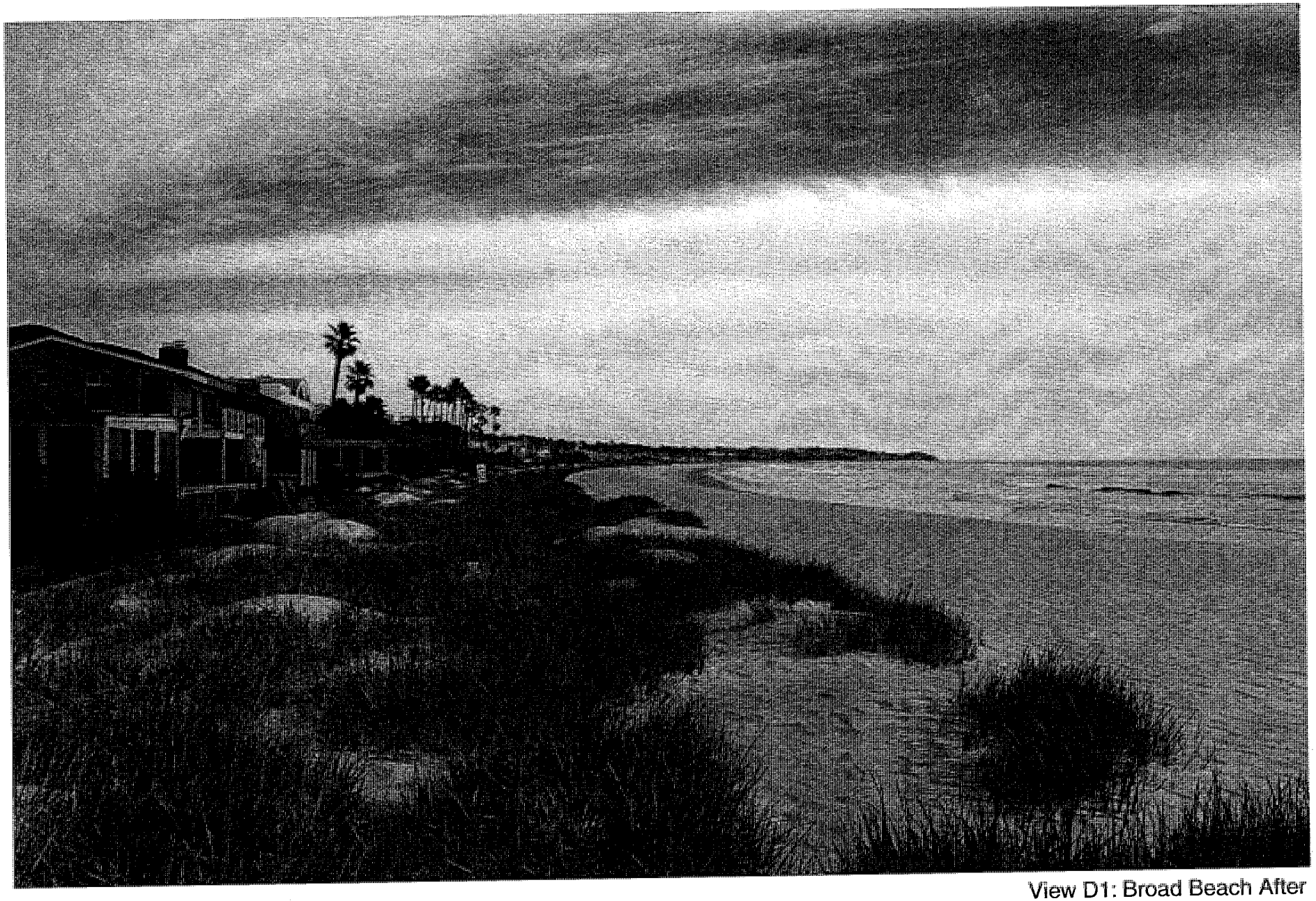
View C: PCH After

Broad Beach Geological Hazard Assessment District Visual Simulation



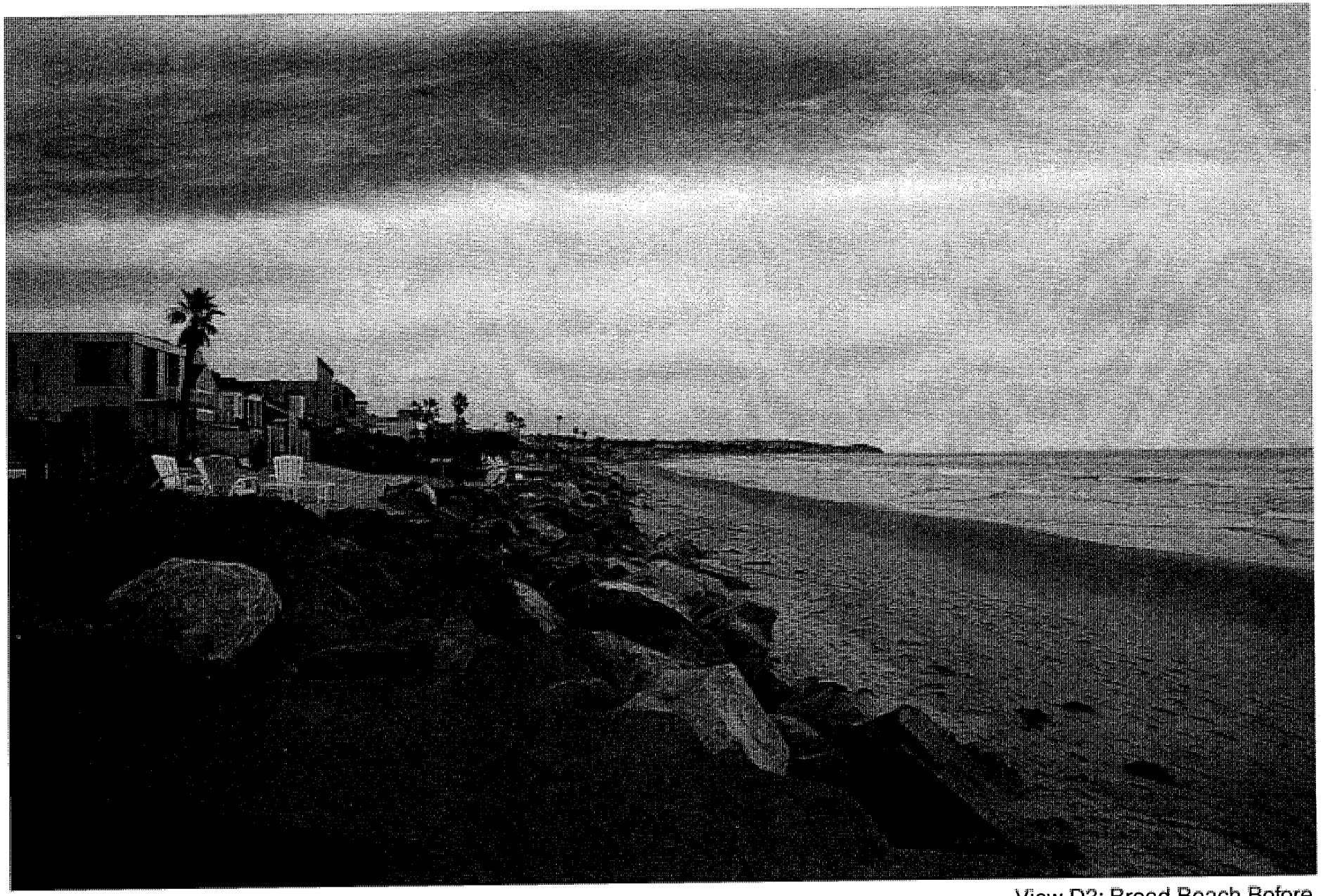
View D1: Broad Beach Before

Broad Beach Geological Hazard Assessment District Visual Simulation



View D1: Broad Beach After

Broad Beach Geological Hazard Assessment District Visual Simulation

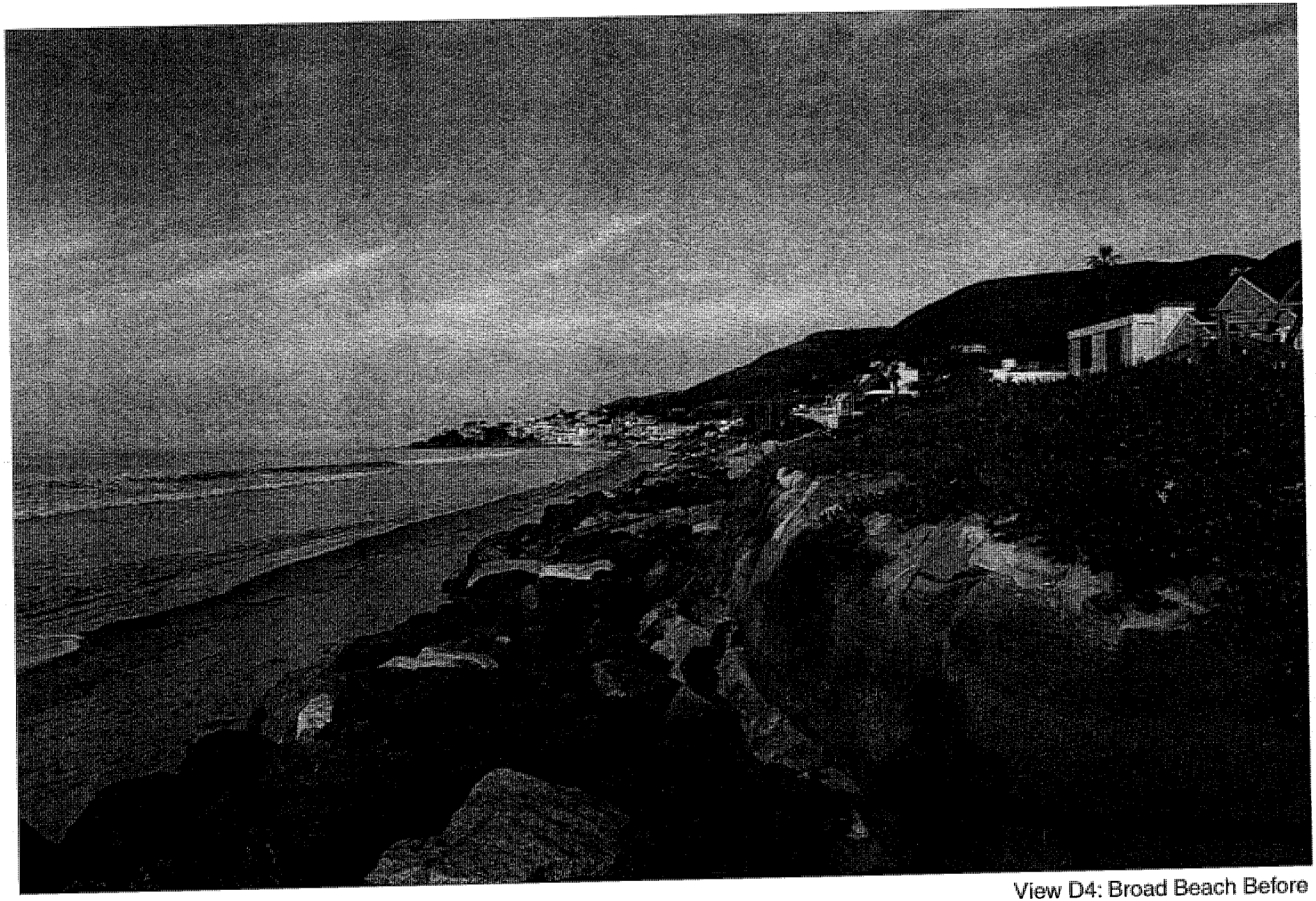


View D3: Broad Beach Before

Broad Beach Geological Hazard Assessment District Visual Simulation

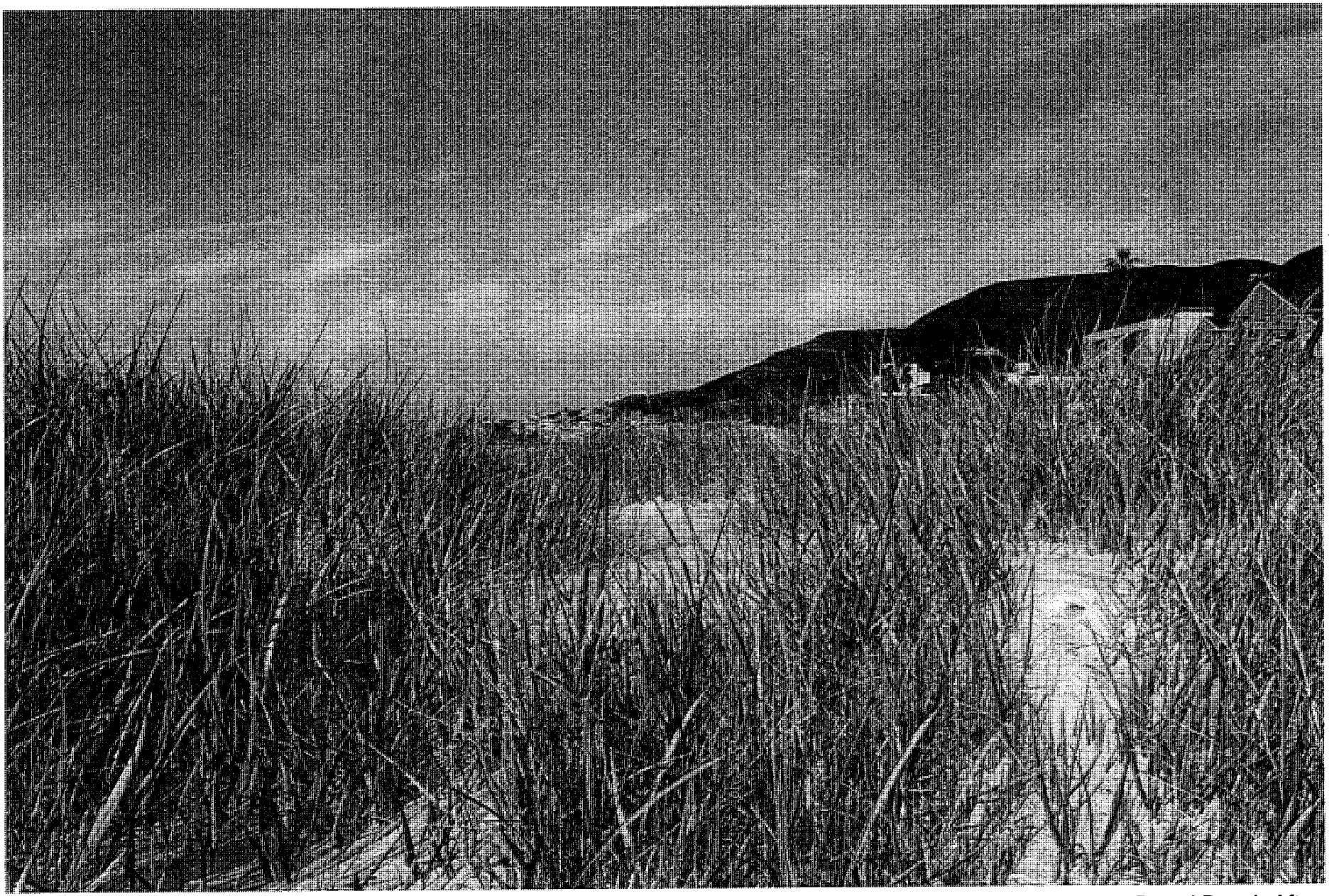
View D3: Broad Beach After

Broad Beach Geological Hazard Assessment District Visual Simulation



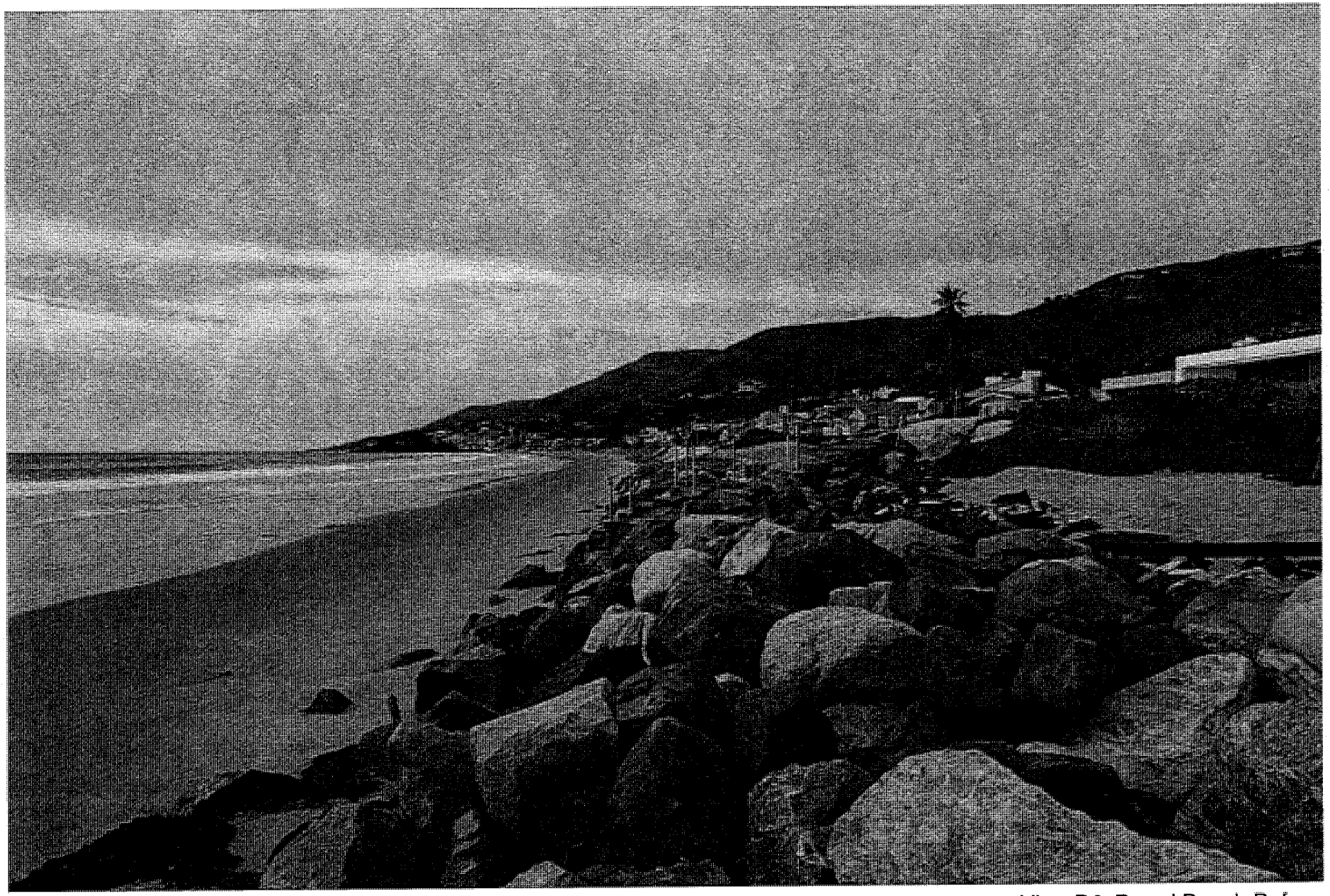
View D4: Broad Beach Before

Broad Beach Geological Hazard Assessment District Visual Simulation



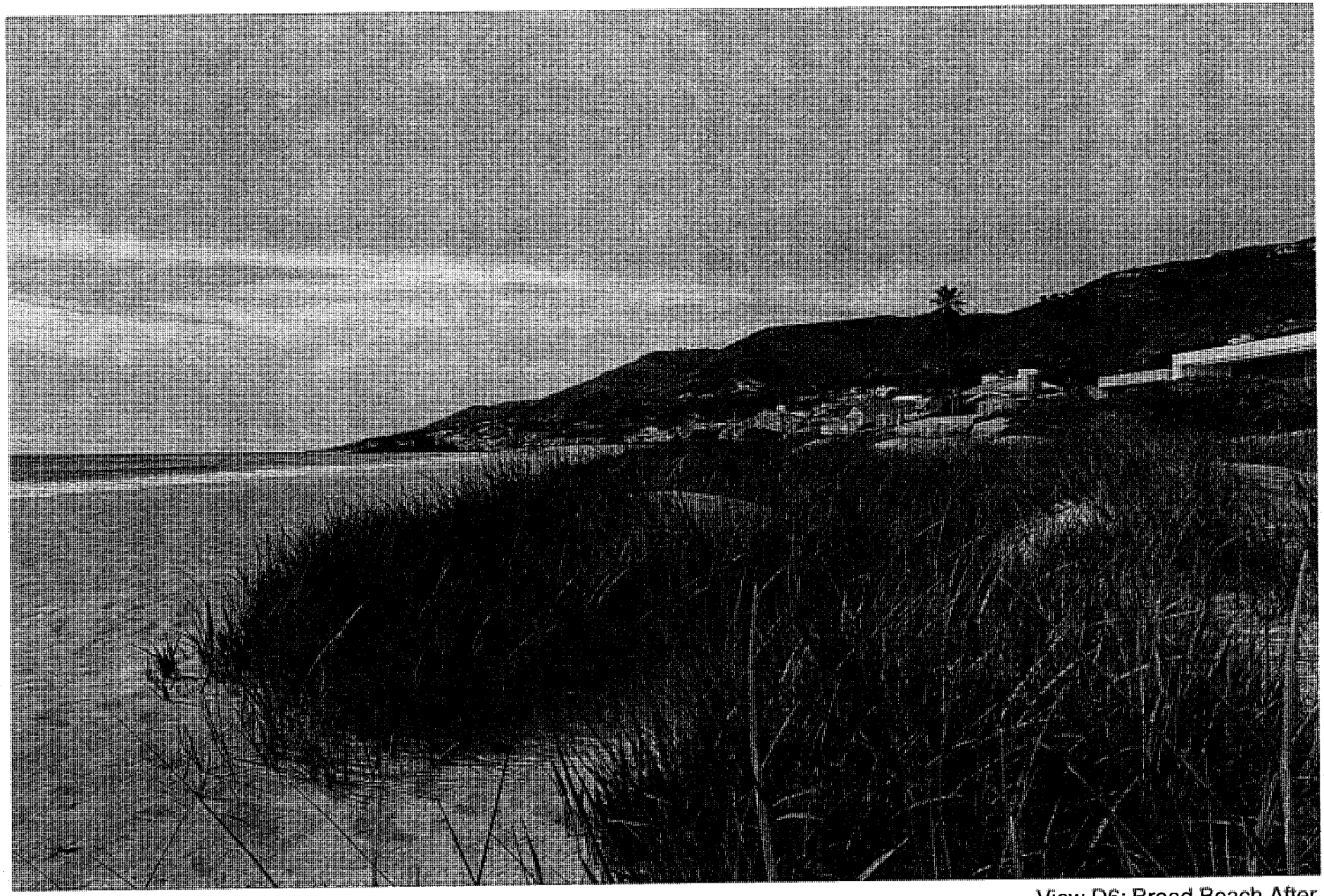
View D4: Broad Beach After

Broad Beach Geological Hazard Assessment District Visual Simulation



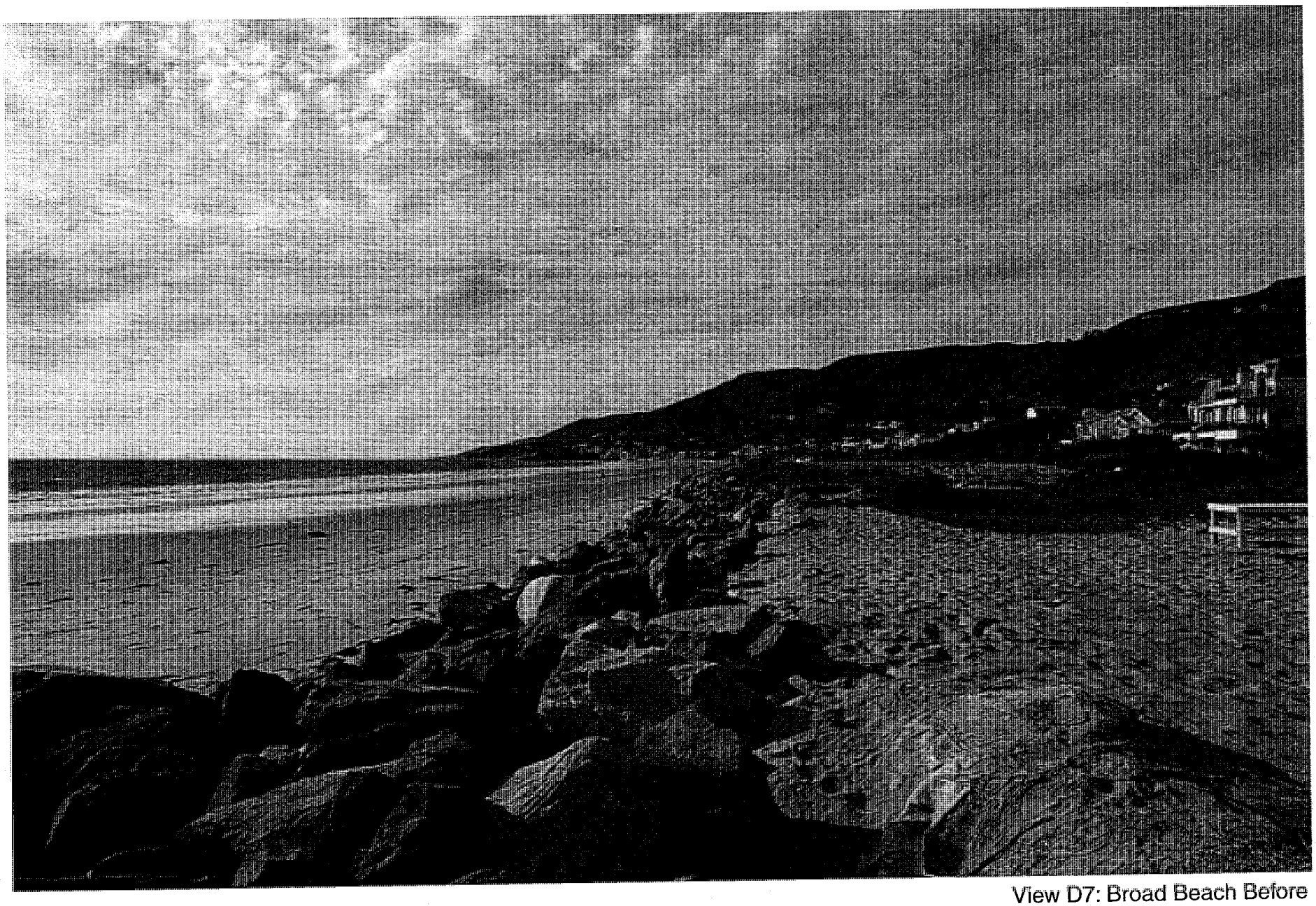
View D6: Broad Beach Before

Broad Beach Geological Hazard Assessment District Visual Simulation



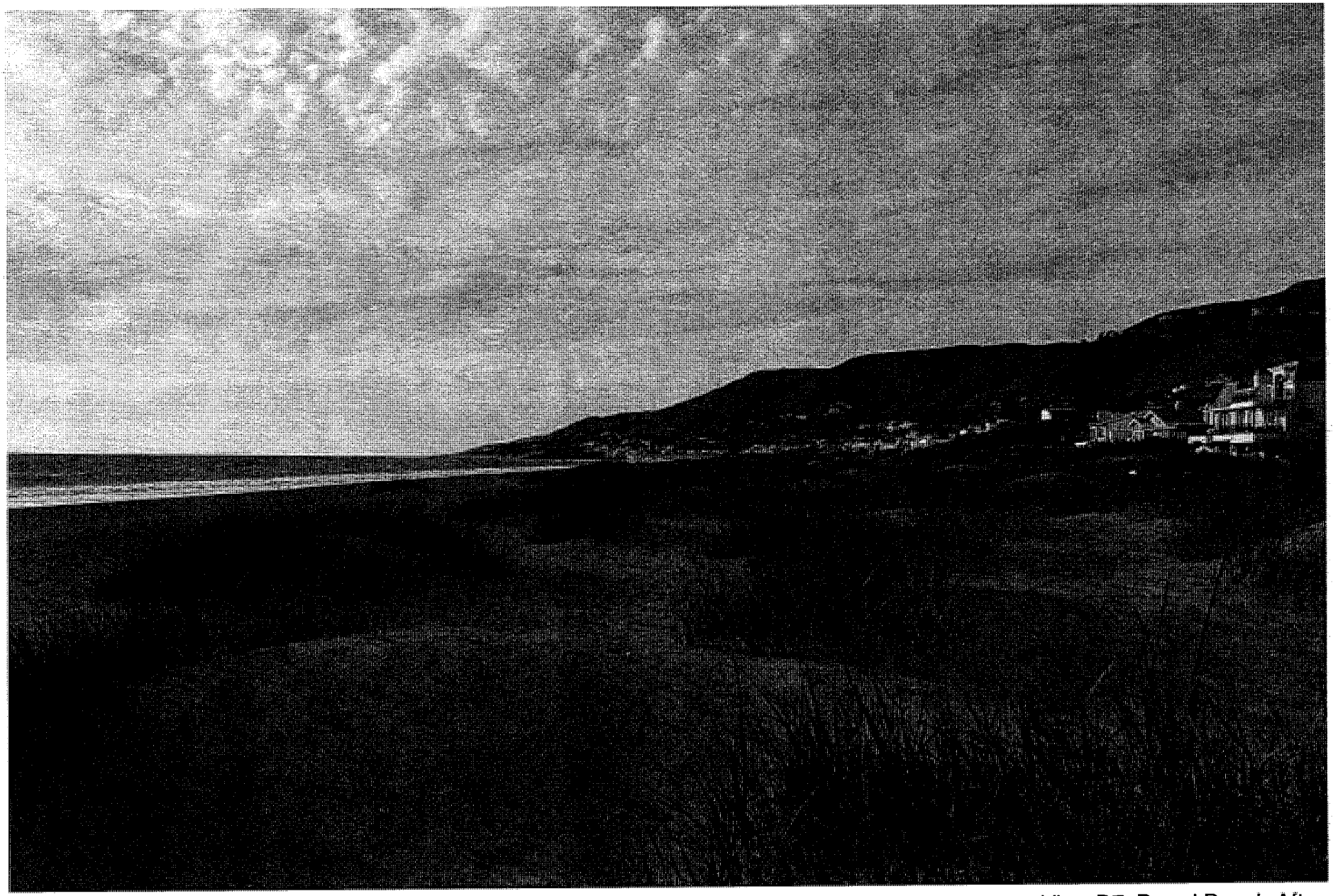
View D6: Broad Beach After

Broad Beach Geological Hazard Assessment District Visual Simulation



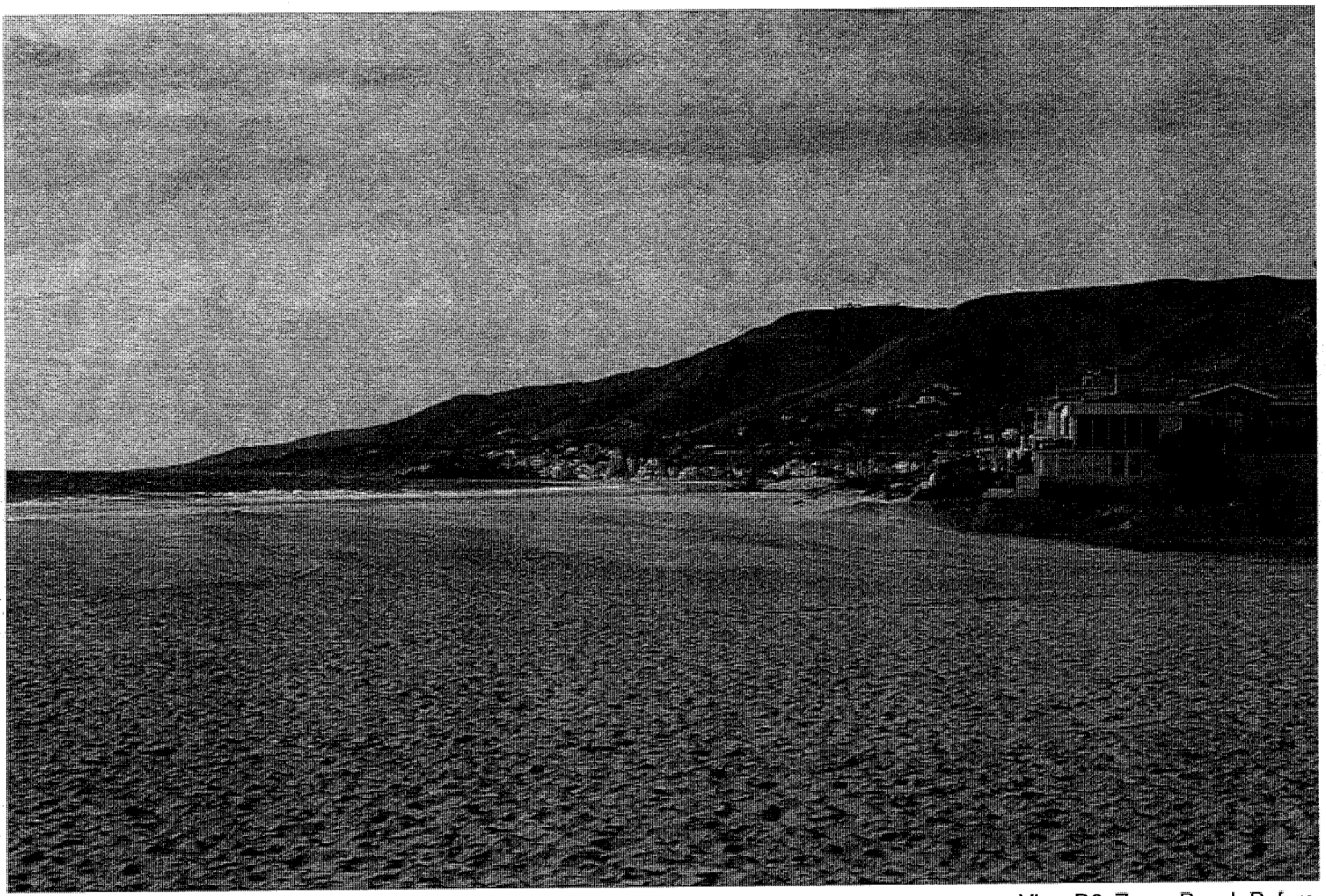
View D7: Broad Beach Before

Broad Beach Geological Hazard Assessment District Visual Simulation



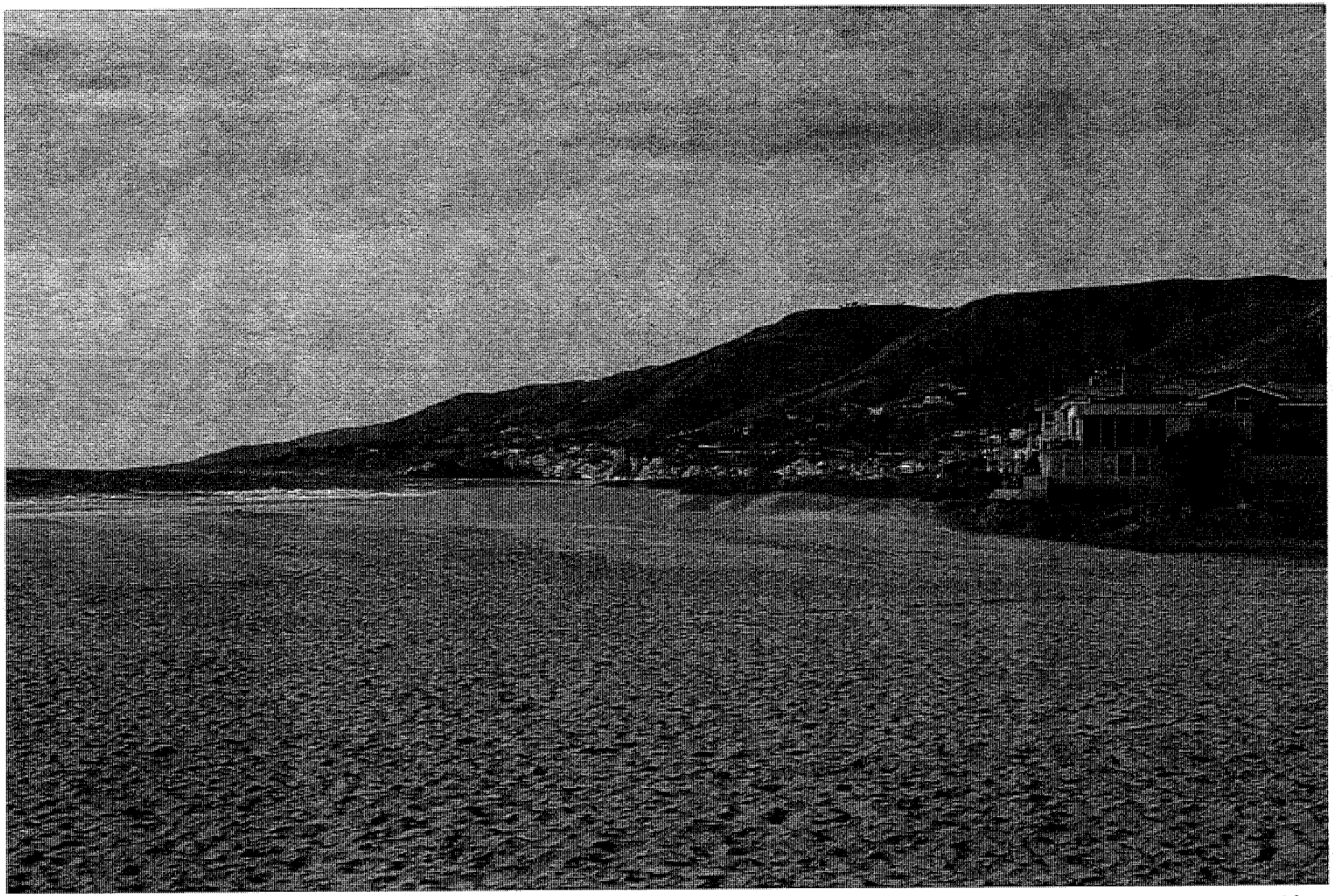
View D7: Broad Beach After

Broad Beach Geological Hazard Assessment District Visual Simulation



View D8: Zuma Beach Before

Broad Beach Geological Hazard Assessment District Visual Simulation

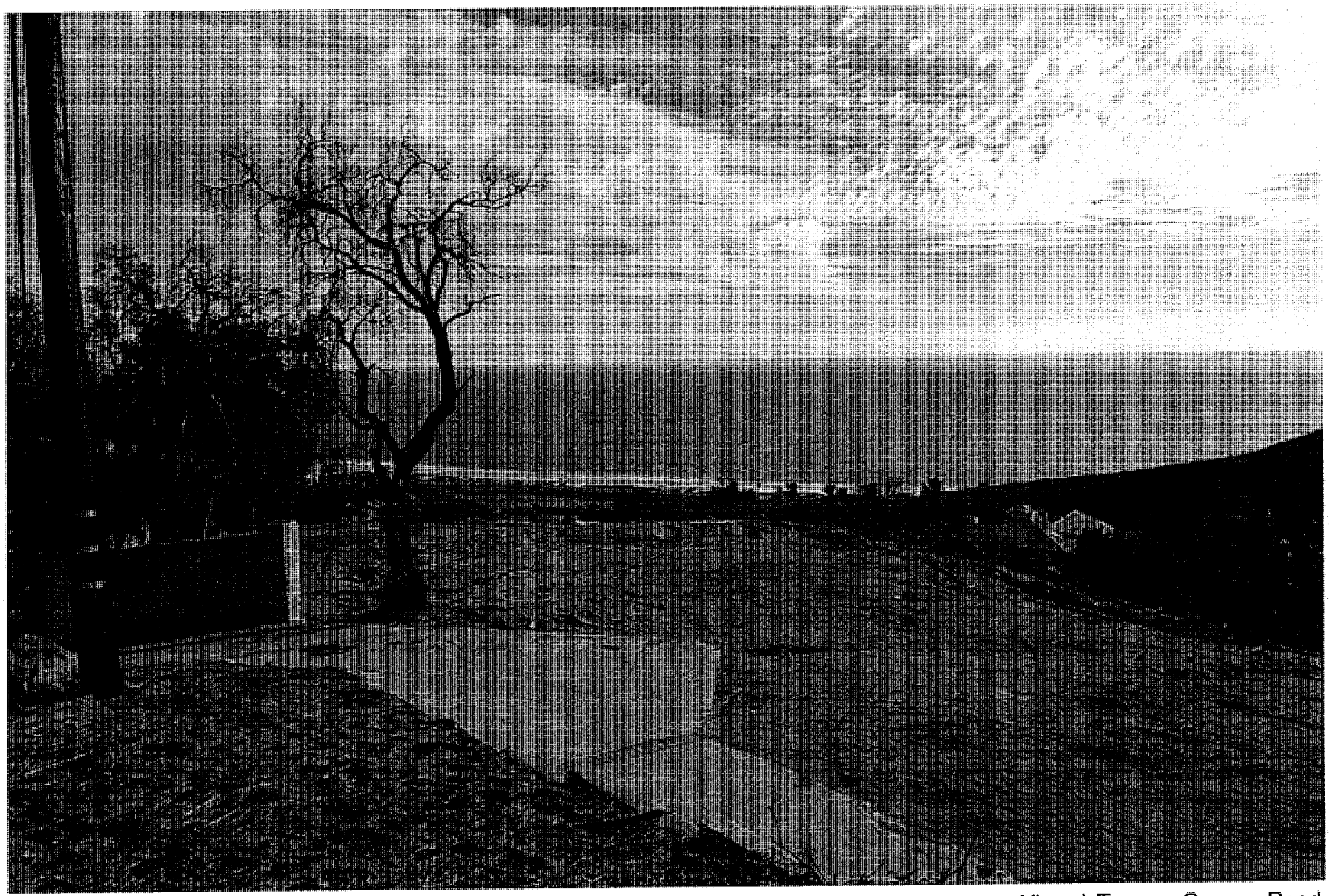


View D8: Zuma After

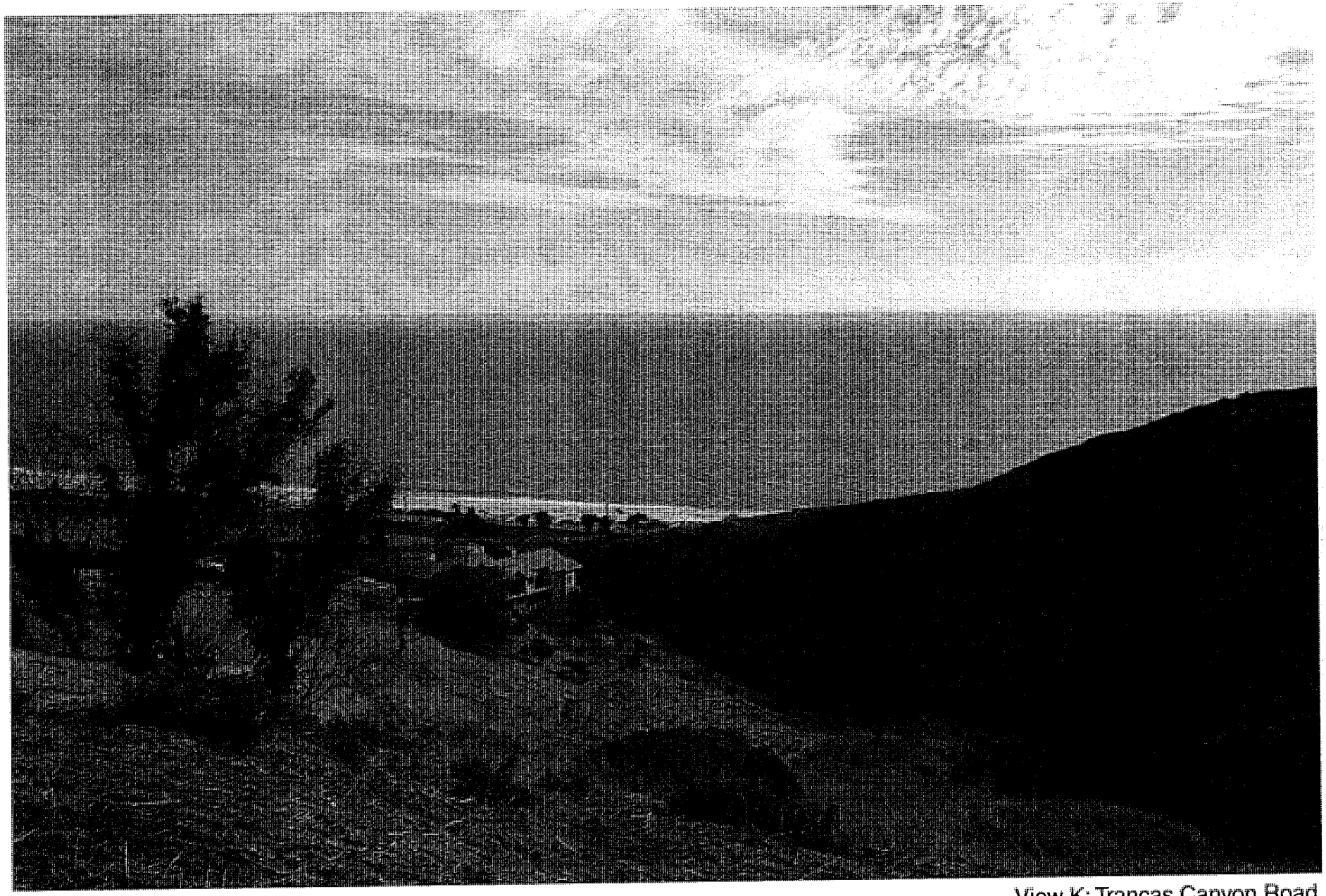
Broad Beach Geological Hazard Assessment District Visual Simulation

View F: Trancas Canyon Road
(No Change)

Broad Beach Geological Hazard Assessment District Visual Simulation



View J: Trancas Canyon Road
(No Change)



View K: Trancas Canyon Road
(No Change)

EXHIBIT E

Peregrine Realty Partners, Inc.
Real Estate Appraisal Report

PEREGRINE
REALTY PARTNERS

June 8, 2020

Mr. Kenneth A. Ehrlich
Elkins Kalt Weintraub Reuben Gartside LLP
10345 W. Olympic Boulevard
Los Angeles, CA 90064

Re: Real Estate Appraisal Report
Proposition 218 Assessment Process
Broad Beach Geologic Hazard Abatement District ("BBGHAD")
Broad Beach Restoration Project ("Project")
Malibu, CA

Dear Mr. Ehrlich:

Pursuant to your request, we have performed research and analysis regarding the Proposition 218 assessment process related to the BBGHAD and Project. The purpose of this engagement is to determine the value of the land on which BBGHAD will construct part of the Project, which BBGHAD understands to be non-assessment funding for the Project. We estimate the value (both market value and fair market value) of the real property being impacted by the Project as a tool for the assessment engineer's use to estimate the non-assessment contributions from these property owners and to estimate special benefits flowing from the Project. Descriptions of the BBGHAD, Project and the specific property being evaluated are detailed in the report along with our conclusions.

ASSIGNMENT PARAMETERS

Intended Users:	BBGHAD, its counsel, and its assessment engineer
Intended Use:	To determine the value of the RLA which will assist in the preparation of an Engineer's Report and other materials related to the Proposition 218 assessment Process. This report is not intended by the appraiser for any other use or by any other user.
Type of Value:	Market Value and Fair Market Value
Date of Value:	November 11, 2019
Interest Appraised:	Fee Simple
Hypothetical Conditions[1]:	None

[1] A hypothetical condition is that which is contrary to what exists, but is asserted by the appraiser for the purpose of analysis. Any hypothetical condition may affect the assignment results.

Extraordinary Assumptions[2]:	The coastal development permit was approved on a temporary (10 year) basis. There is a right to extend for an additional 10-year period. We have assumed this right is exercised and the approvals essentially continue into perpetuity. This assumption affects the assignment results. The land areas presented herein are based on county records and the project engineers' calculations. Should subsequent information be provided, we reserve the right to amend the opinions contained herein.

This is an Appraisal Report in accordance with Standard Rule 2-2(a) of the Uniform Standard of Professional Appraisal Practice (USPAP)

SCOPE OF WORK

The scope of work is the type and extent of research and analysis in an assignment. Scope of work includes the extent to which the property is identified, the extent to which tangible property is inspected, the type and extent of data research, and the type and extent of analysis applied to arrive at credible opinions or conclusions. The specific scope of work for this assignment is identified below and throughout this report.

Data Sources Utilized:	Public Records, Multiple Listing Service (MLS) and CoStar.
Appraiser:	Bradley E. Lofgren, MAI (See Exhibit 1)
Property Inspection:	November 11, 2019 – exterior inspections of all homes from 30760 Broad Beach Road to 31350 Broad Beach Road was conducted both from the street and beach frontage.
Approaches to Value:	The Sales Comparison Approach has been used and relied upon for the value opinions expressed in this report.

Please note, project influences are being analyzed by the engineers and beyond the scope of the appraisal.

As identified above and as an Extraordinary Assumption, the analysis presented herein relies on the Los Angeles County Assessor's Records with regards to parcel area. This is the source typically relied upon for appraisal and assessment purposes and is the most reliable data source available. This source is used uniformly for all of the subject parcels as well as the market data.

Broad Beach Geologic Hazard Abatement District ("BBGHAD")

The City of Malibu approved the formation of the Broad Beach Geologic Hazard Abatement District ("GHAD") on September 12, 2011. GHADs are political subdivisions of the state (Public Resources Code § 26500 et. seq.) formed in specific geographic areas to respond to geologic hazards. Approximately 40 GHADs exist in California (some are inactive) with approximately four of these formed to address coastal erosion issues.

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[2] An extraordinary assumption is directly related to a specific assignment and presumes uncertain information to be factual. If found to be false this assumption could alter the appraiser's opinions or conclusions. Any extraordinary assumption may affect the assignment results.

The Broad Beach GHAD spans the entirety of Broad Beach and a portion of Victoria Point (from Trancas Creek at the east to Lechuza Point at the west) starting at 30708 Broad Beach Road in the east and concluding with 6525 Point Lechuza Road in the west.

Broad Beach Restoration Project ("Project")

The Project consists of: 1) sand nourishment; 2) dune restoration; 3) sand backpassing (moving sand from wider reaches of the beach to narrower reaches of the beach when objective triggers are reached) designed to prolong nourishment, and 4) partly relocating and retaining the existing rock revetment seaward of certain Broad Beach properties as a permanent protective structure buried under both the restored beach and dune, and (5) maintaining Project improvements.

Revetment License Agreements ("RLA")

As indicated, part of the Project includes the relocation (in part) and retention of the existing rock revetment seaward of certain Broad Beach properties as a permanent protective structure buried under both the restored beach and dune. As part of the approval of this project (Coastal Development Permit Application No. 4-15-0390; "Permit"), the California Coastal Commission required each owner on which the revetment is to be located to execute an RLA (sample attached as Exhibit 2) that provides for:

1. An acknowledgment that "the area seaward of the 2010 mean high tide line surveyed by the California State Lands Commission ("2010 MHTL") is and will remain public property regardless of the development undertaken pursuant to the Permit";
2. A grant to the People of the State of California of "an irrevocable license for the life of the Revetment to use certain portions of the Property seaward of the Revetment along the shoreline in accordance with Section 13(B)(1) of the Conditions (the "Access Areas"). In addition, if the circumstances described in Section 14(A)(1) of the Conditions ever exist, then Grantor hereby grants to the People of the State of California an irrevocable temporary springing license, for so long as such circumstances persist, to pass and repass (with no passive recreational use) over the entire portion of the Revetment that is located on the Property and over an area extending from the seaward face of the Revetment landward to a line parallel to and ten (10) feet inland of the landward edge of the Revetment for a public access pathway (the "Springing License Areas")"; and,
3. A grant to "the BBGHAD and its consultants, agents, contractors, and sub-contractors an irrevocable license to construct, maintain, investigate, assess, monitor, and repair the sand and dune restoration project on the Property as specified in, and in accordance with, the Permit".

The RLA only becomes enforceable when the California Coastal Commission (the "Commission") issues the Permit (the Commission approved the Permit subject to pre-issuance conditions, which BBGHAD is working to fulfill). The RLA will then be recorded and its "obligations shall run with the land and be binding upon and inure to the benefit of the heirs, successors and assigns of Grantor, the BBGHAD and the Commission, whether voluntary or involuntary, for so long as the Revetment remains on the Property".

Item 2 in the list above references Section 13(B)(1) and Section 14(A)(1) of the Permit as conditions which would result in enforcement of the RLA conditions. These are described below.

> Section 13 – Public Beach Access – provides in (A) an acknowledgement that the area seaward of the 2010 mean high tide line surveyed by the California State Lands Commission ("2010 MHTL")

is and will remain public property regardless of this project. Subsection (B) requires each owner of real property on which the approved rock revetment will lie to enter into an agreement with the Commission and the BBGHAD in the form of an irrevocable license that provides for public access landward of the 2010 MHTL if, at any time, there is no longer at least 10 feet of dry sandy beach extending seaward from any point along the seaward face of the approved revetment, providing for lateral public access, then the additional temporary springing license provisions described in Special Condition 14 of this permit shall take effect.

Section 14 - Conditional Lateral Public Access over Revetment and Adjacent Pathway – requires lateral public access over the revetment and a strip of land immediately landward of it under the circumstances listed below:

1. The Executive Director determines that three of the reports submitted pursuant to Special Condition No. 4.C.6 during any five-year period demonstrate that less than 10 feet of dry sandy beach has ever been available for public access seaward of the revetment and when one or more of the following conditions is occurring, and only for the duration of time that one or more of the following conditions continues to occur:
   a) If at any time there is less than ten feet of dry sandy beach providing for lateral public access extending seaward of the seaward face of the approved revetment on, or within 100 feet upcoast or downcoast of, any part of the licensor's parcel; or,
   b) Any circumstance occurs (such as, but not limited to, an oil spill) that prohibits the public's use, access, and enjoyment of any of the area of licensor's property seaward of the revetment or of any property within 100 feet upcoast or downcoast thereof.

It should be noted, Section 14 (Conditional Lateral Public Access over Revetment and Adjacent Pathway) should not be confused with an Offer to Dedicate (OTD) or a Lateral Access Easement ("LAE") that are required by the California Coastal Commission (or another permitting agency) as mitigation of the individual and cumulative impacts of private development upon public access to the coast. Either an OTD or an LAE is essentially an offer from a private landowner to allow for a future, open accessway across property. For the purpose of this report, and to avoid confusion, we will refer to an OTD and a LAE seaward of a property as an LAE.

The LAEs have been written in a variety of ways over time. In general, they provide for public access to dry sand beach areas. This is typically defined as an area above the mean high tide line ("MHTL"), which typically sets the seaward boundary for private property. Because the MHTL is not set, the LAE moves in accordance with the MHTL. Most LAEs will limit the landward extent of the LAE to a specific distance from a property improvement, or up to a specific location (i.e., a seawall). In other words, if a property owner agrees to an LAE, the public has rights to use a portion of the private land above (landward of) the MHTL. LAEs are typically required as part of any coastal development/redevelopment. Historically, property owners have not been separately compensated for LAEs.

Properties Evaluated

The RLA is only required from the property owners located in the stretch of coast where the revetment exists. This is essentially from 30760 Broad Beach Road to 31350 Broad Beach Road. There is a total of 84 properties in this area. A summary of these properties is provided below. Note, the properties are arrayed by parcel numbers which do not follow the same pattern as street address.

SUMMARY OF BROAD BEACH PARCELS WITH REVETMENT

Ownership	Address	APN	Land Area (SF)
KLEIN DANIEL AND DIANA TRS; KLEIN LISA	30760 Broad Beach Road	4469-026-002	32,193
FINEGOOD RACHEL R; FINEGOOD FAMILY TRUST	30800 Broad Beach Road	4469-026-012	21,803
LEIGH ANDREW M AND BARBARA TRS; LEIGH FAMILY TRUST	30810 Broad Beach Road	4470-013-002	15,192
MALIBU BEACH PARTNERS LLC	30826 Broad Beach Road	4470-013-004	15,277
WHITE, W BRETT; WHITE, DANIELLE M	30830 Broad Beach Road	4470-013-005	20,604
HOERHAGER FRANZ TR ETAL HOERHAGER	30838 Broad Beach Road	4470-013-006	16,000
THOMPSON EVAN C; EVAN C THOMPSON TRUST	30842 Broad Beach Road	4470-013-007	18,417
RESSLER ANTONY P; GERTZ JAMI B	30846 Broad Beach Road	4470-013-008	22,980
R2FC LLC	30852 Broad Beach Road	4470-013-009	15,942
R2FC LLC	30856 Broad Beach Road	4470-013-010	15,833
R2FC LLC	30860 Broad Beach Road	4470-013-011	15,870
SHERMAN, DIANE F; DIANE F SHERMAN 2008 REVOCABLE TRUST,	30866 Broad Beach Road	4470-013-012	15,961
LABOW FRUMEH; LEMMON FAMILY TRUST	30870 Broad Beach Road	4470-013-013	15,605
ANJAC FASHION BUILDINGS LLC	30874 Broad Beach Road	4470-013-014	16,369
KELTON DAVID AND LENORA L TRS; KELTON FAMILY TRUST	30900 Broad Beach Road	4470-013-015	16,156
SATIN GARY; KNICKERBOCKER AVENUE TRUST	30904 Broad Beach Road	4470-013-016	15,957
THEMBA II	30908 Broad Beach Road	4470-013-017	16,132
NATHANSON MARC (CO-TR); NATHANSON TRUST	30916 Broad Beach Road	4470-013-018	16,332
30918 BB RD LLC,	30918 Broad Beach Road	4470-013-019	16,213
MTSBB LLC	30924 Broad Beach Road	4470-013-020	15,538
HESS JOHN B & SUSAN K	30928 Broad Beach Road	4470-013-021	15,781
MDWBB LLC	30930 Broad Beach Road	4470-013-022	16,303
WEST SONYA	30936 Broad Beach Road	4470-013-023	15,433
MELLON VICTOR; 30940 BROAD BEACH TRUST	30940 Broad Beach Road	4470-013-024	15,599
ARAD AVI AND JOYCE TRS; AVI AND JOYCE ARAD TRUST	30944 Broad Beach Road	4470-013-025	15,387
ARAD AVI (CO-TR); AVI AND JOYCE ARAD TRUST	30948 Broad Beach Road	4470-013-026	15,547
30952 BROAD BEACH LLC	30952 Broad Beach Road	4470-013-027	14,916
PANDORA ENTERPRISE LLC	30804 Broad Beach Road	4470-013-028	14,929
MALIBU-BROAD BEACH S-1 LLC	N/A	4470-013-029	15,260
MAGIDSON MARK; MARK MAGIDSON TRUST	30822 Broad Beach Road	4470-013-030	31,525
30956 BB LLC	30956 Broad Beach Road	4470-014-001	15,085
SITRICK MICHAEL S AND NANCY TRS; M AND N SITRICK TRUST	30962 Broad Beach Road	4470-014-002	15,058
MARX ROBERT (CO-TR); BARBARA M SINATRA (DECD) TRUST	30966 Broad Beach Road	4470-014-003	14,667
SHEINBERG SIDNEY J (CO-TR); SHEINBERG SIDNEY	30970 Broad Beach Road	4470-014-004	14,528
HAFT JONATHAN; HAFT FAMILY TRUST	31000 Broad Beach Road	4470-014-008	14,241
MARK ALAN P (CO-TR); MARK FAMILY TRUST	31008 Broad Beach Road	4470-014-009	13,914
SHOLEM BARRY A (CO-TR); SHOLEM TRUST	31012 Broad Beach Road	4470-014-010	14,376
BARON IRENE (CO-TR); BARON FAMILY TRUST	31016 Broad Beach Road	4470-014-011	13,114
GROSSO NIKKI A GROSSO N	31020 Broad Beach Road	4470-014-012	13,701
GROSSO NIKKI A; GROSS NIKKI	31022 Broad Beach Road	4470-014-013	13,660
GOOCH DIANE	31026 Broad Beach Road	4470-014-014	13,049
GROSSMAN MARSHALL B (CO-TR); GROSSMAN FAMILY TRUST	31030 Broad Beach Road	4470-014-015	13,198
31034 BROAD BEACH ROAD LLC	31034 Broad Beach Road	4470-014-016	12,974
ZUMA BEACH HOLDINGS LLC,	31038 Broad Beach Road	4470-014-017	12,815
HILL WALTER (CO-TR); HILL GOTTLIED FAMILY TRUST	31042 Broad Beach Road	4470-014-018	12,934
AVEDON, DEAN A; THE MSN PROPERTY TRUST,	31048 Broad Beach Road	4470-014-019	13,011
STONEBURNER KAY C; ABDALLA KENNETH J	31052 Broad Beach Road	4470-014-020	12,944
GOTTSEGEN LEE (CO-TR); D L RESIDENCE TRUST NO 2	31054 Broad Beach Road	4470-014-021	12,746
NOVOGRODER COMPANIES INC	31058 Broad Beach Road	4470-014-022	13,088
DREYER MICHAEL S; NORTH ENTERPRISES 1996 TRUST	30980 Broad Beach Road	4470-014-023	42,000
BH BROAD BEACH HOUSE LLC	31100 Broad Beach Road	4470-015-004	31,738
BROSNAN KEELY (CO-TR); MIDLETON TRUST	31118 Broad Beach Road	4470-015-006	34,110
BB MALIBU PLACE LLC	31122 Broad Beach Road	4470-015-007	16,891
ROSKI EDWARD P JR; ROSKI TRUST	31138 Broad Beach Road	4470-015-011	14,650
2XMD PARTNERS LLC	31202 Broad Beach Road	4470-015-012	21,785
2XMD PARTNERS LLC	31206 Broad Beach Road	4470-015-013	16,827
KAUFFMAN MARTA; MARTA KAUFFMAN TRUST	31212 Broad Beach Road	4470-015-014	16,938
KARNO NORTON S	31214 Broad Beach Road	4470-015-015	16,341
ELLY AND JOHNNIE TRUST	31220 Broad Beach Road	4470-015-016	16,224
BEL AIR ESTATES AT MULHOLLAND	31224 Broad Beach Road	4470-015-017	16,557
PETITE PROPERTIES LP	31228 Broad Beach Road	4470-015-018	15,823
PEPPERDINE UNIVERSITY	31232 Broad Beach Road	4470-015-019	16,351
PEPPERDINE UNIVERSITY	31236 Broad Beach Road	4470-015-020	15,870
DOUGLAS JAMES E AND JEAN A TRS; DOUGLAS FAMILY TRUST	31240 Broad Beach Road	4470-015-021	16,086
MARINE JEFFREY AND JONI G TRS; MARINE JEFFREY	31260 Broad Beach Road	4470-015-025	17,823
BROSNAN KEELY (CO-TR); MIDLETON TRUST	31112 Broad Beach Road	4470-015-027	17,271
GREY JILL K; TRIAK TRUST	31108 Broad Beach Road	4470-015-029	20,264
SMIDT ERIC L; SMIDT TRUST	31064 Broad Beach Road	4470-015-030	21,181
BH BROAD BEACH HOUSE LLC	31070 Broad Beach Road	4470-015-031	15,141
31250 BROAD BEACH LLC	31250 Broad Beach Road	4470-015-032	63,641
BOBO KAREN; MOT TRUST	31134 Broad Beach Road	4470-015-033	46,261
WELLS LUANNE C (CO-TR); BROAD BEACH TRUST	31280 Broad Beach Road	4470-016-003	35,232
PALM TRUST	31284 Broad Beach Road	4470-016-004	28,457
RUTTER, DEBORAH F	31330 Broad Beach Road	4470-016-008	16,880
31336 BROAD BEACH ROAD LLC	31336 Broad Beach Road	4470-016-010	12,911
31340 BROAD BEACH RD LLC,	31340 Broad Beach Road	4470-016-011	16,834
JB NEW PROPERTY LLC	31346 Broad Beach Road	4470-016-012	15,077
FENTON DENNIS M; FENTON LINDA	31350 Broad Beach Road	4470-016-013	12,920
FISH JEFFREY	31324 Broad Beach Road	4470-016-027	12,278
REISBORD PAUL S; REISBORD CHILDREN TRUST	31322 Broad Beach Road	4470-016-028	15,127
DOUGLAS KEVIN AND MICHELLE TRS; K AND M DOUGLAS TRUST	31316 Broad Beach Road	4470-016-031	27,427
SPEARS BILL AND SANDRA TRS; SPEARS FAMILY TRUST	31272 Broad Beach Road	4470-016-032	47,393
ANTOCI, MARIANO ANTHONY; ANTOCI, JOSEPHINE	31310 Broad Beach Road	4470-016-036	19,071
KAPLAN STEPHEN (CO-TR); KAPLAN TRUST	31302 Broad Beach Road	4470-016-037	25,221

Source: Pubic Records from Fidelity National Title Company

Combined, these properties have a total land area of 36.24 acres, again per the Los Angeles County Assessor's Records. This does not include the area associated with the two public beach access ways, which are estimated at 12,411.59 square feet, or 0.285 acres (neither access way has a corresponding parcel number, so it is not included in the prior chart). Of the total area, 9.07 acres will be impacted by the dune restoration (this area is also referred to as the Dune Footprint). Included in the Dune Footprint are 2.68 acres that will be improved with the revetment, initially buried under the dunes. Lastly, Section 14 (Conditional Lateral Public Access over Revetment and Adjacent Pathway) will impact a total of 0.97 acres, with 0.90 acres located within the dune footprint and 0.07 acres located at the west end of the Project area. The net dune restoration area (excludes Revetment and Section 14) is 5.49 acres. Note, all of these areas are above (landward of) the 2010 mean high tide line and, where applicable, include areas associated with the public beach access ways.

As of the date of value, 70 of the owners (83 percent) in this area had executed the RLA without any compensation. The following is a summary of the ownership and properties that had not executed the RLA as of that date.

SUMMARY OF BROAD BEACH PARCELS TO BE EVALUATED

Ownership	Address	APN
Andrew M. Leigh, et al	30810 Broad Beach	4470-013-002
Mark Magidson, et al	No Address	4470-013-029
Mark Magidson, et al	30822 Broad Beach	4470-013-030
Franz Hoerhager, et al	30836 Broad Beach	4470-013-006
Diane F. Sherman	30866 Broad Beach	4470-013-012
Frumeh Labow, et al	30870 Broad Beach	4470-013-013
Themba II, LLC	30908 Broad Beach	4470-013-017
Alexander Haagen III	30956 Broad Beach	4470-014-001
Michael Sitrick, et al	30962 Broad Beach	4470-014-002
Barbara Marx Sinatra, et al	30966 Broad Beach	4470-014-003
Keely and Pierce Brosnan, et al	31112 Broad Beach	4470-015-027
Keely and Pierce Brosnan, et al	31118 Broad Beach	4470-015-006
Alexander Haagen III	31122 Broad Beach	4470-015-007
Edward P. Roski, Jr., et al	31138 Broad Beach	4470-015-011

Compiled by: PRP

As indicated, there are fourteen (14) legal parcels, with eleven (11) separate owners that have not signed the RLA. Geographically, the parcels are distributed throughout the portion of the GHAD subject to the Dune Footprint.

Two of the parcels (APN 4470-015-007 and 4470-013-013) are encumbered with LAEs. Two more (4470-013-029 & 030) previously received redevelopment permits and agreed to an LAE as part of the permit process. These LAEs are not recorded, and the permits appear to have expired. Should new permits issue, new LAEs can be expected to be required.

Zoning

All of the properties are zoned SF-M by the City of Malibu. This designation allows for single family homes with a minimum required lot size of 0.25 acres and a minimum lot width of 45 feet (both requirements cited are for beachfront lots). It is noted, several of the existing lots do not meet current zoning standards (i.e., minimum lot widths) and are grandfathered as to new regulations and remain developable. Thus,

there is no reason to distinguish among technically non-conforming lots and others for purposes of this analysis. Lastly, all properties are subject to the Trancas Beach Overlay District (TBOD). This limits most development to the landward portions of the legal parcel. Area I of the TBOD is essentially a strip of land, which appears to be located along the seaward frontage of the development area, that allows for the construction of a windbreak. Area II, seaward of Area I, has further development restrictions, prohibiting structures over 30 inches in height.

In addition to zoning, all of the beachfront properties are subject to development restrictions associated with environmentally sensitive habitat areas (ESHAs). In fact, it appears that all areas covered by the RLA are either designated ESHA or potentially ESHA under the Malibu Local Coastal Program (LCP). Essentially, this would prohibit any improvements in the areas with this designation.

Market Value Analysis

As noted, the purpose of this appraisal is to estimate the non-assessment contributions by owners of land where dunes and other improvements for the Project will be constructed. One method to estimate this contribution is to first determine the impact of the RLA on the market value[3] of the referenced properties. It is important to note, that the RLA represent a limited interest in the property that does not transfer on the open market. In other words, the typical appraisal process would be to research recent sales/listings of RLAs in the market, analyze the data, and formulate an opinion of value. Absent direct market data for the value of the RLA, an analysis can be conducted involving sales/listings of properties subject to the RLA and comparing this data with sales/listings of properties not subject to the RLA. Additional market support is derived from interviews of property owners in the GHAD and real estate brokers that have experience in the marketing of properties in this area.

Direct Market Data

Presented below is a summary of home sales and listings since August 2016 along Broad Beach Road within the revetment boundaries. The data presented is compiled from the MLS and public records.

[3] The most widely accepted components of market value are incorporated in the following definition: The most probable price, as of a specific date, in cash, or in terms equivalent to cash, or in other precisely revealed terms, for which the specified property rights should sell after reasonable exposure in a competitive market under all conditions requisite to a fair sale, with the buyer and seller each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress.

SUMMARY OF HOME SALES AND LISTINGS

Address	APN	Transaction Date	Days On Market	Year Built	Beds	Baths Full & 3/4	Baths Half	Sq. Ft.	Land Area (SF)	Beach Frontage (LF)	Sale Price Total	$/SF Bldg.	$/SF Land	$/LF Frontage	Discount from Original List. Price
30826 Broad Beach	4470-013-004	8/26/2016	522	1974	3	4.0	0.0	3,655	15,277	42	$ 9,300,000	$2,544.46	$ 608.76	$221,428.57	15.1%
30956 Broad Beach	4470-014-001	11/18/2016	245	1948	7	8.0	1.0	3,213	15,085	40	$ 10,000,000	$3,112.36	$ 662.91	$250,000.00	16.0%
31250 Broad Beach	4470-015-032	3/13/2017	209	0	6	8.0	2.0	11,413	63,641	160	$ 24,150,950	$2,116.09	$ 379.49	$150,943.44	28.8%
31228 Broad Beach	4470-015-018	3/31/2017	252	1954	3	3.0	2.0	3,217	15,823	40	$ 6,865,000	$2,133.98	$ 433.86	$171,625.00	19.2%
31026 Broad Beach	4470-014-014	9/25/2017	134	1998	2	3.0	1.0	4,692	13,049	40	$ 7,000,000	$1,491.90	$ 536.44	$175,000.00	25.5%
31324 Broad Beach	4470-016-027	1/19/2018	252	1972	4	4.0	0.0	3,090	12,278	40	$ 6,000,000	$1,941.75	$ 488.68	$150,000.00	17.8%
31048 Broad Beach	4470-014-019	5/7/2018	217	1976	4	4.0	0.0	4,282	13,011	40	$ 7,975,000	$1,862.45	$ 612.94	$199,375.00	10.4%
31340 Broad Beach	4470-016-011	9/28/2018	43	1953	3	3.0	0.0	1,948	16,834	50	$ 5,380,000	$2,761.81	$ 319.59	$107,600.00	13.9%
31038 Broad Beach	4470-014-017	10/16/2018	348	2010	5	5.0	1.0	7,442	12,815	40	$ 13,656,000	$1,834.99	$1,065.63	$341,400.00	24.1%
31310 Broad Beach	4470-016-036	10/16/2018	246	1952	3	3.0	0.0	2,340	19,071	49	$ 8,100,000	$3,461.54	$ 424.73	$165,306.12	19.0%
30830 Broad Beach	4470-013-005	11/28/2018	530	1985	5	4.0	0.0	3,882	20,604	55	$ 7,400,000	$1,906.23	$ 359.15	$134,545.45	29.5%
31330 Broad Beach	4470-016-008	5/24/2019	39	1933	4	3.0	0.0	2,236	16,880	50	$ 5,275,000	$2,359.12	$ 312.50	$105,500.00	15.6%
30826 Broad Beach	4470-013-004	Expired (1/19)	96	1974	4	5.0	0.0	3,655	15,277	42	$ 18,800,000	$5,143.64	$1,230.61	$447,619.05	
31336 Broad Beach	4470-016-010	Expired (11/18)	275	1948	4	4.0	0.0	2,115	12,911	37	$ 5,995,000	$2,834.52	$ 464.33	$162,027.03	
30804 Broad Beach	4470-013-028	Expired (8/19)	153	2005	4	4.0	1.0	4,195	14,929	42	$ 13,500,000	$3,218.12	$ 904.28	$321,428.57	
30830 Broad Beach	4470-013-005	Listing	79	1985	5	4.0	0.0	3,882	20,604	55	$ 8,950,000	$2,305.51	$ 434.38	$162,727.27	
30966 Broad Beach	4470-014-003	Listing	127	1992	7	8.0	1.0	5,824	14,667	40	$ 12,900,000	$2,214.97	$ 879.53	$322,500.00	
31042 Broad Beach	4470-014-018	Listing	127	0	5	5.0	0.0	3,050	12,934	40	$ 8,995,000	$2,949.18	$ 695.45	$224,875.00	

Compiled By: PRP

As of the date of value, there had been a total of 12 sales, three expired listings and three listings. Again, all of the data points are located along Broad Beach Road within the revetment area and have similar locational attributes and a similar view amenity. The individual homes are all oriented towards the ocean and have unobstructed views of it, with the data not showing any discernable premium/discount between a limited sand/beach view (western homes) and a more expansive sand/beach view (eastern homes). Pricing differentials appear to primarily be driven by the age/condition and size of the home.

In terms of the sale data, the range in prices on a per square foot of home area is from $1,491.90 to $3,461.54. Again, the prices appear to be affected by the condition/size of the home improvements. Beach frontage and land area do not appear to affect price per square foot, meaning larger properties sell for higher prices; conversely, smaller properties sell at lower prices. Only two of the sales (31324 and 31330 Broad Beach Road) transferred with the seller having executed the RLA. Nine of the sales involved buyers that executed the RLA after acquiring the property. The buyer as to only one sale (30956 Broad Beach Road) has not yet executed the RLA.

The three expired listings had asking prices from $2,834.52 to $5,143.64 per square foot of home area. All three have executed RLA agreements.

As of the date of value, the listings have asking prices from $2,214.97 to $2,949.18 per square foot of home area. Two of the listings have executed RLA's in place, while the third (30966 Broad Beach Road) is being sold without an executed RLA. We understand that as of the date of value, this property was under contract (price and terms were not disclosed). Further, secondary sources report the buyer was considering the RLA and may sign after closing of the transaction.

In analyzing the data, there does not appear to be any discernable pattern pricing between a property with or without the RLA. The two actual sales with the RLA in place transferred at prices consistent with the pricing for properties without the RLA, all other factors (home size, age, condition, etc.) considered. Additionally, three of the sales have recorded LAE's – 30830, 31038 and 31048 Broad Beach Road. The pricing for these homes does not appear to be affected by the existence of the LAE's.

Lateral Access Easements

Previously we discussed LAE's. This is the most similar agreement to Section 14 (Conditional Lateral Public Access over Revetment and Adjacent Pathway) of the RLA, as it provides for public access typically above the mean high tide line for beachfront properties. The LAE agreements are often required as part of a new development or redevelopment of a property. These are permanent easements, versus the subject RLA which are only active if certain conditions, previously discussed, exist. From a value standpoint, the LAE is the most similar condition to the RLA even though the LAEs reviewed for Broad Beach residences affect public access immediately upon recording and the RLA, even after recording, may never come into effect since it requires certain eroded beach conditions 3 out of any 5 years after the Broad Beach Restoration Project is implemented. Still, deriving a value impact from the LAE, would be a reasonable proxy for Section 14 (Conditional Lateral Public Access over Revetment and Adjacent Pathway) of the RLA.

As noted above, sales of properties along Broad Beach Road with and without LAEs were reviewed. Similar to the RLA, there is no discernable pattern with regards to pricing for properties with and without an LAE.

Market Participants

Lastly, we spoke both to property owners along Broad Beach Road as well as local real estate brokers regarding the RLA. The property owners we spoke with all have executed the agreement (three were recent purchasers who executed the agreement after acquiring property). In each case, the property owners indicated that the RLA was part of the larger project which is ultimately conceived to preserve property value. With regards to the recent transfers, the current owners indicated the price paid for their home was unaffected by the RLA. In other words, the pricing would have been the same had the seller previously executed the document.

Local brokers provided similar sentiment. The RLA is not seen as a negative attribute, with the pricing of a home with and without an executed RLA being the same.

Summary – Market Value

Based on the review of market data and discussions with market participants, there does not appear to be any discernable value, positive or negative, associated with the RLA. The properties identified in this report as having not executed the agreement would all be subject to the same potential impacts as those properties that have executed the agreement for no compensation. The definition of market value assumes that the buyer and seller are each acting prudently, knowledgeably, and for self-interest, and assuming that neither is under undue duress. The 70 owners that have executed the RLA agreement for no compensation meet this definition. As presented, we conclude the project to be constructed will cause no diminishment in value for the real estate

Fair Market Value

The RLA is not a fee taking. As previously described, it is, in part, a grant to "the BBGHAD and its consultants, agents, contractors, and sub-contractors an irrevocable license to construct, maintain, investigate, assess, monitor, and repair the sand and dune restoration project on the Property as specified in, and in accordance with, the Permit". While not specifically called an easement[4], the RLA is similar to this type of agreement and we therefore rely on what is commonly an easement valuation principle known

[4] Conveyance of certain property rights, but not ownership, to a parcel of real estate.

as across-the-fence[5] to estimate the value of the non-assessment contributions by owners of parcels on which BBGHAD will construct the Project. In light of the purpose of the appraisal, "Fair Market Value" appears to be the most reasonable premise for valuation,.

The definition of Fair Market Value is as follow:

> The fair market value of the property taken is the highest price on the date of valuation that would be agreed to by a seller, being willing to sell but under no particular or urgent necessity for so doing, nor obliged to sell, and a buyer, being ready, willing, and able to buy but under no particular necessity for so doing, each dealing with the other with full knowledge of all the uses and purposes for which the property is reasonably adaptable and available.

The conclusion of zero value under Market Value for the RLA will not be the same as the Fair Market Value for the same interest. Under the prior Market Value analysis, there is clear evidence that presence of the RLA condition does not affect Market Value, suggesting owners of property that are subject to the RLA perceive value from the Project that exceeds the value of the RLA and other burdens they bear for the Project.

The area affected by the RLA is essentially land. In some cases, there are minor improvements (decking, landscaping, etc.); however, these are seen as nominal in all cases. Therefore, in order to estimate the Fair Market Value of the area impacted by the RLA and estimate the value of the non-assessment funding from the affected homeowners, we must first determine the value of the "larger parcel", which for the purpose of our analysis will be the land value for the entire legal lot for each parcel where the RLA is required (previously summarized).

Highest and Best Use

We have concluded that the highest and best use of each Parcel as though vacant would be for a residential development while the highest and best use of each property as presently improved is for continued use as improved [the exceptions may be 31330 and 31340 Broad Beach (APNs 4470-016-011 & 008) which have previously been marketed as development sites and 30822 Broad Beach (APNs 4470-013-029 & 030) as to which the owner has previously submitted plans to redevelop the site]. That is, these have been marketed as teardowns.

Land Value

As previously mentioned, each parcel is situated along Broad Beach and has similar market appeal from a vacant land standpoint. Included in the prior summary of sales along Broad Beach are two recent transactions that were both marketed as development/redevelopment sites. They are summarized below.

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[5] ACROSS THE FENCE (ATF) is a methodology that assumes that the corridor has a value consistent with the value of typical adjacent land, as if vacant and based upon sales of nearby or adjacent land, without adjustments for size, shape, topography or access

SUMMARY OF HOME SALES AND LISTINGS

Address	APN	Transaction Date	Days On Market	Year Built	Beds	Baths Full & 3/4	Baths Half	Sq. Ft.	Land Area (SF)	Beach Frontage (LF)	Sale Price Total	$/SF Bldg.	$/SF Land	$/LF Frontage
31340 Broad Beach	4470-016-011	9/28/2018	43	1953	3	3.0	0.0	1,948	16,834	50	$ 5,380,000	$ 2,761.81	$ 319.59	$107,600.00
31330 Broad Beach	4470-016-008	5/24/2019	39	1933	4	3.0	0.0	2,236	16,880	50	$ 5,275,000	$ 2,359.12	$ 312.50	$105,500.00

Compiled By: PRP

These two sales are located towards the western end of the revetment, which generally has shallower lot depths. They indicated a value of between $312.50 and $319.59 per square foot of land.

In addition to these two sales, the property at 30830 Broad Beach Road sold in November 2018. As previously summarized, this is a larger site (20,620 square feet), with 55 feet of beach frontage. While not marketed as a development/redevelopment site, the price paid equated to $359.15 per square foot of land area, slightly higher than the two other properties. Essentially what this indicates is there is some contributory value to the improvements. It also shows some fluctuation in the total value of a single home site based on size of the lot, with the per square foot of land pricing being rather constant. As of the date of value, the 30830 Broad Beach Road property was on the market for sale, with the seller having renovated the existing improvements per the listing information.

Lastly, while is does not appear to be formally on the market as of the date of value, there is a listing for the property at 30822 Broad Beach Road (www.garyglassestates.com/30822-broad-beach-rd) that indicates an asking price of $28.0 million for the property. The property is one where the seller previously obtained permits for a new home development on the site. County records indicate the land area to be approximately 46,785 square feet for the property (APNs 4470-013-029 & 030). This implies an asking land value of $598.48 per square foot. Note, this is an asking price, with transaction prices for the sales previously summarized being 10.4 to 29.5 percent below the listing prices.

Considering the above, and giving the most weight to the two most recent sales as of the date of value, we conclude with a current fair market value for the land at $330 per square foot. Using the across-the-fence valuation method, this would be applied to the area the RLA impacts on each property.

RLA Valuation

The RLA is not a fee taking. As previously described, it is, in part, a grant to "the BBGHAD and its consultants, agents, contractors, and sub-contractors [of] an irrevocable license to construct, maintain, investigate, assess, monitor, and repair the sand and dune restoration project on the Property as specified in, and in accordance with, the Permit". In addition, the RLA allows the public to pass and repass within a 10' strip of the subject property if certain beach erosion prerequisites are met three out of any five years; once the erosion prerequisites are not met (i.e., the beach is renourished), the 10' strip closes. Again, from a property rights/value standpoint, this most closely resembles an easement and is less burdensome than most LAEs.

In the case of the RLA, there is limited-to-no-impact on surface uses as all areas are not developable under the ESHA designations imposed by the City of Malibu's Local Coastal Plan. Further, any potential conveyance of ingress/egress rights is only when certain conditions exist, which are unlikely to occur or to persist if they should occur. Thus, while the RLA might be considered most similar to other types of surface easements, the RLA's actual impact on assessed owners' use of their parcels and those parcels' value is much less. Each component is discussed and analyzed below.

Net Dune Footprint

In accordance with the RLA, the dune areas have limited impact on surface rights. We understand these areas are all non-development areas (while some improvements exist today, they are not permitted) and subject to Malibu's ESHA designation. Under the RLA, ingress and egress restrictions will apply essentially to restrict passage thru the area by the property owner. This is not inconsistent with the current access pathways that are used by a majority of the owners. Some changes will be made (shared access versus individual, etc.), but the overall impact on property rights is minimal especially noting the existence of ESHA. With this in mind, an impact of 10 percent of the fee value is considered reasonable.

Revetment

The Revetment areas will be located beneath the dune footprint. Again, these are all non-development areas, subject to ESHA. The portions of the property where the revetment will be located will have additional burdens beyond those contained in the dune areas. These include surface rights for construction and maintenance of the revetment. However, post-construction of the dunes and relocation of a portion of the revetment, the expectation is that minimal maintenance will be required (the existing "temporary" revetment has been in place for 10 years, with only one maintenance event needed). Similar to the dune areas, ingress and egress restrictions will apply to restrict passage to specific areas by the property owner and potentially the public (should Section 14 of the RLA become active, as discussed below). With this in mind, an impact of 15 percent of the fee value, slightly higher than the percentage applied to the dune area noting the construction/maintenance obligations, is considered reasonable.

Section 14

Section 14 provides for conditional lateral public access should certain conditions exist. The majority of these areas are within the dune footprint (non-development areas) and again all areas are subject to ESHA. These areas will potentially have additional burdens beyond those contained in the dune footprint. These include, if certain beach erosion prerequisites are met three out of any five years, a limited conveyance of ingress/egress rights to the public across the property and some on-going maintenance requirements if certain conditions exist. Based on discussions with the project engineers, we conclude the likelihood of the conditional lateral public access requirements of Section 14 is remote. With this in mind, an impact of 15 percent of the fee value, similar to the percentage applied to the revetment areas, is considered reasonable.

Conclusion – RLA Valuation

The RLA Valuation by component is summarized below.

	Land Area		FMV	Total	% of Fee	RLA
Component	Acres	SF	($/SF)	Value	Adjustment	Value
Net Dune Footprint	5.49	239,087	$330.00	$78,898,710	10.0%	$7,889,871
Revetment	2.68	116,621	$330.00	$38,484,930	15.0%	$5,772,740
Conditional Lateral Public Access Area	0.97	42,269	$330.00	$13,948,770	15.0%	$2,092,316
Total						$15,754,926

Compiled by: PRP

Wave Uprush Analysis

Assuming the Project does not move forward, there will be a significant loss of both private land area and residential structures, either from continued erosion and failure of existing protective structures, removal

of the revetment (which the Coastal Commission likely will order if the Project does not move forward), or both. In addition, the Coastal Commission may not allow installation of other protective devices. The project engineers have prepared a "Wave Uprush" analysis to illustrate the impact of no Project, assuming the removal of the revetment, at a series of time increments. Each is discussed below.

Note, this analysis covers all of the 122 properties in the BBGHAD. With the exception of 30756 Broad Beach Road, these are all zoned SF-M. 30756 Broad Beach Road is zoned PRF (Private Recreational Facilities District). PRF zoned land is essentially a special purpose designation, and we are unaware of any recent sales in the market area involving vacant land with this zoning or for a similar purpose. Using residential (SF-M) land value provides the most reasonable proxy for this parcel for purposes of this analysis and given the intended use of the appraisal.

As will be shown, we have used the concluded residential land value for all parcels, including the parcel zoned PRF, in conjunction with the assessor's improvement value in the following analysis as we believe this to be the most accurate and reasonable for the purpose of this appraisal. Using the assessor's improvement value likely underestimates the total loss, as it is not based on the replacement cost for the improvements, which would be higher.

It should be noted, the analysis contained below provides a mathematical calculation using the per square foot land value times the area lost estimated in the wave uprush analysis prepared by the engineers plus the assessed value of all improvements located on the parcel. We have not separately analyzed the "remainder" value for either the land or improvements. Depending on the scenario and the extent of the loss to the land and improvements, the remainder becomes impaired as redevelopment/repair becomes infeasible. This calculation was beyond the scope of our assignment. Nevertheless, we conclude that the analysis which follows is a reasonable basis for the opinion we provided here given the purposes for which we provide it.

Five-Year Analysis

Under the no Project five-year analysis, a total of 13.1 acres (570,636 square feet) of land will be eroded. Using the base land price of $330 per square foot, the total loss is $188,309,880 plus the "value" of any improvements that will be damaged. Based on the project engineer's calculations, 35 structures will be impacted. According to the Los Angeles County Assessor Records, the current assessed value for the 35 structures is $52,707,592. A summary of the parcels affected in the five-year analysis, along with the assessed value of the improvements is provided below.

SUMMARY OF BROAD BEACH PROPERTIES WITH DAMAGE DUE TO NO PROJECT - 5 YEAR WAVE UPRUSH

Ownership	Address	APN	Land Area (SF)	Year Built	Improvement SF	Assessed Value (Imp.)
GROSSO NIKKI A; GROSS NIKKI	31022 Broad Beach Road	4470-014-013	13,660	1955	980 SF	$155,402
GOOCH DIANE	31026 Broad Beach Road	4470-014-014	13,049	1946	2,551 SF	$1,428,000
GROSSMAN MARSHALL B (CO-TR); GROSSMAN FAMILY TRUST	31030 Broad Beach Road	4470-014-015	13,198	1993	3,152 SF	$1,403,305
31034 BROAD BEACH ROAD LLC	31034 Broad Beach Road	4470-014-016	12,974	1959	3,794 SF	$1,377,516
HILL WALTER (CO-TR); HILL GOTTLIED FAMILY TRUST	31042 Broad Beach Road	4470-014-018	12,934	1975	3,050 SF	$2,691,391
AVEDON, DEAN A; THE MSN PROPERTY TRUST,	31048 Broad Beach Road	4470-014-019	13,011	1976	2,888 SF	$1,586,100
STONEBURNER KAY C; ABDALLA KENNETH J	31052 Broad Beach Road	4470-014-020	12,944	1973	4,357 SF	$607,855
GOTTSEGEN LEE (CO-TR); D L RESIDENCE TRUST NO 2	31054 Broad Beach Road	4470-014-021	12,746	1988	3,687 SF	$1,180,118
BH BROAD BEACH HOUSE LLC	31100 Broad Beach Road	4470-015-004	31,738	1992	7,237 SF	$3,770,868
BROSNAN KEELY (CO-TR); MIDLETON TRUST	31118 Broad Beach Road	4470-015-006	34,110	2011	3,708 SF	$1,833,077
BOBO KAREN; MOT TRUST	31134 Broad Beach Road	4470-015-033	46,261	1958	4,883 SF	$1,483,536
2XMD PARTNERS LLC	31202 Broad Beach Road	4470-015-012	21,785	1946	3,025 SF	$1,041,434
KAUFFMAN MARTA; MARTA KAUFFMAN TRUST	31212 Broad Beach Road	4470-015-014	16,938	2003	3,896 SF	$1,351,174
KARNO NORTON S	31214 Broad Beach Road	4470-015-015	16,341	1989	3,842 SF	$1,191,390
ELLY AND JOHNNIE TRUST	31220 Broad Beach Road	4470-015-016	16,224	1967	4,062 SF	$1,133,481
PETITE PROPERTIES LP	31228 Broad Beach Road	4470-015-018	15,823	1954	3,217 SF	$1,449,277
PEPPERDINE UNIVERSITY	31232 Broad Beach Road	4470-015-019	16,351	2002	3,540 SF	$976,812
PEPPERDINE UNIVERSITY	31236 Broad Beach Road	4470-015-020	15,870	2002	3,064 SF	$1,045,042
DOUGLAS JAMES E AND JEAN A TRS; DOUGLAS FAMILY TRUST	31240 Broad Beach Road	4470-015-021	16,086	1947	2,453 SF	$440,900
31250 BROAD BEACH LLC	31250 Broad Beach Road	4470-015-032	63,641	1989	11,413 SF	$3,329,280
MARINE JEFFREY AND JONI G TRS; MARINE JEFFREY	31260 Broad Beach Road	4470-015-025	17,823	2013	6,242 SF	$2,578,466
SPEARS BILL AND SANDRA TRS; SPEARS FAMILY TRUST	31272 Broad Beach Road	4470-016-032	47,393	2004	12,301 SF	$5,351,878
WELLS LUANNE C (CO-TR); BROAD BEACH TRUST	31280 Broad Beach Road	4470-016-003	35,232	1990	7,691 SF	$1,361,826
PALM TRUST	31284 Broad Beach Road	4470-016-004	28,457	1958	3,695 SF	$421,604
KAPLAN STEPHEN (CO-TR); KAPLAN TRUST	31302 Broad Beach Road	4470-016-037	25,221	1952	2,610 SF	$1,182,180
ANTOCI, MARIANO ANTHONY; ANTOCI, JOSEPHINE	31310 Broad Beach Road	4470-016-036	19,071	1952	2,340 SF	$1,620,000
DOUGLAS KEVIN AND MICHELLE TRS; K AND M DOUGLAS TRUST	31316 Broad Beach Road	4470-016-031	27,427	1952	5,566 SF	$1,593,197
REISBORD PAUL S; REISBORD CHILDREN TRUST	31322 Broad Beach Road	4470-016-028	15,127	1964	2,905 SF	$482,379
FISH JEFFREY	31324 Broad Beach Road	4470-016-027	12,278	1972	2,533 SF	$1,224,000
RUTTER, DEBORAH F	31330 Broad Beach Road	4470-016-008	16,880	1933	1,396 SF	$182,008
31336 BROAD BEACH ROAD LLC	31336 Broad Beach Road	4470-016-010	12,911	1948	2,115 SF	$964,099
31340 BROAD BEACH RD LLC,	31340 Broad Beach Road	4470-016-011	16,834	1953	1,948 SF	$880,000
FENTON DENNIS M; FENTON LINDA	31350 Broad Beach Road	4470-016-013	12,920	2001	3,992 SF	$2,085,806
31388 BROAD BEACH MALIBU LLC	31388 Broad Beach Road	4470-016-025	24,272	1961	3,191 SF	$562,990
JMC INTERNATIONAL LLC	31502 Victoria Point Road	4470-017-037	10,146	1969	6,080 SF	$2,741,201
TOTAL						$52,707,592

Source: Pubic Records from Fidelity National Title Company

Ten-Year Analysis

Under the no Project 10-year analysis, a total of 15.5 acres (675,180 square feet) of land will be eroded. Using the base land price of $330 per square foot, the total loss is $222,809,400 plus the "value" of any improvements that will be damaged. Based on the project engineer's calculations, 58 structures will be impacted. According to the Los Angeles County Assessor Records, the current assessed value for the 58 structures is $93,909,489. A summary of the parcels affected in the 10-year analysis, along with the assessed value of the improvements is provided below.

SUMMARY OF BROAD BEACH PROPERTIES WITH DAMAGE DUE TO NO PROJECT - 10 YEAR WAVE UPRUSH

Ownership	Address	APN	Land Area (SF)	Year Built	Improvement SF	Assessed Value (Imp.)
KLEIN FAMILY PTNSHP	30708 Pacific Coast Highwa	4469-026-009	19,252	1968	1,623 SF	$275,558
BIRD DOG PRODUCTIONS LLC	30712 Pacific Coast Highwa	4469-026-008	23,305	2003	6,094 SF	$2,249,221
CI PROPERTIES LLC	30718 Pacific Coast Highwa	4469-026-007	20,138	2001	5,238 SF	$2,647,366
THREE CHIPS REALTY INV LLC	30724 Pacific Coast Highwa	4469-026-006	20,522	2003	5,902 SF	$3,146,132
SCHWAB MICHAEL CO TR ETAL	30750 Pacific Coast Highwa	4469-026-011	12,087	2002	5,403 SF	$901,569
MALIBU WEST SWIMMING CLUB	30756 Pacific Coast Highwa	4469-026-016	46,217	N/A	N/A	$0
KLEIN DANIEL AND DIANA TRS; KLEIN LISA	30760 Broad Beach Road	4469-026-002	32,193	1979	5,653 SF	$1,686,408
FINEGOOD RACHEL R; FINEGOOD FAMILY TRUST	30800 Broad Beach Road	4469-026-012	21,803	1929	2,662 SF	$110,527
LEIGH ANDREW M AND BARBARA TRS; LEIGH FAMILY TRUST	30810 Broad Beach Road	4470-013-002	15,192	1959	3,736 SF	$662,154
PANDORA ENTERPRISE LLC	30804 Broad Beach Road	4470-013-028	14,929	1978	4,195 SF	$1,939,303
SHEINBERG SIDNEY J (CO-TR); SHEINBERG SIDNEY	30970 Broad Beach Road	4470-014-004	14,528	1952	4,485 SF	$1,117,677
HAFT JONATHAN; HAFT FAMILY TRUST	31000 Broad Beach Road	4470-014-008	14,241	1958	2,910 SF	$561,000
MARK ALAN P (CO-TR); MARK FAMILY TRUST	31008 Broad Beach Road	4470-014-009	13,914	1956	1,690 SF	$556,634
SHOLEM BARRY A (CO-TR); SHOLEM TRUST	31012 Broad Beach Road	4470-014-010	14,376	1963	2,280 SF	$1,758,266
BARON IRENE (CO-TR); BARON FAMILY TRUST	31016 Broad Beach Road	4470-014-011	13,114	1990	4,674 SF	$1,288,273
GROSSO NIKKI A GROSSO N	31020 Broad Beach Road	4470-014-012	13,701	1946	3,347 SF	$235,504
GROSSO NIKKI A; GROSS NIKKI	31022 Broad Beach Road	4470-014-013	13,660	1955	980 SF	$155,402
GOOCH DIANE	31026 Broad Beach Road	4470-014-014	13,049	1946	2,551 SF	$1,428,000
GROSSMAN MARSHALL B (CO-TR); GROSSMAN FAMILY TRUST	31030 Broad Beach Road	4470-014-015	13,198	1993	3,152 SF	$1,403,305
31034 BROAD BEACH ROAD LLC	31034 Broad Beach Road	4470-014-016	12,974	1959	3,794 SF	$1,377,516
ZUMA BEACH HOLDINGS LLC,	31038 Broad Beach Road	4470-014-017	12,815	2010	7,442 SF	$6,437,200
HILL WALTER (CO-TR); HILL GOTTLIED FAMILY TRUST	31042 Broad Beach Road	4470-014-018	12,934	1975	3,050 SF	$2,691,391
AVEDON, DEAN A; THE MSN PROPERTY TRUST,	31048 Broad Beach Road	4470-014-019	13,011	1976	2,888 SF	$1,586,100
STONEBURNER KAY C; ABDALLA KENNETH J	31052 Broad Beach Road	4470-014-020	12,944	1973	4,357 SF	$607,855
GOTTSEGEN LEE (CO-TR); D L RESIDENCE TRUST NO 2	31054 Broad Beach Road	4470-014-021	12,746	1988	3,687 SF	$1,180,118
NOVOGRODER COMPANIES INC	31058 Broad Beach Road	4470-014-022	13,088	1989	4,370 SF	$2,409,246
DREYER MICHAEL S; NORTH ENTERPRISES 1996 TRUST	30980 Broad Beach Road	4470-014-023	42,000			$5,152,540
BH BROAD BEACH HOUSE LLC	31100 Broad Beach Road	4470-015-004	31,738	1992	7,237 SF	$3,770,868
BROSNAN KEELY (CO-TR); MIDLETON TRUST	31118 Broad Beach Road	4470-015-006	34,110	2011	3,708 SF	$1,833,077
BB MALIBU PLACE LLC	31122 Broad Beach Road	4470-015-007	16,891	1948	5,329 SF	$3,296,752
ROSKI EDWARD P JR; ROSKI TRUST	31138 Broad Beach Road	4470-015-011	14,650	1986	4,722 SF	$1,020,340
BOBO KAREN; MOT TRUST	31134 Broad Beach Road	4470-015-033	46,261	1958	4,883 SF	$1,483,536
2XMD PARTNERS LLC	31202 Broad Beach Road	4470-015-012	21,785	1946	3,025 SF	$1,041,434
KAUFFMAN MARTA; MARTA KAUFFMAN TRUST	31212 Broad Beach Road	4470-015-014	16,938	2003	3,896 SF	$1,351,174
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DOUGLAS JAMES E AND JEAN A TRS; DOUGLAS FAMILY TRUST	31240 Broad Beach Road	4470-015-021	16,086	1947	2,453 SF	$440,900
31250 BROAD BEACH LLC	31250 Broad Beach Road	4470-015-032	63,641	1989	11,413 SF	$3,329,280
MARINE JEFFREY AND JONI G TRS; MARINE JEFFREY	31260 Broad Beach Road	4470-015-025	17,823	2013	6,242 SF	$2,578,466
GREY JILL K; TRIAK TRUST	31108 Broad Beach Road	4470-015-029	20,264	1988	5,677 SF	$1,784,380
SMIDT ERIC L; SMIDT TRUST	31064 Broad Beach Road	4470-015-030	21,181	1994	3,787 SF	$1,965,847
SPEARS BILL AND SANDRA TRS; SPEARS FAMILY TRUST	31272 Broad Beach Road	4470-016-032	47,393	2004	12,301 SF	$5,351,878
WELLS LUANNE C (CO-TR); BROAD BEACH TRUST	31280 Broad Beach Road	4470-016-003	35,232	1990	7,691 SF	$1,361,826
PALM TRUST	31284 Broad Beach Road	4470-016-004	28,457	1958	3,695 SF	$421,604
KAPLAN STEPHEN (CO-TR); KAPLAN TRUST	31302 Broad Beach Road	4470-016-037	25,221	1952	2,610 SF	$1,182,180
ANTOCI, MARIANO ANTHONY; ANTOCI, JOSEPHINE	31310 Broad Beach Road	4470-016-036	19,071	1952	2,340 SF	$1,620,000
DOUGLAS KEVIN AND MICHELLE TRS; K AND M DOUGLAS TRUST	31316 Broad Beach Road	4470-016-031	27,427	1952	5,566 SF	$1,593,197
REISBORD PAUL S; REISBORD CHILDREN TRUST	31322 Broad Beach Road	4470-016-028	15,127	1964	2,905 SF	$482,379
FISH JEFFREY	31324 Broad Beach Road	4470-016-027	12,278	1972	2,533 SF	$1,224,000
RUTTER, DEBORAH F	31330 Broad Beach Road	4470-016-008	16,880	1933	1,396 SF	$182,008
31336 BROAD BEACH ROAD LLC	31336 Broad Beach Road	4470-016-010	12,911	1948	2,115 SF	$964,099
31340 BROAD BEACH RD LLC,	31340 Broad Beach Road	4470-016-011	16,834	1953	1,948 SF	$880,000
FENTON DENNIS M; FENTON LINDA	31350 Broad Beach Road	4470-016-013	12,920	2001	3,992 SF	$2,085,806
31388 BROAD BEACH MALIBU LLC	31388 Broad Beach Road	4470-016-025	24,272	1961	3,191 SF	$562,990
JMC INTERNATIONAL LLC	31502 Victoria Point Road	4470-017-037	10,146	1969	6,080 SF	$2,741,201
TOTAL						$93,909,489

Source: Pubic Records from Fidelity National Title Company

20-Year Analysis

Under the no Project 20-year analysis, a total of 20.4 acres (888,624 square feet) of land will be eroded. Using the base land price of $330 per square foot, the total loss is $293,245,920 plus the "value" of any improvements that will be damaged. Based on the project engineer's calculations, 80 structures will be impacted. According to the Los Angeles County Assessor Records, the current assessed value for the 80

structures is $129,530,917. A summary of the parcels affected in the 20-year analysis, along with the assessed value of the improvements is provided below.

SUMMARY OF BROAD BEACH PROPERTIES WITH DAMAGE DUE TO NO PROJECT - 20 YEAR WAVE UPRUSH

Ownership	Address	APN	Land Area (SF)	Year Built	Improvement SF	Assessed Value (Imp.)
KLEIN FAMILY PTNSHP	30708 Pacific Coast Highwa	4469-026-009	19,252	1968	1,623 SF	$275,558
BIRO DOG PRODUCTIONS LLC	30712 Pacific Coast Highwa	4469-026-008	23,305	2003	6,094 SF	$2,249,221
CI PROPERTIES LLC	30718 Pacific Coast Highwa	4469-026-007	20,138	2001	5,238 SF	$2,647,366
THREE CHIPS REALTY INV LLC	30724 Pacific Coast Highwa	4469-026-006	20,522	2003	5,902 SF	$3,146,132
SCHWAB MICHAEL CO TR ETAL	30750 Pacific Coast Highwa	4469-026-011	12,087	2002	5,403 SF	$901,569
MALIBU WEST SWIMMING CLUB	30756 Pacific Coast Highwa	4469-026-016	46,217	N/A	N/A	$0
KLEIN DANIEL AND DIANA TRS; KLEIN LISA	30760 Broad Beach Road	4469-026-002	32,193	1979	5,653 SF	$1,686,408
FINEGOOD RACHEL R; FINEGOOD FAMILY TRUST	30800 Broad Beach Road	4469-026-012	21,803	1929	2,662 SF	$110,527
LEIGH ANDREW M AND BARBARA TRS; LEIGH FAMILY TRUST	30810 Broad Beach Road	4470-013-002	15,192	1959	3,736 SF	$662,154
MALIBU BEACH PARTNERS LLC	30826 Broad Beach Road	4470-013-004	15,277	1974	3,655 SF	$1,352,520
WHITE, W BRETT; WHITE, DANIELLE M	30830 Broad Beach Road	4470-013-005	20,604	1930	1,565 SF	$1,480,000
THOMPSON EVAN C; EVAN C THOMPSON TRUST	30842 Broad Beach Road	4470-013-007	18,417	1985	3,240 SF	$835,071
RESSLER ANTONY P; GERTZ JAMI B	30846 Broad Beach Road	4470-013-008	22,980	1980	4,016 SF	$1,307,473
R2FC LLC	30860 Broad Beach Road	4470-013-011	15,870	1998	7,153 SF	$1,324,915
SHERMAN, DIANE F; DIANE F SHERMAN 2008 REVOCABLE TRUST,	30866 Broad Beach Road	4470-013-012	15,961	1960	2,280 SF	$628,850
LABOW FRUMEH; LEMMON FAMILY TRUST	30870 Broad Beach Road	4470-013-013	15,605	1989	2,560 SF	$923,619
ANJAC FASHION BUILDINGS LLC	30874 Broad Beach Road	4470-013-014	16,369	1956	1,596 SF	$489,459
SATIN GARY; KNICKERBOCKER AVENUE TRUST	30904 Broad Beach Road	4470-013-016	15,957	1949	3,948 SF	$1,062,374
THEMBA II	30908 Broad Beach Road	4470-013-017	16,132	1998	4,283 SF	$1,874,349
NATHANSON MARC (CO-TR); NATHANSON TRUST	30916 Broad Beach Road	4470-013-018	16,332	2005	6,068 SF	$2,756,401
HESS JOHN B & SUSAN K	30928 Broad Beach Road	4470-013-021	15,781	1991	7,117 SF	$1,620,967
MDWBB LLC	30930 Broad Beach Road	4470-013-022	16,303	1982	6,530 SF	$1,755,209
WEST SONYA	30936 Broad Beach Road	4470-013-023	15,433	1963	4,165 SF	$1,648,376
MELLON VICTOR; 30940 BROAD BEACH TRUST	30940 Broad Beach Road	4470-013-024	15,599	1961	2,480 SF	$495,092
ARAD AVI AND JOYCE TRS; AVI AND JOYCE ARAD TRUST	30944 Broad Beach Road	4470-013-025	15,387	1954	2,991 SF	$4,267,755
ARAD AVI (CO-TR); AVI AND JOYCE ARAD TRUST	30948 Broad Beach Road	4470-013-026	15,547	1960	3,439 SF	$2,770,160
30952 BROAD BEACH LLC	30952 Broad Beach Road	4470-013-027	14,916	1987	4,097 SF	$2,123,461
PANDORA ENTERPRISE LLC	30804 Broad Beach Road	4470-013-028	14,929	1978	4,195 SF	$1,939,303
MAGIDSON MARK; MARK MAGIDSON TRUST	30822 Broad Beach Road	4470-013-030	31,525	1953	4,254 SF	$390,336
30956 BB LLC	30956 Broad Beach Road	4470-014-001	15,085	1948	3,213 SF	$2,080,800
SITRICK MICHAEL S AND NANCY TRS; M AND N SITRICK TRUST	30962 Broad Beach Road	4470-014-002	15,058	2002	5,925 SF	$1,888,269
MARX ROBERT (CO-TR); BARBARA M SINATRA (DECD) TRUST	30966 Broad Beach Road	4470-014-003	14,667	1992	5,824 SF	$2,545,972
SHEINBERG SIDNEY J (CO-TR); SHEINBERG SIDNEY	30970 Broad Beach Road	4470-014-004	14,528	1952	4,485 SF	$1,117,677
HAFT JONATHAN; HAFT FAMILY TRUST	31000 Broad Beach Road	4470-014-008	14,241	1958	2,910 SF	$561,000
MARK ALAN P (CO-TR); MARK FAMILY TRUST	31008 Broad Beach Road	4470-014-009	13,914	1956	1,690 SF	$556,634
SHOLEM BARRY A (CO-TR); SHOLEM TRUST	31012 Broad Beach Road	4470-014-010	14,376	1963	2,280 SF	$1,758,266
BARON IRENE (CO-TR); BARON FAMILY TRUST	31016 Broad Beach Road	4470-014-011	13,114	1990	4,674 SF	$1,288,273
GROSSO NIKKI A GROSSO N	31020 Broad Beach Road	4470-014-012	13,701	1946	3,347 SF	$235,504
GROSSO NIKKI A; GROSS NIKKI	31022 Broad Beach Road	4470-014-013	13,660	1955	980 SF	$155,402
GOOCH DIANE	31026 Broad Beach Road	4470-014-014	13,049	1946	2,551 SF	$1,428,000
GROSSMAN MARSHALL B (CO-TR); GROSSMAN FAMILY TRUST	31030 Broad Beach Road	4470-014-015	13,198	1993	3,152 SF	$1,403,305
31034 BROAD BEACH ROAD LLC	31034 Broad Beach Road	4470-014-016	12,974	1959	3,794 SF	$1,377,516
ZUMA BEACH HOLDINGS LLC,	31038 Broad Beach Road	4470-014-017	12,815	2010	7,442 SF	$6,437,200
HILL WALTER (CO-TR); HILL GOTTLIED FAMILY TRUST	31042 Broad Beach Road	4470-014-018	12,934	1975	3,050 SF	$2,691,391
AVEDON, DEAN A; THE MSN PROPERTY TRUST,	31048 Broad Beach Road	4470-014-019	13,011	1976	2,888 SF	$1,586,100
STONEBURNER KAY C; ABDALLA KENNETH J	31052 Broad Beach Road	4470-014-020	12,944	1973	4,357 SF	$607,855
GOTTSEGEN LEE (CO-TR); D L RESIDENCE TRUST NO 2	31054 Broad Beach Road	4470-014-021	12,746	1988	3,687 SF	$1,180,118
NOVOGRODER COMPANIES INC	31058 Broad Beach Road	4470-014-022	13,088	1989	4,370 SF	$2,409,246
DREYER MICHAEL S; NORTH ENTERPRISES 1996 TRUST	30980 Broad Beach Road	4470-014-023	42,000			$5,152,540
BH BROAD BEACH HOUSE LLC	31100 Broad Beach Road	4470-015-004	31,738	1992	7,237 SF	$3,770,868
BROSNAN KEELY (CO-TR); MIDLETON TRUST	31118 Broad Beach Road	4470-015-006	34,110	2011	3,708 SF	$1,833,077
BB MALIBU PLACE LLC	31122 Broad Beach Road	4470-015-007	16,891	1948	5,329 SF	$3,296,752
ROSKI EDWARD P JR; ROSKI TRUST	31138 Broad Beach Road	4470-015-011	14,650	1986	4,722 SF	$1,020,340
BOBO KAREN; MOT TRUST	31134 Broad Beach Road	4470-015-033	46,261	1958	4,883 SF	$1,483,536
2XMD PARTNERS LLC	31202 Broad Beach Road	4470-015-012	21,785	1946	3,025 SF	$1,041,434
KAUFFMAN MARTA; MARTA KAUFFMAN TRUST	31212 Broad Beach Road	4470-015-014	16,938	2003	3,896 SF	$1,351,174
KARNO NORTON S	31214 Broad Beach Road	4470-015-015	16,341	1989	3,842 SF	$1,191,390
ELLY AND JOHNNIE TRUST	31220 Broad Beach Road	4470-015-016	16,224	1967	4,062 SF	$1,133,481
PETITE PROPERTIES LP	31228 Broad Beach Road	4470-015-018	15,823	1954	3,217 SF	$1,449,277
PEPPERDINE UNIVERSITY	31232 Broad Beach Road	4470-015-019	16,351	2002	3,540 SF	$976,812
PEPPERDINE UNIVERSITY	31236 Broad Beach Road	4470-015-020	15,870	2002	3,064 SF	$1,045,042
DOUGLAS JAMES E AND JEAN A TRS; DOUGLAS FAMILY TRUST	31240 Broad Beach Road	4470-015-021	16,086	1947	2,453 SF	$440,900
31250 BROAD BEACH LLC	31250 Broad Beach Road	4470-015-032	63,641	1989	11,413 SF	$3,329,280
MARINE JEFFREY AND JONI G TRS; MARINE JEFFREY	31260 Broad Beach Road	4470-015-025	17,823	2013	6,242 SF	$2,578,466
GREY JILL K; TRIAK TRUST	31108 Broad Beach Road	4470-015-029	20,264	1988	5,677 SF	$1,784,380
SMIDT ERIC L; SMIDT TRUST	31064 Broad Beach Road	4470-015-030	21,181	1994	3,787 SF	$1,965,847
SPEARS BILL AND SANDRA TRS; SPEARS FAMILY TRUST	31272 Broad Beach Road	4470-016-032	47,393	2004	12,301 SF	$5,351,878
WELLS LUANNE C (CO-TR); BROAD BEACH TRUST	31280 Broad Beach Road	4470-016-003	35,232	1990	7,691 SF	$1,361,826
PALM TRUST	31284 Broad Beach Road	4470-016-004	28,457	1958	3,695 SF	$421,604
KAPLAN STEPHEN (CO-TR); KAPLAN TRUST	31302 Broad Beach Road	4470-016-037	25,221	1952	2,610 SF	$1,182,180
ANTOCI, MARIANO ANTHONY; ANTOCI, JOSEPHINE	31310 Broad Beach Road	4470-016-036	19,071	1952	2,340 SF	$1,620,000
DOUGLAS KEVIN AND MICHELLE TRS; K AND M DOUGLAS TRUST	31316 Broad Beach Road	4470-016-031	27,427	1952	5,566 SF	$1,593,197
REISBORD PAUL S; REISBORD CHILDREN TRUST	31322 Broad Beach Road	4470-016-028	15,127	1964	2,905 SF	$482,379
FISH JEFFREY	31324 Broad Beach Road	4470-016-027	12,278	1972	2,533 SF	$1,224,000
RUTTER, DEBORAH F	31330 Broad Beach Road	4470-016-008	16,880	1933	1,396 SF	$182,008
31336 BROAD BEACH ROAD LLC	31336 Broad Beach Road	4470-016-010	12,911	1948	2,115 SF	$964,099
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JMC INTERNATIONAL LLC	31502 Victoria Point Road	4470-017-037	10,146	1969	6,080 SF	$2,741,201
TOTAL						$129,530,917

Source: Pubic Records from Fidelity National Title Company

It has been a pleasure to assist you in this matter.

Respectfully submitted,
Peregrine Realty Partners

Bradley Lofgren, MAI
California-AG022415

Certification Statement

I certify that, to the best of my knowledge and belief:

- The statements of fact contained in this report are true and correct.
- The reported analyses, opinions and conclusions are limited only by the reported assumptions and limiting conditions, and are our personal, impartial, and unbiased professional analyses, opinions and conclusions.
- I have no present or prospective future interest in the property that is the subject of this report, and I have no personal interest with respect to the parties involved.
- I have no bias with respect to the property that is the subject of this report, or to the parties involved with this assignment.
- My engagement in this assignment was not contingent upon developing or reporting predetermined results.
- My compensation for completing this assignment is not contingent upon the development or reporting of a predetermined value or direction in value that favors the cause of the client, the amount of the value estimate, the attainment of a stipulated result, or the occurrence of a subsequent event directly related to the intended use of this appraisal.
- My analyses, opinions, and conclusions were developed, and this report has been prepared, in conformity with the requirements of the Code of Professional Ethics and Standards of Professional Appraisal Practice of the Appraisal Institute (USPAP).
- No one provided significant real property appraisal assistance to the persons signing this certification.
- I certify sufficient competence to appraise this property through education and experience, in addition to the internal resources of the appraisal firm.
- The appraiser has not performed any prior services regarding the subject within the previous three years of the appraisal date.
- Bradley Lofgren has made an inspection of the subject property.
- The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.
- Bradley Lofgren has completed the continuing education program of the Appraisal Institute.

Bradley Lofgren, MAI
California-AG022415

Exhibit 1 – Limiting Conditions

Limiting Conditions and Assumptions

Acceptance of and/or use of this report constitutes acceptance of the following limiting conditions and assumptions; these can only be modified by written documents executed by both parties.

This appraisal is to be used only for the purpose stated herein. While distribution of this appraisal in its entirety is at the discretion of the client, individual sections shall not be distributed; this report is intended to be used in whole and not in part.

All files, work papers and documents developed in connection with this assignment are the property of Peregrine Realty Partners. Information, estimates and opinions are verified where possible, but cannot be guaranteed. Plans provided are intended to assist the client in visualizing the property; no other use of these plans is intended or permitted.

No hidden or unapparent conditions of the property, subsoil or structure, which would make the property more or less valuable, were discovered by the appraiser or made known to the appraiser. No responsibility is assumed for such conditions or engineering necessary to discover them. Unless otherwise stated, this appraisal assumes there is no existence of hazardous materials or conditions, in any form, on or near the subject property.

Unless otherwise stated in this report, the existence of hazardous substances, including without limitation asbestos, polychlorinated biphenyl, petroleum leakage, or agricultural chemicals, which may or may not be present on the property, was not called to the attention of the appraiser nor did the appraiser become aware of such during the appraiser's inspection. The appraiser has no knowledge of the existence of such materials on or in the property unless otherwise stated. The appraiser, however, is not qualified to test for such substances. The presence of such hazardous substances may affect the value of the property. The value opinion developed herein is predicated on the assumption that no such hazardous substances exist on or in the property or in such proximity thereto, which would cause a loss in value. No responsibility is assumed for any such hazardous substances, nor for any expertise or knowledge required to discover them.

Unless stated herein, the property is assumed to be outside of areas where flood hazard insurance is mandatory. Maps used by public and private agencies to determine these areas are limited with respect to accuracy. Due diligence has been exercised in interpreting these maps, but no responsibility is assumed for misinterpretation.

Good title, free of liens, encumbrances and special assessments is assumed. No responsibility is assumed for matters of a legal nature.

Necessary licenses, permits, consents, legislative or administrative authority from any local, state or Federal government or private entity are assumed to be in place or reasonably obtainable.

It is assumed there are no zoning violations, encroachments, easements or other restrictions which would affect the subject property, unless otherwise stated.

Appraisals are based on the data available at the time the assignment is completed. Amendments/modifications to appraisals based on new information made available after the appraisal was completed will be made, as soon as reasonably possible, for an additional fee.

Exhibit 2 – Qualifications

QUALIFICATIONS OF BRADLEY E. LOFGREN, MAI

Principal
PEREGRINE REALTY PARTNERS
915 Wilshire Boulevard, Suite 2060
Los Angeles, California 90017
Phone: (213) 797-6211
FAX: (213) 797-6241

EDUCATION

University of California, Los Angeles, 1990
Bachelor of Arts, History

Appraisal Institute Courses:

- Real Estate Appraisal Principles
- Basic Valuation Procedures
- Advanced Income Capitalization
- Report Writing
- Introduction to Valuing Green Commercial Buildings
- Apartment Appraisal, Concepts & Application
- Eminent Domain and Condemnation
- Standards of Professional Practice
- Highest & Best Use & Market Analysis
- Environmental Risks and the Real Estate Appraisal Process
- Business Practice and Ethics
- Introduction to International Valuation Standards

LICENSES/CERTIFICATIONS

- Member, Appraisal Institute (ID#: 11510)
- California Certified General Real Estate Appraiser, No. AG022415
- Hawaii Certified General Real Estate Appraiser, No. CGA 660

EMPLOYMENT

Peregrine Realty Partners 2009 to Present
Principal

CB Richard Ellis, Inc. – Valuation & Advisory Services 1997 - 2009
Senior Vice President

Cushman & Wakefield of California, Inc. - Appraisal 1993 - 1997
Associate Director

CB Commercial Real Estate Group, Inc. - Appraisal 1992 - 1993
Assistant Real Estate Analyst

Lambert Smith Hampton 1989 - 1992
Commercial Real Estate Salesperson

OWNERSHIP/ACQUISITON/DISPOSITION EXPERIENCE

As a principal with Peregrine Realty Partners, direct involvement with the acquisition, financing and management of the following properties:

NAME/ADDRESS	SIZE/TYPE	PURCHASE PRICE
El Fuerte Business Park Carlsbad, CA	78,326-square-foot multi-tenant industrial park	$7,341,500
Carlsbad Oaks Commerce Center Carlsbad, CA	48,638-square-foot multi-tenant industrial park	$4,558,500
Las Palmas Industrial Park Carlsbad, CA	31,824-square-foot multi-tenant industrial park	$3,250,000 (Sold 2/17 - $4,600,000)
Santa Rita Hills Wine Center Lompoc, CA	75,000-square-foot wine production and storage facility with tasting rooms	$4,000,000
Valley Corporate Center San Diego, CA	178,596-square-foot office building	$34,000,000 (Sold 1/17 - $42,125,000)
Glendale Office Glendale, CA	124,215-square-foot office building	$22,000,000 (Sold 6/16 - $27,325,000)
Glendale Medical Glendale, CA	26,820-square-foot office building	$6,500,000 (Sold 9/13 - $8,000,000)
El Segundo Office El Segundo, CA	106,000-square-foot office building	$27,700,000
Metroplex Office Anaheim, CA	105,000-square-foot office building	$18,625,000
Chesapeake Park Plaza San Diego, CA	93,282-square-foot office building	$14,500,000 (Sold 1/17 - $21,000,000)
La Terraza Office Escondido, CA	78,477-square-foot office building	$23,300,000
Foothill Plaza Pasadena, CA	43,000-square-foot office building	$7,100,000 (Sold 5/18 - $12,400,000)
Pacific View Plaza Carlsbad, CA	51,000-square-foot office building	$13,000,000
5950 Canoga Avenue Woodland Hills, CA	92,500-square-foot office building	$19,500,000
Warner Premier Woodland Hills, CA	62,088-square-foot office building	$13,800,000
North Creek Parkway Center Bothell, WA	205,298-square-foot flex park	$36,500,000
One Sandy Office Sandy, UT	108,026-square-foot office building	$16,500,000
Carlton Plaza Woodland Hills, CA	154,660-square-foot office building	$34,400,000
Monarch Corporate Center San Diego, CA	112,269-square-foot office building	$33,550,000
Carlsbad Airport Plaza Carlsbad, CA	64,817-square-foot office building	$14,000,000
Creekside Corporate Center Salem, OR	99,353-square-foot office project	$21,750,000

VALUATION EXPERIENCE

Appraisal and consulting experience includes the following types of properties:

Automobile Dealerships	Land - Most Uses
Residential Income	Office Buildings
Industrial Parks	Industrial Buildings
Leasehold Interests	Shopping Centers
Mixed Use Projects	Regional Malls
Golf Courses	Proposed Developments
Hotels	Residential Subdivisions

Qualified as an expert witness in the Superior Courts of San Bernardino and Los Angeles counties and the U.S. Bankruptcy Court for the Central District of California (cases include Namco Capital Group and Meruelo Maddux Properties, Inc.), the Northern District of California and the Northern District of Illinois.

PARTIAL LIST OF BEVERLY HILLS VALUATION ASSIGNMENTS

OFFICE	RETAIL	RENT DISPUTES/EXPERT WITNESS
9701 Wilshire	338-346 N. Rodeo Drive	9440 Wilshire (Ground Rent)
9555 Wilshire	9570 Wilshire (Barney's New York)	9440 Wilshire (Space Rent)
Wilshire Rodeo	332-348 North Beverly Dr.	9777 Wilshire (Ground Rent)
9465 Wilshire	9650 Santa Monica Blvd.	433 Camden (Space Rent)
9440 Santa Monica	Granada Village	9570 Wilshire (Space Rent)
Beverly Mercedes Place	Twin Oaks	150 S. Rodeo Drive (Space Rent)
Maple Plaza	**RESIDENTIAL**	8536 Wilshire (Valuation)
331 Maple	9200 Wilshire	Beverly Mercedes Place (Space Rent)
401 Maple	9900 Wilshire	245 N. Beverly Dr. (Lease Dispute)
9460 Wilshire	149 S. Rodeo	
9033 Wilshire	148 Peck Drive	
	The Crescent	

PARTY/NEUTRAL ARBITRATOR ASSIGNMENTS

PARTIES	ROLE
Foxdale Properties vs. Ready Pac Inc.	Party Arbitrator
Westfield vs. San Francisco Unified School District	Neutral Arbitrator
Simon vs. Charles Schwab & Co.	Neutral Arbitrator
Kamehameha Schools vs. First Hawaiian Bank	Party Arbitrator
Colony Surf, Ltd. vs. D.G. "Andy Anderson - Michel's, Inc.	Party Arbitrator
Queen Emma Land Company vs. Earle M. Alexander, Ltd.	Neutral Arbitrator
Queen Emma Land Company vs. Green Thumb, Inc., a Hawaii Corp.	Neutral Arbitrator
Queen Emma Land Company vs. Pacific Industrial Ent, LLC	Neutral Arbitrator
Queen Emma Land Company vs. Public Storage	Neutral Arbitrator
Queen Emma Land Company vs. Carol & Stanley Wada	Neutral Arbitrator
TSM Properties LLC vs. Mr. Sandman Inc.	Neutral Arbitrator

SUMMARY OF TRIAL/ARBITRATION TESTIMONY SINCE 2006

DATE	CASE NAME	JURISDICTION	CASE NUMBER	CLIENT
2019	Estate of Miriam M. Warne, Deceased, William R. Warne & Thomas H. Warne, Co-Executors V. Commissioner	Federal Court	7019-18; 7020-18	Respondent
2019	Estate of Ethel Bell Wright, Deceased, Susan Armistead, Executor, et al. V. Commissioner	Federal Court	5291-16, 14009-16 & 16208-16	Respondent
2018	Sandra M. Itkoff, et al. vs. Sixteen Forty Three Twelfth Street Homeowners Association	Superior Court	SC125624	Defendant
2018	Oren Cohen vs. Avraham Hassis, et al.	Superior Court	BC618549	Plaintiff
2018	Benhour Soleimani vs. Benjamin Soleimani	Private Arbitration	Private Arbitration	Respondent
2018	Rajysan, Inc. vs. Gurmeeet Sahani, et al.	Superior Court	PC055253	Plaintiff
2017	California Union Square L.P. vs Saks & Company LLC	Private Arbitration	Private Arbitration	Lessee
2016	Robert S. Anderson, et al vs. B.H. Triangle Associates, L.P.	Private Arbitration	Private Arbitration	Lessee
2016	Tufeld Corp. vs Beverly Hills Gateway, L.P.	Private Arbitration	Private Arbitration	Lessee
2016	High Sierra Properties vs. Whittier Surgical Partners	Superior Court	VC058345	Defendant
2016	Chi-Chi's Pizza vs. GWP-Northridge Grove Shopping Center	Private Arbitration	01-15-0004-1076	Defendant
2016	Mani Bros. vs. PHH Home Loans, LLC	Private Arbitration	Private Arbitration	Plaintiff
2015	Broadway Victoria, LLC vs. Norminton, Wiita & Fuster	Superior Court	SC 119092	Plaintiff
2015	BAY WEST KAILUA BAY, L.L.C.	US Bankruptcy Court	11-03124 (Chapter 7)	Trustee
2015	Dowent family LLC	US Bankruptcy Court	2:13-bk-12977-RK	Debtor
2014	Robbins, et al. v. Sprecher, et al.	Private Arbitration	ADRS Case No. 14-4943-RSM	Defendant
2014	Kim, Joseph, et al vs. 823 S. Bundy, LLC	Private Arbitration	Private Arbitration	Plaintiff
2014	Shomof vs Saidoff	Superior Court	Bc499518	Plaintiff
2014	LAWPM vs NNN Realty Fund	Private Arbitration	JAMS Reference 1210031559	Lessee
2014	Tekin et al vs. K. Hovnanian at Avenue One	Superior Court	30-2012-00555070	Defendant
2014	Ramondi et al vs. Olenicoff	US District Court	SACV12-2077 AG	Defendant
2013	CA Metro Center vs. Metro TCE	Private Arbitration	75 115 Y 00665 12 MP	Defendant
2013	Claro vs Target	Superior Court	GC041068	Plantiff
2013	Laurelwood Group vs East West Bank, et al	Superior Court	BC430921	Plantiff
2012	Dalton Construction vs 220 Fitness Concepts	Superior Court	BC455355	Plantiff
2011	Demmie Balauro Acosta	US Bankruptcy Court	09-32339 DM	Creditor
2011	NAMCO Capital Group	US Bankruptcy Court	2:08-bk-32333-BR	Trustee
2011	Mnoian Management vs Sanifill of California	Private Arbitration	Private Arbitration	Plantiff
2011	Maguire Partners vs 1733 Ocean Avenue Properties	Private Arbitration	Private Arbitration	Lessee
2010	Kilroy vs. Citibank	Private Arbitration	Private Arbitration	Lessor
2010	Mauerhan vs. Disney	Private Arbitration	Private Arbitration	Lessor
2010	First City Pacific vs. Home Depot, Inc.	Private Arbitration	JAMS Reference No. 1220040762	Lessee
2009	Eagle Ridge vs MKA	Superior Court	N/A	Defendant
2009	Host Corp. vs Port of San Diego	Private Arbitration	Private Arbitration	Lessee

2009	Bankruptcy of Joseph S. Beale	US Bankruptcy Court	04 B 08748	Debtor
2009	Meruelo Maddux Properties, Inc., a DE Corp	US Bankruptcy Court	09-13356 KT	Lender
2009	Volz vs Duesenberg Investment Co.	Private Arbitration	Private Arbitration	Lessee
2008	Wells Fargo vs. Camden Land	Private Arbitration	Private Arbitration	Lessee
2008	Kamehameha Schools vs. Stoebner Family	Private Arbitration	Private Arbitration	Lessor
2008	Blackstone vs. Liner et al	Private Arbitration	Private Arbitration	Lessor
2008	Horton Properties LLC vs. Wilshire Westwood Plaza LLC	Private Arbitration	JAMS Reference No.: 1220037859	Lessee
2008	TDC vs. Blackstone	Private Arbitration	Private Arbitration	Lessor
2007	Kevin Green vs. Harvey Bookstein	Private Arbitration	JAMS Reference No.: 1200038924	Plantiff
2007	TDC vs. Sony	Private Arbitration	Private Arbitration	Lessor
2007	6th and Olive vs. Oviatt Investment Group LLC	Superior Court	BC349120	Plantiff
2006	Robert S. Anderson vs. Oppenheim Immobilien- Kapitalanlagegesellschaft mbH, a German limited liability company	Superior Court	SS014760	Lessee

PARTIAL LIST OF CLIENTS

Allen Matkins et al	Bank of the West	C-III Asset Management
City of Inglewood	California Bank & Trust	LNR Partners LLC
Starpoint	Broadway Bank	JP Morgan Chase Bank
Pachulski Stang Ziehl & Jones LLP	Kilroy Realty	Jefferies LoanCore, LLC
Caldwell Leslie & Proctor, PC	Jeffer, Mangels, Butler & Mitchell LLP	St. John's Health Center
American General Life Insurance Co.	Walker & Dunlop	Pircher Nichols & Meeks
Lincoln Property Company	St. John :Land Company	Heitman
Ford Motor Company	Mesa West Capital, LLC	1st Century Bank
One West Bank	Steptoe & Johnson LLP	Elkins, Kalt, et al LLP
Wells Fargo Bank	Westwood Financial Corp.	CA State Board of Equalization

Exhibit 3 – Sample RLA

RECORDING REQUESTED BY:

L. Sheinberg
1158 Tower Road
Beverly Hills, CA 90210

WHEN RECORDED RETURN TO:

California Coastal Commission
Attn: Legal Department
45 Fremont Street, Suite 2000
San Francisco, CA 94105

APN(S): 4470-014-004

IRREVOCABLE LICENSE FOR LIFE OF REVETMENT

THIS IRREVOCABLE LICENSE FOR LIFE OF REVETMENT ("License"), is made this____day of_____, 2019, by Broad Beach JS Trust Irrevocable Trust dated December 12, 2012, as to 40% interest; Broad Beach BS Irrevocable Trust, dated December 12, 2012, as to 40% interest; and the Sheinberg Family Trust, UDT dated July 7, 1992, as to the remaining 20% interest (individually and collectively, "Grantor").

I. Grantor owns the fee interest in certain real property located in the City of Malibu ("City"), County of Los Angeles, State of California, as legally described on **EXHIBIT A** attached hereto and incorporated by this reference (the "Property").

II. The Property is located within the coastal zone as defined in Section 30103 of the California Public Resources Code ("PRC"), a section of the California Coastal Act of 1976, PRC § 30000 *et seq*. (the "Act").

III. Pursuant to the Act and the City's Local Coastal Program (the "LCP"), the Broad Beach Geologic Hazard Abatement District ("BBGHAD"), of which the Property is a part, applied to the California Coastal Commission (the "Commission") for a Coastal Development Permit ("CDP") to undertake the development (as that term is defined in PRC Section 30106 and Section 2.1 of the LCP's Local Implementation Plan) of a sand and dune restoration project within the boundaries of the BBGHAD under CDP Application No. 4-15-0390 (the "Permit").

IV. On October 9, 2015, the Commission conditionally approved the Permit by issuance of a Notice of Intent to Issue Permit which included certain conditions ("Conditions"), some of which are required to be satisfied prior to issuance of the Permit. A copy of the Conditions which relate to this License, revised as of January 11, 2016, is attached hereto as **EXHIBIT B** and incorporated herein by this reference.

V. The Permit authorizes, among other things, the continuing presence of a rock revetment (the "Revetment") on a seaward portion of the Property as described in Sections 1 and 2 of the Conditions;

VI. Grantor is executing this License in order to satisfy Sections 13 and 14 of the Conditions which will enable the BBGHAD to undertake the development authorized by the Permit.

NOW AND THEREFORE, in consideration of the granting of the Permit to the BBGHAD by the Commission, Grantor hereby agrees as follows:

1. DESCRIPTION OF LICENSES.

a. Grantor hereby acknowledges that the area seaward of the 2010 mean high tide line surveyed by the California State Lands Commission ("2010 MHTL") is and will remain public property regardless of the development undertaken pursuant to the Permit. Thus, although public access to some of the landward extent of that area may be limited in order to protect the dune habitat that is to be created, pursuant to Section 5 of the Conditions, public access seaward of both the ambulatory seaward limit of dune vegetation (hereinafter, the "Vegetation Line") and the 2010 MHTL shall not be impaired or restricted. Consistent with Section 6(A)(6) of the Conditions, public access shall also be available on some of the public property that is seaward of the 2010 MHTL but that is landward of the Vegetation Line if the wet sand ever comes within 25 feet of the Vegetation Line.

b. Grantor hereby grants to the People of the State of California an irrevocable license for the life of the Revetment to use certain portions of the Property seaward of the Revetment along the shoreline in accordance with Section 13(B)(1) of the Conditions (the "Access Areas"). In addition, if the circumstances described in Section 14(A)(1) of the Conditions ever exist, then Grantor hereby grants to the People of the State of California an irrevocable temporary springing license, for so long as such circumstances persist, to pass and repass (with no passive recreational use) over the entire portion of the Revetment that is located on the Property and over an area extending from the seaward face of the Revetment landward to a line parallel to and ten (10) feet inland of the landward edge of the Revetment for a public access pathway (the "Springing License Areas"). The Access Areas are legally described on **EXHIBIT C-1a** and the Springing License Areas are legally described on **EXHIBIT C-1b**, both attached hereto. The Access Areas are depicted on **EXHIBIT C-2a** and the Springling License Areas are depicted on **EXHIBIT C-2b**, both attached hereto.

c. Grantor hereby grants to the BBGHAD and its consultants, agents, contractors, and sub-contractors an irrevocable license to construct, maintain, investigate, assess, monitor, and repair the sand and dune restoration project on the Property as specified in, and in accordance with, the Permit.

2. PURPOSE. The license to the Access Areas is granted for the purpose of allowing public pedestrian lateral access and passive recreational use for as long as the Revetment permitted by the Permit remains in place. The license to the Springing License Areas is granted solely for the purpose of allowing public pedestrian lateral access (but not passive

recreational use) in accordance with the Conditions of the Permit for as long as the Revetment remains in place.

3. DECLARATION OF RESTRICTIONS. This License shall not be used or construed to allow anyone to interfere with any rights of public access acquired through use that may exist on the Property. Grantor shall neither interfere or allow interference with the public's use of the license nor take or allow any action inconsistent with such use, including, without limitation, developing on or improving the Property in a manner inconsistent with the public's use or enjoyment of the license area. Grantor shall retain all normal rights of ownership of the underlying fee interest in the Property not inconsistent with this License. Except as may be required by law, Grantor shall not be bound to undertake any supervision or maintenance to provide for the public purposes hereunder.

4. DURATION, ACCEPTANCE AND TRANSFERABILITY.

a. This License required by the Permit must be recorded before the Commission issues the Permit. In the event that the Permit is not issued, this License shall become null and void, the License shall be terminated, and a subsequent document countersigned on behalf of the Commission shall be recorded by Grantor in order to terminate and supersede this License. Upon the recordation of this License, its terms, covenants, conditions, restrictions and obligations shall run with the land and be binding upon and inure to the benefit of the heirs, successors and assigns of Grantor, the BBGHAD and the Commission, whether voluntary or involuntary, for so long as the Revetment remains on the Property. Grantor shall disclose the existence of this License to any parties with a current possessory interest in the Property and any prospective successor of Grantor's interest(s) in the Property.

b. If the Revetment is removed at any time by any party or third-party after receiving proper Coastal Act approval, the provisions of this License shall become null and void, the License shall be terminated, and a subsequent document countersigned on behalf of the Commission shall be recorded by Grantor in order to terminate and supersede this License.

5. REMEDIES. Any act, conveyance, contract or authorization by Grantor or BBGHAD, whether written or oral, which uses or would cause to be used or would permit use of the Property in a manner contrary to the terms of this License will be deemed a violation and a breach hereof. This License shall be enforceable by the BBGHAD and/or the Commission, and each party reserves all rights to seek specific performance, administrative penalties, or other remedies available at law or equity. Any party named in any such enforcement proceeding retains all defenses and rights accorded by law. In the event of a breach, any forbearance on the part of any such party to enforce the terms and provisions hereof shall not be deemed a waiver of enforcement rights regarding any subsequent breach.

6. TAXES AND ASSESSMENTS. This License does not affect Grantor's responsibility for all real property taxes and assessments levied or assessed against the Property. It is intended that this License shall constitute an enforceable restriction within the meaning of (a) Article XIII, §8 of the California Constitution; and (b) §402.1 of the California Revenue and

Taxation Code, or successor statute. This License shall be deemed to constitute a servitude and burden upon the Property within the meaning of §3712(d) of the California Revenue and Taxation Code, or successor statute, which survives a sale of tax-deeded property.

7. RECORDATION. Grantor hereby authorizes the BBGHAD to record this License against the Property as part of a blanket recordation in connection with the issuance of the Permit.

8. SEVERABILITY. If any provision of this License is held to be invalid, or for any reason becomes unenforceable, no other provision shall be thereby affected or impaired.

[SIGNATURE PAGE FOLLOWS]

Executed this_____day of_____, 2019, at_____, California.

(GRANTOR)

Broad Beach JS Trust Irrevocable Trust dated December 12, 2012, as to 40% interest

By: _____
Lorraine E. Sheinberg, Trustee

Broad Beach BS Irrevocable Trust, dated December 12, 2012, as to 40% interest

By: _____
Lorraine E. Sheinberg, Trustee

The Sheinberg Family Trust, UDT dated July 7, 1992, as to a 20% interest

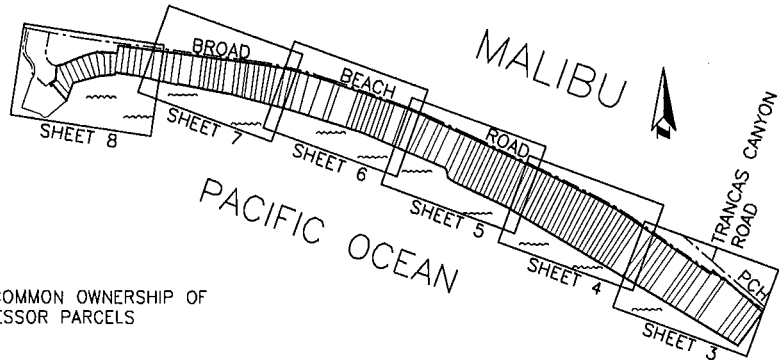
By: _____
Lorraine E. Sheinberg, Trustee

EXHIBIT F

Assessment Diagram

01/18/12

ASSESSMENT DIAGRAM



REPRESENTS COMMON OWNERSHIP OF MULTIPLE ASSESSOR PARCELS

(#)	ASSESSOR PARCEL #	STREET ADDRESS	FRONTAGE CALCULATION
1	4469-026-009	30708 PACIFIC COAST HWY	48'
2	4469-026-008	30712 PACIFIC COAST HWY	57'
3	4469-026-007	30718 PACIFIC COAST HWY	50'
4	4469-026-006	30724 PACIFIC COAST HWY	50'
5	4469-026-005	30732 PACIFIC COAST HWY	190'
6	4469-026-011	30750 PACIFIC COAST HWY	30'
7	4469-026-016	30756 PACIFIC COAST HWY	100'
8	4469-026-002	30760 BROAD BEACH RD	80'
9	4469-026-012	30800 BROAD BEACH RD	50'
10	4470-013-028	30804 BROAD BEACH RD	42'
11	4470-013-002	30810 BROAD BEACH RD	42'
12	4470-013-030	NO ADDRESS	84'
12	4470-013-029	NO ADDRESS	42'
13	4470-013-004	30826 BROAD BEACH RD	42'
14	4470-013-005	30830 BROAD BEACH RD	55'
15	4470-013-006	30838 BROAD BEACH RD	40'
16	4470-013-007	30842 BROAD BEACH RD	50'
17	4470-013-008	30846 BROAD BEACH RD	60'
18	4470-013-009	30852 BROAD BEACH RD	39'
18	4470-013-010	30856 BROAD BEACH RD	39'
18	4470-013-011	30860 BROAD BEACH RD	39'
19	4470-013-012	30866 BROAD BEACH RD	39'
20	4470-013-013	30870 BROAD BEACH RD	39'
21	4470-013-014	30874 BROAD BEACH RD	39'
22	4470-013-015	30900 BROAD BEACH RD	39'
23	4470-013-016	30904 BROAD BEACH RD	39'
24	4470-013-017	30908 BROAD BEACH RD	39'
25	4470-013-018	30916 BROAD BEACH RD	39'
26	4470-013-019	30918 BROAD BEACH RD	39'
27	4470-013-020	30924 BROAD BEACH RD	39'
28	4470-013-021	30928 BROAD BEACH RD	39'
29	4470-013-022	30930 BROAD BEACH RD	39'
30	4470-013-023	30936 BROAD BEACH RD	39'
31	4470-013-024	30940 BROAD BEACH RD	39'
32	4470-013-025	30944 BROAD BEACH RD	39'
33	4470-013-026	30948 BROAD BEACH RD	40'
34	4470-013-027	30952 BROAD BEACH RD	40'
35	4470-014-001	30956 BROAD BEACH RD	40'
36	4470-014-002	30962 BROAD BEACH RD	40'
37	4470-014-003	30966 BROAD BEACH RD	40'
38	4470-014-004	30970 BROAD BEACH RD	40'
39	4470-014-005	30974 BROAD BEACH RD	40'
40	4470-014-006	30978 BROAD BEACH RD	40'
41	4470-014-007	30980 BROAD BEACH RD	34'
42	4470-014-008	31000 BROAD BEACH RD	40'
43	4470-014-009	31008 BROAD BEACH RD	40'
44	4470-014-010	31012 BROAD BEACH RD	40'
45	4470-014-011	31016 BROAD BEACH RD	40'
46	4470-014-012	31020 BROAD BEACH RD	40'
47	4470-014-013	31022 BROAD BEACH RD	40'
48	4470-014-014	31026 BROAD BEACH RD	40'
49	4470-014-015	31030 BROAD BEACH RD	40'
50	4470-014-016	31034 BROAD BEACH RD	40'
51	4470-014-017	31038 BROAD BEACH RD	40'
52	4470-014-018	31042 BROAD BEACH RD	40'
53	4470-014-019	31048 BROAD BEACH RD	40'
54	4470-014-020	31052 BROAD BEACH RD	40'

PREPARED BY:

1/18/2012

RICHARD C. MAHER, PLS 7564 — DATE

THIS DOCUMENT IS PRELIMINARY UNLESS SIGNED

LICENSED LAND SURVEYOR
RICHARD C. MAHER
NO. 7564
STATE OF CALIFORNIA

REPRESENTS COMMON OWNERSHIP OF MULTIPLE ASSESSOR PARCELS

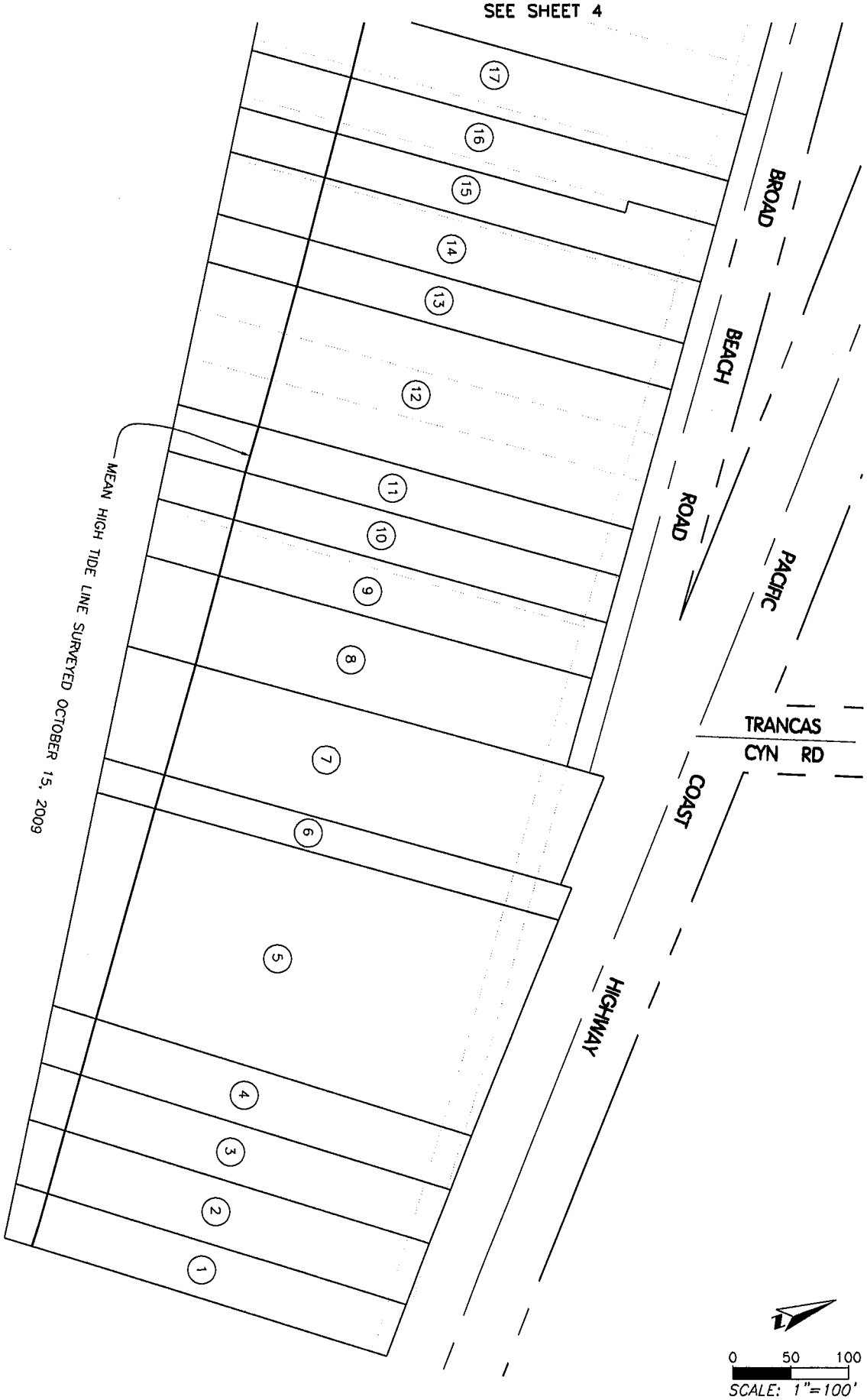
(#)	ASSESSOR PARCEL #	STREET ADDRESS	FRONTAGE CALCULATION
55	4470-014-021	31054 BROAD BEACH RD	40'
56	4470-014-022	31058 BROAD BEACH RD	40'
57	4470-015-030	31064 BROAD BEACH RD	62'
58	4470-015-031	31070 BROAD BEACH RD	45'
58	4470-015-004	31100 BROAD BEACH RD	99'
59	4470-015-029	31108 BROAD BEACH RD	60'
60	4470-015-027	31112 BROAD BEACH RD	40'
60	4470-015-006	31118 BROAD BEACH RD	80'
61	4470-015-007	31122 BROAD BEACH RD	38'
62	4470-015-033	31134 BROAD BEACH RD	104'
63	4470-015-011	31138 BROAD BEACH RD	35'
64	4470-015-012	31202 BROAD BEACH RD	51'
64	4470-015-013	31206 BROAD BEACH RD	40'
65	4470-015-014	31212 BROAD BEACH RD	40'
66	4470-015-015	31214 BROAD BEACH RD	40'
67	4470-015-016	31220 BROAD BEACH RD	40'
68	4470-015-017	31224 BROAD BEACH RD	40'
69	4470-015-018	31228 BROAD BEACH RD	40'
70	4470-015-019	31232 BROAD BEACH RD	40'
71	4470-015-020	31236 BROAD BEACH RD	40'
72	4470-015-021	31240 BROAD BEACH RD	40'
73	4470-015-032	31250 BROAD BEACH RD	160'
74	4470-015-025	31260 BROAD BEACH RD	45'
75	4470-016-032	31272 BROAD BEACH RD	120'
76	4470-016-003	31280 BROAD BEACH RD	88'
77	4470-016-004	31284 BROAD BEACH RD	75'
78	4470-016-037	31302 BROAD BEACH RD	68'
79	4470-016-036	31310 BROAD BEACH RD	45'
80	4470-016-031	31316 BROAD BEACH RD	73'
81	4470-016-028	31322 BROAD BEACH RD	45'
82	4470-016-027	31324 BROAD BEACH RD	34'
83	4470-016-008	31330 BROAD BEACH RD	47'
84	4470-016-010	31336 BROAD BEACH RD	38'
85	4470-016-011	31340 BROAD BEACH RD	50'
86	4470-016-012	31346 BROAD BEACH RD	48'
87	4470-016-013	31350 BROAD BEACH RD	41'
88	4470-016-033	31360 BROAD BEACH RD	81'
89	4470-016-016	31364 BROAD BEACH RD	40'
90	4470-016-017	31368 BROAD BEACH RD	40'
91	4470-016-018	31372 BROAD BEACH RD	40'
92	4470-016-019	31376 BROAD BEACH RD	40'
93	4470-016-020	31380 BROAD BEACH RD	40'
94	4470-016-025	31388 BROAD BEACH RD	80'
95	4470-016-026	31406 BROAD BEACH RD	95'
96	4470-017-069	31412 BROAD BEACH RD	60'
97	4470-017-068	31418 BROAD BEACH RD	60'
98	4470-017-067	31430 BROAD BEACH RD	105'
98	4470-017-066	NO ADDRESS	50'
99	4470-017-065	31438 BROAD BEACH RD	50'
100	4470-017-064	31444 BROAD BEACH RD	50'
101	4470-017-063	31450 BROAD BEACH RD	50'
102	4470-017-062	31454 BROAD BEACH RD	50'
103	4470-017-061	31460 BROAD BEACH RD	51'
104	4470-017-038	31500 VICTORIA POINT RD	47'
105	4470-017-037	31502 VICTORIA POINT RD	49'
106	4470-017-036	31504 VICTORIA POINT RD	54'
107	4470-017-035	31506 VICTORIA POINT RD	46'
108	4470-017-034	31508 VICTORIA POINT RD	46'
109	4470-017-033	31516 VICTORIA POINT RD	51'
110	4470-017-032	31520 VICTORIA POINT RD	50'
111	4470-017-031	31528 VICTORIA POINT RD	50'
112	4470-017-030	31532 VICTORIA POINT RD	51'
113	4470-017-029	31536 VICTORIA POINT RD	53'
114	4470-017-028	6525 POINT LECHUZA DR	58'

NOTE:
FRONTAGE CALCULATIONS ARE THE INVERSE DISTANCE BETWEEN THE INTERSECTIONS OF THE MEAN HIGH TIDE LINE SURVEYED ON OCTOBER 15TH, 2009 WITH PROPERTY SIDE LINES. FROM ASSESSOR PARCEL NUMBER 4470-017-028 EASTERLY TO ASSESSOR PARCEL NUMBER 4470-017-063 THE MEAN HIGH TIDE LINE LIES AT SEA WALLS OR ON AN EXISTING ROCK REVETMENT. ITS LOCATION WAS DETERMINED FROM AERIAL PHOTOGRAMETRY CONTOURS COMPILED FROM PHOTOGRAPHY COLLECTED ON OCTOBER 15TH, 2009.

01/18/12

ASSESSMENT DIAGRAM

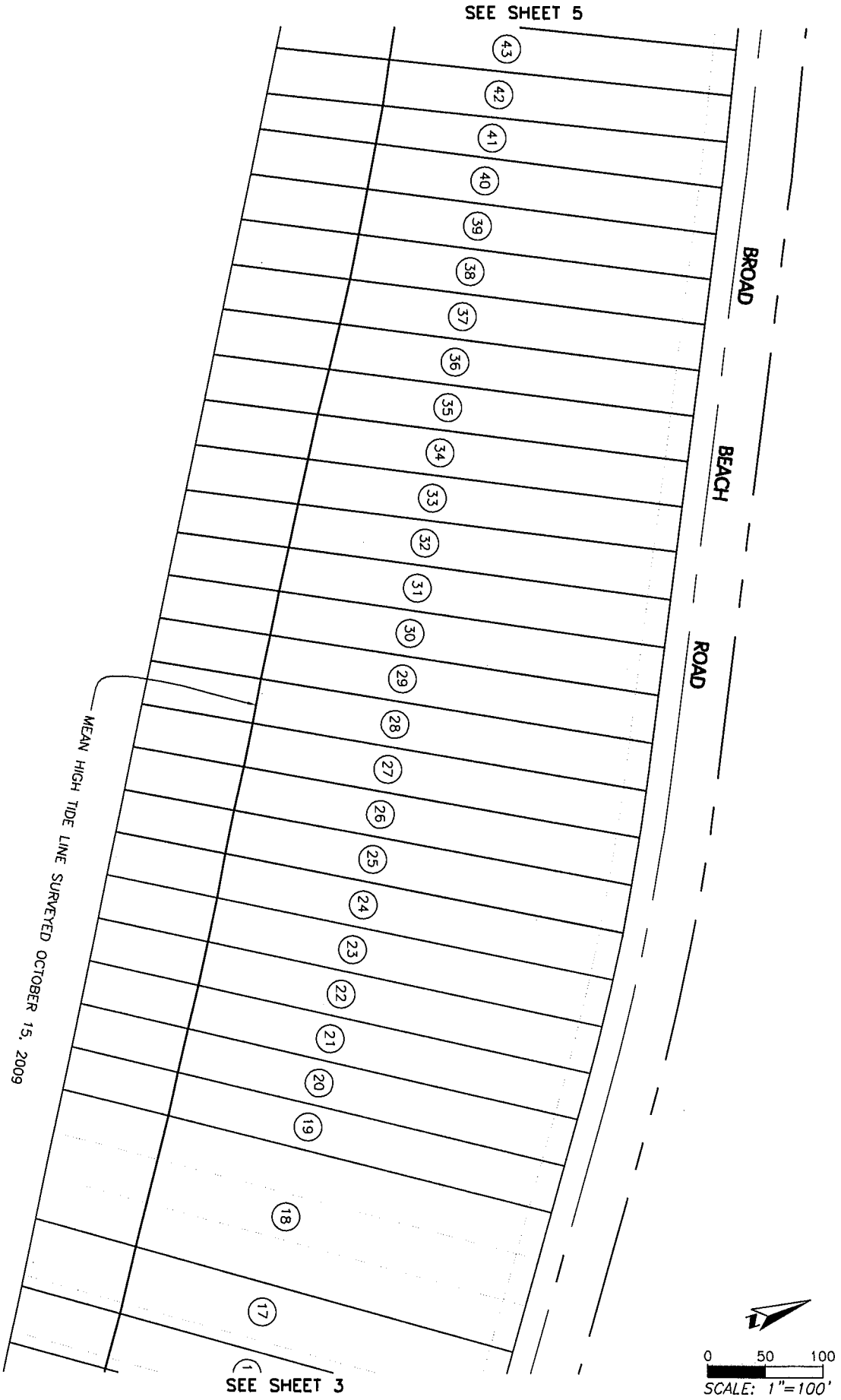
SEE SHEET 4



KDM MERIDIAN, INC. (949)768-0731

01/18/12

ASSESSMENT DIAGRAM

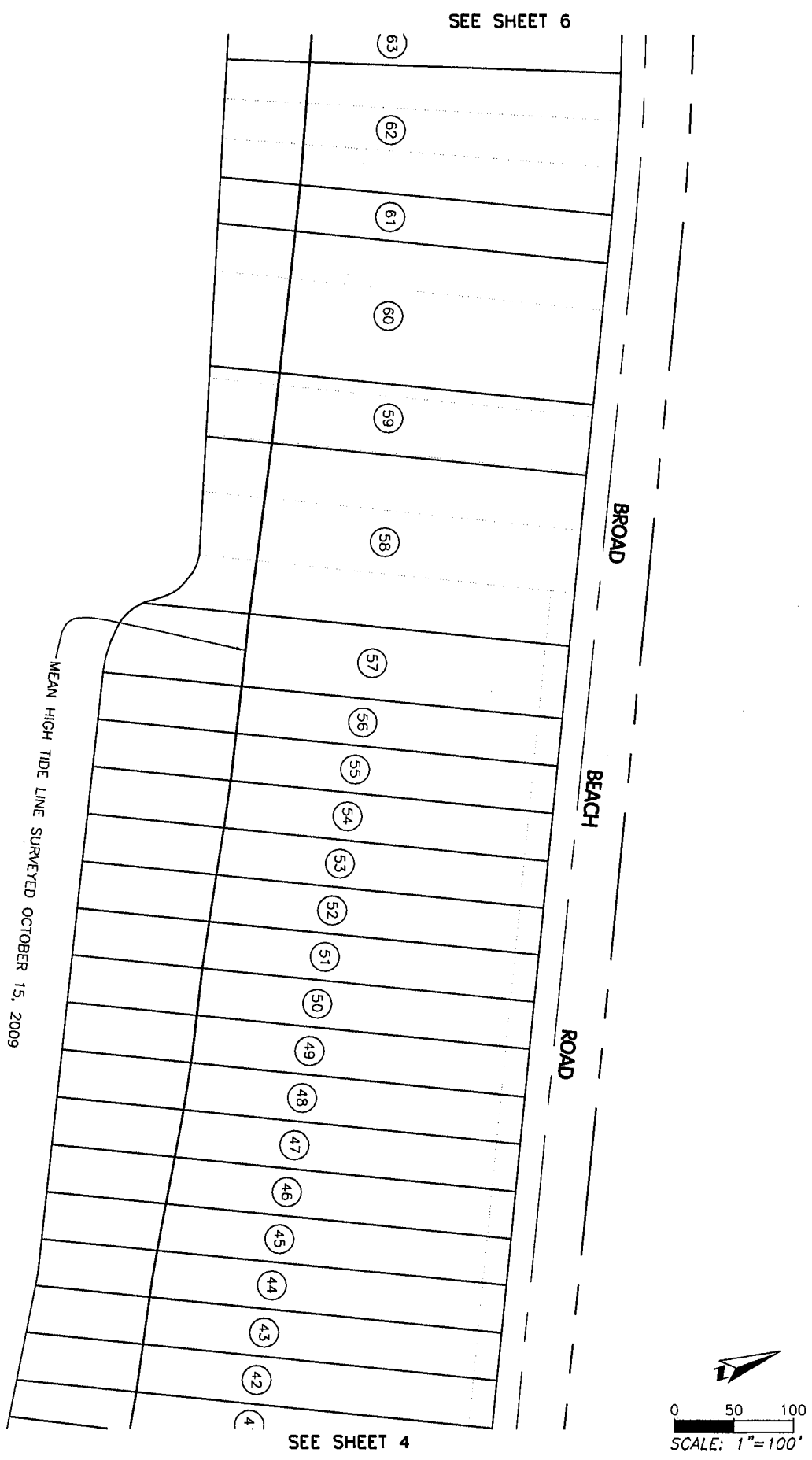


KDM MERIDIAN, INC. (949)768-0731

01/18/12

ASSESSMENT DIAGRAM

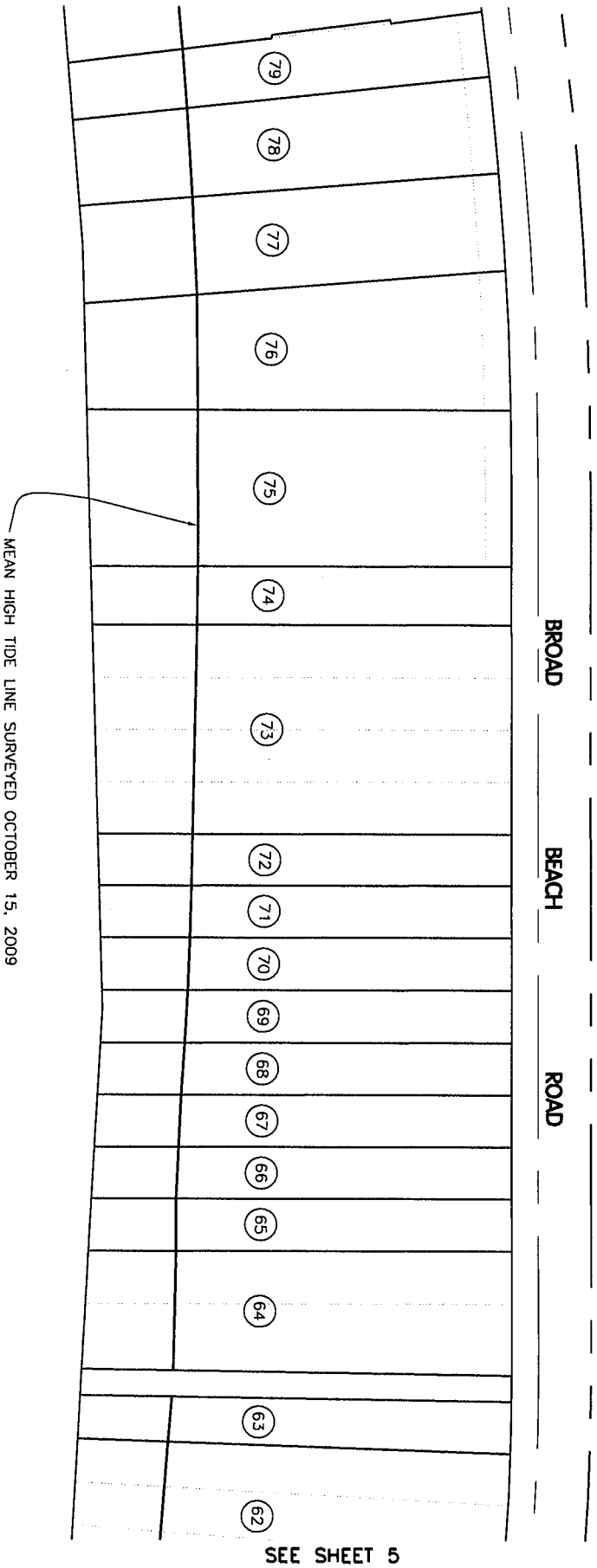
SHEET 5 OF 8



01/18/12

ASSESSMENT DIAGRAM

SEE SHEET 7



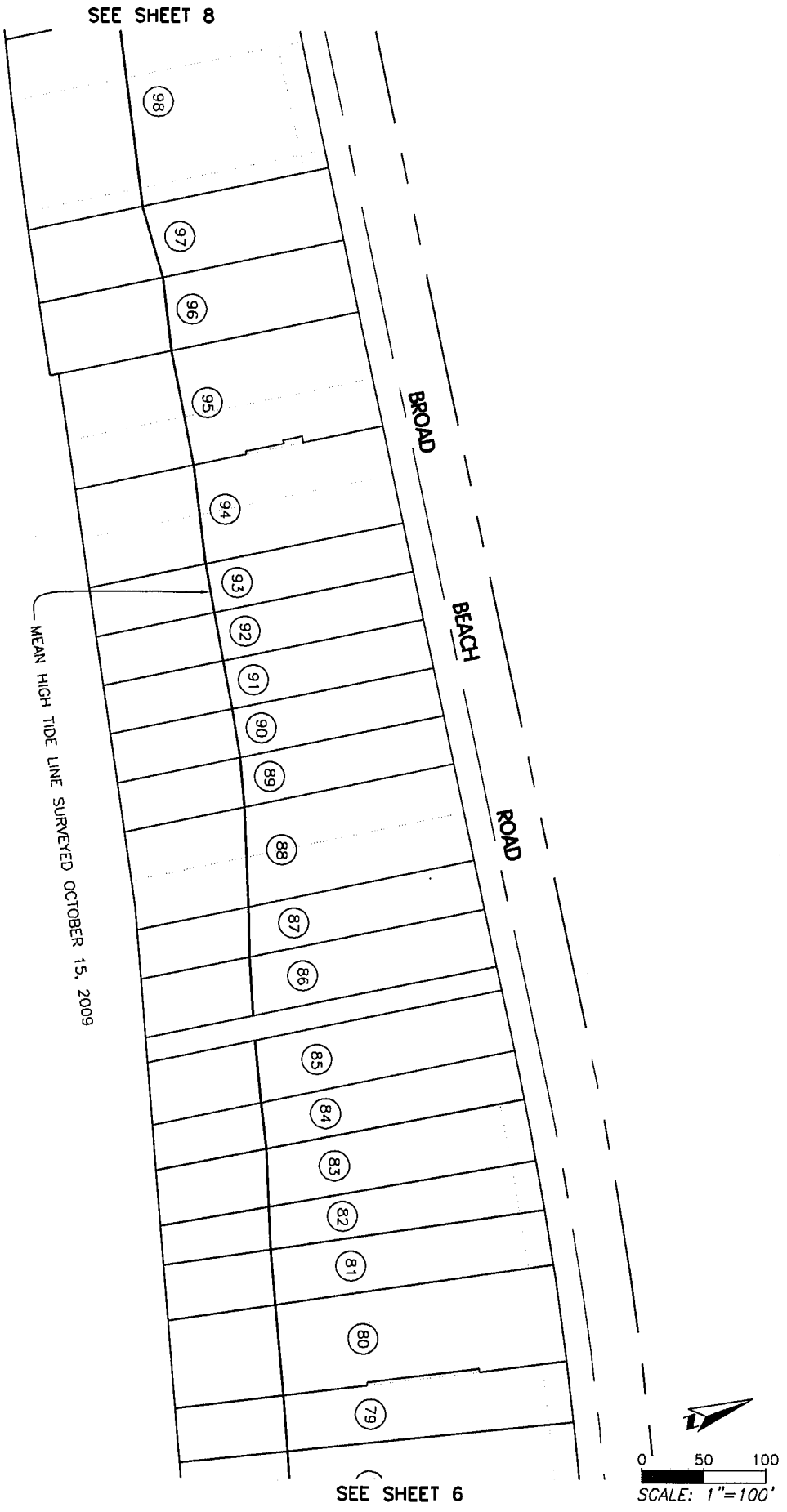
SEE SHEET 5

0 50 100

SCALE: 1"=100'

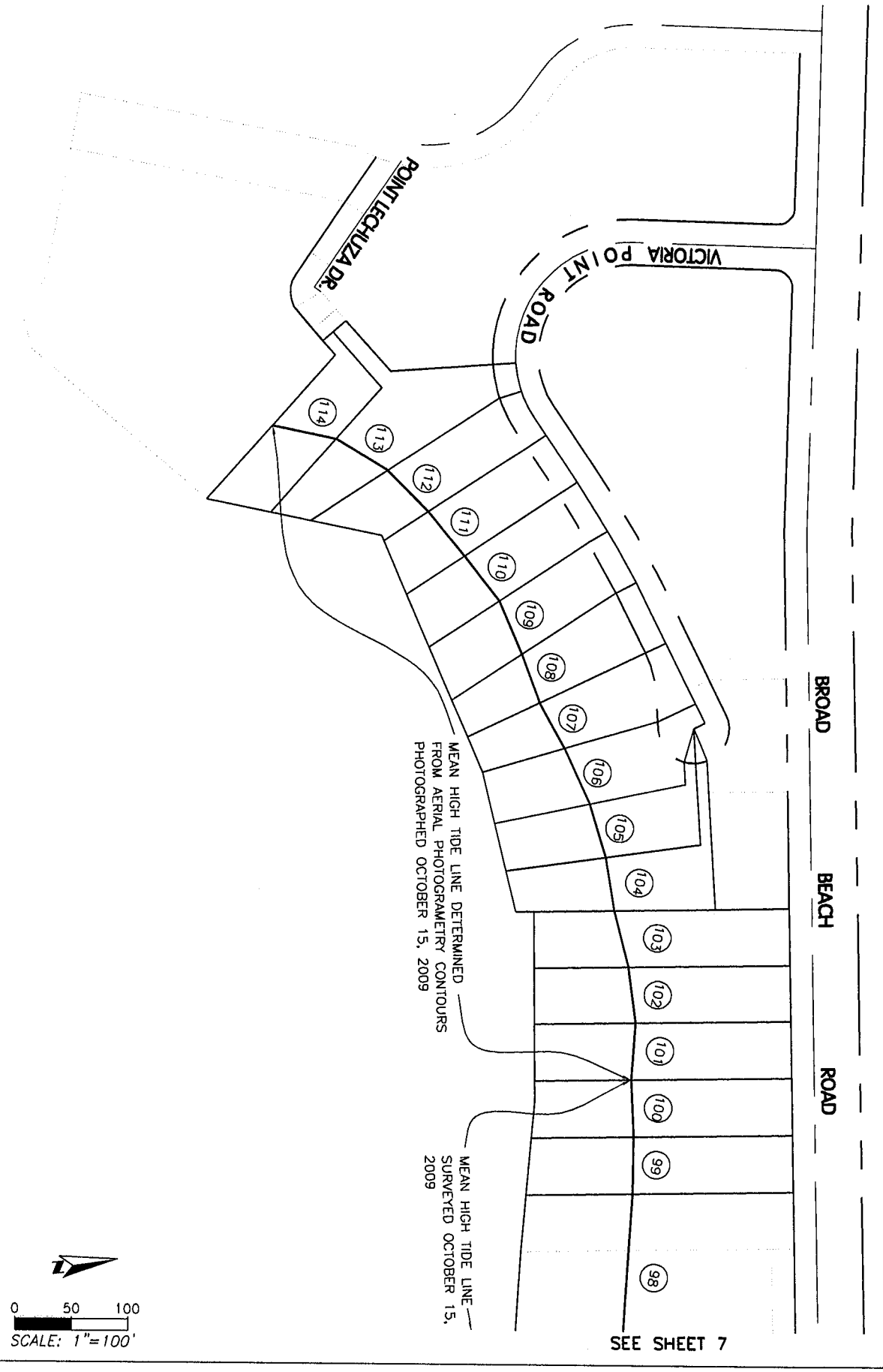
KDM MERIDIAN, INC. (949)768-0731

01/18/12	ASSESSMENT DIAGRAM	SHEET 7 OF 8



01/18/12

ASSESSMENT DIAGRAM



0 50 100

SCALE: 1"=100'

EXHIBIT G

Broad Beach Geologic Hazard Abatement District
Budget – July 12, 2020

Broad Beach Geologic Hazard Abatement District
July 2020 DRAFT GHAD Budget Projection
Full assessment in 2023; $7.250MM Assessment

ASSUMPTIONS

Absorption Period (years)	0
Annual Assessment	$ 7,250,000
TPOA and Fair Share Repayment	$ 3,767,028
Repayment Date:	2028
Annual Increase in Assessment	2.0%
Inflation	2.0%
Investment Earnings	1.5%
Initial Seed Fund	$ 5,869,125
Amount Financed (Init. Nourishment)	$ 22,179,022
Borrowing Rate	3.5%
Term of Loan (years)	5
Frequency of Large-Scale Repair (years)	5
Year of Initial Major Sand Installation	2023
Cost of Large-Scale Repair (2023 $)	$ 22,179,022
Year of Initial Interim Nourishment	2026
Cost of Interim Nourishment (2026 $)	$ 5,596,823
Assessment Cap (per residential unit)	$ 99,999,999
Expense Deferral Period (years)	9

ESTIMATED 2028 ANNUAL EXPENSES

Administration	
Project Manager	$ 120,000
Clerk/Treasurer	$ 43,023
Insurance	$ 35,150
Office Supplies & Postage	$ 2,050
Audit fees	$ 18,464
Lobbyist	$ -
Election Expenses	$ 13,518
Miscellaneous administrative expenses	$ 4,400
Legal	
General Counsel (Elkins Kalt - Ken Ehrlich)	$ 140,000
Special Counsel (Colantuono, Highsmith & Whatley)	$ 70,000
Engineering/Monitoring	
Project Engineer (Moffat Nichol)	$ 127,345
Finalize Dune Plans (WRA)	$ -
MHMMP Pre-construction Monitoring (Rincon)	$ -
MHMMP Post-construction Monitoring	$ 762,630
Scientific Advisory Panel	$ 219,419
Dune Habitat Monitoring Program (WRA)	$ 106,950
Dune Habitat Remediation Program (WRA)	$ -
Adaptive Management and Monitoring (CFC and othe	$ 137,740
Biological Monitoring - Pre and During Construction	$ -
Avoidance and Minimization Measures (AMMS State	$ -
Army Corps of Engineers - Permit Compliance	$ 10,000
Regional Water Quality Control Board - 401 Cert Com	$ 10,000
California Coastal Commission - finalize PTI tasks	$ -
Traffic Engineering	$ -
ENGEO	$ 5,000
KDM aerial photography and topographical surveys	$ -
Intergovernmental Expenses	

Broad Beach Geologic Hazard Abatement District
July 2020 DRAFT GHAD Budget Projection
Full assessment in 2023; $7.250MM Assessment

YEAR (December and April Assessments are both recorded in the Calendar Year of the April Assessment; e.g., December 2020 and April 2021 assessment payments are recorded in 2021)

	2020	2021	2022	2023	2024	2
BEGINNING CASH - JAN 1	5,869,125	5,635,313	8,333,552	10,488,975	10,883,572	11,279,9
A. REVENUES /SOURCES OF CASH						
Assessment	1,501,505	3,757,517	3,832,667	7,693,758	7,847,633	8,004,5
Interest Income	$ 88,037	$ 84,530	$ 125,003	$ 157,335	$ 163,254	$ 169,1
Proceeds from Financing	-	-	-	22,179,022	-	
SLC Revetment Deposit				500,000		
SUBTOTAL - REVENUES/SOURCES OF CASH:	7,458,667	9,477,360	12,291,222	41,019,090	18,894,459	19,453,7
B. PROJECTED EXPENSES						
Administration						
Project Manager	120,000	120,000	120,000	120,000	120,000	120,0
Clerk/Treasurer	36,720	37,454	38,203	38,968	39,747	40,5
Insurance	30,000	30,600	31,212	31,836	32,473	33,1
Office Supplies & Postage	1,250	1,350	1,450	1,550	1,650	1,7
Audit fees	15,759	16,074	16,396	16,724	17,058	17,3
Lobbyist	25,000	-	25,000	-	-	25,0
Election Expenses	11,775	12,129	-	12,492	-	12,8
Miscellaneous administrative expenses	3,600	3,700	3,800	3,900	4,000	4,1
SUBTOTAL - ADMINISTRATION ET AL.:	244,104	221,308	236,061	225,469	214,928	254,7
Legal						
General Counsel (Elkins Kalt - Ken Ehrlich)	572,500	358,000	328,000	280,000	280,000	415,0
Special Counsel (Colantuono, Highsmith & Whatley)	401,250	175,000	70,000	70,000	70,000	70,0
SUBTOTAL - LEGAL:	973,750	533,000	398,000	350,000	350,000	485,0
Engineering/Monitoring						
Project Engineer (Moffat Nichol)	240,000	180,000	180,000	575,000	515,000	120,0
Finalize Dune Plans (WRA)	-	-	-	40,000	-	
MHMMP Pre-construction Monitoring (Rincon)	12,000	12,000	413,848	204,322	-	
MHMMP Post-construction Monitoring	-	-		441,129	658,361	671,5
Scientific Advisory Panel	-	-	194,838	198,735	202,709	206,7
Dune Habitat Monitoring Program (WRA)	-	-			218,550	203,5
Dune Habitat Remediation Program (WRA)	-	-	-	-	-	76,5
Adaptive Management and Monitoring (CFC and others)	-	-	27,000	124,000	126,634	129,3
Biological Monitoring - Pre and During Construction	-	-	-	57,500	58,650	
Avoidance and Minimization Measures (AMMS State Lands Commission)	-	-	-	45,000	-	
Army Corps of Engineers - Permit Compliance	-	-	-	100,000	100,000	10,0
Regional Water Quality Control Board - 401 Cert Compliance	-	-	-	100,000	100,000	10,0
California Coastal Commission - finalize PTI tasks	-	-	50,000	50,000	-	
Traffic Engineering	-	-	85,000	70,000	-	
ENGEO	100,000	5,000	5,000	50,000	50,000	50,0
KDM aerial photography and topographical surveys	-	-	20,000	-	-	
SUBTOTAL - ENGINEERING/MONITORING:	352,000	197,000	975,686	2,055,686	2,029,904	1,477,6
Intergovernmental Expenses						
State Lands Commission - Back Rent	111,000	50,000	50,000	50,000	50,000	50,0
Army Corps of Engineers	142,500	142,500	142,500	142,500	-	
Caltrans	-	-	-	5,100	-	
The Bay Foundation	-	-	-	215,500	-	
SUBTOTAL - INTERGOVERNMENTAL EXPENSES:	253,500	192,500	192,500	413,100	50,000	50,0
Capital Project Construction						
Major sand installation	-	-	-	22,179,022	-	

Broad Beach Geologic Hazard Abatement District
July 2020 DRAFT GHAD Budget Projection
Full assessment in 2023; $7.350MM Assessment; Eminent Domain

ASSUMPTIONS

Absorption Period (years)	0
Annual Assessment	$ 7,350,000
TPOA and Fair Share Repayment	$ 3,767,028
Repayment Date:	2028
Annual Increase in Assessment	2.0%
Inflation	2.0%
Investment Earnings	1.5%
Initial Seed Fund	$ 5,869,125
Amount Financed (Init. Nourishment)	$ 22,179,022
Borrowing Rate	3.5%
Term of Loan (years)	5
Frequency of Large-Scale Repair (years)	5
Year of Initial Major Sand Installation	2023
Cost of Large-Scale Repair (2023 $)	$ 22,179,022
Year of Initial Interim Nourishment	2026
Cost of Interim Nourishment (2026 $)	$ 5,596,823
Assessment Cap (per residential unit)	$ 99,999,999
Expense Deferral Period (years)	9

ESTIMATED 2028 ANNUAL EXPENSES

Administration	
Project Manager	$ 120,000
Clerk/Treasurer	$ 43,023
Insurance	$ 35,150
Office Supplies & Postage	$ 2,050
Audit fees	$ 18,464
Lobbyist	$ -
Election Expenses	$ 13,518
Miscellaneous administrative expenses	$ 4,400
Legal	
General Counsel (Elkins Kalt - Ken Ehrlich)	$ 140,000
Special Counsel (Colantuono, Highsmith & Whatley)	$ 70,000
Engineering/Monitoring	
Project Engineer (Moffat Nichol)	$ 127,345
Finalize Dune Plans (WRA)	$ -
MHMMP Pre-construction Monitoring (Rincon)	$ -
MHMMP Post-construction Monitoring	$ 762,630
Scientific Advisory Panel	$ 219,419
Dune Habitat Monitoring Program (WRA)	$ 106,950
Dune Habitat Remediation Program (WRA)	$ -
Adaptive Management and Monitoring (CFC and othe	$ 137,740
Biological Monitoring - Pre and During Construction	$ -
Avoidance and Minimization Measures (AMMS State	$ -
Army Corps of Engineers - Permit Compliance	$ 10,000
Regional Water Quality Control Board - 401 Cert Com	$ 10,000
California Coastal Commission - finalize PTI tasks	$ -
Traffic Engineering	$ -
ENGEO	$ 5,000

Broad Beach Geologic Hazard Abatement District
July 2020 DRAFT GHAD Budget Projection
Full assessment in 2023; $7.350MM Assessment; Eminent Domain

YEAR (December and April Assessments are both recorded in the Calendar Year of the April Assessment; e.g., December 2020 and April 2021 assessment payments are recorded in 2021)	2020	2021	2022	2023	2024	202
BEGINNING CASH - JAN 1	5,869,125	5,635,313	6,333,552	6,458,975	6,899,243	7,344,101
A. REVENUES /SOURCES OF CASH						
Assessment	1,501,505	3,757,517	3,832,667	7,799,879	7,955,876	8,114,994
Interest Income	$ 88,037	$ 84,530	$ 95,003	$ 96,885	$ 103,489	$ 110,162
Proceeds from Financing	-	-	-	22,179,022	-	-
SLC Revetment Deposit				500,000		
SUBTOTAL - REVENUES/SOURCES OF CASH:	7,458,667	9,477,360	10,261,222	37,034,761	14,958,608	15,569,257
B. PROJECTED EXPENSES						
Administration						
Project Manager	120,000	120,000	120,000	120,000	120,000	120,000
Clerk/Treasurer	36,720	37,454	38,203	38,968	39,747	40,542
Insurance	30,000	30,600	31,212	31,836	32,473	33,122
Office Supplies & Postage	1,250	1,350	1,450	1,550	1,650	1,750
Audit fees	15,759	16,074	16,396	16,724	17,058	17,399
Lobbyist	25,000	-	25,000	-	-	25,000
Election Expenses	11,775	12,129	-	12,492	-	12,867
Miscellaneous administrative expenses	3,600	3,700	3,800	3,900	4,000	4,100
SUBTOTAL - ADMINISTRATION ET AL.:	244,104	221,308	236,061	225,469	214,928	254,780
Legal						
General Counsel (Elkins Kalt - Ken Ehrlich)	572,500	358,000	328,000	280,000	280,000	415,000
Special Counsel (Colantuono, Highsmith & Whatley)	401,250	175,000	70,000	70,000	70,000	70,000
Eminent Domain		2,000,000	2,000,000			
SUBTOTAL - LEGAL:	973,750	2,533,000	2,398,000	350,000	350,000	485,000
Engineering/Monitoring						
Project Engineer (Moffat Nichol)	240,000	180,000	180,000	575,000	515,000	120,000
Finalize Dune Plans (WRA)	-	-	-	40,000	-	-
MHMMP Pre-construction Monitoring (Rincon)	12,000	12,000	413,848	204,322	-	-
MHMMP Post-construction Monitoring	-	-		441,129	658,361	671,528
Scientific Advisory Panel	-	-	194,838	198,735	202,709	206,763
Dune Habitat Monitoring Program (WRA)	-	-			218,550	203,550
Dune Habitat Remediation Program (WRA)	-	-	-	-	-	76,500
Adaptive Management and Monitoring (CFC and others)	-	-	27,000	124,000	126,634	129,323
Biological Monitoring - Pre and During Construction	-	-	-	57,500	58,650	-
Avoidance and Minimization Measures (AMMS State Lands Commission)	-	-	-	45,000	-	-
Army Corps of Engineers - Permit Compliance	-	-	-	100,000	100,000	10,000
Regional Water Quality Control Board - 401 Cert Compliance	-	-	-	100,000	100,000	10,000
California Coastal Commission - finalize PTI tasks	-	-	50,000	50,000	-	-
Traffic Engineering	-	-	85,000	70,000	-	-
ENGEO	100,000	5,000	5,000	50,000	50,000	50,000
KDM aerial photography and topographical surveys	-	-	20,000	-	-	-
SUBTOTAL - ENGINEERING/MONITORING:	352,000	197,000	975,686	2,055,686	2,029,904	1,477,665
Intergovernmental Expenses						
State Lands Commission - Back Rent	111,000	50,000	50,000	50,000	50,000	50,000
Army Corps of Engineers	142,500	142,500	142,500	142,500	-	-
Caltrans	-	-	-	5,100	-	-
The Bay Foundation	-	-	-	215,500	-	-
SUBTOTAL - INTERGOVERNMENTAL EXPENSES:	253,500	192,500	192,500	413,100	50,000	50,000

ENGEO
Expect Excellence

ADDENDUM TO JULY 12, 2020, REVISED AND RESTATED 2020 ENGINEER'S REPORT

July 12, 2020

ADDENDUM TO
JULY 12, 2020, REVISED AND RESTATED 2020 ENGINEER'S REPORT

for

BROAD BEACH GEOLOGIC HAZARD ABATEMENT DISTRICT
MALIBU, CALIFORNIA
July 12, 2020

The undersigned respectfully submits the enclosed Addendum to Engineer's Report.

Date: July 12, 2020

By: ENGEO Incorporated

_____, GE
Uri Eliahu

I HEREBY CERTIFY that the enclosed Addendum to Engineer's Report was filed on the _____ day of _____.

_____
Clerk of the Board
Broad Beach Geologic Hazard Abatement District
Malibu, California

I HEREBY CERTIFY that the enclosed Addendum to Engineer's Report was approved and confirmed by the BBGHAD Board on the _____ day of _____.

_____
Chairman of the Board
Broad Beach Geologic Hazard Abatement District
Malibu, California

APPROVED _____

The BBGHAD project ("Project") protects improvements by protecting the land upon which improvements lie, which is the ultimate goal of BBGHAD's activities. Since the issuance of the February 16, 2020, Engineer's Report ("Engineers Report"), several comments have been provided by the general public. This addendum is intended to provide clarification and commentary regarding several of the comments that have been provided to date.

ECOLOGICAL BENEFITS OF PROJECT

An "Updated Analysis" report was prepared by economist Dr. Philip King ("2020 King Report"), which is intended to update the findings of a report that he authored in 2013 ("2013 King Report"). In the 2020 King Report, Dr. King claims that the dune restoration project will result in ecological benefits he values at over $64 million, which he claims should all be allocated to Proposition 218's category of "general benefit." Dr. King's calculation is based on an estimated replacement cost of other projects.

> "The average cost of other similar projects in California (where data was available) was $5.9 million per acre."

Although Dr. King's replacement cost may be debatable but reasonable, we disagree with his determination that this estimate is allocated solely to general benefit. The analysis does not factor in the costs of construction for the dunes. Further, the dune restoration will inherently provide special benefit to assessed properties, not the least of which is associated with protection of assessed property. Dunes provide an important element of shore protection; they provide a reservoir of sand that is available as a sacrificial sand dike against coastal flooding. The GHAD will assess property owners for this special benefit.

Further, Dr. King also opines in the 2020 King Report that the beach nourishment will act to provide public ecological benefits through the protection of existing septic systems by preventing coastal water contamination from the release of fecal waste, although Dr. King does not attempt to evaluate this benefit. However, we note that the protection of septic systems also provides a significant special benefit to the owners of the properties those systems serve; these improvements are for the exclusive use of each respective parcel that utilizes these systems. If these systems were damaged or destroyed, property owners would no longer have the use of sanitary/wastewater service, which could render respective improvements at each affected parcel diminished or unusable. Further, respective property owners could be held liable for discharges from these systems into public waters.

On p. 26 of the 2020 King Report, Dr. King opines, "The value of the general benefits created by sand placement and dune restoration, however, is entirely independent from the protective value of the sand or dunes." We disagree. While the improvements do provide broad, diffuse social benefits, these are inherently difficult to measure, but we believe that Dr. King's attempt to bifurcate the benefits, which would appear to require expertise in coastal engineering, are not within his expertise as an economist. It is our opinion as the assessment engineer, informed by the work of Moffatt & Nichol, the coastal engineer, that the ecological benefits have been appropriately analyzed in the report.

USE OF 2013 KING REPORT VS. UPDATED REPORT

We understand there is a general concern relating to the use of the 2013 King Report versus the use of the 2020 King Report. We do note that the 2020 King Report is intended to be a revision

to the 2013 King Report, but we also note some debatable points that have been raised in the 2020 King Report.

Of note, the 2020 King Report assumes infinite demand for beach resources and that addition of sand at Broad Beach, as well as migration toward Lechuza Point and/or Zuma Beach, will provide a linear, infinite supply to meet the demand. First, although the Los Angeles metropolitan area has grown in the past decades, it is not realistic to assume infinite demand, as there are several constraints on demand. Of course, increased traffic should be expected to moderate the demand for the beach by limiting the utility of transit options to the beach as well as those potential visitors who would drive their own vehicles to the beach. Second, and more of a direct effect – parking in the vicinity of Broad Beach and Zuma Beach is severely limited. The lack of parking supply would be expected to significantly constrain potential increased demand for use – and public benefit – of the beach.

Second, the 2020 King Report states that the 2013 estimate of 8,000 visitors is too low, since more sand will be placed than had been contemplated by the 2013 King report. It is important to note that Broad Beach is a residential community with no public services or amenities available. This would require beach visitors to utilize the amenities at neighboring public beaches such as Zuma Beach, but once again, it is not reasonable that these amenities would or have the ability to scale up, let alone meet this increased demand. In both instances, it is our opinion that the projections of increased visitor use and related benefits of Broad Beach and the adjacent beaches appear flawed given the notable physical constraints in meeting potential additional demand. It is our opinion that these revised projections are speculative, and although they have been reviewed, we have chosen to not to incorporate them nor revise our general and special benefit analysis.

Further, the volume of sand placed for the current project does not significantly differ from the assumptions made in the 2013 King report. Under the current project schedule, 300,000-cubic-yard nourishments will occur on a 5-year schedule, as opposed to 600,000-cubic-yard nourishments at 10-year intervals considered in the 2013 King Report. Interim nourishments are planned under the current project scenario, which will be implemented only to keep the revetment covered and hence will not necessarily provide greater public recreation opportunity.

EMINENT DOMAIN BUDGET

The Engineer's Report includes a budget alternative that incorporates $4 million in expenses to condemn any interests necessary to complete the project if eminent domain should be necessary. Mr. Bradford Kuhn, legal counsel to the Magidson litigants has opined that this amount is too low. We reiterate our opinion that our $4 million estimate is appropriate, and others may have differing estimates based on more or less conservative estimates of related costs. We note that BBGHAD's special counsel's estimates, on which we rely, assume the lower legal rates prevailing among public law firms serving taxpayer-funded agencies, unlike the higher rates Mr. Kuhn's firm charges. In addition, we rely on the opinion of Peregrine Realty Partners, Inc. of the value of the interests in land that might later be condemned as de minimis in light of the ephemeral nature of the rights taken and the substantial benefit to the remainder parcels from the project those interests are taken to accomplish. Indeed, most assessed property owners have donated those interests at no cost to BBGHAD, suggesting those property owners value the impact on their properties as Peregrine does.

CONSIDERATION OF BACKPASSING

Ms. Nicki Carlsen, legal counsel for several property owners within the eastern portion of the GHAD ("East End Parties") has opined that backpassing "...is an integral part of the project and affects the East End Parties as it is their properties which are donor properties. The Engineer's Report makes clear that backpassing is not considered in the models or presumably the equation for calculating assessments. This lapse is particularly troubling because the trigger for backpassing based on the beach width for the recipient parcels is quantified, but there is no prohibition on backpassing if the beach width of the donor parcels is not sufficient. Backpassing should be considered in any new assessment."

Backpassing is an operation where sand that has been displaced or has migrated between nourishment operations is mechanically transported (using construction equipment) to attempt to restore beach dimensions that had been established with nourishment events. Backpassing extends the life of the beach nourishment to the benefit of all the BBGHAD by capturing some of the sand at the east end, before it leaves the project area, and recycling it back updrift, still within the project boundaries, where it will return again to nourish the downdrift beaches, including those at the east end. Backpassing is undertaken based on specific criteria, including minimum beach widths in the eastern portion of the project. Since backpassing requires specific criteria to be met, and it is not possible to predict if or how many of these events would occur. Backpassing does not alter the benefit; it is a restorative action meant to preserve the benefit for which the GHAD assessment has been established.

CONSIDERATION OF LINEAR BEACH FRONTAGE IN DETERMINING THE ASSESSMENT

In a separate comment, Ms. Carlsen also opines that the property frontage (the beach dimension that is measured parallel to the shoreline) is the basis for determining the benefit of the project. We kindly note that this is an incomplete understanding of the assessment formula. As noted by Ms. Carlsen, the beach width (the beach dimension measured perpendicular to the shoreline) is predicted, but it is integral in determining the relative benefit associated with the sand placement. The beach width is a dimension directly correlated to the protective capacity of a unit of beach; a wider beach provides a greater "wearing course" that may be eroded by wave action. A wider beach provides more sand volume to erode away than a narrower beach, and therefore provides greater protection from wave action. The width of sand placement is directly incorporated into the Sand Placement Factor. This factor is computed for each parcel according to the average width of sand at the respective parcel and is normalized by the maximum width of sand placement within the GHAD.

Once all of the factors, including the Sand Placement Factor, the Revetment Factor, the Seawall Factor, the Bluff Factor, the Recreation Factor, and the Parcel Development Factor have been computed, the linear frontage is applied as described in the Engineer's Report to determine the assessment for each parcel.

EXHIBITS 1 AND 2

We understand that members of the public have indicated that Exhibits 1 and 2, related to current and future assessment levels, have been found to be confusing. The Exhibits will be clarified.

APPENDIX 1

TO

2020 ENGINEER'S REPORT

$7.250MM Assessment (2020 Dollars)

			Site Improvements						
Lot Address	APN	Surveyed Beach Frontage	Vacant	Accessory	Habitable Structure	Improvement Term	Sand	Revetment	Se
30708 PCH	4469-026-009	48			x	1	x		
30712 PCH	4469-026-008	57			x	1	x		
30718 PCH	4469-026-007	50			x	1	x		
30724 PCH	4469-026-006	50			x	1	x		
30728 PCH	4469-026-020	47.5	x			0.5	x		
30732 PCH	4469-026-019	47.5	x			0.5	x		
30738 PCH	4469-026-018	47.5	x			0.5	x		
30748 PCH	4469-026-017	47.5	x			0.5	x		
30750 PCH	4469-026-011	30			x	1	x		
30756 PCH	4469-026-016	100			x	1	x		
30760 Broad Beach Road	4469-026-002	80			X	1	x	x	
30800 Broad Beach Road	4469-026-012	50			x	1	x	x	
30804 Broad Beach Road	4470-013-028	42			x	1	x	x	
30810 Broad Beach Road	4470-013-002	42			x	1	x	x	
NO ADDRESS	4470-013-029	42			x	1	x		
30822 Broad Beach Road	4470-013-030	84			x	1	x		
30826 Broad Beach Road	4470-013-004	42			x	1	x	x	
30830 Broad Beach Road	4470-013-005	55			x	1	x	x	
30838 Broad Beach Road	4470-013-006	40			x	1	x	x	
30842 Broad Beach Road	4470-013-007	50			x	1	x	x	
30846 Broad Beach Road	4470-013-008	60			x	1	x	x	
30852 Broad Beach Road	4470-013-009	39		x		0.7	x	x	
30856 Broad Beach Road	4470-013-010	39			x	1	x	x	
30860 Broad Beach Road	4470-013-011	39			x	1	x	x	
30866 Broad Beach Road	4470-013-012	39			x	1	x	x	
30870 Broad Beach Road	4470-013-013	39			x	1	x	x	

$7.250MM Assessment (2020 Dollars)

Lot Address	APN	Surveyed Beach Frontage	Beach Frontage	Beach Width	Sand Score	Revetment Score	Seawall Score	Bluff Sc
30708 PCH	4469-026-009	48	48	49	687.7192982	0	0	0
30712 PCH	4469-026-008	57	57	49	687.7192982	0	0	0
30718 PCH	4469-026-007	50	50	50	701.754386	0	0	0
30724 PCH	4469-026-006	50	50	50	701.754386	0	0	0
30728 PCH	4469-026-020	47.5	47.5	51	715.7894737	0	0	0
30732 PCH	4469-026-019	47.5	47.5	51	715.7894737	0	0	0
30738 PCH	4469-026-018	47.5	47.5	51	715.7894737	0	0	0
30748 PCH	4469-026-017	47.5	47.5	51	715.7894737	0	0	0
30750 PCH	4469-026-011	30	30	51	715.7894737	0	0	0
30756 PCH	4469-026-016	100	100	51	715.7894737	0	0	0
30760 Broad Beach Road	4469-026-002	80	80	52	729.8245614	120	0	0
30800 Broad Beach Road	4469-026-012	50	50	52	729.8245614	120	0	0
30804 Broad Beach Road	4470-013-028	42	42	52	729.8245614	120	0	0
30810 Broad Beach Road	4470-013-002	42	42	53	743.8596491	120	0	0
NO ADDRESS	4470-013-029	42	42	56	785.9649123	0	0	0
30822 Broad Beach Road	4470-013-030	84	84	53	743.8596491	0	0	0
30826 Broad Beach Road	4470-013-004	42	42	53	743.8596491	120	0	0
30830 Broad Beach Road	4470-013-005	55	55	54	757.8947368	120	0	0
30838 Broad Beach Road	4470-013-006	40	40	54	757.8947368	120	0	0
30842 Broad Beach Road	4470-013-007	50	50	54	757.8947368	120	0	0
30846 Broad Beach Road	4470-013-008	60	60	54	757.8947368	120	0	0
30852 Broad Beach Road	4470-013-009	39	39	55	771.9298246	120	0	0
30856 Broad Beach Road	4470-013-010	39	39	55	771.9298246	120	0	0
30860 Broad Beach Road	4470-013-011	39	39	55	771.9298246	120	0	0
30866 Broad Beach Road	4470-013-012	39	39	55	771.9298246	120	0	0
30870 Broad Beach Road	4470-013-013	39	39	55	771.9298246	120	0	0

Proposed 2021 Proposed 2022 Proposed 2023 Propose

$7.250MM Assessment (2020 Dollars)				$ 3,757,517	$ 3,832,667	$ 7,693,758	$ 7,84
Lot Address	APN	Surveyed Beach Frontage	Aggregated Weighting Factor x Beach Frontage/Total Aggregated Weighting Factor x Beach Frontage				
30708 PCH	4469-026-009	48	0.00860037	$ 32,316.04	$ 32,962.35	$ 66,169.16	$ 67,4
30712 PCH	4469-026-008	57	0.010212939	$ 38,375.29	$ 39,142.79	$ 78,575.88	$ 80,1
30718 PCH	4469-026-007	50	0.009086018	$ 34,140.87	$ 34,823.68	$ 69,905.63	$ 71,3
30724 PCH	4469-026-006	50	0.009086018	$ 34,140.87	$ 34,823.68	$ 69,905.63	$ 71,3
30728 PCH	4469-026-020	47.5	0.008321822	$ 31,269.39	$ 31,894.77	$ 64,026.08	$ 65,3
30732 PCH	4469-026-019	47.5	0.008321822	$ 31,269.39	$ 31,894.77	$ 64,026.08	$ 65,3
30738 PCH	4469-026-018	47.5	0.008321822	$ 31,269.39	$ 31,894.77	$ 64,026.08	$ 65,3
30748 PCH	4469-026-017	47.5	0.008321822	$ 31,269.39	$ 31,894.77	$ 64,026.08	$ 65,3
30750 PCH	4469-026-011	30	0.005527991	$ 20,771.52	$ 21,186.95	$ 42,531.02	$ 43,3
30756 PCH	4469-026-016	100	0.018426636	$ 69,238.40	$ 70,623.16	$ 141,770.08	$ 144,6
30760 Broad Beach Road	4469-026-002	80	0.016686449	$ 62,699.61	$ 63,953.60	$ 128,381.50	$ 130,9
30800 Broad Beach Road	4469-026-012	50	0.01042903	$ 39,187.26	$ 39,971.00	$ 80,238.44	$ 81,8
30804 Broad Beach Road	4470-013-028	42	0.008760385	$ 32,917.30	$ 33,575.64	$ 67,400.29	$ 68,7
30810 Broad Beach Road	4470-013-002	42	0.008867317	$ 33,319.10	$ 33,985.47	$ 68,222.99	$ 69,5
NO ADDRESS	4470-013-029	42	0.008273846	$ 31,089.12	$ 31,710.90	$ 63,656.97	$ 64,9
30822 Broad Beach Road	4470-013-030	84	0.015906101	$ 59,767.45	$ 60,962.79	$ 122,377.69	$ 124,8
30826 Broad Beach Road	4470-013-004	42	0.008867317	$ 33,319.10	$ 33,985.47	$ 68,222.99	$ 69,5
30830 Broad Beach Road	4470-013-005	55	0.011751993	$ 44,158.31	$ 45,041.47	$ 90,416.99	$ 92,2
30838 Broad Beach Road	4470-013-006	40	0.008546904	$ 32,115.14	$ 32,757.44	$ 65,757.81	$ 67,0
30842 Broad Beach Road	4470-013-007	50	0.01068363	$ 40,143.92	$ 40,946.80	$ 82,197.26	$ 83,8
30846 Broad Beach Road	4470-013-008	60	0.012820356	$ 48,172.70	$ 49,136.15	$ 98,636.71	$ 100,6
30852 Broad Beach Road	4470-013-009	39	0.008220285	$ 30,887.86	$ 31,505.61	$ 63,244.88	$ 64,5
30856 Broad Beach Road	4470-013-010	39	0.008432525	$ 31,685.36	$ 32,319.06	$ 64,877.81	$ 66,1
30860 Broad Beach Road	4470-013-011	39	0.008432525	$ 31,685.36	$ 32,319.06	$ 64,877.81	$ 66,1
30866 Broad Beach Road	4470-013-012	39	0.008432525	$ 31,685.36	$ 32,319.06	$ 64,877.81	$ 66,1
30870 Broad Beach Road	4470-013-013	39	0.008432525	$ 31,685.36	$ 32,319.06	$ 64,877.81	$ 66,1

			Proposed 2030	Proposed 2031	Proposed 2032	
$7.250MM Assessment (2020 Dollars)			$ 8,837,710	$ 9,014,464	$ 9,194,753	$
Lot Address	APN	Surveyed Beach Frontage				
30708 PCH	4469-026-009	48	$ 76,007.57	$ 77,527.72	$ 79,078.28	$
30712 PCH	4469-026-008	57	$ 90,258.99	$ 92,064.17	$ 93,905.45	$
30718 PCH	4469-026-007	50	$ 80,299.59	$ 81,905.58	$ 83,543.69	$
30724 PCH	4469-026-006	50	$ 80,299.59	$ 81,905.58	$ 83,543.69	$
30728 PCH	4469-026-020	47.5	$ 73,545.85	$ 75,016.76	$ 76,517.10	$
30732 PCH	4469-026-019	47.5	$ 73,545.85	$ 75,016.76	$ 76,517.10	$
30738 PCH	4469-026-018	47.5	$ 73,545.85	$ 75,016.76	$ 76,517.10	$
30748 PCH	4469-026-017	47.5	$ 73,545.85	$ 75,016.76	$ 76,517.10	$
30750 PCH	4469-026-011	30	$ 48,854.78	$ 49,831.87	$ 50,828.51	$
30756 PCH	4469-026-016	100	$ 162,849.26	$ 166,106.25	$ 169,428.36	$
30760 Broad Beach Road	4469-026-002	80	$ 147,469.99	$ 150,419.39	$ 153,427.77	$
30800 Broad Beach Road	4469-026-012	50	$ 92,168.75	$ 94,012.12	$ 95,892.36	$
30804 Broad Beach Road	4470-013-028	42	$ 77,421.75	$ 78,970.18	$ 80,549.58	$
30810 Broad Beach Road	4470-013-002	42	$ 78,366.78	$ 79,934.11	$ 81,532.79	$
NO ADDRESS	4470-013-029	42	$ 73,121.85	$ 74,584.29	$ 76,075.97	$
30822 Broad Beach Road	4470-013-030	84	$ 140,573.51	$ 143,384.98	$ 146,252.67	$
30826 Broad Beach Road	4470-013-004	42	$ 78,366.78	$ 79,934.11	$ 81,532.79	$
30830 Broad Beach Road	4470-013-005	55	$ 103,860.70	$ 105,937.92	$ 108,056.67	$
30838 Broad Beach Road	4470-013-006	40	$ 75,535.06	$ 77,045.76	$ 78,586.67	$
30842 Broad Beach Road	4470-013-007	50	$ 94,418.82	$ 96,307.20	$ 98,233.34	$
30846 Broad Beach Road	4470-013-008	60	$ 113,302.59	$ 115,568.64	$ 117,880.00	$
30852 Broad Beach Road	4470-013-009	39	$ 72,648.49	$ 74,101.46	$ 75,583.49	$
30856 Broad Beach Road	4470-013-010	39	$ 74,524.21	$ 76,014.69	$ 77,534.98	$
30860 Broad Beach Road	4470-013-011	39	$ 74,524.21	$ 76,014.69	$ 77,534.98	$
30866 Broad Beach Road	4470-013-012	39	$ 74,524.21	$ 76,014.69	$ 77,534.98	$
30870 Broad Beach Road	4470-013-013	39	$ 74,524.21	$ 76,014.69	$ 77,534.98	$

$7.250MM Assessment (2020 Dollars)									
			Site Improvements						
Lot Address	APN	Surveyed Beach Frontage	Vacant	Accessory	Habitable Structure	Improvement Term	Sand	Revetment	Sea
30936 Broad Beach Road	4470-013-023	39			x	1	x	x	
30940 Broad Beach Road	4470-013-024	39			x	1	x	x	
30944 Broad Beach Road	4470-013-025	39			x	1	x	x	
30948 Broad Beach Road	4470-013-026	40			x	1	x	x	
30952 Broad Beach Road	4470-013-027	40			x	1	x	x	
30956 Broad Beach Road	4470-014-001	40			x	1	x	x	
30962 Broad Beach Road	4470-014-002	40			x	1	x	x	
30966 Broad Beach Road	4470-014-003	40			x	1	x	x	
30970 Broad Beach Road	4470-014-004	40			x	1	x	x	
30980 Broad Beach Road	4470-014-023	114			x	1	x	x	
31000 Broad Beach Road	4470-014-008	40			x	1	x	x	
31008 Broad Beach Road	4470-014-009	40			x	1	x	x	
31012 Broad Beach Road	4470-014-010	40			x	1	x	x	
31016 Broad Beach Road	4470-014-011	40			x	1	x	x	
31020 Broad Beach Road	4470-014-012	40			x	1	x	x	
31022 Broad Beach Road	4470-014-013	40			x	1	x	x	
31026 Broad Beach Road	4470-014-014	40			x	1	x	x	
31030 Broad Beach Road	4470-014-015	40			x	1	x	x	
31034 Broad Beach Road	4470-014-016	40			x	1	x	x	
31038 Broad Beach Road	4470-014-017	40			x	1	x	x	
31042 Broad Beach Road	4470-014-018	40			x	1	x	x	
31048 Broad Beach Road	4470-014-019	40			x	1	x	x	
31052 Broad Beach Road	4470-014-020	40			x	1	x	x	
31054 Broad Beach Road	4470-014-021	40			x	1	x	x	
31058 Broad Beach Road	4470-014-022	40			x	1	x	x	
31064 Broad Beach Road	4470-015-030	62			x	1	x	x	

$7.250MM Assessment (2020 Dollars)								
Lot Address	APN	Surveyed Beach Frontage	Beach Frontage	Beach Width	Sand Score	Revetment Score	Seawall Score	Bluff
30936 Broad Beach Road	4470-013-023	39	39	56	785.9649123	120	0	
30940 Broad Beach Road	4470-013-024	39	39	56	785.9649123	120	0	
30944 Broad Beach Road	4470-013-025	39	39	56	785.9649123	120	0	
30948 Broad Beach Road	4470-013-026	40	40	56	785.9649123	120	0	
30952 Broad Beach Road	4470-013-027	40	40	56	785.9649123	120	0	
30956 Broad Beach Road	4470-014-001	40	40	56	785.9649123	120	0	
30962 Broad Beach Road	4470-014-002	40	40	56	785.9649123	120	0	
30966 Broad Beach Road	4470-014-003	40	40	56	785.9649123	120	0	
30970 Broad Beach Road	4470-014-004	40	40	56	785.9649123	120	0	
30980 Broad Beach Road	4470-014-023	114	114	56	785.9649123	120	0	
31000 Broad Beach Road	4470-014-008	40	40	56	785.9649123	120	0	
31008 Broad Beach Road	4470-014-009	40	40	56	785.9649123	120	0	
31012 Broad Beach Road	4470-014-010	40	40	56	785.9649123	120	0	
31016 Broad Beach Road	4470-014-011	40	40	56	785.9649123	120	0	
31020 Broad Beach Road	4470-014-012	40	40	56	785.9649123	120	0	
31022 Broad Beach Road	4470-014-013	40	40	56	785.9649123	120	0	
31026 Broad Beach Road	4470-014-014	40	40	56	785.9649123	120	0	
31030 Broad Beach Road	4470-014-015	40	40	56	785.9649123	120	0	
31034 Broad Beach Road	4470-014-016	40	40	56	785.9649123	120	0	
31038 Broad Beach Road	4470-014-017	40	40	55	771.9298246	120	0	
31042 Broad Beach Road	4470-014-018	40	40	55	771.9298246	120	0	
31048 Broad Beach Road	4470-014-019	40	40	56	785.9649123	120	0	
31052 Broad Beach Road	4470-014-020	40	40	55	771.9298246	120	0	
31054 Broad Beach Road	4470-014-021	40	40	55	771.9298246	120	0	
31058 Broad Beach Road	4470-014-022	40	40	55	771.9298246	120	0	
31064 Broad Beach Road	4470-015-030	62	62	55	771.9298246	120	0	

				Proposed 2021	Proposed 2022	Proposed 2023	Propose
$7.250MM Assessment (2020 Dollars)				$ 3,757,517	$ 3,832,667	$ 7,693,758	$ 7,8
Lot Address	APN	Surveyed Beach Frontage	Aggregated Weighting Factor x Beach Frontage/Total Aggregated Weighting Factor x Beach Frontage				
30936 Broad Beach Road	4470-013-023	39	0.008531819	$ 32,058.45	$ 32,699.62	$ 65,641.75	$ 66,
30940 Broad Beach Road	4470-013-024	39	0.008531819	$ 32,058.45	$ 32,699.62	$ 65,641.75	$ 66,
30944 Broad Beach Road	4470-013-025	39	0.008531819	$ 32,058.45	$ 32,699.62	$ 65,641.75	$ 66,
30948 Broad Beach Road	4470-013-026	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
30952 Broad Beach Road	4470-013-027	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
30956 Broad Beach Road	4470-014-001	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
30962 Broad Beach Road	4470-014-002	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
30966 Broad Beach Road	4470-014-003	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
30970 Broad Beach Road	4470-014-004	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
30980 Broad Beach Road	4470-014-023	114	0.024939163	$ 93,709.33	$ 95,583.51	$ 191,875.88	$ 195,
31000 Broad Beach Road	4470-014-008	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31008 Broad Beach Road	4470-014-009	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31012 Broad Beach Road	4470-014-010	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31016 Broad Beach Road	4470-014-011	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31020 Broad Beach Road	4470-014-012	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31022 Broad Beach Road	4470-014-013	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31026 Broad Beach Road	4470-014-014	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31030 Broad Beach Road	4470-014-015	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31034 Broad Beach Road	4470-014-016	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31038 Broad Beach Road	4470-014-017	40	0.008648744	$ 32,497.80	$ 33,147.75	$ 66,541.34	$ 67,
31042 Broad Beach Road	4470-014-018	40	0.008648744	$ 32,497.80	$ 33,147.75	$ 66,541.34	$ 67,
31048 Broad Beach Road	4470-014-019	40	0.008750583	$ 32,880.47	$ 33,538.07	$ 67,324.87	$ 68,
31052 Broad Beach Road	4470-014-020	40	0.008648744	$ 32,497.80	$ 33,147.75	$ 66,541.34	$ 67,
31054 Broad Beach Road	4470-014-021	40	0.008648744	$ 32,497.80	$ 33,147.75	$ 66,541.34	$ 67,
31058 Broad Beach Road	4470-014-022	40	0.008648744	$ 32,497.80	$ 33,147.75	$ 66,541.34	$ 67,
31064 Broad Beach Road	4470-015-030	62	0.013405553	$ 50,371.59	$ 51,379.02	$ 103,139.08	$ 105,

			Proposed 2030	Proposed 2031	Proposed 2032
$7.250MM Assessment (2020 Dollars)			$ 8,837,710	$ 9,014,464	$ 9,194,753
Lot Address	**APN**	**Surveyed Beach Frontage**			
30936 Broad Beach Road	4470-013-023	39	$ 75,401.74	$ 76,909.77	$ 78,447.97
30940 Broad Beach Road	4470-013-024	39	$ 75,401.74	$ 76,909.77	$ 78,447.97
30944 Broad Beach Road	4470-013-025	39	$ 75,401.74	$ 76,909.77	$ 78,447.97
30948 Broad Beach Road	4470-013-026	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
30952 Broad Beach Road	4470-013-027	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
30956 Broad Beach Road	4470-014-001	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
30962 Broad Beach Road	4470-014-002	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
30966 Broad Beach Road	4470-014-003	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
30970 Broad Beach Road	4470-014-004	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
30980 Broad Beach Road	4470-014-023	114	$ 220,405.09	$ 224,813.18	$ 229,309.44
31000 Broad Beach Road	4470-014-008	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31008 Broad Beach Road	4470-014-009	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31012 Broad Beach Road	4470-014-010	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31016 Broad Beach Road	4470-014-011	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31020 Broad Beach Road	4470-014-012	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31022 Broad Beach Road	4470-014-013	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31026 Broad Beach Road	4470-014-014	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31030 Broad Beach Road	4470-014-015	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31034 Broad Beach Road	4470-014-016	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31038 Broad Beach Road	4470-014-017	40	$ 76,435.09	$ 77,963.79	$ 79,523.06
31042 Broad Beach Road	4470-014-018	40	$ 76,435.09	$ 77,963.79	$ 79,523.06
31048 Broad Beach Road	4470-014-019	40	$ 77,335.12	$ 78,881.82	$ 80,459.45
31052 Broad Beach Road	4470-014-020	40	$ 76,435.09	$ 77,963.79	$ 79,523.06
31054 Broad Beach Road	4470-014-021	40	$ 76,435.09	$ 77,963.79	$ 79,523.06
31058 Broad Beach Road	4470-014-022	40	$ 76,435.09	$ 77,963.79	$ 79,523.06
31064 Broad Beach Road	4470-015-030	62	$ 118,474.39	$ 120,843.87	$ 123,260.74

$7.250MM Assessment (2020 Dollars)									
			Site Improvements						
Lot Address	APN	Surveyed Beach Frontage	Vacant	Accessory	Habitable Structure	Improvement Term	Sand	Revetment	Se
31202 Broad Beach Road	4470-015-012	51			x	1	x	x	
31206 Broad Beach Road	4470-015-013	40		x		0.7	x	x	
31212 Broad Beach Road	4470-015-014	40			x	1	x	x	
31214 Broad Beach Road	4470-015-015	40			x	1	x	x	
31220 Broad Beach Road	4470-015-016	40			x	1	x	x	
31224 Broad Beach Road	4470-015-017	40			x	1	x	x	
31228 Broad Beach Road	4470-015-018	40			x	1	x	x	
31232 Broad Beach Road	4470-015-019	40			x	1	x	x	
31236 Broad Beach Road	4470-015-020	40			x	1	x	x	
31240 Broad Beach Road	4470-015-021	40			x	1	x	x	
31250 Broad Beach Road	4470-015-032	160			x	1	x	x	
31260 Broad Beach Road	4470-015-025	45			x	1	x	x	
31272 Broad Beach Road	4470-016-032	120			x	1	x	x	
31280 Broad Beach Road	4470-016-003	88			x	1	x	x	
31284 Broad Beach Road	4470-016-004	75			x	1	x	x	
31302 Broad Beach Road	4470-016-037	68			x	1	x	x	
31310 Broad Beach Road	4470-016-036	45			x	1	x	x	
31316 Broad Beach Road	4470-016-031	73			x	1	x	x	
31322 Broad Beach Road	4470-016-028	45			x	1	x	x	
31324 Broad Beach Road	4470-016-027	34			x	1	x	x	
31330 Broad Beach Road	4470-016-008	47			x	1	x	x	
31336 Broad Beach Road	4470-016-010	38			x	1	x	x	
31340 Broad Beach Road	4470-016-011	50			x	1	x	x	
COUNTY ACCESS PARCEL		20		x		0.7	x	x	
31346 Broad Beach Road	4470-016-012	48			x	1	x	x	
31350 Broad Beach Road	4470-016-013	41			x	1	x	x	

$7.250MM Assessment (2020 Dollars)

Lot Address	APN	Surveyed Beach Frontage	Beach Frontage	Beach Width	Sand Score	Revetment Score	Seawall Score	Bluff S
31202 Broad Beach Road	4470-015-012	51	51	51	715.7894737	120	0	0
31206 Broad Beach Road	4470-015-013	40	40	51	715.7894737	120	0	0
31212 Broad Beach Road	4470-015-014	40	40	51	715.7894737	120	0	0
31214 Broad Beach Road	4470-015-015	40	40	50	701.754386	120	0	0
31220 Broad Beach Road	4470-015-016	40	40	49	687.7192982	120	0	0
31224 Broad Beach Road	4470-015-017	40	40	49	687.7192982	120	0	0
31228 Broad Beach Road	4470-015-018	40	40	49	687.7192982	120	0	0
31232 Broad Beach Road	4470-015-019	40	40	49	687.7192982	120	0	0
31236 Broad Beach Road	4470-015-020	40	40	48	673.6842105	120	0	0
31240 Broad Beach Road	4470-015-021	40	40	47	659.6491228	120	0	0
31250 Broad Beach Road	4470-015-032	160	160	47	659.6491228	120	0	0
31260 Broad Beach Road	4470-015-025	45	45	46	645.6140351	120	0	0
31272 Broad Beach Road	4470-016-032	120	120	45	631.5789474	120	0	0
31280 Broad Beach Road	4470-016-003	88	88	44	617.5438596	120	0	0
31284 Broad Beach Road	4470-016-004	75	75	43	603.5087719	120	0	0
31302 Broad Beach Road	4470-016-037	68	68	42	589.4736842	120	0	0
31310 Broad Beach Road	4470-016-036	45	45	42	589.4736842	120	0	0
31316 Broad Beach Road	4470-016-031	73	73	41	575.4385965	120	0	0
31322 Broad Beach Road	4470-016-028	45	45	40	561.4035088	120	0	0
31324 Broad Beach Road	4470-016-027	34	34	40	561.4035088	120	0	0
31330 Broad Beach Road	4470-016-008	47	47	39	547.3684211	120	0	0
31336 Broad Beach Road	4470-016-010	38	38	39	547.3684211	120	0	0
31340 Broad Beach Road	4470-016-011	50	50	38	533.3333333	120	0	0
COUNTY ACCESS PARCEL		20	20	38	533.3333333	120	0	0
31346 Broad Beach Road	4470-016-012	48	48	38	533.3333333	120	0	0
31350 Broad Beach Road	4470-016-013	41	41	37	519.2982456	120	0	0

				Proposed 2021	Proposed 2022	Proposed 2023	Propo
$7.250MM Assessment (2020 Dollars)				$ 3,757,517	$ 3,832,667	$ 7,693,758	$ 7
Lot Address	**APN**	**Surveyed Beach Frontage**	**Aggregated Weighting Factor x Beach Frontage/Total Aggregated Weighting Factor x Beach Frontage**				
31202 Broad Beach Road	4470-015-012	51	0.010507765	$ 39,483.11	$ 40,272.76	$ 80,844.20	$ 8
31206 Broad Beach Road	4470-015-013	40	0.008023702	$ 30,149.20	$ 30,752.18	$ 61,732.42	$ 6
31212 Broad Beach Road	4470-015-014	40	0.008241384	$ 30,967.14	$ 31,586.48	$ 63,407.22	$ 6
31214 Broad Beach Road	4470-015-015	40	0.008139545	$ 30,584.48	$ 31,196.16	$ 62,623.69	$ 6
31220 Broad Beach Road	4470-015-016	40	0.008037705	$ 30,201.81	$ 30,805.85	$ 61,840.16	$ 6
31224 Broad Beach Road	4470-015-017	40	0.008037705	$ 30,201.81	$ 30,805.85	$ 61,840.16	$ 6
31228 Broad Beach Road	4470-015-018	40	0.008037705	$ 30,201.81	$ 30,805.85	$ 61,840.16	$ 6
31232 Broad Beach Road	4470-015-019	40	0.008037705	$ 30,201.81	$ 30,805.85	$ 61,840.16	$ 6
31236 Broad Beach Road	4470-015-020	40	0.007935865	$ 29,819.15	$ 30,415.53	$ 61,056.63	$ 6
31240 Broad Beach Road	4470-015-021	40	0.007834025	$ 29,436.48	$ 30,025.21	$ 60,273.10	$ 6
31250 Broad Beach Road	4470-015-032	160	0.031336101	$ 117,745.93	$ 120,100.84	$ 241,092.38	$ 24
31260 Broad Beach Road	4470-015-025	45	0.008698709	$ 32,685.55	$ 33,339.25	$ 66,925.76	$ 6
31272 Broad Beach Road	4470-016-032	120	0.022891037	$ 86,013.46	$ 87,733.72	$ 176,118.10	$ 17
31280 Broad Beach Road	4470-016-003	88	0.016562713	$ 62,234.68	$ 63,479.36	$ 127,429.51	$ 12
31284 Broad Beach Road	4470-016-004	75	0.013924999	$ 52,323.42	$ 53,369.88	$ 107,135.57	$ 10
31302 Broad Beach Road	4470-016-037	68	0.012452205	$ 46,789.37	$ 47,725.15	$ 95,804.25	$ 9
31310 Broad Beach Road	4470-016-036	45	0.00824043	$ 30,963.55	$ 31,582.82	$ 63,399.87	$ 6
31316 Broad Beach Road	4470-016-031	73	0.013181951	$ 49,531.40	$ 50,522.03	$ 101,418.74	$ 10
31322 Broad Beach Road	4470-016-028	45	0.00801129	$ 30,102.56	$ 30,704.61	$ 61,636.93	$ 6
31324 Broad Beach Road	4470-016-027	34	0.006052975	$ 22,744.16	$ 23,199.04	$ 46,570.12	$ 4
31330 Broad Beach Road	4470-016-008	47	0.008247686	$ 30,990.82	$ 31,610.63	$ 63,455.70	$ 6
31336 Broad Beach Road	4470-016-010	38	0.006668342	$ 25,056.41	$ 25,557.53	$ 51,304.61	$ 5
31340 Broad Beach Road	4470-016-011	50	0.008646834	$ 32,490.63	$ 33,140.44	$ 66,526.65	$ 6
COUNTY ACCESS PARCEL		20	0.003349892	$ 12,587.28	$ 12,839.02	$ 25,773.26	$ 2
31346 Broad Beach Road	4470-016-012	48	0.008300961	$ 31,191.00	$ 31,814.82	$ 63,865.58	$ 6
31350 Broad Beach Road	4470-016-013	41	0.006986018	$ 26,250.08	$ 26,775.08	$ 53,748.73	$ 5

			Proposed 2030	Proposed 2031	Proposed 2032
$7.250MM Assessment (2020 Dollars)			$ 8,837,710	$ 9,014,464	$ 9,194,753
Lot Address	APN	Surveyed Beach Frontage			
31202 Broad Beach Road	4470-015-012	51	$ 92,864.58	$ 94,721.87	$ 96,616.31
31206 Broad Beach Road	4470-015-013	40	$ 70,911.15	$ 72,329.37	$ 73,775.96
31212 Broad Beach Road	4470-015-014	40	$ 72,834.97	$ 74,291.66	$ 75,777.49
31214 Broad Beach Road	4470-015-015	40	$ 71,934.94	$ 73,373.63	$ 74,841.10
31220 Broad Beach Road	4470-015-016	40	$ 71,034.91	$ 72,455.60	$ 73,904.71
31224 Broad Beach Road	4470-015-017	40	$ 71,034.91	$ 72,455.60	$ 73,904.71
31228 Broad Beach Road	4470-015-018	40	$ 71,034.91	$ 72,455.60	$ 73,904.71
31232 Broad Beach Road	4470-015-019	40	$ 71,034.91	$ 72,455.60	$ 73,904.71
31236 Broad Beach Road	4470-015-020	40	$ 70,134.87	$ 71,537.57	$ 72,968.32
31240 Broad Beach Road	4470-015-021	40	$ 69,234.84	$ 70,619.54	$ 72,031.93
31250 Broad Beach Road	4470-015-032	160	$ 276,939.38	$ 282,478.16	$ 288,127.71
31260 Broad Beach Road	4470-015-025	45	$ 76,876.67	$ 78,414.20	$ 79,982.48
31272 Broad Beach Road	4470-016-032	120	$ 202,304.35	$ 206,350.43	$ 210,477.43
31280 Broad Beach Road	4470-016-003	88	$ 146,376.46	$ 149,303.98	$ 152,290.06
31284 Broad Beach Road	4470-016-004	75	$ 123,065.10	$ 125,526.40	$ 128,036.93
31302 Broad Beach Road	4470-016-037	68	$ 110,048.98	$ 112,249.95	$ 114,494.95
31310 Broad Beach Road	4470-016-036	45	$ 72,826.53	$ 74,283.06	$ 75,768.72
31316 Broad Beach Road	4470-016-031	73	$ 116,498.26	$ 118,828.22	$ 121,204.78
31322 Broad Beach Road	4470-016-028	45	$ 70,801.46	$ 72,217.49	$ 73,661.83
31324 Broad Beach Road	4470-016-027	34	$ 53,494.44	$ 54,564.32	$ 55,655.61
31330 Broad Beach Road	4470-016-008	47	$ 72,890.66	$ 74,348.47	$ 75,835.43
31336 Broad Beach Road	4470-016-010	38	$ 58,932.87	$ 60,111.53	$ 61,313.76
31340 Broad Beach Road	4470-016-011	50	$ 76,418.21	$ 77,946.57	$ 79,505.50
COUNTY ACCESS PARCEL		20	$ 29,605.38	$ 30,197.48	$ 30,801.43
31346 Broad Beach Road	4470-016-012	48	$ 73,361.48	$ 74,828.71	$ 76,325.28
31350 Broad Beach Road	4470-016-013	41	$ 61,740.40	$ 62,975.21	$ 64,234.71

$7.250MM Assessment (2020 Dollars)									
			Site Improvements						
Lot Address	APN	Surveyed Beach Frontage	Vacant	Accessory	Habitable Structure	Improvement Term	Sand	Revetment	Se
31418 Broad Beach Road	4470-017-068	60			x	1	x		
NO ADDRESS	4470-017-066	50		x		0.7	x		
31430 Broad Beach Road	4470-017-067	105			x	1	x		
31438 Broad Beach Road	4470-017-065	50	x			0.5	x		
31444 Broad Beach Road	4470-017-064	50			x	1	x		
31450 Broad Beach Road	4470-017-063	50			x	1	x		
31454 Broad Beach Road	4470-017-062	50			x	1	x		
31460 Broad Beach Road	4470-017-061	51			x	1	x		
31500 Victoria Point	4470-017-038	47			x	1	x		
31502 Victoria Point	4470-017-037	49			x	1	x		
31504 Victoria Point	4470-017-036	54			x	1	x		
31506 Victoria Point	4470-017-035	46			x	1	x		
31508 Victoria Point	4470-017-034	46			x	1	x		
31516 Victoria Point	4470-017-033	51			x	1	x		
31520 Victoria Point	4470-017-032	50			x	1	x		
31528 Victoria Point	4470-017-031	50			x	1	x		
31532 Victoria Point	4470-017-030	51			x	1	x		
31536 Victoria Point	4470-017-029	53			x	1	x		
6525 Point Lechuza	4470-017-028	58			x	1	x		

$7.250MM Assessment (2020 Dollars)								
Lot Address	APN	Surveyed Beach Frontage	Beach Frontage	Beach Width	Sand Score	Revetment Score	Seawall Score	Bluf
31418 Broad Beach Road	4470-017-068	60	60	31	435.0877193	0	0	-4
NO ADDRESS	4470-017-066	50	50	28	392.9824561	0	-600	
31430 Broad Beach Road	4470-017-067	105	105	29	407.0175439	0	-600	
31438 Broad Beach Road	4470-017-065	50	50	28	392.9824561	0	0	-4
31444 Broad Beach Road	4470-017-064	50	50	27	378.9473684	0	-600	
31450 Broad Beach Road	4470-017-063	50	50	26	364.9122807	0	-600	
31454 Broad Beach Road	4470-017-062	50	50	26	364.9122807	0	-600	
31460 Broad Beach Road	4470-017-061	51	51	25	350.877193	0	-600	
31500 Victoria Point	4470-017-038	47	47	24	336.8421053	0	-600	
31502 Victoria Point	4470-017-037	49	49	24	336.8421053	0	-600	
31504 Victoria Point	4470-017-036	54	54	23	322.8070175	0	-600	
31506 Victoria Point	4470-017-035	46	46	22	308.7719298	0	-600	
31508 Victoria Point	4470-017-034	46	46	22	308.7719298	0	-600	
31516 Victoria Point	4470-017-033	51	51	22	308.7719298	0	0	-4
31520 Victoria Point	4470-017-032	50	50	22	308.7719298	0	0	-4
31528 Victoria Point	4470-017-031	50	50	22	308.7719298	0	0	-4
31532 Victoria Point	4470-017-030	51	51	22	308.7719298	0	0	-4
31536 Victoria Point	4470-017-029	53	53	22	308.7719298	0	0	-4
6525 Point Lechuza	4470-017-028	58	58	22	308.7719298	0	0	-4

				Proposed 2021	Proposed 2022	Proposed 2023	Prop
$7.250MM Assessment (2020 Dollars)				$ 3,757,517	$ 3,832,667	$ 7,693,758	$
Lot Address	**APN**	**Surveyed Beach Frontage**	**Aggregated Weighting Factor x Beach Frontage/Total Aggregated Weighting Factor x Beach Frontage**				
31418 Broad Beach Road	4470-017-068	60	0.003429455	$ 12,886.23	$ 13,143.96	$ 26,385.39	$ 2
NO ADDRESS	4470-017-066	50	0.000571258	$ 2,146.51	$ 2,189.44	$ 4,395.12	$
31430 Broad Beach Road	4470-017-067	105	0.002038387	$ 7,659.27	$ 7,812.46	$ 15,682.86	$ 1
31438 Broad Beach Road	4470-017-065	50	0.002022474	$ 7,599.48	$ 7,751.47	$ 15,560.43	$ 1
31444 Broad Beach Road	4470-017-064	50	0.000716061	$ 2,690.61	$ 2,744.42	$ 5,509.20	$
31450 Broad Beach Road	4470-017-063	50	0.000588761	$ 2,212.28	$ 2,256.53	$ 4,529.79	$
31454 Broad Beach Road	4470-017-062	50	0.000588761	$ 2,212.28	$ 2,256.53	$ 4,529.79	$
31460 Broad Beach Road	4470-017-061	51	0.000470691	$ 1,768.63	$ 1,804.00	$ 3,621.38	$
31500 Victoria Point	4470-017-038	47	0.000314112	$ 1,180.28	$ 1,203.89	$ 2,416.70	$
31502 Victoria Point	4470-017-037	49	0.000327479	$ 1,230.51	$ 1,255.12	$ 2,519.54	$
31504 Victoria Point	4470-017-036	54	0.000223411	$ 839.47	$ 856.26	$ 1,718.87	$
31506 Victoria Point	4470-017-035	46	7.31973E-05	$ 275.04	$ 280.54	$ 563.16	$
31508 Victoria Point	4470-017-034	46	7.31973E-05	$ 275.04	$ 280.54	$ 563.16	$
31516 Victoria Point	4470-017-033	51	0.001746425	$ 6,562.22	$ 6,693.47	$ 13,436.57	$ 1
31520 Victoria Point	4470-017-032	50	0.001712181	$ 6,433.55	$ 6,562.22	$ 13,173.11	$ 1
31528 Victoria Point	4470-017-031	50	0.001712181	$ 6,433.55	$ 6,562.22	$ 13,173.11	$ 1
31532 Victoria Point	4470-017-030	51	0.001746425	$ 6,562.22	$ 6,693.47	$ 13,436.57	$ 1
31536 Victoria Point	4470-017-029	53	0.001814912	$ 6,819.56	$ 6,955.95	$ 13,963.50	$ 1
6525 Point Lechuza	4470-017-028	58	0.00198613	$ 7,462.92	$ 7,612.18	$ 15,280.81	$ 1

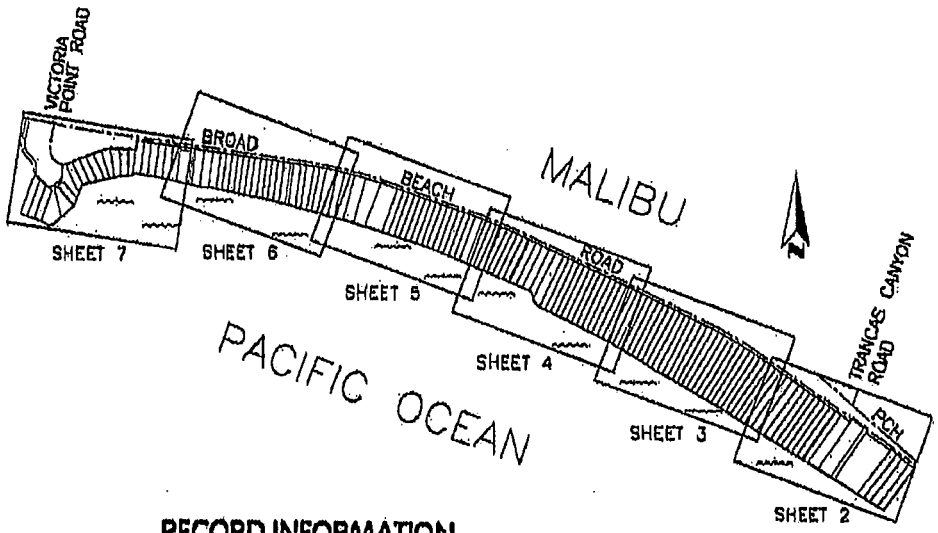
Proposed 2030 Proposed 2031 Proposed 2032

$7.250MM Assessment (2020 Dollars)			$ 8,837,710	$ 9,014,464	$ 9,194,753
Lot Address	**APN**	**Surveyed Beach Frontage**			
31418 Broad Beach Road	4470-017-068	60	$ 30,308.53	$ 30,914.70	$ 31,532.99
NO ADDRESS	4470-017-066	50	$ 5,048.61	$ 5,149.58	$ 5,252.57
31430 Broad Beach Road	4470-017-067	105	$ 18,014.67	$ 18,374.97	$ 18,742.46
31438 Broad Beach Road	4470-017-065	50	$ 17,874.04	$ 18,231.52	$ 18,596.15
31444 Broad Beach Road	4470-017-064	50	$ 6,328.34	$ 6,454.91	$ 6,584.00
31450 Broad Beach Road	4470-017-063	50	$ 5,203.30	$ 5,307.37	$ 5,413.51
31454 Broad Beach Road	4470-017-062	50	$ 5,203.30	$ 5,307.37	$ 5,413.51
31460 Broad Beach Road	4470-017-061	51	$ 4,159.83	$ 4,243.02	$ 4,327.89
31500 Victoria Point	4470-017-038	47	$ 2,776.03	$ 2,831.55	$ 2,888.18
31502 Victoria Point	4470-017-037	49	$ 2,894.16	$ 2,952.04	$ 3,011.08
31504 Victoria Point	4470-017-036	54	$ 1,974.44	$ 2,013.93	$ 2,054.21
31506 Victoria Point	4470-017-035	46	$ 646.90	$ 659.83	$ 673.03
31508 Victoria Point	4470-017-034	46	$ 646.90	$ 659.83	$ 673.03
31516 Victoria Point	4470-017-033	51	$ 15,434.40	$ 15,743.09	$ 16,057.95
31520 Victoria Point	4470-017-032	50	$ 15,131.76	$ 15,434.40	$ 15,743.08
31528 Victoria Point	4470-017-031	50	$ 15,131.76	$ 15,434.40	$ 15,743.08
31532 Victoria Point	4470-017-030	51	$ 15,434.40	$ 15,743.09	$ 16,057.95
31536 Victoria Point	4470-017-029	53	$ 16,039.67	$ 16,360.46	$ 16,687.67
6525 Point Lechuza	4470-017-028	58	$ 17,552.84	$ 17,903.90	$ 18,261.98

EXHIBIT 2 to RESOLUTION 2020/04

BBGHAD BOUNDARY MAP

03/14/11	EXHIBIT "B" PLOT TO ACCOMPANY LEGAL DESCRIPTION	SHEET 1 OF 7



RECORD INFORMATION

THE CENTERLINES, RIGHTS-OF-WAY, AND PROPERTY LINES SHOWN HERON ARE BASED ON THE FOLLOWING RECORD MAPS AS FILED IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER:

TRACT NO. 12314	BOOK 232	PAGES 23-24
TRACT NO. 12908	BOOK 263	PAGES 37-38
TRACT NO. 31985	BOOK 1081	PAGES 78-79
TRACT NO. 32003	BOOK 1081	PAGES 28-29
TRACT NO. 26166	BOOK 695	PAGES 29-31
RECORD OF SURVEY	BOOK 76	PAGES 20-21
F.M. 11698-1		PAGES A1-A8
F.M. 11260-2		PAGES A1-A13

DEEDS REFERENCED AS XX-XXXXXXX INDICATE RECORDED INSTRUMENT NUMBER IN THE LOS ANGELES COUNTY RECORDERS' OFFICE.

1 60-FOOT STRIP OF LAND DESCRIBED IN DEEDS RECORDED IN BOOK 21735, PAGE 135 AND BOOK 21722, PAGE 190, FILED IN THE OFFICE OF THE LOS ANGELES COUNTY RECORDER

LINE TABLE

LINE	BEARING	DISTANCE
L1	S07°28'30"W	65.06'
L2	N84°58'01"W	131.25'
L3	S78°12'50"W	31.00'
L4	N17°26'00"W	11.00'
L5	S72°34'00"W	105.92'
L6	S64°51'00"W	68.42'
L7	S04°26'30"W	110.00'
L8	S56°28'55"W	59.24'
L9	S32°46'52"E	27.00'
L10	N57°13'08"E	16.36'
L11	S34°49'30"W	10.07'
L12	N48°39'18"W	100.66'
L13	S31°49'30"W	32.81'
L14	N55°10'30"W	121.95'

CURVE TABLE

CURVE	DELTA ANGLE	ARC LENGTH	RADIUS
C1	7°43'00"	134.68'	1000.00'
C2	29°35'30"	51.65'	100.00'

LEGEND

P.O.B. POINT OF BEGINNING
℄ CENTERLINE

PREPARED BY:

3/14/11

RICHARD C. MAHER, PLS 7564 DATE
THIS DOCUMENT IS PRELIMINARY UNLESS SIGNED

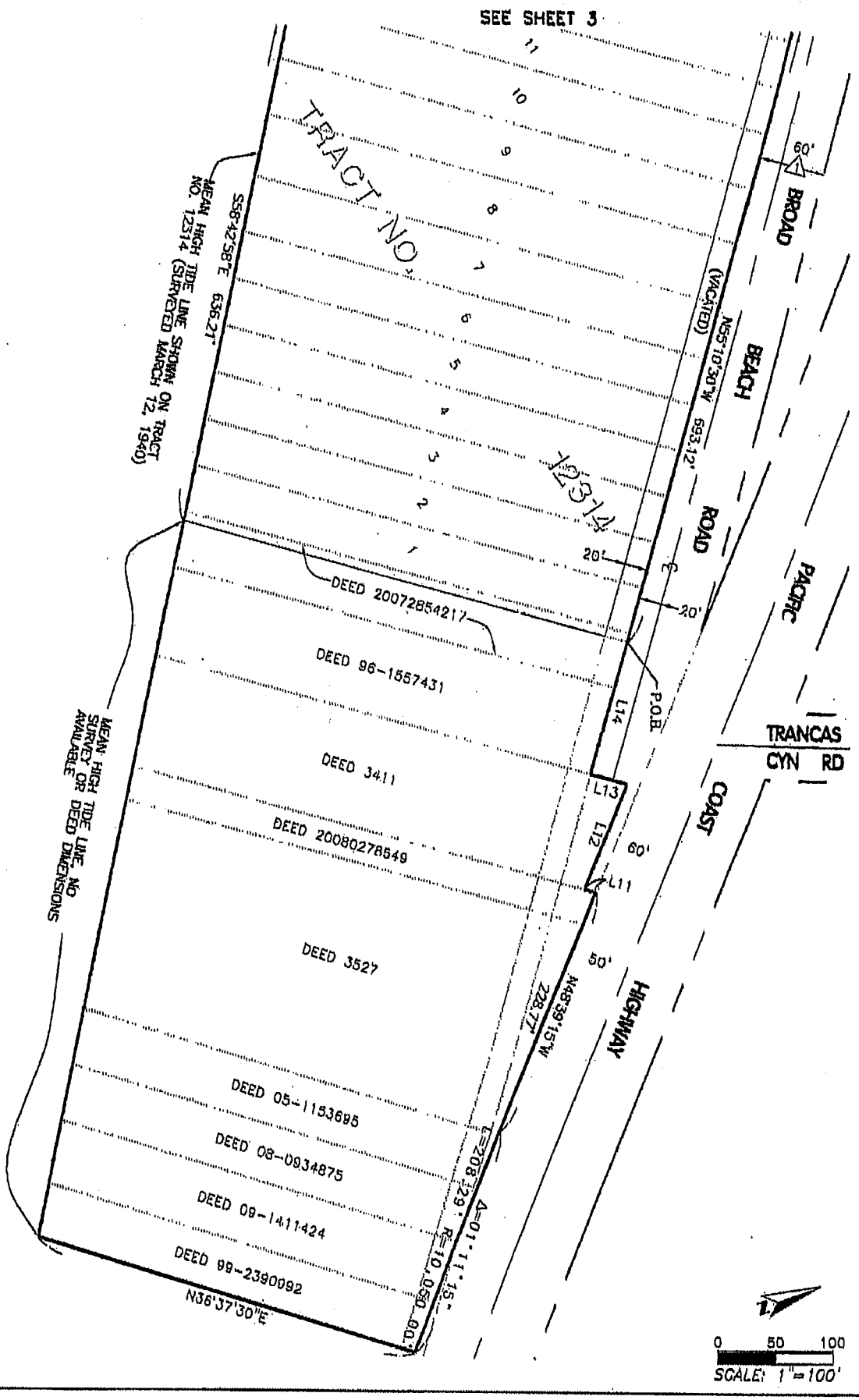
LICENSED LAND SURVEYOR
RICHARD C. MAHER
No. 7564
STATE OF CALIFORNIA

03/14/11

EXHIBIT "B"

PLAT TO ACCOMPANY LEGAL DESCRIPTION

SHEET 2 OF 7



KDM MERIDIAN, INC.

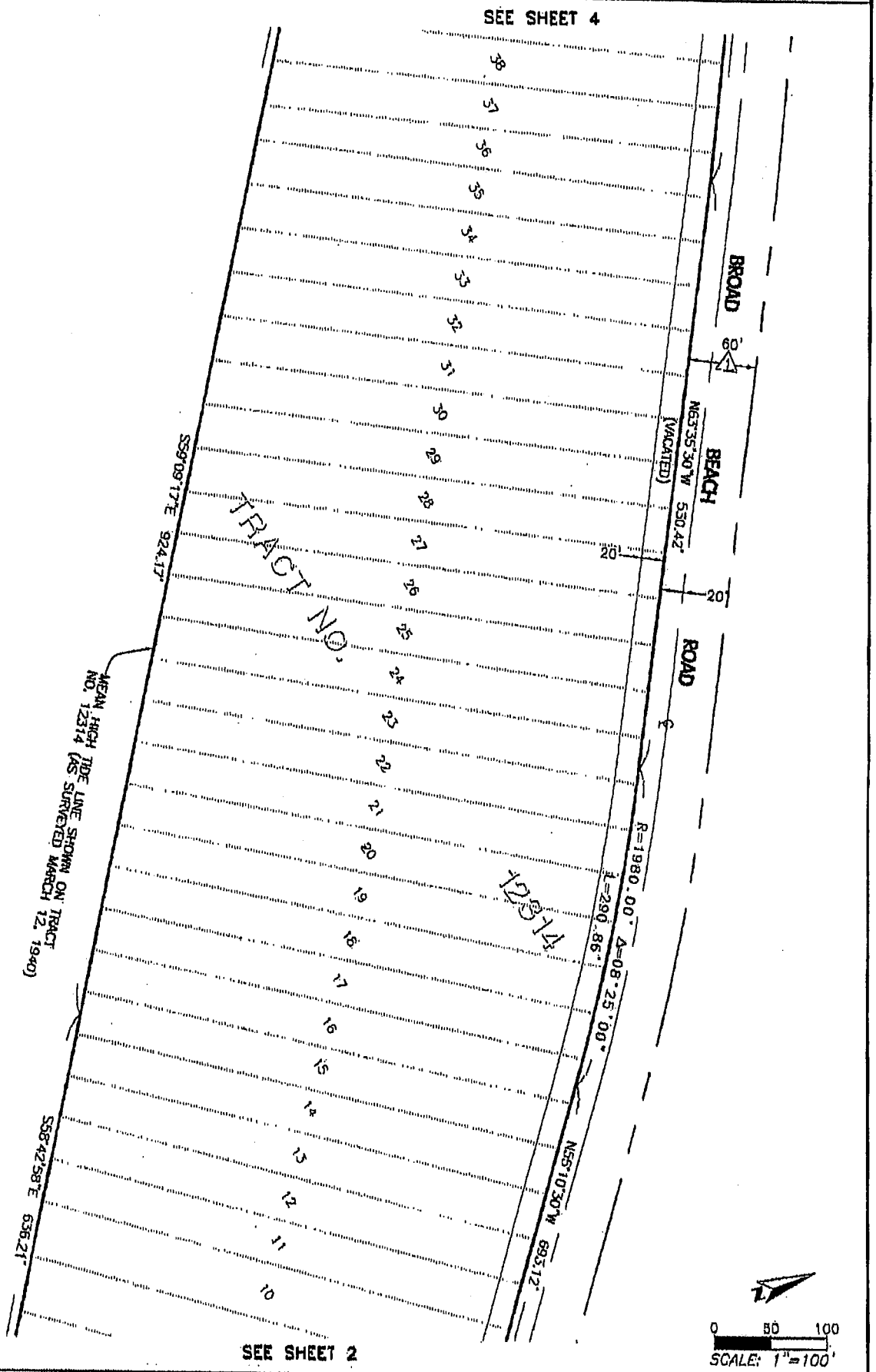
(949)768-0731

03/14/11

EXHIBIT "B"

PLAT TO ACCOMPANY LEGAL DESCRIPTION

SHEET 3 OF 7

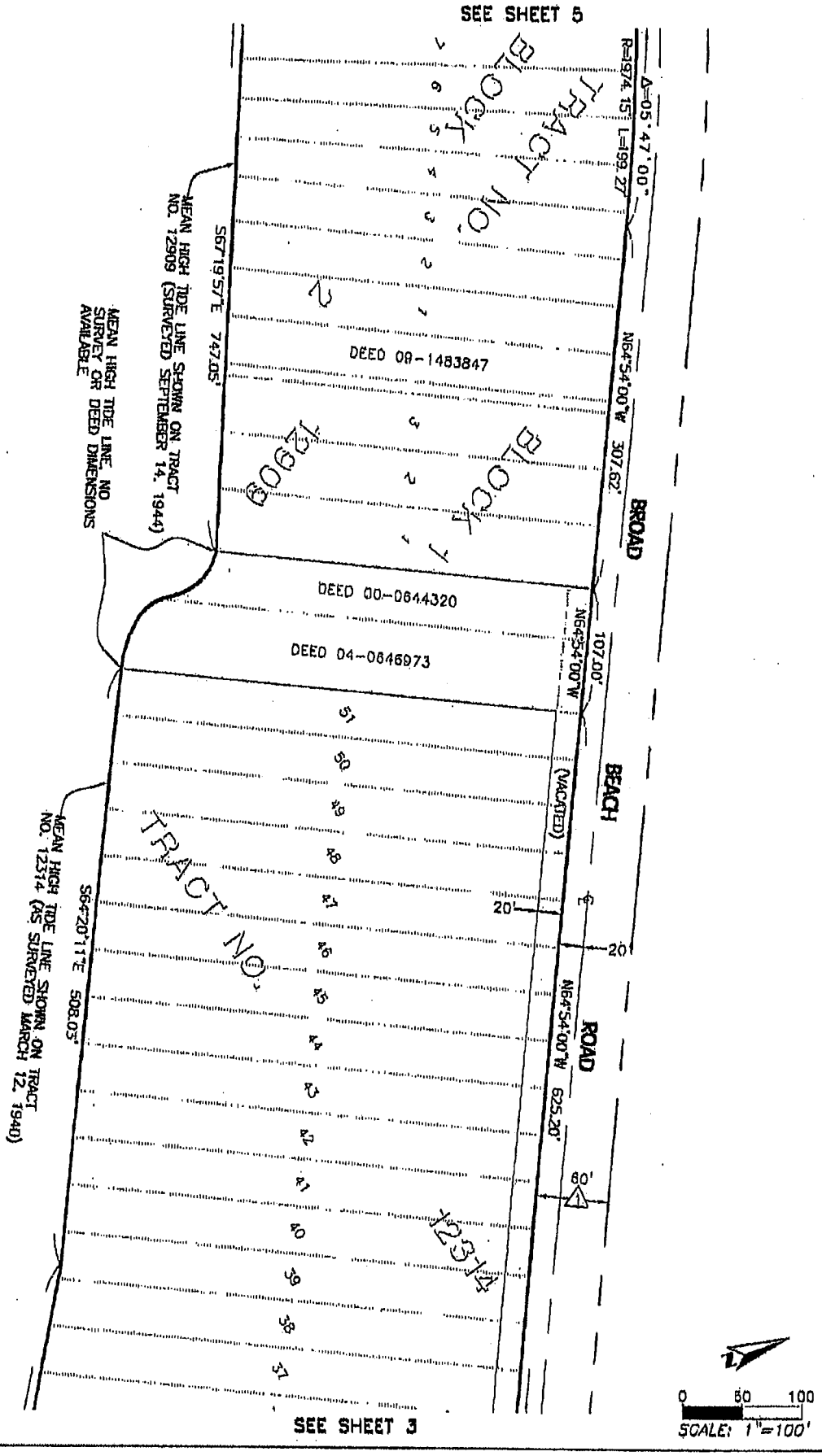


KDM MERIDIAN, INC. (949)768-0731

03/14/11

EXHIBIT "B"

PLAT TO ACCOMPANY LEGAL DESCRIPTION



KDM MERIDIAN, INC.

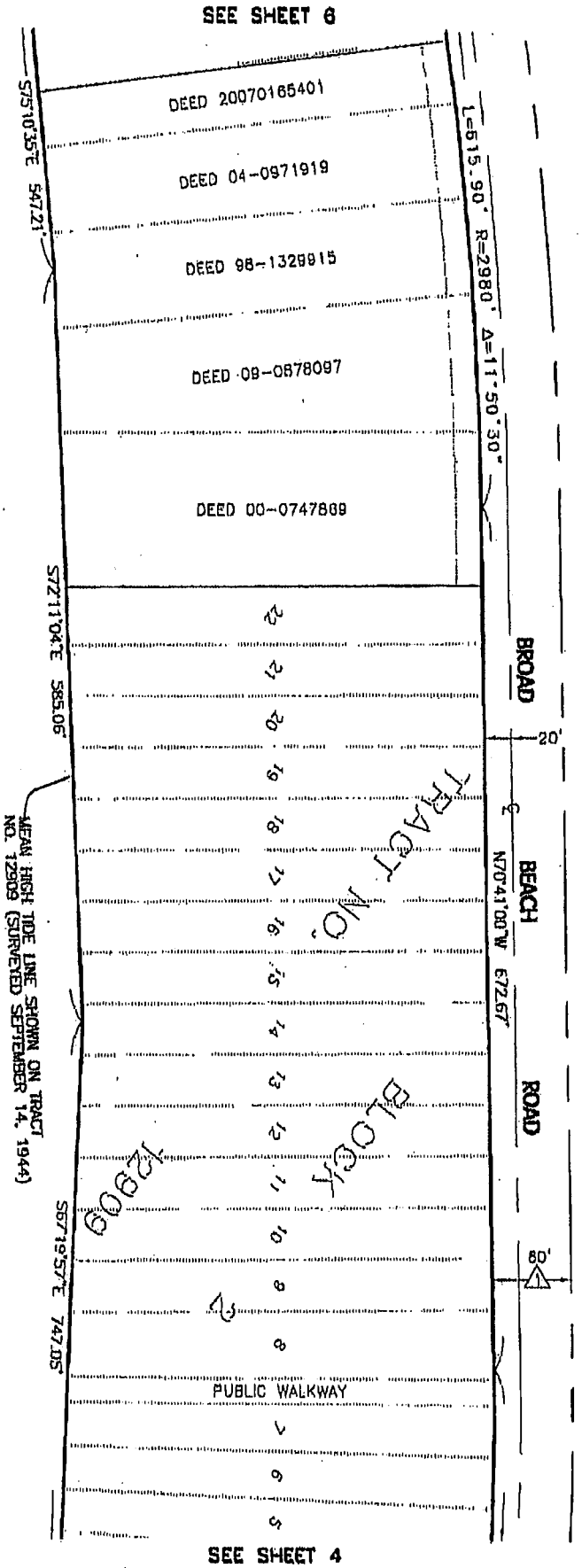
(949)768-0731

03/14/11

EXHIBIT "B"

PLAT TO ACCOMPANY LEGAL DESCRIPTION

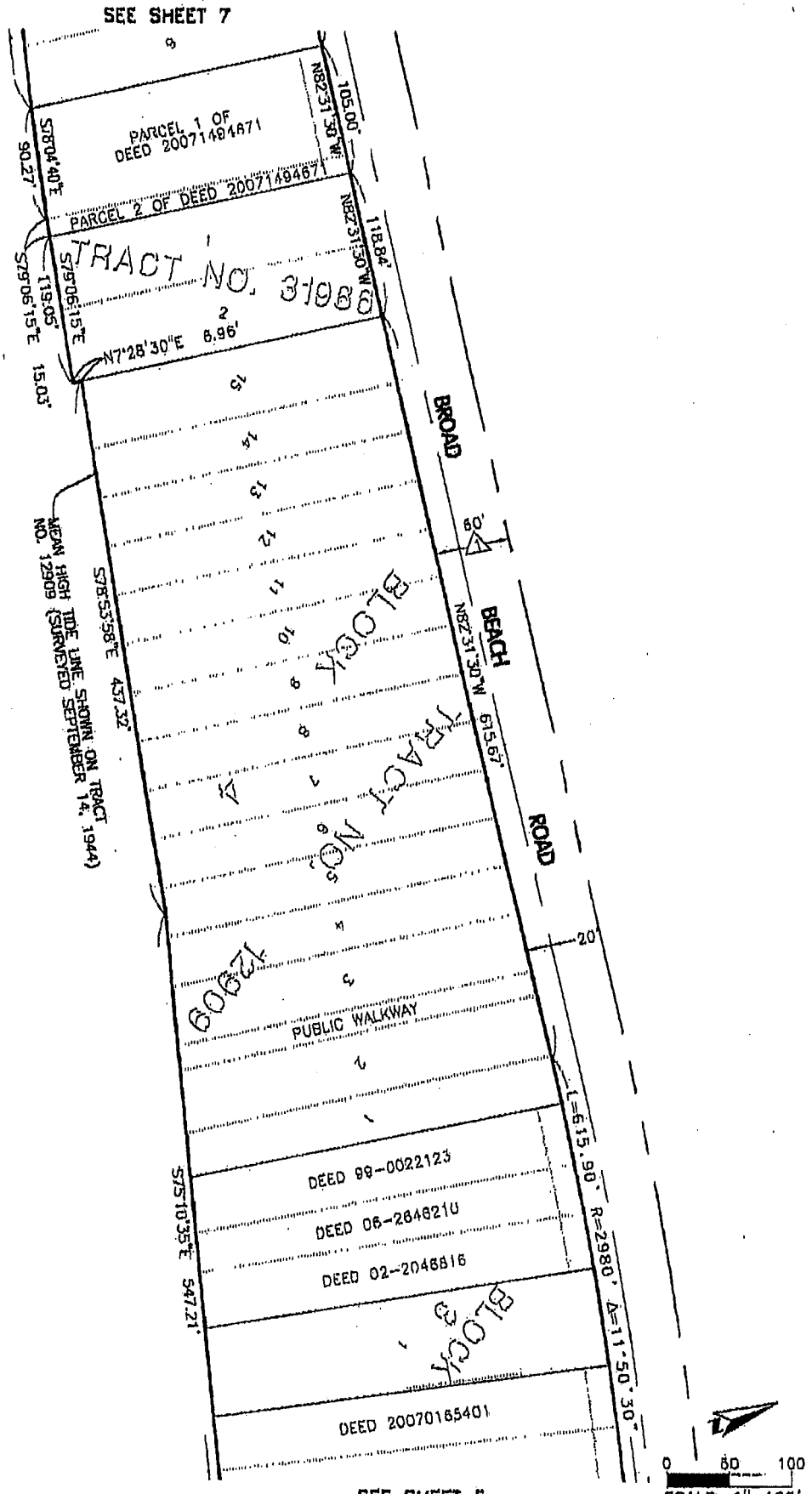
SHEET 5 OF 7



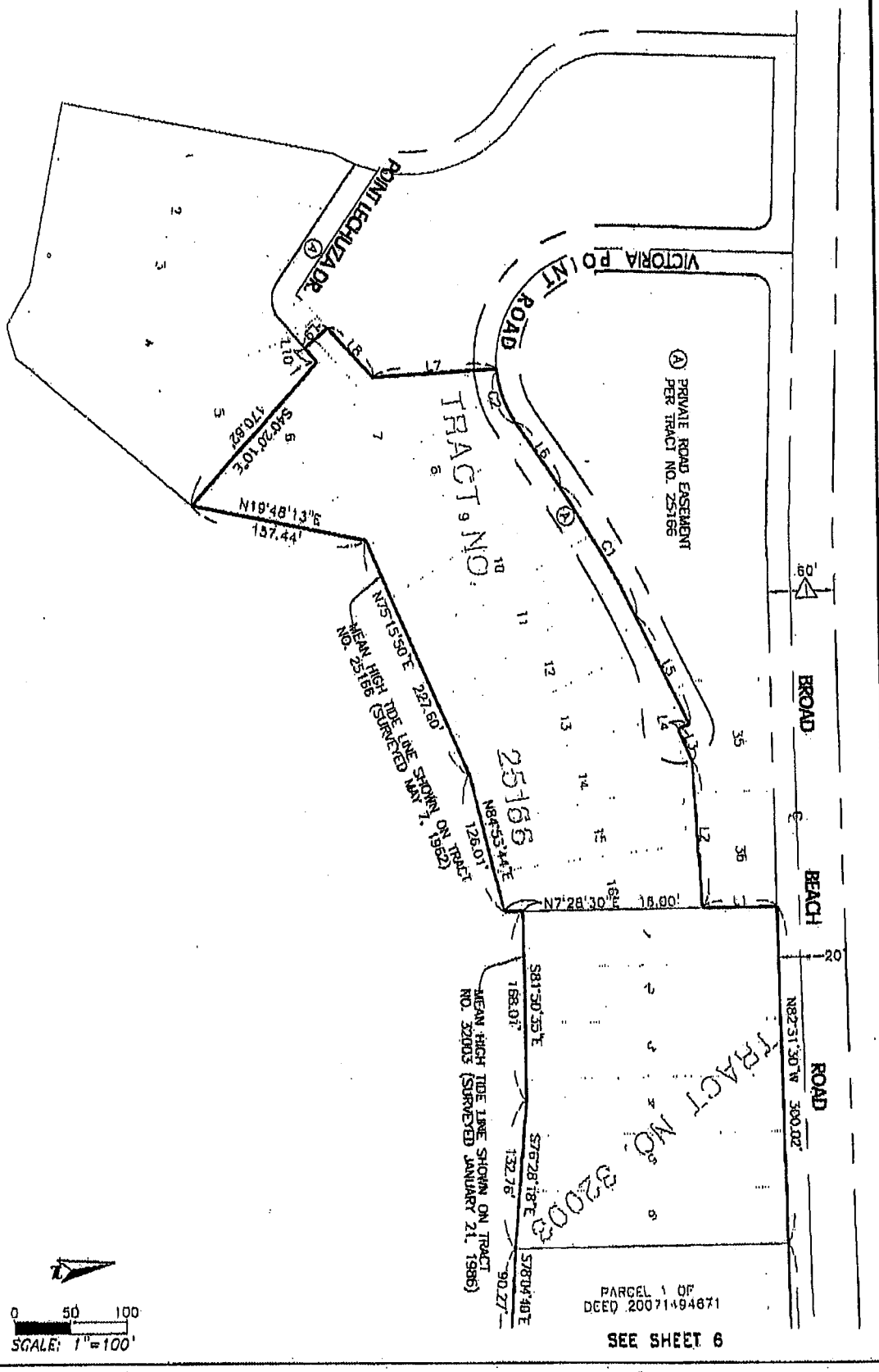
KDM MERIDIAN, INC.

(949)768-0731

PLAT TO ACCOMPANY LEGAL DESCRIPTION



03/14/11	EXHIBIT "B"	SHEET 7 OF 7
	PLAT TO ACCOMPANY LEGAL DESCRIPTION	



KDM MERIDIAN, INC.	(949)768-0731

EXHIBIT 3 to RESOLUTION No. 2020/04

EXEMPLAR NOTICE OF ADOPTION OF RESOLUTION

(parcel-specific Notices to be sent to all BBGHAD parcel owners)

Owner
Address
APN: 4470-014-XXX

NOTICE OF BROAD BEACH GEOLOGIC HAZARD ABATEMENT DISTRICT BOARD OF DIRECTORS' ADOPTION OF RESOLUTION FOR PROPERTY OWNER VOTE ON A NEW ASSESSMENT

A. On September 12, 2011, the Malibu City Council adopted Resolution No. 11-41, approving and ordering the formation of the Broad Beach Geologic Hazard Abatement District ("BBGHAD") and appointing five (5) landowners to act as the initial Board of Directors ("BBGHAD Board").

B. On November 6, 2011, the BBGHAD Board adopted Resolution No. 2011/03, which adopted the Plan of Control. The BBGHAD Plan of Control describes the improvements to be implemented by the BBGHAD in addition to its other responsibilities and obligations.

C. On March 11, 2012, the BBGHAD Board adopted Resolution No. 2012/03, which accepted the Certification of Tabulation Official and Statement of Assessment Ballots from the BBGHAD Clerk that the benefit assessment passed as a result of a vote by BBGHAD property owners. On the same day, the BBGHAD Board adopted Resolution No. 2012/04, which confirmed the assessment and authorized the levy and collection of the BBGHAD's assessment.

D. In or about January 2015 and prior to the BBGHAD securing final permits to conduct the contemplated beach restoration, the BBGHAD learned of facts and permitting realities that a portion of the west end, west of 31380 Broad Beach Road, could not receive direct sand nourishment as part of the Project because the Project, as originally conceived, could not achieve regulatory approval without changes to its design and without significant mitigation;

E. Subsequently, in July 2015, the BBGHAD Board held a public hearing and, through Resolution No. 2015/03, declared its' intent to order a new, proposed assessment within the BBGHAD and fixed a hearing date to consider the proposed assessment and any protests thereon ("2015 Assessment"); the 2015 Assessment is based on the Engineer's Report dated July 15, 2015 ("2015 Engineer's Report").

F. On or about September 6, 2015, the BBGHAD Board held a public hearing and, among other actions, adopted Resolution Nos. 2015/04 (accepting the Statement of Assessment Ballots) and 2015/05 (confirming and adopting the 2015 Assessment and authorizing the levy and collection of the assessment within the BBGHAD);

G. The 2015 Assessment contemplated the BBGHAD's placement of significant sand nourishment east of 31380 Broad Beach Road, and no direct sand placement west of this address;

H. Since the adoption of the 2015 Assessment, the BBGHAD obtained certain additional permits necessary to implement the Project; during this permitting period, the BBGHAD staff concurrently finalized commercial arrangements for, among other items, sand source, sand transportation to Project area, and actual construction of the Project;

I. In or about 2017, BBGHAD staff has obtained updated cost estimates for components necessary to implement the Project and such costs exceeded those contemplated in the 2015 Assessment and 2015 Engineer's Report;

Owner
Address
APN: 4470-014-XXX

J. Therefore, on July 23, 2017, the BBGHAD Board held a public hearing and adopted Resolution No. 2017/05, which, among other points, declared the BBGHAD Board's intent to order a proposed assessment within the territory of the BBGHAD and fixed a hearing date to consider the proposed assessment and any protests thereon ("2017 Assessment"); the 2017 Assessment is based on the Engineer's Report dated June 22, 2017 ("2017 Engineer's Report"), and attached as Exhibit 1 to Resolution No. 2017/05.

K. On or about September 10, 2017, the BBGHAD Board held a public hearing and, among other actions, adopted Resolution Nos. 2017/08 (accepting the Statement of Assessment Ballots) and 2017/09 (confirming and adopting the 2017 Assessment and authorizing the levy and collection of the assessment within the BBGHAD);

L. Subsequently, four (4) BBGHAD property owners filed suit challenging the 2017 Assessment, Mark Magidson, Trustee of the Magidson Revocable Trust of 1987 (2006 Restatement), and Malibu-Broad Beach S-1, LLC a California Limited Liability Company through its Manager Mark Magidson; Alexander Haagen III, as Managing Member of 30956 BB, LLC and BB Malibu Place LLC; Mike Schwab; Cheryl Schwab; Andrew Leigh; Barbara Leigh v. Broad Beach Geologic Hazard Abatement District; Board of Directors of the Broad Beach Geologic Hazard Abatement District, Los Angeles County Superior Court Case No. BS170769 ("Reef Group Action"), and the BBGHAD subsequently filed litigation seeking the Court's validation of the 2017 Assessment, Broad Beach Geologic Hazard Abatement District v. All Persons Interested in the Validity of Resolution No. 2017/09 of the BBGHAD Board, LASC Case No. BC 684646 ("Validation Action"). The Court consolidated the Reef Group Action and the Validation Action for trial purposes;

M. On or about September 17, 2019, the Court issued its Order Granting Writ Claim and Order Denying Validation ("Order") granting certain of the relief requested by the property owners in the Reef Group Action and denying the Validation Action.

N. On or about January 22, 2020, the Court supplemented its Statement of Decision in connection with the Reef Group Action and the Validation Action.

O. The Reef Group subsequently filed and served its Proposed Order Granting Petition for Writ of Mandate in the Reef Group Action and its Proposed Judgement in the Validation Action; the BBGHAD filed objections to both the Proposed Order Granting Petition for Writ of Mandate and the Proposed Judgement.

P. The Reef Group subsequently filed and served its Proposed Order Granting Petition for Writ of Mandate in the Reef Group Action and its Proposed Judgement in the Validation Action; the BBGHAD filed objections to both the Proposed Order Granting Petition for Writ of Mandate and the Proposed Judgement;

Q. The Court subsequently issued its Order Granting Petition for Writ of Mandate in the Reef Group Action and entered Judgment in the Validation action; the BBGHAD has since filed a Notice of Appeal, appealing both the Order Granting Petition for Writ of Mandate in the Reef Group Action and the Judgment in the Validation Action;

Owner
Address
APN: 4470-014-XXX

R. The BBGHAD also filed in the trial court a Motion for Stay of Enforcement of the Judgment ("Motion for Stay");

S. On April 14, 2020, the Reef Group appeared in Court seeking an Ex Parte Order to Show Cause re Contempt against the BBGHAD, claiming that the Judgment in the Validation Action enjoins the BBGHAD from all actions except pursuing a CDP amendment;

T. The Court denied the ex parte relief, and ruled that: a) no evidence supports a finding of contempt against the BBGHAD, b) the Court signed the wrong order and never intended to prevent the BBGHAD from holding a vote on a new assessment or moving forward with the Project in any other way, and c) the parties can further argue their respective positions at the hearing on the BBGHAD's Motion for Stay;

U. on June 24, 2020, the Court held a hearing on the Motion for Stay, but has not yet issued its ruling;

V. Among other principles, the BBGHAD Board seeks to ensure that the BBGHAD: a) complies with all legal requirements, including those specified in the Order, b) levies and collects an Assessment commensurate with the special benefits received by each and every real property owner within the BBGHAD; and c) treats each and every BBGHAD property owner in a fair, just, and equitable manner; and

W. The BBGHAD Board intends to order the vote on the proposed assessment contemplated herein to be based on the Revised and Restated 2020 Engineer's Report dated July 12, 2020 (Exhibit 1) ("Revised and Restated 2020 Engineer's Report") and to set a BBGHAD Board meeting for October 25, 2020 to consider the proposed assessment specified in the Revised and Restated 2020 Engineer's Report.

NOTICE IS HEREBY GIVEN that:

On February 16, 2020, the BBGHAD Board adopted Resolution No. 2020/01 declaring its intention to impose a new assessment on the property within the BBGHAD boundaries and fixing a public hearing to consider adoption of this assessment to finance the cost and expenses of the maintenance and operation of the improvements implemented by the BBGHAD as allowed by Public Resources Code Section 26650 *et seq.* On July 12, 2020, the BBGHAD Board adopted Resolution No. 2020/04, which cancelled the assessment process created by Resolution No. 2020/01 and substituted a new assessment process to culminate in an October 25, 2020 public hearing.

The total yearly BBGHAD estimated budget from 2020-2032 is specified in the attached Revised and Restated 2020 Engineer's Report and is listed for 2020-2023 on the attached Exhibit 2. Exhibit 2 also specifies: a) your parcel's lineal beach frontage according to the BBGHAD survey, b) the amount to be assessed in 2020, c) the maximum dollar amount per lineal foot per year that can be assessed according to the proposed assessment (not including CPI increases), and d) the total, maximum annual assessment that can be levied for your parcel according to the proposed assessment (not including CPI increases). As in past years, the BBGHAD anticipates

that your annual assessment will be adjusted to reflect the annual percentage change in the Los Angeles Metropolitan Area Consumers Price Index for All Urban Consumers. Unless the BBGHAD is terminated, the assessment will continue to be levied in perpetuity.

The Revised and Restated 2020 Engineer's Report, attached as Exhibit 1, was prepared by a registered engineer certified in the State of California, and describes in detail the reason for the assessment and the basis upon which the amount of the proposed assessment was calculated. The Revised and Restated 2020 Engineer's Report specifically states the yearly estimated budget, the total assessment that will be chargeable to the entire BBGHAD territory, the proposed estimated assessments to be levied each year against each parcel of property, and a description of the method used in formulating the estimated assessment. A copy of the Engineer's Report can also be downloaded from the BBGHAD's website (www.bbghad.com) or can be reviewed at the office of the BBGHAD's Project Counsel, Ken Ehrlich, c/o Elkins Kalt Weintraub Reuben Gartside LLP, 10345 W. Olympic Blvd., Los Angeles, CA 90064.

The BBGHAD Board will conduct a public hearing on October 25, 2020 at 9:00 a.m. at **30237 Morning View Drive, Room 3, Malibu, CA 90265** or, if federal, state, county, or local law(s) prevent meeting in person, by Zoom or other similar video platform, to consider the proposed assessment and any protests against the proposed assessment. An agenda will be posted for the meeting as required by the Ralph M. Brown Act, California Government Code section 94950 et seq. at least 72 hours before the meeting which will disclose whether in-person attendance will be possible.

The following paragraphs provide the procedures for returning and tabulating the ballots:

1. A copy of this Notice of Adoption of Resolution, a sealable Ballot and the Engineer's Report has been sent to each of the property owners within the BBGHAD. The Ballot may be completed and mailed or hand delivered to the BBGHAD Clerk, c/o Elkins Kalt Weintraub Reuben Gartside LLP, 10345 W. Olympic Blvd., Los Angeles, CA 90064, or may be submitted at the public hearing on October 25, 2020. If you choose to vote by mail, your completed Ballot must be sealed in the enclosed envelope and received in sufficient time to be considered by 9:00 a.m. October 25, 2020 (**NOTE**: Since there will be no U.S. Mail or overnight mail delivery received at this commercial address on Saturday October 24 or Sunday October 25, **ballots sent by U.S. Mail or overnight mail must be received by Friday, October 23, 2020**). If you choose to vote in person, please deliver your sealed ballot to the BBGHAD Clerk before the conclusion of the public hearing at the BBGHAD meeting scheduled for 9:00 a.m. on October 25, 2020. If the meeting must be held by videoconference, arrangements will be made to allow in-person delivery of ballots on the hearing date by those who wish to do so. The Ballot may be withdrawn or changed at any time prior to the conclusion of the public testimony on the proposed assessment at the public hearing.

2. Immediately after the close of the public hearing, the BBGHAD Clerk or Election Official shall tabulate the ballots. In tabulating the ballots, the ballots shall be weighted according to the proportional financial obligation of the affected property as calculated by the Assessment Engineers. The proportional financial obligation of each affected parcel is governed by a formula, stated at pages 12-15 of the Engineer's Report, derived by the BBGHAD's

Address
APN: 4470-014-XXX

Assessment Engineers that estimates the special benefit conveyed by the Project. The formula identifies the special benefit conveyed by the Project to each parcel within the BBGHAD. The formula weights these factors based on their relative contribution to special benefit the Project provides. Special benefit is derived considering six factors, and weighting has been applied to each factor to reflect its relative importance as compared to other factors. These factors are supported by the Engineer's Report and the Coastal Engineering Appendix (Exhibit C to the Revised and Restated 2020 Engineer's Report) with respect to analysis of shore protection components, including sand placement, revetment, seawall, recreation, and bluff features, and from real estate appraisals and market analyses as well as publicly available property value assessments, for consideration of other values. After considering all evidence available to the Assessment Engineer, including analyses of coastal engineering processes, the Assessment Engineer applied professional judgment to the factor values regarding the relative efficacy of protective devices and projections of the effects of the Project.

Only those parcel owners who submit valid ballots for the 2020 Assessment will have their votes counted; and the votes will be weighted in accordance with the above-referenced formula.

3. At the hearing, the BBGHAD Board shall consider any objections or protests to the assessment and certify the tabulation of the ballots. The BBGHAD Board shall not impose the assessment if there is a majority protest. A majority protest exists if, upon conclusion of the hearing, weighted ballots submitted in opposition to the assessment exceed the weighted ballots submitted in favor of the assessment.

4. Public comments or inquiries regarding the proposed assessment may be made in writing by mail to the BBGHAD Clerk, Heike Fuchs, c/o Elkins Kalt Weintraub Reuben Gartside LLP, 10345 W. Olympic Blvd., Los Angeles, CA 90064. All public comments or inquiries on the Revised and Restated 2020 Engineer's Report or proposed assessment must be: 1) in writing, and 2) received at the address in this paragraph 4 by no later than the close of business on October 16, 2020.

Owner
Address
APN: 4470-014-XXX

EXHIBIT 1 to NOTICE OF ASSESSMENT

Revised and Restated 2020 Engineer's Report

Owner
Address
APN: 4470-014-XXX

EXHIBIT 2 to NOTICE OF ASSESSMENT

PARCEL-SPECIFIC INFO, COSTS, & BBGHAD BUDGET

EXHIBIT 4 to RESOLUTION NO. 2020/04

BALLOT EXEMPLAR

(parcel-specific Ballots to be sent to all BBGHAD parcel owners)

BBGHAD 2020 ENGINEER'S REPORT & ASSESSMENT

BALLOT

Identification of Parcel(s): [redacted] and commonly known as [redacted] Malibu, CA 90265	BBGHAD Surveyed Frontage (feet)	Maximum 2020 Annual BBGHAD Assessment (not including CPI)
Record(s) Owner: [redacted]	48	$60,202.59

_____ Yes, I/we approve the proposed annual benefit assessment described in the attached Notice on the property described by the parcel numbers identified in this Ballot.

_____ No, I/we do not approve the proposed annual benefit assessment described in the attached Notice on the property described by the parcel numbers identified in this Ballot.

Signature of Record Owner or Authorized Representative of the above-identified parcel(s)

[redacted]

_____

By _____

By signing above, I hereby declare under penalty that I am/we are the record owner of the parcel(s) above.

Mail or deliver sealed Ballot to:

Clerk of the Board of Directors,
Broad Beach Geologic Hazard Abatement District c/o Elkins Kalt Weintraub Reuben Gartside LLP
10345 W. Olympic Blvd.
Los Angeles, CA 90064